

# The Training Complex as a Component of the Readiness Formation of Students of Technical Specialties for Professional Activity

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**Abstract:** The article discusses a set of theoretical and practical issues related to the problem of forming the professional readiness of students of technical specialties for future professional activity. Suggestions are made to improve the organization and conduct of psychological training of students during their studies at universities. Practical classes in psychological preparation differ from other classes in a closer combination of theory and practice, the presentation, repetition, and strengthening of precisely that psychological knowledge that ensures the conscious execution of exercises. The level of preparedness of a person for professional activity is always associated with the characteristics of their personality, the totality of which characterizes the degree of development of abilities for this profession. Based on this, the main task becomes the introduction of innovative technologies in the educational process, which, of course, include educational and developing training complexes that contribute to the formation of professional and psychological readiness as a combination of psychophysiological, moral, professional and socio-psychological characteristics, properties and qualities that correspond to the characteristics of the profession and that are acting as the internal condition for its successful implementation. An experimental study was conducted to confirm the hypothesis about the effectiveness of introducing precisely training technologies into the educational process of students of technical specialties. We selected 298 students of Odessa National Polytechnic University, with whom testing was conducted in order to clarify the initial psychological profile. After conducting the full volume of the training complex with students from the experimental group, we can ascertain the direct influence of educational and developmental training through the targeted formation of cognitive qualities on professionally significant personal qualities. This indicates the relevance of our study, which is focused on the problem of optimization and intensification of the professionally significant qualities formation of specialists in technical specialties in the process of their preparation.

**Keywords:** *pedagogy; psychological readiness; professional psychological training; professional activity.*

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## 1. Introduction

Recently, there has been a tendency around the world in juvenation of specialists in all areas of professional activity in general, and technical areas in particular.

The modern labor market needs not only young, but also experienced, professionally competent specialists who can not only occupy individual positions, but who are able to successfully use theoretical knowledge, abilities, acquired during training in technical higher education institutions, and people in need of constant professional growth, ready for changes in accordance with innovative technologies and lifelong learning.

Therefore, the task of the university is the desire to psychologically prepare students for the difficult conditions of their future professional activity precisely during their training in a higher educational institution. And here the primary role is given to the departments of psychological orientation, which should not only teach psychological disciplines, but also educate students in professionally important qualities that correspond to their future work.

Professional psychological training is a special type of training, which consists of a set of interrelated psychological and pedagogical activities aimed at the formation, support, and development of professionally important psychological, physiological, moral and business qualities, internal self-control during conflict situations, communicative culture, psychological readiness for professional activities in students of technical specialties.

Technical specialties belong to complex types of professional activity, characterized by: the diversity and complexity of professional tasks; high level of mental tension of work; time constraints to achieve an appropriate professional level.

Professional psychological training sets a focus on forming the following skills in students of technical specialties (making unusual decisions; psychologically effective use of verbal and non-verbal means of communication; establishing psychological contact with various categories of citizens, taking into account their psychological characteristics; using psychological techniques to influence the decisions of professional tasks; think creatively; control your own emotions; work in a team; work under the leadership; communicate with different categories of the population; work on uninteresting projects) and skills (act in conditions of lack of time and information; work in unusual conditions that require a creative approach; show business activity, creativity, initiative; set goals and achieve a specific result).

The main forms of training thanks to which students will form the above qualities should be:

- lecture classes (theoretical material);
- training classes (work in group);
- practical classes (setting of non-standard tasks);
- business games (artificially created situation requiring creative thinking);
- classes using "cases" (modeling a typical and non-typical situation).

## **2. Analysis of research and publications**

The problem of professional psychological preparation of students was considered by many scientists (Caras & Sandu, 2014; Frunza & Sandu, 2018; Marc, Makai-Dimeny & Oşvat, 2014; O'Donoghue, Ju & Tsui, 2018; Petrovska, 1989; Sandu, 2013; Sobchik, 1997; Unguru & Sandu, 2018) in their scientific works.

Analysis of scientific sources makes it possible to determine the most general, according to most scientists, concept of lecture, which is defined as an organized systematized way of presenting educational material in an accessible form, the main purpose of which is to give a systematic basis of scientific knowledge in the discipline, to reveal the state and prospects for progress in a specific field of science and technology, to focus on the most complex and key issues, as well as provide an indicative basis for further assimilation of teaching material.

Practical classes in psychological preparation differ from other classes in a closer combination of theory and practice, the presentation, repetition, and strengthening of precisely that psychological knowledge that ensures the conscious execution of exercises. In practical classes, it is necessary to take into account the specifics of future professional activity and create an environment as close as possible to real conditions, the need to solve many problems at the same time (Petrovska, 1989).

Thus, the psychological preparation of students of technical specialties is a combination of established and developed professional and psychological characteristics that correspond to the features of future professional activity and are a necessary internal condition for its successful implementation.

## **3. Research Methods**

To solve the problems of professional psychological training, the rational selection of competent class managers, the scientifically based

organization and methodology of their implementation, and the consideration of the characteristics of students' future professional activities are crucial. Classes should have a psychological and pedagogical orientation, be carefully prepared and technically provided (Kovalska, 2010).

The main tasks of psychological preparation are:

- arming students of technical specialties with psychological knowledge necessary for a comprehensive assessment and consideration of psychological aspects in practical activity;
- development of professionally important qualities;
- the formation of skills to carry out professional actions in any conditions and self-management, the ability to use psychological techniques (speech, facial expressions, gestures) to increase the effectiveness of establishing contact in professional communication;
- the formation of psychological resistance to difficulties that arise when solving psychologically complex situations and action methods in such situations.

The level of preparedness of a person for professional activity is always associated with the characteristics of their personality, the totality of which characterizes the degree of development of abilities for this profession.

Professional activity is carried out in the real world, an integral part of which is a system of subjective and objective relations. The effectiveness of these relations is essentially determined by the psychological organization of the individual.

Any professional activity has its own technical methods, without mastery of which perfection is impossible even in the presence of natural talent. Professional training helps to strengthen the authority of the future specialist, regardless of the position that he will occupy.

Based on this, the main task becomes the introduction of innovative technologies in the educational process, which, of course, include educational and developing training complexes that contribute to the formation of professional and psychological readiness as a combination of psychophysiological, moral, professional and socially psychological characteristics, properties and qualities that correspond to the characteristics of the profession and are the internal condition for its successful implementation (Abramyan, 1992; Konup, 2009).

An experimental study was conducted to confirm the hypothesis about the effectiveness of introducing precisely training technologies into the educational process of students of technical specialties.

To solve the tasks, a complex of interrelated research methods was used. Namely: theoretical (analysis, comparison and generalization of scientific and theoretical data), empirical (testing with R. Kettell's questionnaire 16 PF - 105C, R. Amthauer's test, method of expert estimates, methods of mathematical statistics).

#### **4. The results of the research and their interpretation**

The study was divided into 3 stages: stating, formative and control.

A stating experiment was conducted with second-year students at the Department of Psychology and Social Work of Odessa National Polytechnic University, studying in technical specialties. In order to correctly determine the optimal number of study participants, we used the statistical standard. According to V. N. Druzhinin (1997), the number of members of the piloting sample met the requirement, the number of which was three times more than the scales of the methods used in psychodiagnostic research. Thus, a total of 298 people participated in the study. In addition, the surveyed array met the requirements of statistical probability and sufficiency of the sample size at a five percent level of reliability [ $P = 0.05$ ]. The sample size is determined by the formula of V. Cochren:  $n = 1 / \square \Delta 2 + 1 / N$ ).

We selected 298 students of the Odessa National Polytechnic University, with whom primary testing was carried out in order to clarify the initial psychological profile using the psycho-diagnostic methods of R. Kettell and R. Amthauer (Sobchik, 1997).

After the initial testing, at the formative stage of the experiment, from the total number of examined, an experimental group of 188 people was formed. This group has undergone a full course of intensive educational and developmental training sessions aimed at the formation of professionally significant personality qualities.

The second group of 110 people did not pass the training program for the formation of professionally significant qualities, but studied in the traditional form according to the standard program.

Our task was to track the dynamics of changes in both groups according to leading professionally significant qualities to determine the effectiveness of the introduction of intensive training technologies in the professional psychological training of students of technical specialties.

After conducting the full volume (57 academic hours) of the training complex with students from the experimental group, we conducted their second study. The retest was carried out according to all the rules of psychodiagnostic examination using the same methods.

Based on the retest results, the following picture of the leading trends in the dynamics of the psychological profile is obtained (see Table 1.).

**Table 1.** Comparative analysis of the psychological profile of the experimental group of students before and after the training according to the method of R. Kettell

Scales	Student test	Student retest	Allowed Interval	Student test*	Student retest*	Student test and retest*
A	8,7	8	7-9	1,3	0,6	0,7
B	5,3	6,1	4-6	1,8	1	0,8
C	7,4	8,2	7-9	0,1	0,7	0,8
E	6,5	5,8	4-6	0,4	0,3	0,7
F	6	5,5	5-7	0,4	0,1	0,5
G	8	8,5	8-10	1	1,5	0,5
H	6,8	7,3	6-8	0,5	1	0,5
I	5	5,8	5-7	0,6	0,2	0,8
L	5,3	5,6	5-7	0,4	0,7	0,3
M	5,2	4,9	4-6	0,1	0,2	0,3
N	5,9	5,5	5-6	0,3	0,7	0,4
O	5,8	5,0	3-5	0,2	1	0,8
Q1	5,9	5,5	5-6	0,2	0,2	0,4
Q2	4,7	4,7	4-5	0,8	0,8	0
Q3	7,9	8,1	7-9	1,6	1,8	0,2
Q4	4,6	5,3	5-7	0,6	1,3	0,7

Note: \* - is the difference in the indicators of these scales is given in absolute value.

The table shows that even for a short period of intensive training, significant changes took place in such leading parameters:

- by 0.8 points: B (intellectual ability, learning ability, understanding), C (emotional lability - emotional stability), I (rigidity - responsiveness), O (self-confidence - anxiety)
- by 0.7 points: A (isolation, unsociability - openness, sociability), E (submission - dominance), Q4 (relaxation - tension);
- by 0.5 points: F (restraint - expressiveness), G (accessibility to feelings - normative behavior), N (uncertainty - risk appetite).

Thus, it can be stated that there is a direct impact of educational and developmental training through the targeted formation of cognitive qualities on professionally significant personality qualities.

This indicates the relevance of our study, which focuses on the problem of optimization and intensification of the formation of professionally significant qualities of specialists in technical specialties in the

process of their preparation. In other words, one can insist on the need to introduce intensive modern educational and developmental training technologies into the educational process of the university.

The next step will be the analysis of the results of a training experimental group by the R. Amthauer methodology of researching the intellectual area of the personality for tracking the leading trends in the intellectual area of the personality. It is clear that the expectation of dramatic changes is possible only under the condition of a longer and more intensive preparation than a one-time experimental educational and developmental training course, but it is already possible to ascertain at least some patterns of dynamics (see Table 2.).

**Table 2.** Comparison of the results of initial student testing and retesting according to the method of R. Amthauer.

Scales (sections)	Student test	Student retest
1	102,8	107,2
2	101,9	105,4
3	98,8	99,7
4	90,7	92,9
5	89,2	89,6
6	107,2	109,5
7	99,5	107,2
8	99,2	100,1
9	112,7	118,5

Based on the data shown, almost all indicators showed certain positive changes, although the trend of hierarchical shifts itself remains interesting. So, the first place continues to be occupied by the indicator of the development of memory and attention (Section 9), and the indicators of mathematical abilities (Section 5) and the ability to classify, make judgments (Section 4) remain low. However, if earlier five indicators did not overcome the barrier of 100 points, now there are only three of them left, and one of them, namely, the indicator of combinatorial abilities and the ability to determine similarity, analogy (Section 3), reached the conditional limit of 99.7 points, thus, almost achieved the desired result. Significant changes in the direction of increase have undergone the following indicators: spatial imagination (Section 7), the development of memory and attention (Section 9), inductive thinking and sense of speech (Section 1), and abstraction abilities (section 2).

Now it is advisable to consider the possible interdependencies of the qualities of the psychological profile of the person according to the method of R. Kettell and certain elements of the structure of intelligence according to the method of R. Amthauer (see Table 3).

So, by analyzing the correlation between the indicators of these methods, we noted the following patterns (provided in descending order):

- the value of the O scale (self-confidence) correlates with the indicator of mathematical abilities (0.1936) and practical mathematical thinking (0.1805);
- the value of the H scale (risk appetite) correlates with the indicator of inductive thinking and sense of speech (0.1528), abstraction abilities (0.1135), mathematical abilities (0.1137) development of memory and attention (0.1097);
- the value of the L scale (suspicion, alertness) correlates with the indicator of combinatorial abilities and the ability to determine similarity, analogy (0.1504), the ability to classify, make judgments (0.1358), and the ability to abstract (0.1050);

**Table 3.** A table of correlation between the indicators of the scales of the methods of R. Kettell and R. Amthauer

Kettell	Amthauer								
	1	2	3	4	5	6	7	8	9
A	0,0081	-0,0164	-0,0571	0,0512	0,1269	0,1255	0,0100	0,0328	0,0434
B	0,1234	0,1546	0,1179	0,2266	0,2028	0,0454	0,1007	0,1190	0,0831
C	- 0,0535	0,0507	0,0449	0,0323	0,1961	0,1028	-0,0097	-0,0142	-0,0356
E	- 0,0634	0,0112	-0,1426	0,0083	-0,0744	-0,0644	0,0484	0,0552	0,0024
F	- 0,1049	0,0106	-0,0548	0,0644	0,0426	-0,0399	-0,0471	-0,0854	-0,0687
G	- 0,0152	-0,0371	-0,1028	0,0350	0,0545	0,0377	0,0314	-0,0296	-0,0583
H	0,1528	0,1135	0,0573	0,0833	0,1137	0,0376	0,0169	0,0659	0,1097
I	0,0584	0,0543	0,0140	0,0445	0,1233	0,0159	0,0798	0,0515	0,1011
L	- 0,0231	0,1050	0,1504	0,1358	0,0223	-0,0163	0,0690	0,0606	-0,0217
M	0,0206	-0,1427	0,0006	0,0114	-0,0890	-0,0481	-0,0092	0,0182	-0,0555
N	- 0,0009	0,0290	-0,0217	-0,0378	-0,0152	0,0039	-0,0610	0,1293	-0,0625
O	- 0,0691	-0,0330	-0,0266	-0,0802	-0,1936	-0,1805	0,0083	0,0834	-0,0449



Q1	0,0003	0,0563	-0,0200	0,0988	-0,0183	0,0170	0,0878	0,0504	-0,0826
Q2	- 0,0146	0,0389	0,0428	0,0047	-0,0073	-0,0781	0,0254	0,0180	-0,0695
Q3	- 0,0346	0,0458	-0,0248	-0,0813	0,1299	0,0582	0,0267	0,0243	-0,1294
Q4	- 0,0814	-0,0522	0,0081	0,1098	-0,0388	0,0062	-0,0244	-0,0587	-0,0357

- the value of the M scale (pragmatism) correlates with the abstraction ability indicator (0.1427);
- the value of the E scale (subordination) correlates with the indicator of combinatorial abilities and the ability to determine similarity, analogy (0.1426);
- the value of the Q3 scale (high self-control) correlates with the indicator of mathematical abilities (0.1299), and determines the decrease in the rate of development of memory and attention (0.1294);
- the value of the A scale (openness, sociability) correlates with the indicator of mathematical abilities (0.1269), practical mathematical thinking (0.1255);
- the value of the I scale (sensitivity) correlates with the indicator of mathematical abilities (0.1233), the development of memory and attention (0.1011);
- the value of the N scale (diplomacy) correlates with the spatial orientation indicator (0.1293);
- the value of the Q4 scale (mobility, tension) correlates with the indicator of ability to classify and make judgments (0.1098);
- the value of the F scale (restraint) correlates with the indicator of inductive thinking and sense of speech (0.1049);
- the value of the C scale (emotional stability) correlates with the indicator of practical mathematical thinking (0.1028);
- the value of the G scale (accessibility to feelings) correlates with the indicator of combinatorial abilities and the ability to determine similarity, analogy (0.1028).

## 5. Conclusions

Thus, we can state a certain positive dynamic. This allows us to conclude that, providing the widespread, systematic and longer introduction of intensive educational and developmental training methods of forming professionally significant qualities into the process of professional psychological preparation, even more significant positive changes can be

expected. Moreover, they would be distinguished by their depth and stability, and in combination they would lead to more dramatic personal changes in psychological qualities towards the professionally oriented formation of a future specialist.

The development and implementation in the process of professional psychological training of students of technical specialties of appropriate educational development training complexes aimed at the development of professionally important qualities will give the educational process much greater efficiency.

Also, it should be emphasized that the applied methods and the training complex program can be successfully used in the process of teaching students of various fields and specializations, since all over the world, the main task of training is the formation and development of professionally important qualities.

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## References

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- Abramyan, V. T. C. (1992) *Improving the training of the future teacher by theatrical training methods* (Abstract from PhD in Pedagogical Sciences Thesis), Kyiv, Ukraine. URL: <https://dlib.rsl.ru/01000202925>
- Caras, A., & Sandu, A. (2014). The role of supervision in professional development of social work specialists. *Journal of Social Work Practice: Psychotherapeutic Approaches in Health, Welfare and the Community*, 28(1):75-94. doi:10.1080/02650533.2012.763024.
- Druzinin, V. N. (1997) *Experimental psychology*. Moscow, Russia: INFRA-M.
- Frunza, A., & Sandu, A. (2018). Supervision of ethics in social work practice: A reconstruction of ethics expertise. In A. Frunza, A. Sandu (eds). *Ethical Issues in Social Work Practice*, (pp. 175-209). USA: IGI Global. DOI: 10.4018/978-1-5225-3090-9.ch011
- Konup, E. F. (2009) *Formation of professionally significant cognitive qualities of future investigators in higher educational institutions of the Ministry of Internal Affairs of Ukraine* (Abstract from PhD in Psychological Sciences Thesis). Kyiv, Ukraine: Academy of Management of the Ministry of Internal Affairs. URL: [http://irbis-nbu.gov.ua/cgi-bin/irbis\\_all/cgiirbis\\_64.exe](http://irbis-nbu.gov.ua/cgi-bin/irbis_all/cgiirbis_64.exe)
- Kovalska, N. L. (2010). *Organizational, legal and psychological basis for improving the activities of criminal police for children* (Abstract from PhD in Law Sciences Thesis). Kyiv, Ukraine: National Academy of Internal Affairs.

- Marc, C., Makai-Dimeny, J., & Oşvat, C. (2014). The social work supervisor: Skills, roles, responsibilities. *Bulletin of the Transilvania University of Braşov Series VII: Social Sciences, Law*, 7(56):221-230.
- O'Donoghue, K., Ju, P.W.Y., & Tsui, M.-S. (2018). Constructing an evidence informed social work supervision model. *European Journal of Social Work*, 21(3), 348-358. DOI: <https://doi.org/10.1080/13691457.2017.1341387>
- Petrovska L. A. (1989) *Competence in communication. Socio-psychological training*. Moscow, Russia: Moscow State University
- Sandu, A. (2013). *Asistența socială aplicată. Tehnici de cercetare și modele de intervenție*, [*Applied social work. Techniques of research and models of intervention*]. Iași, Romania: LUMEN Publishing.
- Sobchik, L. N. (1997). *Introduction to the psychology of personality*. Theory and practice of psychodiagnostics. Moscow, Russia: Institute of Applied Psychology. URL: <https://www.twirpx.com/file/480208/>
- Unguru, E., & Sandu, A. (2018). Normative and institutional frameworks for the functioning of supervision in social work. *Revista Romaneasca pentru Educatie Multidimensionala*, 10(2):69-87. doi: 10.18662/rrem/47