

effet important sur l'intensité de la cavitation ultrasonore. La justification des paramètres technologiques est d'une importance scientifique pour l'intensification des processus de nettoyage de pièces par ultrasons dans des laveuses submersibles.

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### DESIGNING GENIALLY-BASED INTERACTIVE POLYCODE TEXTS FOR STUDENTS TO LEARN TECHNICAL VOCABULARY

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**Abstract:** *The author defines the term “integral meaning” and justifies the necessity for technical students to explore the integral meaning of technical terms while learning foreign languages. The article outlines the principles of designing interactive polycode texts, intended for students to analyze the integral meaning of technical terms. The author describes the pedagogical potential of the media creation platform Genially.*

**Key words:** *foreign language, learning technical vocabulary, term, integral meaning, polycode text.*

Foreign language education is increasing in importance due to the intensive globalization processes. Foreign languages are regarded as an important tool for the effective training of technical students in various professional fields. According to national educational standards, the objective of specialists' training is the development of social and professional, practice-oriented competence that allows combining academic, social, and personal, professional competencies to solve problems in the field of professional and social activities [3]. In order to achieve the objective, it is practical to engage students in career-focused learning based on the educational materials designed to visualize workplace scenarios and expose students to a real-world workplace vocabulary.

Today, technology has become an essential part of the higher education process and highly immersive educational interactive content can be designed using a considerable number of online educational tools and platforms: COREapp, Genially, Thinglink, Glogster, Crello etc.

In this article, we focus on integrating Genially into the learning process, because it is a media creation platform that can be used to create engaging and interactive in-class and out-of-class activities for technical students as it has an impressive set of tools for planning, designing, and presenting material. Genially offers an abundant number of useful templates to design infographics, interactive images, dossiers, interactive and video presentations, e-posters, CVs, quizzes of all kinds. Genially templates are of great value because they allow developing polycode content by integrating verbal code (textual written and spoken technical information) and nonverbal code (static images, gif. images, video clips, etc.) in a way that enhances students' understanding of professional information. If the templates do not meet your educational needs you can upload appropriate pictures and start from scratch. When designing your polycode content you can also use interactive elements (buttons and markers) to avoid information overload on students' short-term memory by organizing verbal and nonverbal information in layers. Let's look into the process of designing Genially-based didactic materials for teaching technical vocabulary.

When teaching technical vocabulary it is important to recognize that a specialist must express his/her meaning extremely accurately while dealing with professional problems. To deliver the right message in a foreign language he/she needs to know the key terms of his/her area of knowledge and understand the term meanings. Furthermore, the associative relations of the key terms with other general and technical words must be developed in the linguistic consciousness of a specialist. These relations are determined by the presence of the same semantic components in the integral meanings of the terms and the words belonging to their lexical environment [5]. The analysis of the findings in the research studies on the problem of the integral meaning in the native speakers' linguistic consciousness (I. A. Sternin, O. E. Vinogradova, etc.) shows that the term and its associates can be characterized by paradigmatic, syntagmatic, and thematic relations, based on certain types of associations: "part – device/ apparatus", "object – action", "object – feature", "object – function", "object – malfunction", etc. For instance, when discussing the reasons for braking system failure, the term BRAKING SYSTEM can actualize in the specialist's linguistic consciousness, the following associates: CYLINDER, FLUID, BOOSTER, LEAK, etc. Consequently, it is practical for students to learn not only the lexicographic meaning of the term, which covers only the minimum set of essential characteristics of the object (phenomenon) nominated by the term [5], but also its integral meaning. The term "integral meaning" refers to the structure that organizes all the semantic components associated with the spoken form of the term in the linguistic consciousness of native speakers [2] and regularly occurs in various contexts of its use. It seems reasonable for students to explore the integral meaning of the term through the construction of an educational model of the term integral meaning [4], based on the structure of the integral meaning as a cognitive representation: the image component, the intensional, and the implicational components. The image component includes sensory representations, schemes, emotional states. This component is the vector, structuring rational information, organized within the intensional and the implicational components of a term integral meaning. The intensional covers key semantic components, for example, the function of a device, nominated by the term. The implicational component includes semantic subcomponents determined by its intensional, for instance, characteristics of the nominated object/process related to its practical use.

Since the integral meaning of a term is a polycode formation, we believe that students

should explore the integral meaning of terms by carrying out the cognitive analysis of the polycode texts, purposefully selected and designed for learning integral meaning of a technical term. The polycode texts should integrate different semiotic codes, as such a way of presenting professional information verbally and nonverbally enhances the student's ability to establish connections between image-based and rational components of the integral meaning of the term. According to the Dual Code Theory, these connections are important for technical vocabulary learners as they make it easier for them to retain and recall a particular term [1] as well as its associates, included in the term lexical environment.

When designing interactive polycode texts, intended for students to analyze the integral meaning of technical terms, it is critical to apply the following principles: 1) the terms to be learned and their associates should be presented to students in polycode contexts; 2) the number of polycode text blocks should correlate with the number of the segments of an educational model of the term integral meaning; 3) the verbal and nonverbal blocks of the polycode text should be organized in a way that reduces the cognitive load on the students' short-term memory. The selected learning materials become structural elements of an interactive polycode text and must be relevant for students to explore the integral meaning of technical terms. Considering the options Genially offers, a polycode text can include: 1) professional text excerpts (for instance, an excerpt describing constituent parts of a braking system); 2) nonverbal content: a) static images displaying the external characteristics of mechanical components, machines, apparatuses, etc.; b) dynamic schemes that demonstrate the characteristics of material processing or production processes, etc.; c) interactive 3-D models of engines, devices, apparatuses, etc., demonstrating their design features and explaining the way they function; d) video clips, demonstrating professional situations that are precedent for a special area of knowledge. To organize the selected material we use Genially basic presentation template allowing us to integrate nonverbal content with the textual information and create timelines in an intuitive way. The structure of a polycode text includes: 1) a page with teaching guidelines for students to follow and the description of the interactive elements and their functions, 2) a content page with interactive links directing students to all blocks of the polycode text; 3) basic pages displaying the learning task and the polycode text excerpt for students to analyze and complete one of the segments of an educational model of the term integral meaning. In order to reduce the cognitive load on students' short term memory, we use three different types of interactive elements to provide the pronunciation of some key terms from the polycode text excerpts, and, depending on the level of English proficiency of students, the term definitions in English or mother tongue and individual pictures to visualize these terms. When creating the basic pages one should try to keep their design homogeneous by putting elements in the same level and position and using one font not to confuse students. Moreover, it is advisable not to include more than three colours in the color palette of each basic page. When a Genially-based polycode text is designed, the link might be shared with the students on LMS platform or social networks or any available messaging app.

Therefore, the use of Genially as a creative tool for designing didactic materials makes it possible to: present the key technical terms of a particular area of knowledge in various polycode contexts relevant for students to explore the integral meaning of a term; give students numerous exposures to the technical terms they are to learn; involve students in deeper deliberate processing of technical vocabulary.

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## ENVIRONMENTAL MONITORING OF WATER PONDS

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**Abstract:** *The importance of environmental monitoring of water ponds and the study of some physical and hydro-chemical indicators of water quality and their seasonal changes in a number of ponds in the north of Moscow.*

**Key words:** *environmental monitoring, ponds, temperature, dissolved oxygen, water quality.*

The state of the biosphere changes under the influence of natural causes and under the influence of human activity. Natural changes in the state of the biosphere occur near the initial state; changes in temperature, pressure, air humidity, seasonal changes in the biomass of vegetation and animals are examples that illustrate such changes[1]. Among the measures to stabilize and further improve the environmental situation in Russia, a special place is given to the formation of an environmental monitoring system, the main task of which is information support and support for decision-making procedures in the field of environmental protection and environmental safety [2]. The aquatic flora and fauna are affected by such indicators as the depth of the reservoir, flow rate, acid-base properties of water, turbidity, oxygen and temperature conditions, the amount of dissolved organic matter, nitrogen and phosphorus compounds, and many others. All these parameters are influenced by both anthropogenic load and natural processes occurring in water bodies [3]. The objects for assessing the state of