Conclusion

The presented above technologies: nanogenerators, shoes which produce electricity, motion as a source of energy, decoration to generate electricity, are only prototypes that show unlimited possibilities to produce renewable and echo-friendly energy. The main advantages of these technologies are their convenience and availability. The scientists hope that with time these prototypes could be introduced at commercial scale.

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THE USE OF GRAPHICAL VISUALS IN STUDYING ENGLISH FOR SPECIFIC PURPOSE IN MODERN UNIVERSITY

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Among the principles existing in the modern didactics concerning the discipline "Professional English" the use of visual methods is directly connected with the necessity to acquire bulk of theoretical material of high level of abstraction. In accordance with the above mentioned fact the teaching-learning process is associated with the application of visuals, such as tables, graphs, diagrams, mind maps which help present information compact by its analyzing and generalizing. Graphical methods of presentation information are useful tools to visualize and simulate complex phenomena and processes.

The wide use of information technologies requires new modern approaches to the development of didactic tutorials and the use of these tools at lessons.

Modern information technologies such as multi and hypermedia ones allow to improve graphical tools (tables, curves, diagrams and etc.) making them interactive, multilevel and its content and methodology satisfying the aims, objectives and conditions of teaching in modern institutes of higher education.

The implementation of new graphical tools based on information technologies into education process in institutes of higher education is not only an attempt to realize all advances proposed by the methodologists but necessity to place at the disposal of educational specialists all tools capable to enhance the level of education quality.

The fundamental papers concerning the peculiarities of visual perception (A. V. Luisov, I. A. Klypina, V. L. Latyshev, B. F. Lomov, B. V. Onchinnikov, O. A. Revenko, N. P. Travnikova) and psychoeducational fundamentals of creation and use of visual means (V. G. Boltyansky, L. V. Zankov, V. G. Zvarich, A. P. Koval, N. M. Lebedev, I. Ya. Maurina) comprise the theoretical base of our research.

It is to be emphasized the transition from traditional approaches to student-cantered one. However, there does not exist one universal method suitable for different situations. Every person has his own individual psychological features. Independent foreign language study is a complex task requiring the knowledge of own cognitive capability which allows efficient acquisition of new information. The consideration of cognitive styles and dominant type of information perception will help to choose the most appropriate form of teaching material presentation [1].

For understanding individual psychological features it is important to know construction of human brain. The cerebral hemispheres are divided right into a right hemisphere and a left hemisphere. Each hemisphere appears to be specialized for some behaviors.

Student with the dominant right-hemisphere function are more creative, sensitive and unpractical. The study of foreign language for those students should be based on visuals, images, pictures and graphical tools [2].

Students with the dominant left hemisphere function are rational and make their decisions using logic. The preferable ways to study foreign language for those students are learning by heart and doing exercises.

Each hemisphere appears to be responsible for some behaviors.

The right hemisphere is responsible for:
- Recognizing faces
- Expressing emotions
- Music
- Reading emotions
- Color
- Images
- Intuition
- Creativity

In comparison with the right hemisphere, the left hemisphere is responsible for:
- Language
- Logic
- Critical thinking
- Numbers
- Reasoning

The use of graphical tools (tables, pie charts, diagrams and etc.) stimulates the activity of both hemispheres [3].

There are main methods of presenting information that you want to include in your work (figures or other statistics from different sources), to show the results of experiments or data that you have collected and analyzed as part of a project or dissertation. Such information can be used to illustrate an argument or convey complex or detailed information in a concise manner.

It can be:
- incorporated into the main body of text;
- presented separately as a table;
- used to construct a graph or chart; or
- presented as a mind map.

Determining which of these methods is the most appropriate depends upon the amount of data you are dealing with and their complexity. The choice about whether to use text, tables or graphs requires careful consideration and often depends on the type of information. It is crucial to remember that when using a table or graph the associated text should describe what the data reveal about the topic, therefore you should not need to describe the information again in words.

1. Graphs

In engineering, graphs, tables, diagrams and charts are a common way of giving information. Graphs are a good means of describing, exploring or summarizing numerical data because the use of a visual image can simplify complex information and help to highlight patterns and trends in the data. They are a particularly effective way of presenting a large amount of data but can also be used instead of a table to present smaller datasets. Line graphs are usually used to show time series data – that is how one or more variables vary over a continuous period of time. As an example daily load profile is used in power supply. A 24 hour load profile of a particular day is shown in Figure 1.
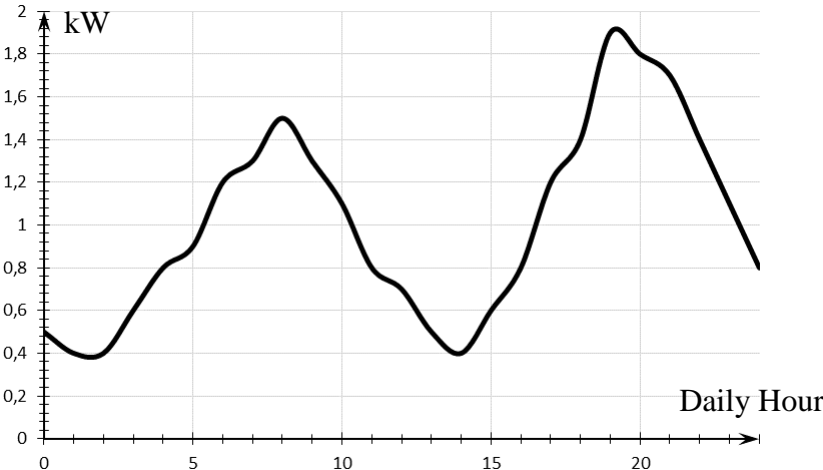

Figure 1 – Daily load profile of a Residential house

Load profile of a residential house varies according to the residents work time pattern. The curve demonstrates the power consumption during weekday from Monday to Friday. There is the decrease of load between 7:00AM to 9:00 AM

when most people are at work and the rise of load between 6:00 PM to 7:00 PM when people return home. According to figure 1 maximum load demand was in the evening from 6:00 PM to 10:00 PM and in the morning 7:00 AM to 9:00 AM.

2. Bar charts

Bar charts are one of the most commonly used types of graph and are used to display and compare the number, frequency or other measure for different discrete categories or groups. The graph is constructed such that the heights or lengths of the different bars are proportional to the size of the category they represent. For instance, annual load bar chat is shown in figure 2.
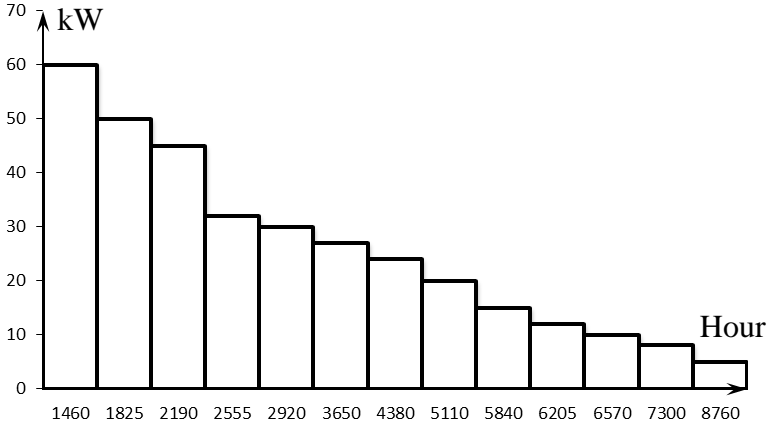

Figure 2 – Annual load bar chat

Annual load bar chat shows dependence of power consumption from hours during a year.

3. Pie charts

Pie charts are a visual way of displaying how the total data are distributed between different categories. The example here shows the proportional consumption of energy between different types of fuel.
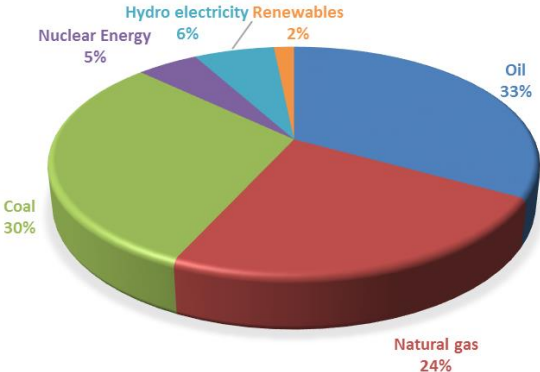

Figure 3 – Energy consumption by Fuel Type

Pie charts should only be used for displaying nominal data (i.e. data that are classified into different categories). They are generally best for showing

information grouped into a small number of categories and are a graphical way of displaying data that might otherwise be presented as a simple table. The study guide Pie Charts gives more details about designing pie charts and using them to compare data [4].

4. Mind Map

Mind mapping is an interactive method of teaching, known also as cluster method, used to stimulate cognitive activity, to develop memory, and critical and spatial thinking. This method includes three stages: challenge (where students are encouraged to the study of new topics), comprehension (new ideas are integrated with the old ones), and reflection (new ideas are produced on the base of the given material).

Moreover, mind mapping is a very efficient way of presenting information which includes all of above mentioned of types: diagram, tables, and graphs. It is to be mentioned that using mind maps different types of information can be represented.

Mind mapping is a simple and reliable technique for drawing and presenting information in diagrams, instead of writing it in sentences. The diagrams always take the same basic format of a tree, with a single starting point in the middle that branches out, and divides again and again.

The tree is made up of key words, phrases, colorful pictures, ideas or short sentences connected by lines. The lines used to connect the words are also a part of the meaning.

Mind maps are based on trees, since the trees reflect how our minds work, because we always seek patterns. Trees encourage and capture this thought process in the way of patterns efficiently, presentably and clearly. The use of software means helps to extend opportunities: we can deal with much more information than we could on paper, and easily rearrange it to suit our purposes [5].

The process of mind mapping creation is a step-by-step one which includes seven main steps to be followed:

1. Start in the centre of a blank page turned sideways to give your brain freedom to spread out in all directions and to express your ideas more freely and naturally.

2. Use an image or picture, cartoon for your central idea, because an image is worth a thousand words helping you to concentrate and focus on appropriate ideas and develop your imagination and partial and critical thinking.

3. Use different colours throughout, because colors make your brain work being as exciting to your brain as are images, pictures or cartoons. Colour adds extra attraction, flexibility, visualization and life to your Mind Map.

4. Connect your main branches to the central image and connect your second- and third-level branches to the first and second levels, so you can show all your associations. The system of associations will help you understand, remember and master the material easily and durably.

5. Curved branches are preferable, because having nothing but straight lines is boring to your Brain.

6. Use only one key word or idea per line, because single key words and ideas give your Mind Map more power, transparency, unambiguity and flexibility.

7. Use images throughout, because each image, like the central image, is more powerful. 10 images in your Mind Map is already worth 10,000 words of notes [6].

The benefits of mind mapping are as follows: it develops critical thinking, helps clarify your thinking in many different contexts: personal, family, educational or business, master the material, contributes to mutual interaction in the process of interpersonal communication. Besides, the use of mind maps allows presenting information in colorful non-linear manner avoiding dull, linear thinking and making note taking fun.

Mind maps can be used for:

• Note taking while watching videos, listening or reading;

• Brainstorming (individually or in groups);

• Problem solving;

• Self -Studying and memorization;

• Planning of your own activities and organizing your day;

• Researching, analyzing, rearranging, consolidating and summarizing information from multiple sources;

• Visualizing and presenting information;

• Writing blog posts;

• Gaining insight on complex subjects [7].

To confirm the power of mind mapping an experiment in two identical groups was conducted. One group (control group) had to read the ordinary linear text without drawing mind maps, while the other group (experimental) presented the information from the text in the mind map format. The result is as follows:

Table 1

Results of experiment

Controlled parameters	Control group	Experimental group
Rate of accuracy, fullness and depth of comprehension, %	52	89
Rate of terms comprehension, %	60	81
Rate of fullness, accuracy and depth of the text meaning convey, %	51	92
Average rate, %	54,3	87,3

The comparison of two types of presenting information: ordinary linear text and mind mapping shows that identical information gives pretty different results of understanding and memorizing.

The example below shows two ways of presenting information.

The first one is a plain text: "Not all power plants rely on falling water. Many take advantage of steam, which acts like a fluid and can therefore transfer energy to a turbine and, ultimately, to a generator. The most popular way to make steam is to heat water by burning coal. It's also possible to use controlled nuclear reactions to turn water into steam."

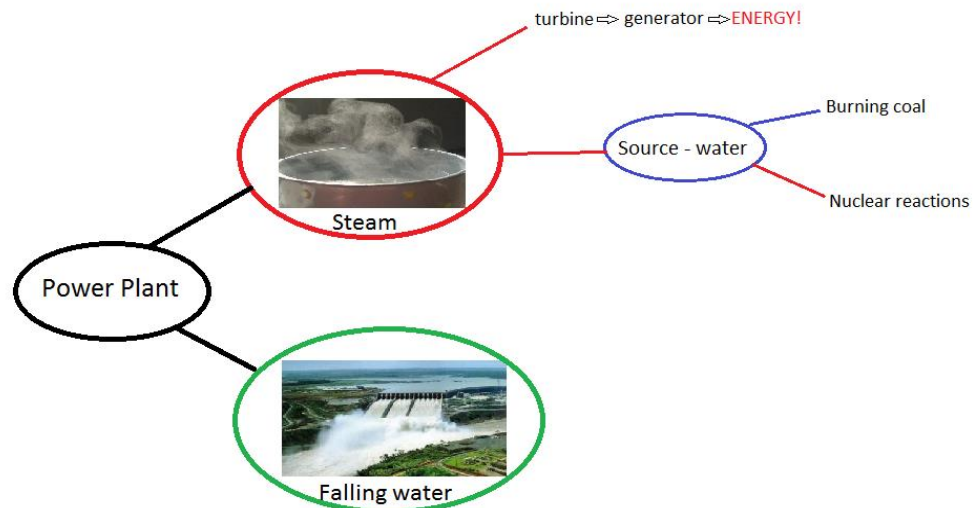The second example is a fragment of a mind map.

Figure 4 – A fragment of a mind map

Reading is a two-step process: first you interpret and digest the sentences, and then you create a mental image and hold it in your mind. To understand a mind map, you can see it, where the mental images that you would create from the text are directly represented. The comparison demonstrates that you can understand and get to the meaning in one step using a mind map. It allows focusing on the most important information which is not plain, flat and lifeless, but becomes interactive and worth exploring. "It raises questions and makes us think". Thus the information is turned into knowledge, with insight and actions [5].

Tables, different types of graphs and mind maps were considered as a pedagogic tool used in professional English teaching-learning process which allows dealing with a huge amount of education material. The study of the specific of information presentation in graphic forms, the analysis of these visual tools as a modeler of the content of the module "Power Supply" within the framework of professional English, the research of didactic and technological fundamentals of graphic forms of material presentation allowed to make the conclusion that mind map is the most flexible and efficient way of information modification. Mind map is a dynamic, interactive form of presenting information, which is characterized by its ability to carry out a double-sided interaction between a student and a study tool and present information using step-by-step algorithm which simplifies the material acquisition [1].

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АКТУАЛИЗАЦИЯ КОНЦЕПТА ARMY В АНГЛИЙСКОМ ЯЗЫКЕ

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Современная военно-политическая обстановка в мире характеризуется высокой степенью напряженности, соперничеством, неустойчивостью процессов политического и экономического развития, осложнением международного сотрудничества. В отношении Российской Федерации на ряде направлений наблюдается усиление военных опасностей и угроз. Одна из военных угроз исходит со стороны Соединенных Штатов Америки. В связи с этим изучение Вооруженных Сил как своей страны, так и потенциального противника является одним из главных условий для становления высококвалифицированного офицера, готового к защите своей страны в случае вооруженного конфликта и сохранению ее целостности и суверенитета. Интересным представляется взгляд на Вооруженные Силы США сквозь призму языка, т.к. подобные исследования позволяют глубже познать картину мира противника, его культуру, привычки и традиции.