Using media resources to develop students' skills in self-educational activities

E V Astapenko and A V Bedareva*
Reshetnev Siberian State University of Science & Technology, 31 Krasnoyarsky Rabochiy Av., Krasnoyarsk, 660037, Russia

*E-mail: alissaval@mail.ru

Abstract. In the article, the authors consider and solve the issues of developing the skills of self-educational activity of students by including the use of media resources in the educational process, and in particular in the process of learning a foreign language, the relationship of such concepts as skills of self-education and the level of formation of media competence is also noted. The authors concretize the concepts of self-educational activity and media competence of students. To determine the level of development of self-educational skills of students and the level of formation of media competence, methods such as polling and questioning, developed by the authors of this article, were used. To assess the reliability of the study results, the Friedman $\chi^2 r$ criterion was used. The study was conducted in the period 2019-2020 and included sixty students at the Institute of Social Engineering and the Engineering and Economic Institute of the Siberian State University of Science and Technology named after M. F. Reshetnev.

1. Introduction

At present, the development of Russian education is taking place in the difficult conditions of globalization not only of economic relations, but also of the education sector. Along with the expansion of opportunities for access to the resources necessary to search for information in order to acquire new knowledge, the requirements for the construction of the educational process are increasing. There is a need to modernize teaching, introduce innovative methods, including the need and the possibility of independent acquisition of knowledge by students, that is, there is a need to create an educational environment and interaction between a teacher and a student, aimed at developing students not only professional qualities, but also developing their need for independent the search for the necessary information, that is, the need for self-education, which is supported by various researchers [1, 2, 3, 4]. Modern information technologies and the expansion of opportunities for obtaining information have made adjustments in the teaching of various disciplines, including such a discipline as a foreign language (5; 6). In the centre of foreign language teaching, an important place is beginning to be given to the independent search for authentic media resources, which has a positive impact on the learning process, making it more interesting and productive.

But it should be noted that the successful search for the necessary information, that is, the level of development of students 'skills in self-educational activity, can cause difficulties for students, since working with media resources largely depends on the level of formation of students' media competence.
2. Diagnostics of the level of development of students' skills of self-educational activity

Self-educational activity can be considered as the acquisition of solid general educational knowledge, cognitive interests, awareness of the importance of continuous acquisition of the necessary knowledge for professional growth, the skills of independent search for the necessary information to acquire new knowledge using various sources, including media resources [7, 8, 9, 10].

In order to determine the level of development of students' skills of self-educational activity, we used the questionnaire “The level of development of skills of self-educational activity of a student”, developed by the authors of the article, which contained questions that students were asked to answer (table 1). The purpose of this questionnaire was to determine the level of development of students' skills in self-educational activities using media resources.

**Table 1.** Determination of the level of development of students' skills in self-educational activities using media resources.

| Question                                                                 | EG   | Middle | Low |
|-------------------------------------------------------------------------|------|--------|-----|
| Do you like to independently acquire knowledge using media resources, in addition to those obtained during the training? | 15   | 46.6   | 38.4|
| Is it possible, in your opinion, to improve the organization of self-educational activities of students; if so, by what means? | 16.7 | 48.3   | 35  |
| Is it necessary to stimulate and, if so, how the self-educational activity of students? |      |        |     |
| Are changes in the organization of the learning process necessary for the growth of students' skills in self-educational activity? |      |        |     |
| Can a student's ability to use media resources affect the development of self-educational skills? |      |        |     |
| Is it necessary to change anything in the organization of theoretical training for the growth of students' skills in self-educational activity? |      |        |     |
| Do you agree that the ability to independently search for the necessary media resources is necessary for the growth of students' skills in self-educational activities? |      |        |     |
| Do you feel the need to engage in more self-educational activities during your studies at the university, and what do you think is needed for this? |      |        |     |

The results of the survey are presented in table 2, where the EG is an experimental group consisting of 60 students of different courses and the CG is a target group, also consisting of 60 students of the same courses.

**Table 2.** The results of diagnosing the level of development of students' skills in self-educational activity at the beginning of the experimental work.

| Group | The level of development of students' skills in self-educational activities (%) |
|-------|--------------------------------------------------------------------------------|
|       | High | Middle | Low      |
| EG    | 15   | 46.6   | 38.4     |
| CG    | 16.7 | 48.3   | 35       |

The results of the survey showed that students of both the control and experimental groups had an average level of development of skills in self-educational activities, as students experienced difficulties in the process of finding the necessary educational media resources. Based on the results obtained in the course of the survey, it became necessary to develop students' ability to work with media resources to find the necessary information and, thus, stimulate the development of their skills of self-educational activity.

3. Diagnostics of the level of formation students’ media competence

At this stage, significant changes are taking place in the world community, associated, among other things, with the growth of opportunities for using media resources to obtain information, which is a
necessity for further professional growth, self-development and self-education. This need is also relevant for the education sector, since the use of media resources expands the possibilities of the learning process, makes it more cognitive and productive, which is confirmed by various studies [11, 12, 13, 14].

However, upon closer examination of the possibility of using media resources for the development of students' self-education skills, it turned out that in order to effectively use media resources, students need to have media competence, which, as it turned out when determining the level of development of self-educational skills among students, causes problems for most students. Media competence helps the student navigate the information space to find the information necessary to gain new knowledge.

To determine the level of formation of media competence, the questionnaire "Assessment of the level of development of media competence in the modern world: the latest developments in the media field, their perception and social consequences" was used [15]. Analysing the results of the survey, the following was revealed: 1) for the majority of students, Internet resources are the main source of information; 2) the overwhelming number of students participating in the experiment is characterized by a low level of formation of media competence, that is, students who were free to navigate in search of social networks experienced difficulties in finding information (especially in a foreign language) necessary for self-education (table 3).

### Table 3. The results of diagnosing the level of formation of media competence among students.

| Group | The level of formation of students’ media competence (%) |
|-------|--------------------------------------------------------|
|       | High | Middle | Low |
| EG    | 15   | 18.4   | 68.3 |
| CG    | 13.3 | 20     | 65   |

To increase the level of media competence formation, students learned to selectively approach the information found, evaluating it according to the following parameters: source of information; information content; way of presenting information [16]. For this, in foreign language classes, students were given tasks to search for certain information in a foreign language, the goals of information search, the criteria for selecting this material, and the rules for analysing the material were determined.

### 4. Results and discussion

At the final stage of the work, the following results were obtained: students learned to understand the goals of searching for media resources, look for the necessary materials, comprehend the process and results of searching for media resources and use them correctly, independently obtain the necessary knowledge and use them in practice. In addition, a relationship was revealed between the level of formation of media competence and the level of development of skills in self-educational activities. The results of the work aimed at developing students’ level of media competence formation and the level of development of self-educational skills are presented in table 4.

### Table 4. The results of diagnosing the level of formation of media competence and the level of development of skills in self-educational activity at the final stage.

| Group | The level of formation of media competence | The level of development of skills in self-educational activities |
|-------|--------------------------------------------|---------------------------------------------------------------|
|       | High | Middle | Low | High | Middle | Low |
| EG    | 33.3 | 53.3   | 13.4 | 73.3 | 25     | 1.7 |
| CG    | 15   | 38.4   | 46.6 | 15   | 61.7   | 23.3 |

To assess the reliability of the study results, the Friedman $\chi^2$ criterion was used.  
1. Assessment of the reliability of the shift in the values obtained as a result of the study of the level of development of skills in self-educational activity among students from the EG.

Let us formulate hypotheses:
H₀: Differences in the level of need of students from the EG for self-educational activity at the beginning and end of the experimental work are random.

H₁: Differences in the level of needs of students from the EG for self-educational activity at the beginning and end of the experimental work are not accidental.

Having ranked the assessments of each subject according to three conditions (initial stage, intermediate stage, final stage of experimental work), we obtained the following sums of ranks for each condition: 60; 120; 180 for a total of 360.

The calculated sum of the ranks in the criterion is determined by the formula:

$$\Sigma R_i = n \cdot c \cdot (c + 1)$$

Where n is the number of subjects; c – number of measurement conditions (measurements)

In this case, $60 \cdot \frac{3 \cdot (3 + 1)}{2} = 360$

Thus, the actually obtained and calculated sums of ranks coincide.

Let us define $\chi^2$, for this case:

$$\chi^2 = \frac{12}{60 \cdot 3 \cdot (3 + 1)} \cdot (60^2 + 120^2 + 180^2) - 3 \cdot 60 \cdot (3 + 1) = 86.4$$

Since in our case, with the number of conditions $c=3$ the number of subjects $n=60$, we compare the obtained empirical value with the critical values of the $\chi^2$ criterion for the levels of statistical significance $\rho \leq 0.05$ and $\rho \leq 0.01$ with a different number of degrees of freedom $v$. The number of degrees of freedom is determined by the formula: $v = c - 1 = 3 - 1 = 2$

Critical values for $v = 2$ are determined:

$$\left\{ \begin{array}{l} \chi^2_{0.05} = 5.991 \quad (\rho \leq 0.05) \\ \chi^2_{0.01} = 9.210 \quad (\rho \leq 0.01) \end{array} \right.$$  

$\chi^2_{emp} > \chi^2_{0.05} \quad (\rho \leq 0.01)$. Hence, $H₁$ is accepted.

2. Assessment of the reliability of the shift in the values obtained as a result of the study of the level of students’ media competence formation.

Let us formulate hypotheses:

H₀: Differences in the level of formation of the students from the EG of the ability to interact at the beginning and end of the experimental work are random.

H₁: Differences in the level of formation among students from the EG of the ability to interact at the beginning and end of the experimental work are not accidental.

Having ranked the assessments of each subject according to three conditions (initial stage, intermediate stage, final stage of experimental work), we received the following sums of ranks for each condition: 66; 114; 180 for a total of 360.

The calculated sum of the ranks in the criterion is determined by the formula:

$$\Sigma R_i = n \cdot c \cdot (c + 1)$$

$$\frac{2}{2}$$
Where n is the number of subjects; c – number of measurement conditions (measurements)

In this case,

\[
60 \cdot \frac{3 \cdot (3+1)}{2} = 360
\]

Thus, the actually obtained and calculated sums of ranks coincide.

Determine the empirical value of \( \chi^2 \) by the formula:

\[
\chi^2_r = \left[ \frac{12}{n \cdot c \cdot (c+1)} \sum_{j} T_j^2 \right] - 3 \cdot n \cdot (c+1)
\]

Let us define \( \chi^2_r \) for this case:

\[
\chi^2_r = \left[ \frac{12}{60 \cdot 3 \cdot (3+1)} \cdot (66^2 + 114^2 + 180^2) \right] - 3 \cdot 60 \cdot (3+1) = 76
\]

Since in our case, with the number of conditions \( c = 3 \) the number of subjects \( n = 60 \), we compare the obtained empirical value with the critical values of the \( \chi^2 \) criterion for the levels of statistical significance \( \rho \leq 0.05 \) and \( \rho \leq 0.01 \) with a different number of degrees of freedom \( v \). The number of degrees of freedom is determined by the formula:

\[
v = c - 1 = 3 - 1 = 2
\]

Critical values for \( v = 2 \) are determined:

\[
\chi^2_{cr} = 5.991 \ (\rho \leq 0.05)
\]

\[
9.210 \ (\rho \leq 0.01)
\]

\( \chi^2_{emp} = 76 \)

Differences between the two distributions can be considered significant if \( \chi^2_{emp} \) reaches or exceeds \( \chi^2_{0.05} \) and even more reliable if \( \chi^2_{emp} \) reaches or exceeds \( \chi^2_{0.01} \). Hence, \( H_1 \) is accepted.

5. Conclusion

In the study presented in this article, the authors proved the effectiveness of the process of developing the skills of self-educational activity through the phased implementation of organizational and pedagogical conditions through the inclusion of media resources in the educational process in the discipline “Foreign language”. Interviewing students, observation, questioning, expert assessment of the work carried out and other research methods allowed us to conclude that the inclusion of media resources in the educational process ensured the advancement of students in the development of self-educational skills and the formation of their media competence, which is confirmed by the presence of more significant positive dynamics in the levels of its formation in the experimental group in comparison with the control. The conducted theoretical and experimental research allowed us to fulfill the research tasks and confirm the validity of the hypothesis put forward. The obtained data can be used by teachers of foreign languages for a more effective organization of the educational process using media resources.

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