РОЗДІЛ 3

ПРОБЛЕМИ ЛІНГВІСТИКИ ТЕКСТУ ТА ДИСКУРСУ

УДК 378.147.016:811.111

Svitozara Bihunova,
PhD in Psychology, Associate Professor of Practice of English Language Department, Rivne State University of the Humanities
Iryna Vorobiova,
PhD in Pedagogy, Associate Professor of Practice of English Language Department, Rivne State University of the Humanities
Alla Fridrikh,
PhD in Pedagogy, Associate Professor of Practice of English Language Department, Rivne State University of the Humanities

DEVELOPING PROBLEM-SOLVING SKILLS

The article deals with the creating and the developing of the students' problem-solving skills, which are necessary for all life spheres. The authors have focused on the idea that classroom problem solving activities can be a great tool to get students ready to solve real problems in real life as the ability to analyze a problem critically, map out all its elements and develop a workable solution as one of the most valuable skills one can acquire in life. It has been highlighted the features of the problem-solving skill education; analyzed the main problems in developing activities and instructions to them in the context of the problem-solving skill education; formulated the basic principles of the problem-solving skill education; studied the models of the problem-solving skill education and developed a set of activities to prove the ideas discussed. Applying the discussed activities in a complex and systematic way, within a general educational model gives the opportunity to provide a methodologically conditioned approach that will form the so-called "21st Century Skills": critical thinking, problem-solving, collaboration, and self-management. The authors have emphasized that problem-solving skills do not develop naturally; they need to be explicitly taught in a way that can be transferred across multiple settings and contexts.

Key words: *problem-solving skills, critical thinking, collaboration, problem-solving activities, 21st Century Skills.*

Бігунова Світозара Анатоліївна,
кандидат психологічних наук, доцент кафедри практики англійської мови,
Рівненський державний гуманітарний університет
Воробйова Ірина Анатоліївна,
кандидат педагогічних наук, доцент кафедри практики англійської мови,
Рівненський державний гуманітарний університет
Фрідріх Алла Володимирівна,
кандидат педагогічних наук, доцент кафедри практики англійської мови,
Рівненський державний гуманітарний університет

РОЗВИТОК НАВИЧОК ВИРІШЕННЯ ПРОБЛЕМ

Стаття присвячена розвитку навичок вирішення проблем у студентів. Автори зосередилися на тому, що діяльність з вирішення проблем може бути прекрасним інструментом для того, щоб сформувати у студентів готовність вирішувати проблеми в житті, оскільки здатність критично аналізувати проблему, усвідомлювати її складові та розробляти рішення для її вирішення – цінне уміння, яке варто набути в житті. У статті висвітлені особливості формування майстерності вирішення проблем; проаналізовано основні проблеми розробки діяльності та вказівки до них у контексті формування навичок вирішення проблем; сформульовано основні засади формування майстерності вирішення проблем; представлено модель та розроблено зразки діяльності з даної проблеми. Застосування означеної діяльності комплексно і систематично в рамках загальноосвітньої моделі дає можливість забезпечити методологічно обумовлений підхід, який сформує так звані «Навики 21 століття»: критичне мислення, вирішення проблем, співпрацю і самостійність управління.

Ключові слова: *навики вирішення проблем, критичне мислення, співпраця, діяльність з вирішення проблем, навики 21 століття.*

The applicability of the article. It goes without saying that the world is changing rapidly. And teachers (teachers-to-be in particular) are highly recommended to be well-prepared to deal with it. There are various ways and one of them is implementing "New Generation School Teacher", a joint project of the British Council Ukraine and the Ministry of Education and Science of Ukraine.

Rivne State University of Humanities has been taking part in it, trying to provide students of the Faculty of Foreign Languages with important professional skills related to methodology as well as to develop essential life skills.

It should be noted that modern way of learning and teaching, designed to develop important life skills of 21st century includes *problem solving,* that is the ability to recognize and analyze difficult situations and to find suitable solutions.

It is obvious that problem-solving skills are necessary for all life spheres, and classroom problem solving activities can be a great tool to get students prepared and ready to solve real problems in real life. Whether in university, work or in their social relationships, the ability to analyze a problem critically, map out all its elements and develop a workable solution is one of the most valuable skills one can acquire in life.

Thus, the *objectives* of the article are:

• to highlight the features of the problem-solving skill education;

• to analyze the main problems in developing activities and instructions to them in the context of the problem-solving skill education;

• to formulate the basic principles of the problem-solving skill education;

• to study the models of the problem-solving skill education;

• the develop a set of activities to prove the ideas discussed.

The *aim* of the article is to define problem solving as a critical skill that students will need in all aspects of their life. By working out their existing skills and creating a solid foundation in problem-solving techniques students will become capable and aware to solve their problems successfully.

The principles for teaching problem solving were studied by R.Foshay, J.R.Hayes, and J.Kirkley; the teaching problem-solving skills – by I.D.Doig, T.W.Hoffman, R.K.Swartman, D.R.Woods, and J.D.Wright. Nevertheless, the problem needs further research, especially in the field of English teachers' training. The reason is that traditional teaching methods are challenged for their inability to foster students' critical thinking. Formation and development of students' skills to observe, measure, classify, process and interpret information, analyze, synthesize, and formulate conclusions should be recognized as the essential elements of the learning process.

Problem solving should be an important part of the curriculum. It presupposes that students can take on some of the responsibility for their own learning and can take personal action to deal with problems, discuss alternatives, and focus on thinking as a vital element of the curriculum. It provides them with the opportunities to use their newly acquired knowledge in meaningful, real-life activities.

Classes sometimes include activities based on common problems: pollution, relationships, noisy neighbours, and so on. But often problem-solving tasks are over too quickly, as students agree on the first solution that comes to mind, using minimal language, e.g. 'Noisy neighbours? OK – so call the police'. The instructions of a problem-solving activity should contain several ways of generating better interaction. Example: *There is too much traffic in the centre of the city. In pairs, think of three alternative solutions to this problem. List the advantages and disadvantages of each alternative. Then decide which alternative would be the cheapest one, the most innovative one, and the most environmentally friendly one. Report your decisions to another pair / group and discuss with them which solution would be the best.*

This example of problem-solving task involves listing, comparing, evaluating, and sharing personal experiences activities where students are asked to reflect on their personal experiences; in fact, it is everything that we often do in real life. However, the instructions for such activities where students are encouraged to relate things from their personal lives are often rather vague and open-ended. In order to encourage richer interaction, it is obviously necessary to add some clear goals to the process of activities and instructions development to make them more precise.

So, we propose to formulate the goals of problem-solving skill teaching like the following: training students to think differently about diverse situations; helping the students to acquire the problem solving steps so that they are able to use them to evaluate potential solutions to occurring problems; learning and generalizing problem solving skills and the way to apply them.

Problem solving is the process of applying a method – not known in advance – to a problem that is a subject to a specific set of conditions and that the problem solver has not seen before in order to obtain a satisfactory solution. To develop this skill successfully we recommend following such basic principles of problem-solving skill teaching and the model to implement in teaching:

• Model a useful problem-solving method. The task of the teacher is to convince students in the necessity to be persistent.

• Teach within a specific context. We think that problem-solving skills should be necessarily taught in the context and not as an abstract skill. Moreover, real-life examples are preferable and even obligatory.

• Help students to understand the problem. For solving the problem successfully students need to define the end goal. This step is crucial to successful learning of problem-solving skills (identifying specific problems, difficulties, or confusions).

• Take enough time. You never know how much time solving the problem will take. But be sure to prearrange not only enough but even a little more time for all parts of the work to avoid the situation when students cannot solve the problem because they haven't simply understood it.

• Ask questions and make suggestions. As we want to foster students' critical thinking and understanding of holistic learning environment, we recommend teaching them to answer various imaginary situations ("*What would you do if...*"). Thus, students learn that their action can lead sometimes to an unexpected ending; and are taught to predict the result of each decision and to avoid the undesirable one.

• **Treat errors like a misunderstanding.** It's quite understandable that mistakes and errors can have different causes such as mother-tongue interference, over-generalisation, anxiety, and tiredness. But you should try hard to avoid errors because of misunderstanding. You should explain to students that mistakes are natural and we all learn from them, but it is a misunderstanding that really hurts and we should take great pains to avoid it. It is always better to repeat something again, to ask for some details to make everything clear than to be silent being afraid to hurt somebody's feelings and because of this misinterpret the problem [1; 2].

Let's study the key elements of the Woods' problem-solving model, which we advise to use as a basic one in the context of problem-solving skill teaching:

1. Define the problem. It's advisable to identify the problem as the system by interpreting the information provided in the problem statement *(e.g.: by drawing a diagram, metaphor)*; to list what is known and unknown about the problem, and identify the knowledge needed to solve it. Be sure that students understand what they are expected to find. The task of the teacher as a facilitator to teach how to select and to interpret the information while doing this step, to help them to consider from the beginning what a logical type of answer would be.

2. Think about it. Teachers should use this stage to ponder the problem to help students develop a mental image of the problem. During this step students determine by themselves the required background knowledge (e.g.: by using *illustrations* and *examples*). The vital point is to encourage students to collect pertinent information (e.g.: *conversion factors*, *constants*, and *tables* needed to solve the problem).

3. Plan a solution. The tasks of this step are to **consider possible strategies and choose the best one.** Common problem-solving strategies are: calculate; simplify; use an equation; make a model, diagram, table, or chart.

4. Carry out the plan. It is very important to be patient and persistent and to encourage students to try different strategies and keep trying even if problem solving is not successful.

5. Look back. It is crucial in problem solving teaching to inspire and to motivate students to reflect (e.g.: *students should ask themselves the following questions: Does the answer make sense? Does it fit with the criteria established in step 1? What did I learn by doing this? Could I solve the problem another way?*) [3].

The crucial part of any activity is students' self-assessment, an absence of which means that the goals of the activity are not reached. The assessment process is not an easy task. However, like any other process it includes certain steps. We offer to follow the scheme to do it clearer for students:

1. Identify problems. A student anticipates different kinds of problems in complicated projects and thinks of ways to solve them before they happen.

2. Identify relevant information. A student clearly identifies important information needed to solve complex problems.

3. Analyze problems. A student carefully analyzes the characteristics of a problem before solving it.

4. Use strategies. A student uses the strategies and tools he/she has learned and subject-area knowledge to solve problems.

5. Reflect. A student reflects on the problem solving processes, evaluates how well he/she is working, and makes changes when necessary.

Now, we want to show the practical application of the theoretical issues discussed above. Every day we normally come across a lot of different problems. Knowing how to behave in this or that situation will help students in their everyday life. In order to develop problem-solving skills we have designed and tested five activities for students during our sessions and propose here the examples.

1. Social Problem Solving.

We have created a number of cards with various social situations, e.g. "*Some days ago you had a quarrel with your best friend. He/She was totally wrong denying you in something you hadn't done and didn't want to listen to any of your explanations. All these days both of you have pretended that you aren't familiar with each other but this can't last forever. What is the way out?*" or "*You suspect your boyfriend/girlfriend that he/she is seeing someone else. Will you check his/her mobile to find out whether it is so?*"

Then students one by one take the card from the pile, read it aloud and together try to find the best decision for every situation.

2. Who can propose more?

This game activity includes elements of curiosity, suddenness, quick-wittedness, team-building, and mutual cooperation.

With the help of paper clips of different colours (which are taken from a non-transparent box) students are grouped into teams of 3-4. Each team in turn chooses one card with a problem (the set is prepared beforehand) and reads it aloud. Then they have 4-5 minutes to discuss it in their own team and invent as many solutions to the problem as they can. The team, which has chosen this card, has the right to be the first to announce their proposals. The next teams shouldn't use the already mentioned solutions. So, the second team reads only new variants and so does the third one and so on. Every team gets as many points as many solutions of the problem have been proposed. Then the second team chooses the card and the game goes on.

Besides, if your goal is a communication activity, it is worth adding a collective discussion when after announcing possible solutions to the problem the whole group of students, together, rethinks all of them choosing the best one.

3. Everything is Bad...

Sometimes it seems that it is impossible to be in the worst situation, nothing can be done and nobody can help. But it is not true! First of all we persuade the students who think that they are in such a situation to calm down. Then we give them a sheet of paper and ask them to divide it into two columns. The left column is called "Bad things". So, we propose students to fill in the left column writing down everything bad what they are nervous about. When they are ready, we ask them to fill in the right column explaining that the right column has a title "What can I do with it?" and that they have to write the solution just opposite every point (for example see Table 1).

Table 1.

My Problems

Bad things	What can I do with it?
Lost my favourite pen.	Go to the supermarket or some other shops and choose the best pen!
Forgot to send the task for checking.	Come up to the teacher, apologize and ask if it is still possible even for the lower mark.
He doesn't pay any attention to me anymore.	Maybe I should pretend that I'm not interested with him either. *or* I should change my way of behaviour to become more positive and unpredictable. *or* It's ME who doesn't love him anymore.

As a rule, this works. The students stop feeling blue and become more creative, critically thinking and problem-solvers for themselves. However, in case this does not help, we propose the next task "I need help".

4. I need help.

There are situations when you simply do not know what to do. In this situation we propose the following. There is a box in the classroom where during the week the student can put the question about any problem he or she cannot deal with. Of course, it is not signed, so it is absolutely anonymous and no feelings will be hurt. Then on Monday the box is opened and the first question is read. The students brainstorm different answers even the craziest ones and at last the solution is found. Then the second question is read and discussed and so on.

5. Moral dilemma.

This kind of activity is always popular and rather relaxing. We prepare a set of cards with different moral dilemmas students can come across in their life. Among them there are: "*You have seen a stranger take his/her purchase in the shop leaving his/her wallet. Will you tell him/her about it?*", "*Being in the cinema you saw your best friend's boyfriend/girlfriend with someone else. Will you tell your best friend about it?*", "*You have found out that your younger brother, who is 11, starts smoking. Will you tell the parents?*" or "*You best friend has bought a new shirt/blouse. It doesn't suit him/her at all but he/she loves it very much and wears it all the time. Will you tell him/her that he/she looks awful?*" Divide students into groups of 3-4; give each group a set with these moral dilemmas and place them face down on the table. Then the students choose who is going to be the first to cope with the dilemmas. Then we give rest of the students the cards with the word "Yes" or "No".

So, the activity starts. The first student chooses the first moral dilemma, reads it aloud and while he/she is thinking about his/her answer, the rest of students have to predict the first student's answer and put a "Yes" card or "No" card face down. When the student explains his/her answer, the group turns over their cards. Those who could predict the correct answer, get a point. When the cards are over, the person who gets the better result is the winner. But it is very useful after finishing the game to discuss all the moral dilemmas with the students who can think over them, listen to their group mates' proposals how to cope with this or that dilemma and work out the best variant of dealing with them.

Conclusions. Taking everything into account we should emphasize that students achieve better results when they solve problems and make decisions themselves and in a team. The proposed problem solving activities teach and motivate students how to work out a solution. What is more, problem solving improves teamwork, gives the opportunity to use different thinking styles, to increase creativity, and leads to decision making, teaches both negotiation and cooperation.

Development of efficient problem-solving activities is not an easy task. We are sure that clear instructions of the activities used help student to feel confident and perform the tasks correctly. At the same time, applying the discussed activities in a complex and systematic way, within a general educational model provides a methodologically conditioned approach that will form the so-called "21st Century Skills": critical thinking, problem-solving, collaboration, and self-management.

Obviously, problem solving activities need not be dull and routine. Ideally, the problem solving activities you give your students will engage their senses and be genuinely fun to do. The activities will leave an impression on each student, increasing the likelihood that they will take the lesson forward into their everyday lives. And in the real world, students encounter problems that are complex, not well defined, and lack a clear solution and approach. They need to be able to identify and apply different strategies to solve these problems. However, problem solving skills do not necessarily develop naturally; they need to be explicitly taught in a way that can be transferred across multiple settings and contexts.

References:
1. Hayes J. R. The Complete Problem Solver. Hillsdale, NJ: Lawrence Erlbaum Associates, 1989. 376 p.
2. Foshay R., Kirkley J. Principles for Teaching Problem Solving. Bloomington, MN: PLATO Learning, 1998. PP. 1–14.
3. Woods D. R., Wright J. D., Hoffman T. W., Swartman R. K., Doig I. D. Teaching Problem Solving Skills. *Engineering Education*. Vol. 66 (3). 1975. PP. 238–243.