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Self-regulation of students as a factor influencing the success in learning process

This article presents the results of research about the impact of students' self-regulation educational activity on success in learning process.

Key words: student, self-regulation, self-control, self-estimation, reflection, self-correction.

Introduction

In our research we studied and considered three components of self-regulation: self-control in educational work, social self-control and ability to strong-willed efforts in intellectual work as self-regulation means. The research was made by in three stages. The first two stages as studying of self-regulation theoretical bases, the selection of techniques and experiment carrying out; the formation of didactic materials, the elaboration of the methodical ways providing the development of self-control, self-estimation, reflection and self-correction of pupils at lessons of physics and the English language in 7 classes were presented in the previous article. In this article the authors investigate carrying out the pedagogical reflection and a control-estimating stage, the definition of the self-regulation level of pupils and comparison to the success of their learning, making practical recommendations and forward planning.

Main part

We will consider, first of all, the experimental data received while using of a teenage personal questionnaire by R.Cattell, i.e. corresponding to the age and taking into account pupils' sex of 7 classes. We will stop only on results under factor Q₃ (self-control): a high level of self-control makes 7 %, an average level makes 72.4 %, a low level makes 20.6 % of pupils (Fig. 1).

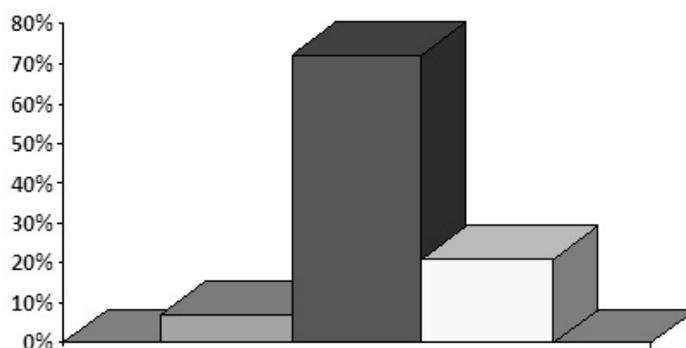


Figure 1. Diagram of level of social self-control of students

On the basis of these received data we made a conclusion, that the majority of pupils have an average level of social self-control in behavior, a normal social accommodation, they are pretty well organized and understand social specifications. The correlation analysis performed by us revealed an absence of connection between the progress and the level of social self-control of children. Thus, analyzing the received experimental data we made the following first conclusion that the success of pupils' learning does not depend on the level of social self-control.

By the results of the research, i.e. by the experimental data received as a result of an educational activity under the techniques «problem which cannot be solved», we defined the time within which a pupil tried to solve a problem (to carry out a task). By the time spent for making the first and the second tasks, we defined

a level of the completeness of spatial thinking in pupils, and the time spent on making the third task, i.e. on solving our «problem which cannot be solved» served as a quantitative characteristic of showing a strong-willed effort. As a result, on the average each pupil spent 6 seconds on solving the first problem, where 80 % of pupils solved this problem for a shorter period of time (3–5 seconds). To solve the second problem the pupils spent 96 seconds on the average, where 50 % of pupils coped with the problem faster (20–100 seconds). And to solve the third problem the pupils spent 538 seconds on the average, 50 % of pupils performed this work longer than others (9–13 minutes), 1 % of pupils did not cope with the second and the third problem at all. The character of the received refusal, the explanation of the reason why the problem was not solved as well as the behavior of pupils in an experimental situation gave us an opportunity to make a qualitative analysis of strong-willed efforts showed by the pupils. The pupils having identical results, we united in one group. As a result all the pupils were divided into four qualitatively various groups:

The first group. Pupils who refused to solve a problem in a sharply affective form — «I cannot, I do not want to do it any more». Our offer as experimenters to try once again treated extremely negatively and refused. This group made 20 % of pupils.

The second group. Pupils who refused to solve a problem, showing discontent concerning their activity «I cannot do it». To our request — to continue we received an uncertain answer — «you see I cannot do it», but nevertheless tried once again. This group made 40 % of pupils.

Group 3. Pupils who refused to solve a problem quite calmly — «it cannot be solved» or «it's not possible to solve». They answered to our request too confidently and emotionally — «well if I could not solve it before, it means I cannot solve it now either». This group included 25 % of schoolchildren.

Group 4. Pupils who refused to solve a problem, but only having tried all possible ways of its solving, they behaved calmly and confidently — «this problem cannot be solved here». To our request to continuation the work we received an explanation, that this problem cannot be solved. This group included 15 % of pupils.

Analyzing qualitatively the causes of the refusal to solve the problem, we distinguished three main causes which the pupils used for explaining why the problem had not been solved. First, it is the internal reason, i.e. the pupils of 7 classes saw the reason of the problems not being solved in their own qualities. Our question as experimenters — «how do you think why the problem was not solved» was answered «I am not able to solve the problem», «I cannot solve the problem». This reason was specified by 40 % of pupils. Secondly, some children saw the reason of their failure in external circumstances (the problem is lacking one condition; additional information is lacking then it would be solved and so on). Thus, an external reason was specified by 25 % of pupils. And, at last, thirdly, some part of the pupils specified the true reason. They concluded that the offered data were not sufficient for solving the problem. 20 % of children specified this reason. There were, of course, some children (15 %) who did not explain their refusal in any way and they did not specify the reason of not solving the problem by them. Thus, the data received as a result of the quantitative and qualitative analysis allowed distinguishing three groups of pupils who differed in the level of the development of their ability to strong-willed efforts.

The first group which made 60 % of all the pupils is presented by children who accuse themselves of failure and are characterized by a weak development of strong-willed qualities, indecision, uncertainty in their abilities, requiring support from teachers, classmates, adults. They are characterized by emotional instability, a low level of self-control that probably affects the quality of solving any educational problem. Pupils of this group feel at a loss facing difficulties and, as a rule, have a low level of the development of such qualities as independence, resoluteness, organization, persistence. We decided that these pupils possess a low level of the development of ability to strong-willed efforts.

Pupils of the second group differ in the evaluation of the possibilities, they are too resolute, impulsive, and emotionally unstable, that is shown in affective behavior in relation to the experimenter or a material with which they work. Such pupils 20 % were defined, we have carried them to pupils with an average level of development of ability to strong-willed efforts.

The third group of pupils made 20 %, and is presented by those who specify an objective reason of their failure. These pupils have a high level of the development of strong-willed qualities. They are emotionally steady when facing difficulties, they can self-regulate their behavior, search for possible new ways for solving the given problems, they are initiative, independent, persevering, active, differ in search behavior.

In the process of studying the analysis of the connection between the indicators of the technique «problem which cannot be solved» and pupils' progress we used the calculation of correlation by Pearson» [1]. Between the level of the development of ability to strong-willed efforts and the progress appeared a statisti-

cally significant connection. The connection between these two indicators is a straight one, i.e. the higher the level of the development of strong-willed efforts, the better the progress. Thus, the experimental research data allowed us to make the following assumption that pupils making good progress have a high ability to strong-willed efforts. Thus, 56 % of pupils making good progress have a high level of the development of ability to strong-willed efforts, and 44 % have an average level, and 0 % with a low level among pupils making good progress. The majority of pupils making average success have an average level of the development of strong-willed efforts — 46 %, a little less have a low level — 41 %, and only 13 % have a high level of the development of ability to strong-willed efforts. And among pupils making bad progress 80 % of pupils are characterized by a weak development of ability to strong-willed efforts, 20 % of pupils are on an average level of the development of strong-willed efforts (Fig. 2).

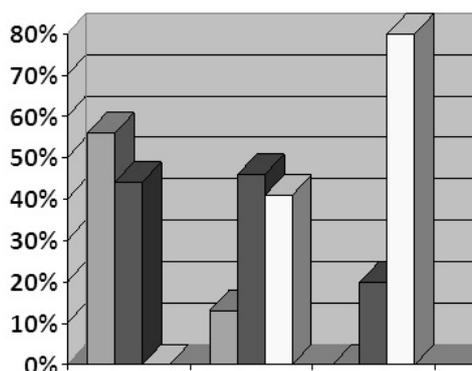


Figure 2. Diagram of the ability to strong-willed efforts

To determine a level of the completeness of control-estimating actions in pupils «the technique of amendments» was used [2]. About the level of the completeness of self-control we judged by pupils' ability to make real amendments to their work. During the experiment we revealed the following features of pupils' per-operational self-control which is characterized by quantity and quality of those corrections which pupils made in their work in the process of its writing. In the process of writing their text the pupils found 64.8 % of all errors made in it. A high level of per-operational self-control completeness was given to 31 % of pupils, on an average level to 28 % of pupils, and on low level to 41 % of pupils (Fig. 3).

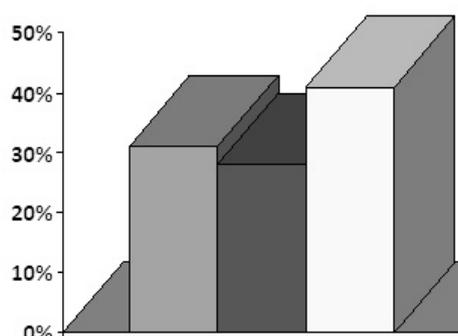


Figure 3. Diagram of self-control students with different learning success

And what is especially interesting, 38 % of pupils did not use the final self-control in their work at all. And with those pupils who applied the final self-control it was on a very low level and made only 5 % in comparison with the indicators of the per-operational self-control. The data about the correlation between the final and per-operational self-control were also interesting. Thus, for example, of the pupils having a high level of per-operational self-control, only 22 % of pupils use the final self-control, of the pupils having an average level of per-operational self-control 28 % of pupils use the final self-control in their work, and of the pupils having a low level of the final self-control 50 % use the final self-control in their work. We think that the data about the relative incompleteness of the final self-checking in comparison with per-operational self-

checking can be explained by the fact that teachers simply do not develop skills of the final self-checking in pupils.

Let us consider now the character of the correlation dependence received as a result of the comparison of the quantity indicators of self-control and progress of pupils. The correlation analysis of the received experimental data revealed statistically significant correlation dependence of the progress on the level of per-operational self-control completeness. It is proved also by the quantitative data processing. The data show that among the pupils making good progress 78 % are characterized by a high level of per-operational self-control; 22 % of pupils are characterized by a average self-control level. Among the pupils making an average progress 13 % are characterized by a high level of per-operational self-control; 41 % are on an average level of per-operational self-control; 46 % of pupils have a low level of self-control (Fig. 4).

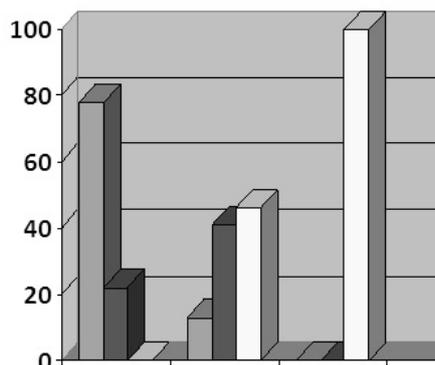


Figure 4. Chart levels of self-control students with different learning success

Pupils making poor progress are all on a low level of per-operational self-control.

Conclusion

Thus, we studied several parameters of self-regulation (ability to strong-willed efforts, ability to self-control in behavior and learning). The analysis of solving problems directed to researching several parameters of self-regulation showed that pupils with good progress give the best results. At analyzing the character of errors an attention is drawn by the fact that in groups with pupils making good and average progress there are mainly errors with the subsequent self-correction while children with low progress do not often notice or correct their errors. Statistically processed were both grades in separate subjects and total grades which usage allows, in our opinion, to characterize more fully and precisely the self-control in pupils and to avoid the influence of random errors, this is especially important while working with pupils.

The correlation analysis showed that there is a significant dependence between the progress and results by the technique «problem which cannot be solved» and «the technique of amendments». The most significant correlation dependence was revealed with the help of «the technique of amendments» (0.65), i.e. that self-regulation is most developed in pupils making good progress. The difficulties of regulation and control appeared to be most expressed in children with low progress. The results of the research allow us to make the following conclusion:

1. Ability to strong-willed efforts in intellectual work tends to be connected with the level of progress of teenage pupils ($r = 0.52$).
2. Ability to self-control influences progress of pupils of teenage age.
3. The influence of social self-control of pupils of teenage age on their progress is not significant statistically.

On the basis of this conclusion we as researchers, came to the following conclusions:

1. The development of self-regulation of educational activity of pupils on the basis of the formation of self-control, self-estimation, reflection and self-correction is a necessary condition of skill for learning.
2. The level of the general ability to studying school subjects at pupils depends on the level of the completeness of actions of control and estimation at all basic stages of study.
3. The positive dynamics of the development of self-regulation of educational activity will be provided with the inclusion of the pupil in estimated activity; the transition from group forms of management of edu-

cational activity to individual one and on the contrary; the application of dialogue methods of learning directed to the development of reflection and self-estimation.

4. The results received in the process of the experimental research testify to the efficiency of the offered ways and means, and also about the expediency of their use in school practice. Thus, we can say that our research showed the necessity of carrying out a special work at school on the further formation of self-regulation in pupils.

The further prospects of work on continuing the given research consist in working out, carrying out programs and a special work on the further formation of self-regulation at the senior school age.

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Өзін-өзі реттеу оқушылардың үлгеріміне әсер ететін фактор

Мақалада оқушылардың өзін-өзі реттеу мәселесі үлгеріміне әсер ететін фактор ретінде зерттелді. Авторлар заманауи оқытудың маңызды міндеттерін шешудің бір тәсілі болып табылатын оқу қызметінде оқушылардың өзін-өзі реттеу қабілетін дамыту талданып, эксперимент жүзінде дәлелдеген.

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Саморегуляция как фактор, влияющий на успешность обучения учащихся

В статье представлены результаты исследования влияния саморегуляции учебной деятельности учащихся на успешность их обучения. В работе экспериментально обоснован один из подходов решения важнейшей задачи современного обучения — развитие саморегуляции учебной деятельности учеников. Саморегуляция как фактор, влияющий на успешность обучения учащихся, является выводом их исследования.