

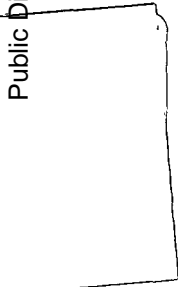
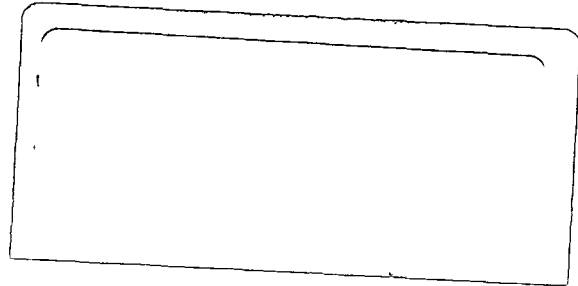
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# Educational Reform in the Soviet Union: Implications for Developing Countries

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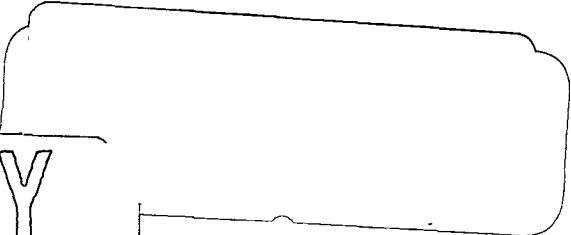


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May 1978

EDUCATIONAL REFORM IN THE SOVIET UNION: IMPLICATIONS  
FOR DEVELOPING COUNTRIES

This paper examines the causes and consequences of educational reform in the Soviet Union. It draws lessons for planners in developing countries who are confronted with similar issues. It is part of a project (671-19) on education reform directed by John Simmons, Policy Planning Division.

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SUMMARY

The development of Soviet education within the framework of a general national economic development plan merits attention, since it was achieved without economic or technical assistance from abroad and under conditions marked by severe economic and social disruptions. Although students of Russian history generally agree that the country had reached the take-off point at the opening of World War I and that European Russia had achieved a respectable first level in economic development, the vast outer reaches of the Empire remained very backward, and the ravages of war, revolution and civil strife retarded all progress.

The basic goals set by the Bolsheviki for Soviet education became apparent soon after the old education system had been dismantled. Education was to help change Soviet Russia from a backward, rural and traditional society to an enlightened, industrialized and modern one. More particularly, schools, apart from transmitting cognitive skills, were to assume important functions in the socialization process by providing students with citizenship training, consistent with communist ideology, and by preparing them for a life of "socially useful labor." There was not much dispute over these goals, but opinions differed on how to achieve them. The first educational reforms reflected humanistic Marxist thought with utopian overtones and relied on progressive Western educational theories. The reforms also envisaged that local communities were to play a decisive role in the development and operation of schools. However, the adverse economic and social conditions which marked the first decade of Soviet rule impeded significant expansion of the educational system. Substantial resources had to be committed to provide for the hordes of destitute waifs, victims of the prevailing conditions. Insti-

tutions were set up to provide integrated child welfare-education programs with emphasis on resocialization.

After a decade of experimentation and very modest growth in education, the results were found to be discouraging. In addition, local initiative never materialized. Finally, it proved very difficult to make headway in providing students in the context of the general education program with meaningful preparation for work, although the school curriculum stressed "polytechnic" studies, i.e., natural sciences and technical subjects.

Nevertheless, a beginning had been made in the nationwide expansion of the educational system, especially at the primary level. Important features of the system were the growing educational services rendered to inhabitants of the more backward areas, in the main non-Russians, and to women. The former was a substantial undertaking since education was provided in the native language: some nationalities lacked a written language, others had complex script, and teachers had to be trained and textbooks written. Nonformal education programs, often improvised and using voluntary local talent, spread literacy to the adult population, while at the same time attempting to break down traditional social structures and life styles by drawing the population into the campaign for modernization and economic development. Again, local initiative could not be relied upon, and policy directions and resources came from central authorities.

Beginning in the late twenties education received special attention and support after studies by Soviet social scientists had convinced policy makers of the effectiveness of education for raising labor productivity and of the substantial social returns from public expenditures in education. At the same time, authorities came to the conclusion that the prevailing progressive, anti-authoritarian style of public education had proven inadequate: not enough students finished school, and those who did showed very uneven cognitive



skills, while displaying attitudes and behavior patterns poorly suited for work in industry. Subsequent reforms set the pattern for general education in the USSR for the next decades: a highly structured curriculum, strict class discipline, emphasis on the three R's and learning by rote were its main features. In short, it turned into an authoritarian educational system, stressing imitative and iterative learning behavior. Following the introduction of the first Five Year Plan, general education expanded steadily and primary education became universal in the early thirties. Secondary education grew much slower, especially at the senior level. This, in turn, restricted social demand for higher education.

Vocational training which had only grown slowly during the first decade of Soviet rule also expanded more rapidly thereafter. For one, it greatly benefited from the steady spread of general education by shortening the training period. Yet, the industrialization drive, which increased demand for skilled labor drastically, led to the introduction of the "Labor Reserve" system shortly before Soviet entry in the war. It also limited expansion of senior secondary education. Under the Labor Reserve system youths were drafted from lower level high schools (7th grade) into vocational-technical training programs, often away from home, and then assigned to work wherever their skills were needed. This system remained in force throughout the war and was only abolished after Stalin's death. Vocational training, in spite of the large network of vocational schools, is still predominantly a matter of on-the-job training. Soviet authorities have found it more efficient to train workers at enterprises, especially for work requiring high technical skills and the operation of complex machinery. Vocational schools in the majority thus offer programs for traditional trades. And vocational schools as a rule do not allow access to higher education, although workers are

encouraged to complete high school by attending schools for working and rural youths after work.

Senior secondary education, both general and specialized (i.e., technical-professional), throughout the Stalin period remained severely constrained, as did higher education. First, admission was limited by the size and number of institutions, thus requiring rigorous selection procedures. Secondly, the vast numbers of students who received their education in technical-vocational schools, as a rule, were denied access to higher education. Thirdly, in 1940 fees were introduced for senior secondary and higher education. While the fees were modest and could be waived for students from poor families, this measure, nevertheless, tended to dampen social demand in a society where income levels for the vast majority were very low indeed.

The development of higher and specialized secondary education has remained closely tied to manpower requirements projected for succeeding Five Year Plans. Soviet plans for economic development centered on industrialization with emphasis on heavy industry, mining and construction, while agriculture was largely neglected. Trained manpower with specific technical-professional skills was urgently needed, and, as a result, the professional education curriculum at both the secondary and higher levels became narrowly specialized in order to move the student from the classroom directly to his place of work as a "specialist." Narrow specialization has remained the hallmark of Soviet education, and is only now being questioned as no longer appropriate for a developed and complex economy which needs to respond to rapid technological change.

The widespread, comprehensive education network of the Soviet Union in existence today has been developed under great adversity and with severely limited resources. It has significantly contributed to the modernization

of the country and its advances in economic development. Among its salient features are:

1. The utilitarian nature of Soviet education. Emphasis was placed from the beginning on "polytechnic studies," i.e., mathematics, sciences and principles of technology, and on training for specific occupations at all levels of vocational and technical-professional education. While programs designed to offer meaningful "labor experience" in the context of general education have not proven satisfactory, they have led to greater involvement of enterprises and other non-educational institutions in school programs and youth work.
2. Widespread use of nonformal and informal education to either supplement or provide an alternative to formal education. The existence of a great variety of educational programs, frequently under the auspices of non-educational institutions such as economic enterprises, trade unions, the military, etc. allow both for national campaigns in support of educational goals, such as literacy, or for highly specialized curricula and organization to meet specific needs or designed for particular groups.
3. The willingness to launch educational programs with minimal resources. The system at all levels has been forced to expand, sometimes very rapidly, while being short of qualified teachers and material resources. This was regarded as preferable than to wait until well qualified teachers and adequate facilities became available. In short, any, even inadequate education was better than none, and raising the quality of education would come in time.

4. Efforts to equalize educational facilities throughout the whole country. To achieve this goal Soviet policy makers found it essential that (a) the major burden of operating expenses, above all, teacher salaries, be funded from federal (union) resources; (b) nation-wide standards for educational programs and operation of schools (with suitable modification for regional disparities) be instituted and reinforced by an integrated system of budgetary and financial supervision and control. As a result, regions with poorer educational facilities were favored in the allocation of resources until national standards had been approximated. This accounts among others for the substantial educational advances among backward nationalities.
5. Close integration between economic development and education. Use of manpower planning has determined the development of technical-professional training. Indirectly it has strengthened the expansion of general education as the most efficient prerequisite for technical-professional education. Considerations of manpower needs also contributed to the development of institutions and facilities for children and adolescents to remain under supervision while both parents are working. Such facilities as preschool institutions, boarding schools, extended day schools, youth clubs, summer camps, etc. do not only provide supervision, but offer important educational programs which supplement regular school work.

The Soviet experience provides developing countries with approaches which are worth considering, above all the following:

1. General education is the basis for effective technical-professional training.

2. Economic development requires a high degree of technical-professional specialization for higher education and students must be directed towards disciplines in accordance with projected manpower needs.
3. Greater equalization of educational opportunities at the university level can be achieved by a system which not only provides education free of charge, but covers living expenses based on need and academic performance. The selection process should take into consideration both cognitive skills and a demonstrated commitment to nation building.
4. Universal literacy in the native language, even for a multinational society, is an important goal for developing countries and should not be abandoned, since it is a prerequisite for modernization.
5. Initial emphasis on the expansion of primary education for all at the expense of temporarily restricting secondary and higher education is not only more equitable, but is a better strategy for long-term growth.
6. Neglecting education for women is wasteful and likely to retard economic development. Extra efforts may be needed to overcome prejudices in traditional societies.
7. Supplementary, largely nonformal services at relatively low cost can greatly enhance formal schooling, provide vocational guidance and identify talent.
8. Standardization of school sizes and equipment with full awareness of the costs and low efficiency of mini-schools can lead to substantial savings.

9. Vocational training conducted in large enterprises can be highly effective in providing skilled manpower in excess of need of the enterprise.

While some of these educational measures may be suitable for developing countries and can be instituted at relatively low cost, it is also true that they require political power and unity of national purpose.

## CHAPTER I

### General Education

General education in the Soviet Union encompasses today the ten year cycle\*, although reforms are under way to lop off one year from the four year grade school by compressing coverage of the material into three years. The schools are organized into four (three) year grade schools, eight-year lower (incomplete) high schools, and ten-year senior high schools, i.e., each type of school includes all lower grades. Children are admitted to first grade at seven years of age.

Pre-school institutions consist of nurseries and kindergartens and form a separate system. Though relatively widespread, especially in urban areas, these institutions are not yet able to assure a place for all children.

The general education system has developed over several decades of Soviet rule and has been marked by various reforms as well as by occasional expansion and contraction of the whole system or its several parts.

Initially, and as noted before, existing ideology was of little help to the Bolshevik leadership in developing a new educational system after the old one had largely been dismantled. In addition, the central authorities such as the RSFSR Council of People's Commissars or the People's Commissariat for Public Education (Narkompros) had only formal authority. They lacked either the power or the means in the form of financial or material resources to give effective direction and support to the development of education.

The initial policies of the Bolshevik regime on general education as expressed by the declarations and directives emanating from Narkompros,

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\*Due to a strong tradition, the Baltic republics were allowed to continue eleven-year schools of general education.





envisioned an autonomous school system run by local government and inspired by the people.\* Lunacharsky, who headed Narkompros, was strongly supported by Lenin's wife, Krupskaja. She criticized supporters of centralized authority for education as misguided comrades who had lost faith in the people.

The Declaration on the United Labor School of September 30, 1918, which was designed to reform the whole educational system, was couched in very general terms, incorporating various progressive pedagogic ideas and as one of its authors admitted, "not readily comprehensible to anyone unacquainted with educational theory."\*\* It was to be anti-authoritarian, non-scholastic and centered on development of the child's individuality. Education was to be free, compulsory, secular and co-educational for all children from eight to seventeen years of age, and was to consist of five primary grades and a second level of four grades.\*\*\* An essential feature was the unification of the educational system allowing all children, depending on their abilities and inclinations, access at any point on the educational ladder from primary school to the highest level. While the school was to convey active acquaintance with labor processes and emphasize polytechnical subjects, no special trade was to be taught until adolescence.

Such features as a seven-day school week, club work in after school hours and special summer programs, excursions, outdoor instruction, free hot breakfasts, etc., showed the utopian idealistic approach of the early educational planners who did not seem to be concerned where the required

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\*Sheila Fitzpatrick, The Commissariat of Enlightenment: Soviet Organization of Education and the Arts Under Lunacharsky, October 1917-1921, Cambridge, Cambridge University Press, 1970, 26ff.

\*\*Ibid., p. 31.

\*\*\*The previous system had only three years of grade school.

resources, both material and human, for the operation of such a system were to come from.

Although from 1917 to 1922 central authorities were officially committed to support schools from budgetary funds, such funds or needed material supplies as fuel, food and clothing, books for teachers and students and other school supplies were more often unavailable and schools were left to fend for themselves with support, if any, coming from local authorities. Yet, the local authorities, the Soviets, whether village, city or district councils, took very little interest in education. The central authorities, largely Narkompros, were well aware of it but lacked the ability to do anything about it. Even instructions on the organization of the basic school system -- the creation of the "united labor school" -- frequently were not implemented, in part because they were not properly understood, in part because local conditions were counterproductive.

After introduction of the new economic plan (NEP), conditions, instead of improving, became worse for those sections of the government, among them Narkompros, which had no opportunity to engage in income-yielding operations.

In spite of the prevailing critical financial situation and largely due to the kind of leadership provided by the first People's Commissar of Public Education (Prosveshchenie -- literally translated "Enlightenment"), Lunacharsky and some of his co-workers such as Krupskaya, Lenin's wife, the education policy of the twenties encouraged and supported more open and progressive education in the best West European and American traditions. However, most of these efforts did not extend beyond experimental schools or pilot projects, and these were largely clustered in and around Moscow

and Leningrad.\* A large number of these institutions were furthermore designed primarily not for formal schooling, but they offered a comprehensive child welfare-education program with emphasis on socialization. Torn apart by revolution and civil war and under the impact of attending disasters such as devastations, spreading famine and other economic and social dislocations due to rapid change, including unemployment, the country all during the twenties and right up until World War II had to deal with the presence of destitute homeless children roaming the countryside. In the wake of the great famine, Krupskaja reported that in 1922-23 alone, 7 million children were registered as homeless. Clearly, the actual number of such destitute waifs (bezprizornyi) was much larger. The disintegrating social structure, including the loosening of family ties, only prolonged the desperate situation, and Soviet authorities were forced to create special institutions for such children. Thus, some of the most famous experimental-model institutions, such as Makarenko's "children's colonies," were especially designed for these children. They were predominantly engaged in welfare and socialization programs with the aid of work training. The experience gathered in these educational ventures, however, was deemed significant and Makarenko has received credit for influencing pedagogical approaches and educational policies in later years.\*\*

The early vision of schools, administered autonomously by teachers, students, and representatives of the working population, helped by a strongly supportive local government, was a far cry from the stark reality then and

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\*For an account by a former member of Narkompros, see V. Diushen, "V pervye gody Sovetskoi vlasti: opytno-pokazatel'nye uchrezhdeniia Narkompros" (During the first years of Soviet power: experimental-model institutions of Narkompros), Narodnoe obrazovanie, No. 1, Jan. 1966, pp. 79-81.

\*\*Some doubt has been expressed by Western observers of Soviet education on the real importance of Makarenko.

later on. Local initiative never materialized, and beyond work in the experimental schools, the declaration on the "united labor school" remained without meaning for most of the still operating schools. On the contrary, under the pressure of the existing material conditions and the inability of the central government to do anything to alleviate them, the general educational system deteriorated. In Russia (RSFSR territory) we have the following figures for the early years\*:

	Number of Primary Schools	Number of Students (in millions)
1914-15	73,000	4.9
early 1921	76-82,000	6-6.8
December 1922	55,000	--
October 1923	49,000	3.7

In early 1923, school fees were introduced at all levels of the educational system, and the central government had relinquished all financial responsibility for primary schools and restricted financial support of secondary education to 50%. Only in the following year, and after the financing of education was reorganized and the central government again assumed major financial responsibility, was the attrition trend in primary education reversed, and it was from that time on that both primary and higher levels of education have steadily expanded. By then the "united labor school" had been substantially restructured; the grade school had been cut back to three years, and vocational training had been introduced for the higher grades of secondary schools.

For much of the early period, we have only few and scattered accounts of what went on in the far reaches of Soviet Russia, and statistical material

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\*Fitzpatrick, op. cit., p. 285.

is altogether scarce. But it can be assumed that as the bulk of the educational institutions, the primary schools, were made the full responsibility of local authorities, the conditions for their operations varied widely, depending upon the particular economic situation and local attitudes. Most communities were barely able to keep the schools in operation, and as the above quoted figures show, many did not. Unheated schoolrooms, hungry students, unpaid teachers, etc. -- such conditions were widespread, and until the country had started on the road of economic recovery, significant relief could not be expected.

It is not surprising that steady expansion in the general education system coincided with the reorganization in 1924\* of the system of financing, after it had become abundantly clear that local government even with introduction of fees for school attendance, was incapable of maintaining, let alone expanding, the school system. While by 1924 the system of local budgets had been separated from the state budget, local authorities, by sharing national revenues, were dependent on the central government.

The two main features of financial control by the central government were first, the need for every budget to be approved by the next higher level of authority. Such approval was accorded as long as the budget reflected compliance with national policy -- in the sphere of education, observance of unit standards for education such as heat and light per student, equipment and furnishing, including uniform standards of instruction. Wages, as we have seen, were taken over early by the central government. And the second control mechanism was exercised through the management of local revenue by the central government, since both the republic and lower budgets depended

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\*See R. W. Davies, The Soviet Budgetary System, Cambridge, Cambridge University Press, 1958, 774 ff.

heavily on allocations from state (central) revenues whether through "linked revenues," subventions or grants. But even local revenues such as local taxes generally were made subject to regulations issued by the Commissariat (later Ministry) of Finance of the USSR.\* Thus, although the specific makeup of the local budget was not made subject to direct central control, it was, in fact, in regard to essentials dependent on higher authority. It was this type of "guided autonomy" of local government which was to be typical of the administration of general education in the USSR and which was to assure uniformity and compliance with national educational policies while allowing local participation in the implementation and administration.

The most significant control mechanism for the development of education, aside from the size of revenues assigned, was the application of standards which were developed for the operation of schools throughout the country, standards which determined the number of teachers to be hired for a set number of students at a given level, the number of lessons in each subject and their pedagogical content, the space and equipment per pupil, etc. Even when standards were not always met because resources were lacking, such standards provided the school administration and supervising authorities with guidance and justification for budget requests and allowed central authorities to distribute its resources in such a way that poor and backward regions were given a proportionately larger share so as to equalize their educational facilities. It was by this means that the advances in education in the outlying regions of the Soviet Union were achieved in a relatively short period.

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\*Ibid., pp. 297-98.

Given the prevailing conditions during the twenties and the preoccupation of the Bolshevik leaders with problems of political succession and of the economy, a comprehensive, uniform educational system for the whole country was slow to develop. In many parts of the vast territories, Soviet control remained weak or was exercised by freewheeling local Soviet authorities who were preoccupied with local problems and did not pay much attention to instructions emanating from Moscow. Finally, Narkompros under Lunacharsky developed policies for the Soviet Russian Federal Republic (RSFSR), and educational policies and institutions in other republics remained for some time subject to their respective republic education commissariats. For example, the Ukrainian Narkompros under Grinko placed initially much more emphasis on vocational and social training, supplemented by actual work experience, than did the Russian model of the "united labor school."

At the same time, while education and training for work were regarded as among the essential programs for building a communist society, funds available to the central government (first, the RSFSR and then the USSR) for such purposes were scarce. The weakened economy, furthermore, was unable to absorb large numbers of trained personnel, and unemployment among workers, especially after demobilization of Red Army units, caused problems.

These things changed with the introduction of the Five Year Plans and the mobilization of the whole country for industrialization. Now, an ever-expanding number of workers was required to be recruited from the countryside and suitably trained. Economic planning, including manpower planning, became the backbone of educational policy. Thus, it was only at the end of the twenties and in the early thirties that the rising demand for educated and trained manpower became so urgent as to make educational policy a matter of the highest priority. It also brought about more close coordination

between educational development and manpower requirements, which changed the focus from a largely idealistic, progressive educational perspective held by Lunacharsky and his co-workers to a strictly utilitarian one, which was less concerned with development of the total new man, but with the creation of an adequate supply of suitably trained and disciplined manpower.

Soviet economists and sociologists had already in the early twenties attempted to assess the role of education for labor productivity. Among them was Strumilin, a key member of the State Economic Planning Committee (Gosplan). His studies were based on surveys of manual and white collar workers in selected industries.\* While Strumilin's calculations by present standards are crude and their results have been questioned, their influence on Soviet policy makers and economic planners who faced the problems of harnessing needed resources for the industrialization drive, notably skilled labor, proved important. Strumilin demonstrated to their satisfaction that education was of great economic benefit, both to the individual and to society, and that investment in education not only paid for itself, but provided a handsome return to society in the form of greater labor productivity. At the same time, the results of Strumilin's calculations showed that the most efficient form of education for skilled workers, both manual and white collar workers, consisted in a sound grounding in general education, supplemented by brief vocational training. The latter findings were largely confirmed by subsequent experiences gathered during the industrialization drive: training of illiterates or semi-literates was time consuming and

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\*For a rendition in English of Strumilin's work in the twenties, see an abridged and slightly revised version: S. G. Strumilin, "The Economic Significance of National Education," Mary Jean Bowman, et al. (eds.), Readings in the Economics of Education, Paris, UNESCO-IIEP, 1968, pp. 413-450.



relatively expensive. And by showing that at the grade school level each additional year of general education raised labor skills substantially, Strumilin claimed that profits due to the resulting increase of labor productivity of the work force were 27.6 times greater than government expenditures on school education,\* thereby providing strong support to advocates of mass general education.

Strumilin's calculations in attributing such a high value to general education for the growth of labor productivity so impressed Soviet policy makers, including Stalin, that general education during the early stages of the industrialization drive received then, and for subsequent Five Year Plans substantial support.\*\* The fact that Strumilin himself was a senior member of Gosplan and one of the few men who rode out the many purges of the following decades undoubtedly helped to maintain the commitment made by Soviet economic planners to education.

While up till the concerted industrialization drive demand for skilled and semi-skilled labor was sporadic and alternated with periods of unemployment, now the need for trained labor and other more highly trained technical and professional manpower expanded rapidly so as to keep pace with the planned capital investment in industry and in the required infrastructure. And though opportunities for general education had expanded since the revolution, it became evident that both the level and quality of education, as well as the total number of schooled labor recruits were all inadequate.

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\*Ibid., p. 422. Even Soviet economists today question some of Strumilin's findings, but they concede their influence on contemporary Soviet policies.

\*\*V. N. Turchenko, "Nauchno-tekhnicheskaia revoliutsiia i problemy obrazovaniia" (The scientific-technical revolution and problems of education), Voprosy filosofii, No. 2, 1973, p. 20.

Soviet economic planners were especially critical of the uneven quality of acquired cognitive skills and of the absence of discipline and other behavioral attributes essential for the industrial production process. New educational policies brought about drastic changes. The openness and great variety of educational approaches and the orientation toward Western progressive education were to give way to a uniform educational system, reverting essentially to traditional Russian education, with emphasis on the three R's, a narrowly prescribed curriculum, learning by rote, increased authority for teachers and tight class discipline. This type of formal general education has remained, with only slight modification, the basic pattern up to the present. And only now, voices are being raised openly and loudly, questioning the value of such a narrow and rigid system for a time when rapid technological change requires less specific but more general knowledge skills and the ability to analyze and think creatively.

Though the educational reforms instituted in the early thirties appear to be a step backward in educational policy, the new massive effort in expanding and reorganizing the educational system was not without merit. Given the need for rapid growth at all levels of education, it is doubtful whether in the absence of adequate numbers of sufficiently qualified teachers, a swiftly expanding general education system would have been able to function without regimentation and standardization of curricula and rather pedestrian, traditional ways of instruction. The good Soviet schools of the twenties were dependent on well trained and creative teaching talent, but such talent was scarce. Although efforts had been made during the twenties to increase the number of newly trained teachers who progressively were to replace the politically suspect teaching cadres schooled under the the old regime, not nearly enough teachers with minimum qualifications had

been trained when the industrialization drive started. As late as 1950-51, only 14.2% of Soviet teachers in schools of general education (both primary and secondary) had a higher education with an additional 20.4% having completed institutions of teacher training. The vast majority, 58.9% had completed secondary education, and 6.5% had not even graduated from high school.\* As could have been expected, grade school teachers had the poorest qualifications.

Qualifications of Soviet Teachers in Schools  
of General Education 1950/51\*\*

	Higher Education	Teacher Training Institutes	Secondary Education	No High School Graduation
Grades 1-4	0.7%	2.7%	87.1%	9.5%
Grades 5-7	20.1%	43.3%	35.7%	0.9%
Grades 8-10	78.9%	16.3%	4.7%	0.1%

The concerted efforts by Soviet authorities for the expansion of general education were thus based on the recognition that rapid industrialization without, at the same time, raising the level of education of the population was impossible, and that it was more efficacious to expand general education as rapidly as possible, than to continue relying primarily on vocational training to increase the ranks of skilled and semi-skilled labor. But a significant aspect in the expansion of general education must also be found in the role assigned to the spreading network of schools in the

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\*TsSU SSSR, Narodnoe obrazovanie, nauka i kultura v SSSR (Public education, science and culture in the USSR), Moscow, "Statistika," 1971, p. 105.

\*\*TsSU SSSR, Narodnoe khoziaistvo SSSR v 1958 g. (The national economy of the USSR in 1958), Moscow, 1959, p. 818. It should be noted that included under the category "secondary education" are those teachers who had completed secondary teacher training institutions.

campaign for social change and modernization of society throughout Soviet lands, but especially in the more backward, non-Russian regions of the country.

Thus, both the more specific and immediate needs to supply adequate manpower for rapid industrialization and the broader aims of communism to transform society by destroying ancient ways and values through modernization were to be primary purposes of the general education system. The latter purpose was of course more far-reaching, but it was no less a sine qua non for economic development than the former. As a result, we find that concurrent with the growth of allocations for the economy, especially heavy industry, there was also an impressive expansion of budget allocations to education and cultural programs, many of which supported endeavors in nonformal and informal education, including literacy programs.\*

While general education expanded rapidly, it must be noted that emphasis was initially placed at the primary level (See table I). Secondary education developed much more slowly, especially senior (complete) secondary education through the tenth grade. In fact, measures were taken from time to time which retarded growth of senior secondary education. First, during the school year 1930-31 and 1931-32 a vast number of secondary schools, with staff and students,

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\*The best figures on budgetary support for the cultural and educational sector in the twenties and thirties are found in Davies, op. cit., pp. 42-43, 83, 254, 296. However, these figures are not only aggregates, including expenditures (at times only planned expenditures) on cultural, scientific and other such programs, but due to Soviet accounting practices which, furthermore, were subject to frequent changes, no more than general trends can be adduced from them.

were transformed into technicums.\* Thus the number of senior secondary schools fell from a previous high of 1,940 in 1929-30 during the next year to 653 and the year following to 5.\*\* The experiment seemed to have been a failure, for in 1931-32 the number of senior secondary schools rose again to 1,261.

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\*The technicums or technical schools are hybrid technical-professional training establishments of great diversity, training both skilled workers, but also true middle level technicians and semi-professional personnel. They are subordinate both to the State Committee of Vocational-Technical Education and to the Ministry of Higher and Specialized Secondary Education. Today some are providing training in sophisticated technology such as electronics, computer technology and laboratory work, while others will train workers as auto mechanics, tractor drivers and in other traditional skills. Thus reports about conditions in 1973 showed that many technicums will not only accept, but prefer students with only eight years general education, while others require high school graduation. See the articles in Izvestia of March 27 and 28, 1973 as reported in the Current Digest of the Soviet Press, vol. XXV, No. 13 (April 25, 1973 pp. 18-20.

\*\*TsSU SSSR, Kul'turnoe stroitelstvo SSSR (Cultural development in the USSR), Moscow, Gos. statist. iz-vo, 1956, pp. 80-81.



Needless to say, for large numbers of students regular advance in general secondary education had been effectively disrupted. The other measure which definitely restricted the number of graduates from senior secondary school was the introduction of fees for the last two classes of secondary school and for all higher education in 1937. Western observers have not been able to agree on the true intent behind this measure, which was in clear contradiction with Lenin's policy. The explanation that it was designed to help support financing of education does not carry much conviction, because the fees were quite low and exceptions for needy students were allowed. However, for individual families the fees were high enough to discourage those with low incomes from enrolling their children in secondary schools. This policy effectively put a brake on rapid expansion of the number of graduates from secondary schools. The development, of course, also had an impact upon the demand for higher education; first, by reducing the total number of graduates from secondary school, and secondly, by discouraging some graduates from seeking admission to higher education because of fees. It was the former, rather than the latter which dampened social demand for higher education.

By the mid 30's attendance of primary school was made obligatory. This was not so great an accomplishment in the European Russian part of the USSR, as in the outlying non-Russian regions such as Central Asia or among the northern non-Russian nationalities where illiteracy had been widespread at the time of the revolution. For the success of Soviet education policies should not only be measured in terms of overall growth of educational opportunities and the general rise in the level of education for the population as a whole, but note must be taken of the educational advance of two groups which in most societies, but particularly in traditional societies, have less than average education: women and national minorities, particularly backward nationalities.

Statistics of the last decades of Tsarist rule provide clear indication that both of these groups, but especially the nationalities of Siberia and Central Asia were educationally very backward. Thus, in 1897 the territory of Uzbekistan had a literacy rate of 3.6% for the population between 9 and 49 years of age (5.6% for men, 1.2% for women). The comparable figures for Tadzhikistan are even lower: 2.3% (3.9% for men, 0.3% for women). Even in 1926 Tadzhikistan had only achieved an overall literacy rate of 3.8%. However, by 1939 the literacy rate had jumped to 82.8% (87.4% for men and 77.5% for women)\*. Although literacy was broadly defined by including people who could barely read a primer and sign their name, the achievement was nevertheless remarkable.\*\* It greatly contributed to the acceptance of Soviet education by these backward Moslem societies and accelerated the modernization and secularization process.\*\*\*

The efforts in achieving adult literacy and to develop an educational system which would provide schooling in the native language\*\*\*\* was an enormous undertaking: the number of minorities with a distinct language of their own was considerable. Some languages had no written form, others had highly complex scripts. And before schools could be opened, native teachers had to be trained, textbooks had to be written, etc. In the Soviet Union about 130

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\*Narodnoe obrazovanie, nauka i kultura v SSSR, op. cit., pp. 21-22.

\*\*For an excellent account of the development of general education and the literacy campaign in one of the backward regions of Central Asia, see William K. Medlin, et al., Education and Development in Central Asia, Leiden, Brill, 1971, 92ff.

\*\*\*A description of the transformation of the role of Moslem women in Soviet Central Asia through, among others, education, can be found in Gregory J. Massell, The Surrogate Proletariat, Princeton. Princeton University Press, 1974.

\*\*\*\*For the nationwide literacy campaign and on the education work in non-Russian areas see K. Nozhko et al., Educational Planning in the USSR, Paris, UNESCO-IIIEP, 1968, 27ff.



native languages are spoken, and at present, books are published in 89 Soviet languages. In 1972 instruction in schools was conducted in 57 different native languages. Today, even small and originally quite backward nationalities, several lacking a written language at the time of the revolution, have not only achieved general literacy but have reached a respectable level in secondary and higher education. Table IV illustrates the educational achievements of the major nationalities of the USSR.

The best educated group before the revolution was that of urban males in European Russia. Today, women, especially women under 40 years of age, as a whole are better educated than their male counterparts. Thus, the 1970 census showed that in the 30 to 40 year age group, 336 women per 1000 have a higher or secondary education, while the rate for men is only 330. The educational level of women between 20 and 30 years of age is even higher. For every 1000 women in that age bracket, 59 had a higher education as against 41 men, and 471 had a secondary education as against 384 men.

The difference is even more pronounced in urban areas where the figures for higher and secondary education for women are 674 per 1000 as against 536 for men or more than 26%. The republics with particularly high rates of higher education for women are not, surprisingly, Russia, Lithuania and Georgia. The only area where the proportion is reversed is in the Central Asian republics.\*

It should be noted, however, that at the highest level, i.e., senior academic appointments and holders of graduate degrees, representation from formerly backward nationalities and women is considerably less favorable. Nevertheless, the educational achievements and the growing contribution to economic development by women is impressive by any standard, especially

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\*The data is from an article by a prominent social scientist and demographer V. Perevedentsev in Literaturnaja gazeta, No. 10, March 7, p. 13. (Abstract in Current Digest of the Soviet Press, vol. XXV, No. 30, August 22, 1973, p. 32).

when considering the brief period during which it was achieved (tables II and III provide further illustrations).\*

Women not only were encouraged to seek education at all levels, but measures were taken, as soon as resources were available, to organize education for children and adolescents in such a way as to permit working mothers to continue at their jobs. The problems of child care and supervision was, of course, especially acute in urban areas and increased with the continuous disappearance of the extended family. The educational system has tried to meet the needs in the following way:

(1) Expansion of nurseries and kindergarten facilities was advocated from the very beginning, but noticeable progress was recorded only after 1928. These institutions take care of children during the daytime working hours and some have boarding facilities. Nursery care may be obtained for children from two months to three years and kindergarten extends through the sixth year, since Soviet children enter first grade at age seven. Pre-school facilities to free working mothers are relatively expensive since they have to provide food services, facilities for both play and rest, and a certain amount of health care. Although parents are charged a fee, the fee is minimal and is geared to the income of the parents, usually covering the contribution for feeding the child. The pre-school educational system has grown at a slower rate than had been envisaged by the recent Five Year Plans. By 1970, 32% of children of pre-school age attended nurseries or kindergartens, and the target for the ninth Five Year Plan 1971-75 is 40% of children of pre-school age attending these institutions with 60-70% of six-year olds attending kindergarten. In 1972, almost 9 million children attended pre-school institutions.

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\*For more details on women in higher education, see chapter III.

(2) Today, a growing number of schools have facilities to keep children after hours. These are the so-called extended day programs or extended day schools which provide children with supervised homework and recreation. Extended day programs on a nationwide basis were introduced in 1960 and by 1973, 6 million students were enrolled in such programs and further expansion is planned. However, it appears that many programs are seriously deficient, lacking in facilities and organization and are, in essence, no more than a second shift school session. There is a serious lack of recreational facilities, and critics point to the fact that lack of active play and exercise endangers the health of students. These institutions developed after it had become clear that the creation of boarding schools, was not only too expensive for society to sustain at this time, but was also opposed by a majority of parents, according to the findings of a group of Leningrad sociologists and educators. The latter confirmed that children brought up in institutional surroundings were more likely to have problems.\*

(3) Thus, the third type of educational institution, the boarding school, which was intended to relieve the working mother, is not widespread. Aside from permanent boarding schools for orphans or for physically handicapped children, the majority of schools with boarding facilities are designed for students attending schools which are remote from their homes, for children whose homelife has been disrupted temporarily or whose parents have work assignments away from home. But not all who need it can count on finding boarding facilities and parents must pay fees, though the operations are

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\*The studies have not become available, but are frequently referred to by Soviet authorities on social policies. See V. Perevedentsev, a foremost authority in Zhurnalist, No. 9, 1974, p. 5, who recommends that small children especially not be left to institutional care.

subsidized. In 1973, 2.3 million children lived in all types of boarding facilities attached to schools.

(4) Schools which convene after the end of the regular school hours and provide instruction in such subject matters as music, art or sports can be found in urban centers. They are usually for slightly more mature students who have shown special talent and interest in the subject matter and supervision of students is not a major purpose.

(5) One of the most important programs providing supervision to children after school hours offers extramural activities for children and adolescents. It is in the main organized by Young Pioneers, the communist youth organization for children 9 to 14 years of age. The most famous facilities are the pioneer palaces located in urban centers. But extramural programs of this kind are conducted in less sumptuous surroundings all over the Soviet Union. They provide not only recreational facilities, but further the socialization process through character training and ideological indoctrination. The program is designed as an extension of the school and provides special opportunities for youth to develop their talents, to engage in hobbies, etc. Regular schools have not always proved effective in discovering and furthering the talents and creative abilities of youth in their care. As William Medlin has shown,\* these programs play an important role in identifying vocational aptitude and talents.

Special clubs, such as centers for young technicians or young naturalists, excursion clubs, children's parks, children's railroads, clubs for young seafarers, and the many sports clubs and sports activities organized for the young also assist in providing its members with constructive leisure

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\*See Medlin, op. cit., 195ff.

and a certain amount of supervision.

(6) During vacation time, extensive facilities for children and youth are available, providing activities and supervision full time or during day hours. In 1950 about 2.5 million children and in 1970 almost 9 million children attended pioneer camps.

Clearly, such programs are expensive and they have become a significant part of the education system only in the last two decades. However, their need today is fully recognized in statements by responsible officials and the country continues to raise the level of investments in these programs.

In addition to educational benefits, there are several reasons why support and expansion of these relatively expensive programs continue. One reason for the expansion of these programs must be sought in the dissatisfaction voiced by authorities with the socialization of youth by the family and the regular school. As the Soviet Union has moved from a largely traditional, rural society towards an urban mass society, juvenile delinquency has become a problem. The widespread indifference of youth towards the aims of communism has the authorities worried also. In addition, demographic considerations appear to play a role, namely the declining birth rate in the European part of the Soviet Union. There, the single child family has become prevalent at a time when the number of women in the primary reproductive age group has declined as a result of World War II. Sociological surveys have shown that young couples with one child are frequently reluctant to enlarge their families when child care institutions are not accessible. As society provides adequate facilities for the working mother to assist her in raising her children, there will be greater incentive to increase the number of children in the family.

The growth of these institutions is also favored by the expansion of the education system which retains more adolescents for longer periods of time in school than ever before. Secondary education is to be made universal by 1975. But this does not mean that all adolescents will attend general secondary schools through the 10th grade. Some will leave school earlier and start working. They will be required to attend schools for working and rural youth after work. Others will attend so-called specialized secondary schools or technicums and will receive additional general education, although plans envisage that all general education is to be phased out from specialized secondary schools in the near future. This would require that students complete general secondary education before admission to secondary technical-professional schools. At the same time, vocational schools are again offering more supplemental general education to allow their students to obtain the required secondary education.

The question remains how the program of universal secondary education can be realized under present conditions, especially for students from remote rural areas. This is a particularly thorny problem, because in recent years the policy has been to consolidate smaller senior high schools,\* because they are relatively expensive to operate, but also in order to upgrade the instruction program and equip all secondary schools with laboratories, workshops, libraries, etc.\*\* Today, there are not enough boarding facilities everywhere,

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\*In the Soviet Union all general education schools start with the first grade.

\*\*Due to demographic factors Soviet schools during 1972-73, on the average, had only 271 students. Consolidation of schools aims at establishing rural ten-year schools of between 400-500 students and the ideal size for larger urban centers has been identified as a school of around 1300 students. Thus Soviet consolidation policy is not aimed at creating giant school complexes as they exist in many Western countries and which tend to cause high indirect costs.

While at the end of the 1972-73 school year more than 70% of all youths entering adult life had completed their secondary education, the target of the ninth Five Year Plan is to reach 90% by 1975. Although demand for education continues to be high, it is unlikely that the goal can be met so soon.

But the problems of general education are not merely a matter of expansion in terms of numbers. As in other sectors of the educational system, there is continued need for improved quality, as responsible authorities are well aware. Public discussion of the draft laws\* for reform of the Soviet education system and reports by the responsible ministers point to some of the problems. Thus, the curriculum and pedagogic methodology need updating in order to meet the needs of an increasingly modernized, developed country. The qualifications of teachers still leave much to be desired. By 1970/71 only 52.7% of all Soviet teachers in general education schools had a higher education, 12% had attended teacher's institutes, 26.9% had obtained their teaching credentials in secondary schools for educators, and an additional 7.8% had other specialized or general secondary education. The number of those who had not graduated from high school had dropped to 0.6%.\*\* The raising of qualifications for teachers is to be achieved by graduating more teachers from institutions of higher education and by periodic advanced training at special pedagogic institutes throughout the country. But the physical facilities also leave much to be desired. There are still schools which operate on double shifts and the rate at which old or unsuitable buildings are being replaced is very slow. The special problem of rural schools has already been noted. In addition, Soviet authorities are not satisfied with

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\*Uchitel'skaia gazeta, April 15, 1974, pp. 1-2.

\*\*Narodnoe obrazovanie, nauka i kultura v SSSR, op. cit., p. 105.

the socialization program for students and they are aware of the lack of preparation of youths in general education schools for a realistic career choice. A sociological survey conducted in different regions of the Soviet Union found that 80% of high school students wished to enter an institution of higher education after graduation, and only 5-7% considered joining the labor force, when, in fact, 50% upon graduation would do so. And the majority of remaining graduates would not all be accepted for higher education, but would have to be content with a specialized secondary education.\* In 1973, out of 9 students graduating from high school, only 2 could anticipate being accepted to an institution of higher education.

However, with all its shortcomings, general education has played an important role in the modernization and economic development of the country. If today skills and professional training are widespread in the Soviet Union, and the qualifications of the population continue to rise, then this, to a considerable extent, is due to the steady growth of the level of general education.

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\*Turchenko, op. cit., p. 24.



## CHAPTER II

### The Training of Qualified Manpower: Vocational Training in the Soviet Union

Training of qualified manpower proceeds at three distinct levels in the Soviet Union. First, there is vocational training which includes both formal and non-formal training for labor skills. It can be distinguished from so-called "specialized" education which provides professional and technical training at two levels, higher and secondary education. The latter, the second level, is for the training of technicians and semi-professional personnel together with selected junior professional occupations, including teachers. At the upper level of vocational and lower level of specialized secondary education the categories overlap and a clear distinction between the two has shifted over time and is difficult to maintain. Training for qualified manpower at the third level, higher education, takes place primarily in specialized institutions of higher education, the so-called VUZy which provide a relatively narrow, higher professional education. Two different agencies of the Soviet Government at the federal level are concerned with the training of qualified manpower: The State Committee for Vocational Technical Education and the USSR Ministry of Higher and Secondary Specialized Education. The policy for all three categories: vocational, specialized secondary, and higher education\* is closely linked with economic planning and development.

Two broad categories of vocational training must be distinguished: first, vocational training for youths preparing to enter the labor force, and secondly, vocational training for adults already engaged in labor, including upgrading of their qualifications and retraining.

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\*Secondary specialized and higher education is the subject of the next chapter.

The first, vocational training of youths before entering the labor force, was in part accomplished through formal education: trade schools, technical schools and other vocational institutions; although, as under the earlier regime, substantial numbers of youths continued to be trained in apprenticeship programs at plants and workshops. Upon assuming power, the Bolsheviki found a growing network of trade and other vocational schools engaged in the training of skilled labor. Concurrent with the rapid growth of industry from the latter part of the nineteenth century onwards, vocational schooling also expanded. In 1898 some six thousand students attended a variety of trade schools. Prior to World War I the number had risen to 100,000,\* and by 1915 267,000 students were enrolled in such schools.\*\* The schools were operated either by government agencies or by a variety of private and public organizations and ranged from the so-called lower trade schools training semi-skilled labor to so-called "technicums" which trained not only highly skilled workers, but also junior rank technicians.

When the Bolsheviki assumed control, concern over vocational training of skilled workers was immediate both for economic as well as political reasons, for the Communist Party required a more numerous proletariat to fulfill its mission. How best to prepare the growing generation for a life of productive labor was thus a crucial issue for the Bolsheviki and the role of vocational training, its nature and structure, were questions of major political and economic consequence. The chaotic conditions of

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\*S. IA. Batshev, Formirovanie kvalifitsirovannykh rabochikh kadrov v SSSR (The formation of qualified labor cadres in the USSR), Moscow, "Ekonomika," 1971, p. 6.

\*\*Arcadius Kahan, "The Economy of Vocational Training in the USSR," Comparative Education, vol. 4, No. 2 (Oct. 1960), p. 75.

the early years of Bolshevik rule merely complicated the situation. In the wake of the civil war and in order to facilitate the reconstruction of the shattered economy, an attempt was made to integrate general education and vocational training by changing the curriculum of the upper grades of the general education schools. This experiment was short-lived, since it proved to be quite ineffective. The schools had neither the necessary equipment nor suitably trained teachers for such an enormous task. While some Bolshevik leaders supported early vocational training for all youths, Lenin, his wife, Krupskaja, and the Commissar for Education, Lunacharsky, opposed this policy on principle and agreed to the merger of general and vocational education only as an emergency measure, following the end of the civil war. Although the Ukrainian Republic had earlier introduced a general education system which emphasized vocational training and work experience, the RSFSR (Russian Republic) remained committed to polytechnical education.\* But it must be understood that pressures for the early introduction of youths to labor training was not merely due to concern over shortages of skilled labor, but was also due to the preoccupation with effective socialization of the younger generation. If socially useful labor was to be the way of life for all able bodied Soviet citizens, then it appeared essential that youths be introduced at an early age to work experience, which included acquisition of at least some skills to make such an experience stimulating and meaningful. And, if in the process, the young were led to an early career choice, so much the better. Thus, vocational training in secondary schools was designed not merely to provide the needed skilled labor, but also to inculcate the young with a positive attitude towards labor, especially manual labor.

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\*The Soviet pedagogical encyclopedia defines polytechnical education as that

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"education which conveys knowledge about the chief branches and scientific principles of production and supplies appreciation of general technology, essential for participation in productive work."

Pedagogicheskaia entsiklopediia, vol. III, p. 435.

Thus the curriculum of Soviet schools places emphasis on mathematics and natural sciences together with basic principles of technology. But the implied labor appreciation and experience has been more difficult to convey without turning schools into vocational training institutions. See also pp. 40-41 below.

But experience showed that for vocational training to be effective, it had to shift back to special vocational schools and training courses, if possible in close proximity to workshops. This ended for the time being the experiment of integration between general and vocational education.

In the twenties, after the initial period of reconstruction and following the civil war, the need for skilled labor grew only slowly, and there were periods of unemployment. In addition to the existing vocational training institutions, the Bolshevik leadership in 1920 organized the so-called F.Z.U. (factory-plant schools) which required minimal grade school attendance and were designed to admit youths between 14 and 15 years of age for training in mass production techniques. The training period initially lasted from three to four years, but as general education expanded, it was reduced to two and then to one year and, ultimately, to as little as six months. As long as many youths entered the labor market without having completed primary education, these schools also covered a substantial amount of general education. As primary education became more readily available to all, this part of the program was phased out. By the end of 1929 the average level of general education of workers over 22 years of age had reached just above four grades. The majority of these training institutions were attached to relatively large plants, but schools were also organized on a regional basis at the district (rayon) level, serving several district industries. Thus, in 1923-24, 70% of juveniles working in industry were trained in F.Z.U. By 1929, 2,711 F.Z.U. were operating with some 323,000 students and in 1931-32, 975,000 students attended 3,151 F.Z.U.\* However, it must be understood that such training was designed

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\*See Batyshev, op. cit., p. 11.



only for adolescents recruited for industrial work. The large number of adult workers brought from the villages had to be trained elsewhere: in the plant, at the workbench, and by means of various on-the-job training programs and special educational programs.

The F.Z.U. which underwent frequent restructuring, seemed to have met the most urgent need for industrial skilled manpower as long as the drive for industrialization was in its early stages and was largely centered in the more densely populated areas of European Russia. With the third Five Year Plan, however, not only vocational training but the recruitment of workers was reorganized. The reason for this was the vastly expanded investment plans for new plants and the dispersion of enterprises to some of the outlying, less densely populated areas, such as Siberia, for which labor had to be recruited. Based on a directive of the Presidium of the Supreme Soviet of October 2, 1940, "On the State Labor Reserves of the USSR" three types of vocational schools were provided: trade schools for youths of 14-16 years, with a training period of two years, special railroad vocational schools, and the so-called F.Z.O. (factory-plant training schools) for youths between 16-18 years and a training period of 6 months. The institutions were organized to train young workers who needed skills for industry. The type of training and the number of students trained were, henceforth, determined by national requirements for manpower, based on projections of manpower needs under the Economic Plan.\* The trade schools spent 60-65% of their program on industrial training while the F.Z.O. assigned 80-95% to industrial training. Youths were drafted from schools

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\*For the role of manpower planning and education see Nozhko, Educational Planning in the USSR, op. cit., 81ff.

and farms, transferred to a training institution, not necessarily in their home district, and assigned to a place of work upon graduation. This system continued through the war years and was only changed in the wake of Stalin's death. However, even during this period, numerous adjustments in the vocational training system were made. Thus, in 1947 special trade schools with a three to four year training program were organized, designed to accept youths between the ages of 12 and 15. A substantial amount of general education was offered by these training schools. Soon after Stalin's death, it was decided to substantially expand the vocational schools to train personnel for more effective mechanization of agriculture. The ever growing expansion of general education led to a reform of the labor reserve system. The compulsory recruitment system was phased out and in 1954 technical schools, so-called "technicums," were created for the training of skilled labor for occupations requiring an especially high level of education and to train junior technical personnel. At present some technicums require complete secondary education. In 1958 the various schools and institutions for the training of labor reserves, as well as the permanent vocational institutions under the authority of individual economic branch ministries and other government agencies, were brought under a unified system by being transformed into the so-called "vocational-technical schools" (P.T.U.); the "technicums" remained a separate category. The P.T.U. are designed to provide vocational training for youths having completed the 8th year of secondary education (intermediate level).

Formal vocational training is not only free of charge but students are generally supported either by stipends (rural youths are often supported by their farms), or they are provided with free food and lodging and other necessary expenses. At the beginning of the seventies the



vocational training schools provided training for more than 1100 occupations and had trained since 1941 more than 23 million skilled workers.\* General education was almost phased out from the vocational curriculum and has only recently been reinstated as secondary specialized schools are eliminating it from their curricula by raising entrance requirements to high school graduation. But Soviet vocational schools -- a type of educational establishment generally lacking in prestige -- frequently have mediocre staff and inadequate equipment, and, as a consequence, will seldom be able to develop and implement training programs in the newest required skills. Such institutions, unless closely allied with well-to-do modern enterprises which are willing to provide specially equipped workshops and the aid of their professional staff, are as a rule incapable of maintaining a flexible up-to-date training program, keeping in step with the latest technological developments. Instead, enterprises will frequently maintain their own more or less structured training programs for newly recruited labor.\*\*

The relationship between vocational education and other sectors of the Soviet educational system, especially general education, is noteworthy. The expansion of general education has, of course, played an important role in raising qualifications in vocational training. By emphasizing "polytechnical" studies, general education in the Soviet Union has provided a sound basis for subsequent training for labor skills, especially in the field of technology. The studies of Strumilin in the early twenties which demonstrated that increased levels of general education followed by brief vocational training constituted the most efficient form of education for achieving rapid growth in labor productivity gave impetus to economic planners to provide

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\*TsSU SSSR, Narodnoe obrazovanie, nauka i kultura v SSSR, op. cit., p. 8.

\*\*See also tables VI and VII. For more detailed descriptions, see Nicholas DeWitt, Soviet Professional Manpower, Washington, D.C., National Science Foundation, 1955, pp. 12-14 and Jaan Pennar et al., Modernization and Diversity in Soviet Education, New York, Praeger, 1971. 53ff.

continued support for the expansion of general education at a time of great scarcity of resources. The investment, however, was regarded as justified in view of the expected payoff in the near future. Soviet calculations on costs and benefits continue to show that the costs of general education for the national economy are soon offset by growing income due to higher labor productivity as well as the expanded application of science and technology in the production process.\*

As mentioned before, there were several experiments attempting to integrate vocational with general education but these so far have all failed. The latest such experiment took place in connection with the famous educational reforms instituted after 1958 by Khrushchev which were designed both, as an urgently needed socialization process providing "labor experience," and as a means of equipping the majority of youths with labor skills leading to a life-time career. The experiment and its subsequent failure received wide publicity, including in the West. The reasons for its failure are briefly as follows. It was impossible to implement the reforms without commitment of vast resources to supply needed facilities and equipment together with suitably trained teaching staff to offer effective vocational training in the public school system. Even when labor training facilities were provided,

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\*V. E. Komarov, "The Relationship between Economic Development and the Development of Education," Mary Jean Bowman et al. (eds.) Readings in the Economics of Education, op cit., pp. 85-93; and V. E. Komarov, Ekonomicheskie problemy podgotovki i ispolzovania kadrov spetsialistov (Economic problems in the training and utilization of specialists' cadres), Moscow, "Ekonomika," 1972.

V. A. Zhamin and G. A. Yegiazarian, Effektivnost kvalifitsirovannogo truda (The efficacy of skilled labor), Moscow, "Ekonomika," 1968.

V. A. Zhamin, Ekonomika obrazovaniia: voprosy teorii i praktiki (The economics of education: problems of theory and practice), Moscow, "Prosveshchenie," 1969.

the choice of occupations was so restricted that students were offered training without either regard to the student's choice or to the needs of the national economy. Where relatively well-developed training facilities existed, subsequent surveys have demonstrated that most students did not pursue the occupation for which they received training, but almost always changed to another type of career. Finally, the requirement of work experience at a job prior to admission to an institution of higher education proved both wasteful to the student as well as to society. Since enterprises were loath to use poorly trained and reluctant youths who gave no promise of remaining after the initial training period, but were likely to seek further education elsewhere, the placement of youths for any but the most menial work was very difficult. The enterprises found such labor unproductive, if not outright prohibitive, and society not only had to pay the greater costs of lower efficiency generated by the program at the enterprise level, but valuable time was lost for many youths by delaying their education and entry into the labor market.\*

While efforts to integrate vocational training into the general education system have failed, general education continued for many decades as an important part of formal vocational training. With the steadily rising level of general education for the Soviet labor force this was no longer needed. However, since for various reasons a sizeable number of youths join the work force without finishing even the eight-year incomplete secondary school, part-time schools for working (urban) and rural youths were established to provide

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\*This summarizes the lengthy discussions in the popular press and in learned journals, together with official pronouncements on vocational training in public schools which preceded the dismantling of the Khrushchev educational reform of 1958. For a Soviet description of current practices in "labor training" in general education see IU. K. Vasil'ev and V. I. Chepelev, "Labor Training and Polytechnical Education in the School," Soviet Education, vol. XVI. No. 6 (April 1974), pp. 79-96.

young workers or peasants with an opportunity to continue their general education. For this purpose farms and enterprises are required by law to reduce the working time for the employed youths and provide for special time off in order to encourage continuation of their studies.

One of the most serious shortcomings of the formal vocational training system in the USSR has been its terminal nature and the lack of well-defined access to higher education. Lenin and other leading Bolsheviks had envisaged an educational system permitting continued advance on the educational ladder from primary education through the university. In fact, the institution of so-called "workers' faculties" (rabfaks)\* was supposed to be merely the first step in creating a system that would permit free and open access of workers and peasants to higher education. However, in spite of several structural reforms, formal vocational education from 1920 onwards has essentially remained a dead-end street in educational advancement: graduation from vocational training institutions for skilled and semi-skilled workers does not by itself permit access to higher education. This was a retreat from Lenin's enunciated policy of open access. Unless a worker obtains a completed secondary education, either by evening or by correspondence school, or earns the sponsorship of the party or his enterprise by outstanding performance, access to higher education is effectively precluded. And as entrance to higher education has become more competitive, general secondary education in fact performs the screening function for access to higher education. Graduates from extension programs, such as the schools for working and rural youths, are placed at a disadvantage, because the quality of their education is found to be inferior and is seldom sufficient to prepare

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\*See chapter III, pp. 54.

the student to pass the competitive entrance examinations for higher education successfully. To alleviate a situation which has come under increasing criticism, since 1969 a number of VUZy have introduced special programs to prepare young workers and farmers for admission and within two years some 10,000 such students were enrolled in such programs. Yet such measures are no more than an acknowledgement that educational opportunities are not equitably distributed.

Soviet statistical data on formal vocational training shows that the group benefiting most by it are male rural youths. The proportion of rural youths is especially noteworthy at a time when the Soviet population is predominantly urban. The 1970 census figures show that 56.3% of the population in the USSR were urban and only 43.7% were rural, and for mid-1973 Soviet figures show a ratio of 59% urban as against 41% rural.\* Formal vocational education in the Soviet Union is at the same time the only educational sector where females are relatively underrepresented. Arcadius Kahan\*\* suggests that the reason for this was originally that employment of women has been less stable because of interruptions resulting from raising a family or from following the husband to a new place of employment. In a period when the need for skilled labor was high and training facilities were not unlimited, it was more economical to train young males (see table V).

Although the number of formal educational institutions for the vocational training of youths has increased substantially and continues to do

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\*TsSU, Narodnoe khoziaistvo SSSR v 1972 g. (The national economy of the USSR in 1972), Moscow, "Statistika," 1973, p. 7. It was unfortunately impossible to find Soviet data on the distribution between urban and rural youths in secondary schools, specialized secondary schools and higher educational institutions. But from Soviet writings, both professional and popular literature, it appears that rural youths in comparison with urban youths are underrepresented in these institutions.

\*\*In Comparative Education, op cit., p. 78.

so, at present, no more than slightly over one-fourth of the labor force has received training in such schools. The rest were trained through a variety of programs provided while on the job, either at the place of work or in extension programs. Table VI covering vocational training tells the story.

While the percentage of the industrial work force trained in a vocational school, including mechanics for the agricultural sector, has risen from 18% in the early years of the labor reserve system\* to 25.7%, it should be noted that the heavy recruitment of unschooled and untrained adult peasants which supplied the majority of industrial labor during the first decades of industrialization has largely ceased. Yet, even today the vast majority of youths entering the work force do not obtain their training in vocational schools, and as table VI shows, only the agricultural sector is supplied with just over 50% of skilled labor through formal vocational education.

Krevnevich also shows\*\* that vocational schools and "technicums" are training skilled workers by and large only for traditional occupations and lack facilities to prepare workers in new, highly skilled occupations needed for such branches of the economy as the electronics industry and the chemical industry. But occupations in other branches of the economy requiring higher technical qualifications are also poorly represented. Here, the shortcomings of existing vocational training institutions become apparent. They lack the resources, both physical and human, to develop suitable programs

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\*See pp. 37-38.

\*\*Krevnevich, V. V., Vlianie nauchno-tekhnicheskogo progressa na izmenenie struktury rabocheho klassa SSSR (The influence of progress in science and technology on changes in the structure of the working class in the USSR) Moscow, "Nauka," 1971, 320ff.

to meet the demand for highly qualified workers who can keep up with modernization and technological innovation. Thus, in those sectors where modern technology is particularly important, such as industry, transport, and communications, the percentage of skilled labor trained in vocational schools has remained static or has even declined. Furthermore, not only are requirements for workers with specific skills not met by the vocational schools, but the total number of newly trained skilled workers remains short of target for most economic sectors.\*

The place of work thus remains by far the most important training ground for skilled labor in the Soviet Union. The reasons favoring this situation are several and are likely to persist. First, the present level of general education of the entering labor force is such that most occupations need but a brief training period before the recruit can be fully integrated into the existing work force. Secondly, formal vocational schooling is for certain skills a relatively ineffective and costly form of training since it requires among others expensive equipment and facilities, in addition to frequent replacement to keep up with changing technology. Enterprises frequently may not need to acquire special equipment when it is possible to use the facilities in after hours or on an occasional basis. The costs of training can be further reduced in enterprises by the skillful deployment of experienced workers and senior staff for training purposes. Not only are demands on budgetary resources reduced by on-the-job training programs, but total expenditures of education are

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\*See Murray Feshbach and Stephen Rapawy, "Labor Constraints in the Five Year Plan," Soviet Economic Prospects for the Seventies, a Compendium Paper Submitted to the Joint Economic Committee, Congress of the United States, Washington, U. S. Government Printing Office, 1973, pp. 485-563. See also Batyshev, op. cit., p. 20.

reduced by being absorbed at little or no additional cost into the operations of the enterprise. Thirdly, on-the-job training programs generally are directly related to labor needs of the training enterprise and eliminate some of the problems which beset formal vocational education such as training of youths for occupations for which there is not sufficient demand or failure to train manpower for urgently required skills. Fourthly, Soviet materials suggest that the early association of the adolescent with experienced workers has a beneficial influence on the recruit by improving motivation, creating better labor discipline and generally aiding in the socialization process.

The complexity and diversity of non-formal vocational training at the place of work allows for only a very generalized description. It should be noted that the account below is based in part on prescriptive material, i.e. the stated requirements of Soviet policy makers.

As a rule the majority of young workers will have completed eight grades of general education.\* He or she will then receive introductory training at the first level of the so-called "step-by-step" program. Large enterprises and plants will have specially organized workshops for training of recruits. During the initial period the recruit is trained either in a group (brigade) or as an individual under the supervision of senior workers and foremen (masters). The training for occupations which require a certain amount of theoretical knowledge will be enriched by suitable courses. This training usually does not extend beyond six months and at the end of the training period the recruit will have to demonstrate his accomplishments to be certified as a qualified worker. Once trained at the first level,

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\*In 1970 of every 1000 employed in the USSR 653 had finished at least 8 grades (incomplete secondary education). Though exact figures are missing, it is likely that the 347 with less formal education will be relatively old and predominantly rural inhabitants engaged in agriculture. The comparable figures for 1939 are of every 1000 employed, 123 had at least incomplete secondary education.



the worker, especially in industry, will have various opportunities to upgrade his or her qualifications and perhaps even train for another job.\* Some training will occur during working hours, some after work, some may be pursued with special leave, while some will proceed while the worker is continuing on his full-time job.

Major means for the upgrading of qualifications are so-called courses in "industrial technology" offered by the enterprise staff or by a specially organized series of courses conducted by vocational teachers engaged by the enterprise. The other broad category of upgrading labor qualifications is special training in production methods such as assembly work, etc. This training is conducted with the help of senior workers and foremen. For particular categories of workers or for individuals whose performance and motivation has been deemed promising, an enterprise may organize special courses, such as training for foreman or brigade leader. Within this very broad and varied range the second, third and fourth levels of the "step-by-step" training program can be completed, each requiring demonstration of accomplishment so as to qualify for a higher grade and a raise in wages.

There are numerous other methods and forms of raising labor qualifications, both on an individual and on a wholesale basis. Thus a nationwide campaign was recently launched to raise the level of understanding principles of management and Marxist economics among workers and employees of industrial enterprises. This was done mainly by organizing so-called "schools of Communist labor." Based on widely distributed materials (course material with detailed instructions was published regularly in the economic weekly Ekonomicheskaja Gazeta), these "schools" are no more than the organizational basis to instruct the working force over a period of time

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\*See table VIII.

with the aid of senior staff. Groups of workers and employees attend seminars extending over several weeks and scheduled after work.

The training program in each enterprise is developed and coordinated by the department of industrial training (OPTO) in cooperation with other departments. The workers are also encouraged to pursue education after hours by selecting suitable education programs from the extension system which includes the so-called schools for working and rural youth providing general education, evening programs of vocational and technical schools, and the whole range of adult education which includes programs in cultural subjects and, of course, also political education. These courses, available in after work hours or by correspondence, aid the worker in qualifying for advancement and better wages, but authorities also encourage any kind of training which "raises the political consciousness and cultural level" of the worker.

Since the various on-the-job training programs depend to a large extent on conditions prevailing at the enterprise and the nature of the particular occupation, it is difficult to evaluate their effectiveness. But since three-fourths of the skilled and semi-skilled Soviet labor force continues to be trained within this system, it must have proven its worth. However, training at the place of work tends to be even more narrow than at vocational schools and has thus aggravated an already serious problem: relatively narrow specialization.\*

As has been shown, vocational training both formal and informal has gone through a great many reforms and adjustments. These can directly be related to economic development. As a close observer of Soviet vocational training noted, ". . . the particular goals and forms of vocational training

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\*See also pp. 49-50 below.

reflected distinct and successive phases in industrialization."\* Determined skill targets were not only achieved by opportunities for particular kinds of training and by various forms of recruitment, but they were also sought through wage differentials favoring higher skills and those sectors of the economy such as heavy industry, construction or transport which were given priority by economic planners. Side by side with changing programs there were also changes in wage levels, providing incentives for individuals to seek training for better paid occupations. As time went on and general education as well as skill levels rose, wage differentials between lower and higher skill levels decreased. Depending upon conditions, emphasis in training programs has shifted from mere quantity to quality of skilled labor and from a general demand for all kinds of skills to greater discrimination among particular types of skills and to emphasis on raising of general qualifications for labor by both increased general, as well as vocational education (see table VIII).

Under present demographic and economic conditions recruitment for skilled labor has become tight and some sectors of the economy as well as several regions of the USSR experience labor shortages. As a consequence, the raising of labor productivity and more effective utilization of labor resources has become essential. At the same time advances in technology and modernization of equipment are requiring expansion of skills and the need for retraining of large numbers of workers whose skills are no longer required.

The narrow specialization in training which prevails at all levels of technical and professional training in the USSR, including vocational

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\*Kahan, op. cit., p. 77.

training, has created especially severe problems. The resulting lack of versatility has inhibited substitutability which, in turn, perpetuates narrow specialization and standardization of training requirements for job categories, thus further stultifying both the employment pattern and training system which necessitates elaborate retraining programs. Given these conditions, the demands on vocational training have become heavier than before and a substantial burden is placed on both formal vocational training institutions and on non-formal training programs for the employed labor force. Thus, vocational training in the Soviet Union, whether formal or nonformal, needs to be upgraded and modernized so as to allow better utilization of the increasingly scarce labor resources. Recruitment for this kind of education also needs improving and there are indications that vocational guidance programs are receiving considerable attention. But above all, a broader training of skilled workers and less rigid training requirements for positions in industry should encourage substitutability and eliminate the need for retraining so many workers.

## CHAPTER III

### Higher and Specialized Secondary Education

The Soviet system for training professional, scientific and semi-professional-technical personnel is carried on in institutions of higher education and in schools of specialized secondary education. The large majority of institutions of higher education are the so-called VUzy, educational institutions which prepare students for professions and in the applied disciplines. The universities offer programs in fundamental and theoretical sciences and in the humanities. They account for only about 8 to 10% of graduates in higher education. Admission to higher education is strictly limited by discipline and numbers in accordance with manpower projections. It is a highly selective system and students are screened not only on the basis of their high school record, but they must sit for competitive entrance examinations. The potential student's social commitment and political attitude as demonstrated by his work experience, army record, Komsomol membership, volunteer work, etc. is also taken into account.\* Once admitted, education is not only free of charge, but the vast majority of students are on scholarship which is provided on the basis of need and academic performance and covers essential living expenses and educational supplies and books. A substantial number of students at the higher level are being trained through extension programs (both so-called "shift" and correspondence programs) which were designed

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\*The weight given to individual factors has fluctuated continuously. For a good summary of current practice, see Tamara Revenko, L'enseignement superieur en Union Sovietique, Paris, OCDE, 1973, pp. 41-42.

for working youths, but are today attended by many who failed to get into the regular daytime program. Tables IX and X show the growth of the higher education system.

So-called specialized secondary education is a separate category between the level of vocational-technical training (vocational schools and technicums as a rule do not provide access to higher education) and higher education for specialists. Specialized secondary education is designed for the training of technical and junior professional personnel, which includes in the Soviet Union, among others, many teachers, paramedical personnel, but above all intermediate level technical personnel, so vital for a modern economy. The required education for admission to schools of specialized secondary education has traditionally been graduation from the junior high school (seven, later eight grades). But graduation from senior high school (ten grades) is becoming prevalent with anticipated universal secondary education. However, even graduation from a general education school does not assure automatic admission to specialized secondary schools since, as in the case of higher education, there is a set admission rate for every discipline, determined each year by manpower requirements under the Economic Plan. Soviet planning for the future needs of trained manpower is based on national aggregates of figures on required staff, submitted by all Soviet enterprises, farms or organizations. These figures are broken down by occupation and the level of training. Added calculations based on both demographic and economic projections are designed to identify the appropriate ratio of specialists to the total work force, both for occupations and within geographic regions. The calculations take account of the goals set for the future economy, including planned structural changes, advances in technology, as well as the rate of increase

in labor productivity and such demographic factors as retirement and mortality patterns. On the basis of these figures and calculations, projections are made for the required training of manpower and quotas are set for all educational institutions which train specialists, both at the higher and secondary level.\*

Together with the programs at the higher education level, specialized secondary education is subordinated to the USSR Ministry of Higher and Specialized Secondary Education and to corresponding agencies at the republic level. With very few exceptions all institutions of specialized secondary education and higher education institutions are administered by republic and not federal agencies. However, essential policies are developed at the level of the USSR Ministry which is concerned with the nationwide development of these institutions to meet the needs of qualified manpower at the intermediate and higher levels. Thus graduation requirements, curricula, location of new institutions, and other such measures are being decided upon at the federal level.

Training for qualified manpower at the higher and intermediate level has been a major concern for the Soviet Union from the very beginning, since it was regarded as a key problem for the required modernization and industrialization of the country, and because the Bolsheviki could count on very few such trained persons among their ranks. Initially the Bolsheviki were forced to depend on experts and technical personnel trained under the

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\*For a more comprehensive description of manpower planning see K. Nozhko et al., Educational Planning in the USSR, Paris, UNESCO-IIEP, 1968, 85ff., and Nicholas DeWitt, "Educational and Manpower Planning in the Soviet Union," in Mark Blaug (ed.), The World Year Book of Education, 1967: Educational Planning, New York, Harcourt, Brace & World, 1967. However, extension programs are not subject to the quotas established as a result of manpower projections.

Tsars and, in the majority, out of sympathy with the new regime. Though mistrusted as politically unreliable, their services were urgently required and compromises were struck by reappointing needed "specialists" with a reliable party member watching their every step. But the idea, from the beginning, was to train new cadres of specialists, preferably of worker origin, who were fully committed to the goals of the new regime. Once the decision had been made to transform the country by rapid industrialization, the demand for middle and upper level qualified manpower became extremely critical.

The task at the level of higher education was especially complicated. First, it was very difficult to select suitable recruits for training from among Red Army veterans, workers and poor peasants. Most of them were educationally deprived and needed careful preparation, especially for vitally needed disciplines in the natural sciences or engineering. Secondly, it was impossible to substantially reduce the required time span for training well qualified personnel, especially when dealing with hastily prepared students. And thirdly, the training itself remained in the hands of people who as authority figures were likely to transmit, together with knowledge skills, bourgeois values and approaches to the new generation. However, the problems themselves were regarded as transitory, and the question was not so much whether it would be possible to solve them, but how soon. One measure to meet the problem was the establishment of the so-called "rabfaks" -- workers' faculties, which were attached to colleges and universities and staffed by politically reliable professors. They were to provide students of proletarian or peasant origin with a program which would prepare them for admittance to higher education in a relatively brief time span. From the very beginning the "rabfaks" were envisaged as a temporary institution until general education schools were capable of graduating sufficient



numbers of proletarian youths. But even as a temporary system the rabfaks did not function very well. It soon became clear that few of the students admitted under rabfak auspices were able to follow the required programs. Several reforms were introduced when the inadequacy of the newly qualified specialists became apparent and when the general level of work at the various institutions of higher education showed signs of serious deterioration. Finally, in 1940 the program was terminated, approximately at the same time as the labor reserve system was put into operation.\*

The development of higher education shows that a significant expansion took place only in the course of the first Five Year Plan. Within the borders held by the Soviet Union up to the late summer of 1939, Tsarist Russia in 1914-15 counted 91 institutions of higher education with 112,000 students. By 1928-29, with 105 institutions and 127,400 students only a relatively moderate expansion had taken place. The figures from then on rose more rapidly -- for 1932-33 we have 832 institutions of higher education with just over half a million students. The number of institutions then decreased temporarily due to the reorganization and consolidation of some of the colleges, but the number of students continued to rise and in 1940-41, just prior to the Soviet Union's entry into the war, reached 811,700 students. At the end of the war in 1945-46, the number of students of higher education had leveled off at 730,000 students; rising rapidly again it reached in 1952-53, at the time of Stalin's death, 827 colleges with 1,441,500 students. The institutions were again reorganized and consolidated, dropping by 1961-62 to 733, and accommodating the impressive number of 2,689,900

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\*During 1927-28, 49,000 students were enrolled in rabfaks. By 1940-41, when they were disbanded, the number had dropped to 25,000. Narodnoe khoziaistvo SSSR v 1958, op. cit., pp. 806-807.

students.\* In 1972-73 the Soviet Union counted within its borders 825 institutions of higher education with over 4.5 million students (see also tables IX and X).\*\*

During the prewar years, as the higher education system expanded, it was initially concerned with quantity rather than with quality, a development similar to that in vocational training. Although manpower planning was still relatively crude, coordination with the educational system was not as complex since there were shortages for practically all kinds of "specialists," and neither the secondary nor the higher level institutions were able to train the required number of specialists.

The program which was launched in response to the industrialization drive, both at the specialized secondary and higher level, was in the nature of a crash program, an approach which has become typical for overcoming shortages or deficiencies in any number of sectors of the Soviet Union. One result was that universities and other institutions of higher and specialized secondary education were opened with poorly qualified staff, very inadequate facilities and equipment. However, these institutions did produce large numbers, if not always of the desired quality, of trained people to provide upper level manpower for the ever expanding number of enterprises of the state economy. But in the process and as a result of the crash program, the institutions of higher and secondary specialized education took on certain features which have persisted into the present. Among them are the following: (1) the educational programs developed provide for very narrow specialization to meet particular needs as rapidly as possible with

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\*Narodnoe obrazovanie, op. cit., p. 151. Foreign students are not included in these numbers.

\*\*Narodnoe khoziaistvo v 1972, op. cit., p. 637.

a view of allowing students without much loss of time to move from the classroom directly into the production process. Time consuming courses, whether of a general or theoretical nature or those acquainting the student with related disciplines, as a rule, were not included in the curriculum. The prescribed narrow curriculum and uniform study materials were of course easier to manage for a teaching staff which initially frequently lacked higher qualifications. Specialization has continued, so that today students can select among almost 400 majors (a reduction from 900 specialties in 1954) at the higher education level and almost 500 majors at the secondary specialized level, (2) Under pressure to expand education facilities, often with scarce human and material resources, a great disparity developed in the quality of instruction offered at different institutions, in spite of the nationwide standardized program for training in most specialties. The old established universities and some of the more prestigious institutions of higher education (VUZy), such as the universities in Moscow, Leningrad, Kiev or the Bauman Technical Institute in Moscow, have highly qualified staff and excellent facilities, while some of the newer VUZy, especially in the outlying areas, have remained poorly staffed and equipped. One result has been the well-known tendency, prevalent in the West, for students to try, whenever possible, to gain entrance to the more prestigious institutions which are thereby enabled to admit higher qualified students than their provincial sister institutions and thus tend to further perpetuate the system.

An even greater discrepancy exists between training offered in regular daytime programs for full-time students and programs offered by extension divisions (shift and correspondence programs). During the late fifties educational planners had assumed that expanded extension programs would be the way of the future, particularly in higher education, since

this would allow the Soviet Union to graduate ever larger numbers of students at relatively low cost. An added benefit to the national economy was seen in the fact that the students continued on their jobs, at the very least for part time. However, comprehensive studies in recent years have shown that when comparing the flow of graduates from daytime and extension programs, the latter proved, in fact, more expensive both due to great wastage of dropouts and repeaters, and to the reduced work load at the job, a condition which tends to last over many years for students in extension programs.\* In addition, the quality of extension programs, according to accounts by Soviet critics, is much inferior, and the relatively rapid expansion of extension programs has been reversed in recent years. After growth of extension programs levelled off in 1966, a reduction can be noted since 1969 (see table X).

Under current conditions some weaknesses in the training of specialists, especially at the higher levels, have become apparent. Due to the division in structure and function of academic institutions in the USSR, and for that matter throughout Eastern Europe, which assigns teaching to universities and VUZy and reserves research largely to research institutes and to the various academies, special difficulties have arisen in a period when scientific developments and technological change are proceeding at an ever rapid pace. The narrow specialization of middle and higher qualified personnel extends to the teaching staff. Though individual research in the teaching institutions is not discouraged and will help the individual's career, the facilities and provisions for it, in most instances, are non-existent. This is particularly true for the VUZy which form the vast

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\*For an analysis of some of these studies see Zhamin, Ekonomika obrazovaniia, op. cit., 155 ff.

majority of such institutions. Laboratories and equipment for research are inadequate or not at all available, and the heavy teaching load does not allow sufficient time and energy for truly creative work in research. This, combined with narrow specialization, creates a serious threat for the quality of teaching. According to a speech of the USSR Minister of Higher and Secondary Specialized Education, Yeliutin, delivered in early 1973 on the occasion of the All-Union Conference of Workers of VUZy, out of a total teaching staff of 366,000 only 124,000 have an advanced degree (either candidate or doctor). Yet the opportunities for instructors without such degrees to obtain them while fulfilling their teaching obligations are not propitious.\*

Soviet educators and economists are aware of the difficulties that narrow specialization has created for the Soviet educational system in a time of rapid changes in technology and industrial production. In recent years a trend towards the creation of greater research opportunities can be observed at institutions of higher education. The reasons for this are not entirely educational, i.e., for the sole benefit of students and

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\*Initially all academic degrees were abolished by the Bolsheviks. But by 1935 two advanced degrees, candidate and doctor, had been reinstated. They are in the nature of post-graduate degrees, -- candidate, corresponding roughly to the American Ph.D. and a more advanced degree, usually only held by full professors or comparable research personnel -- the doctor. For a good account on the history of advanced training and degrees see N. DeWitt, Soviet Professional Manpower, op. cit., 187ff. In 1970, a total of 23,600 persons with a doctor degree and 224,500 with a candidate degree were employed in academic institutions. This includes universities, VUZy, research laboratories and institutes, and the various academies. 18,100 individuals held senior academic positions: members and corresponding members of the academies and full professors. With few exceptions these hold a doctor degree. Narodnoe obrazovanie, op. cit., p. 246.

the teaching staff, but are in part due to the growing need for R & D in the economy. Because of their narrow focus, research institutes directly attached to industry or other branches of the economy are not always achieving desired results and the academic research institutes have limited manpower. At present, both academic research institutes and laboratories, as well as institutions of higher education are encouraged to accept research contracts from economic enterprises and organizations. As an incentive they are allowed to use income from such contracts to improve their facilities.

Recently introduced curricula reforms also attempt to meet the problem of narrow specialization by offering more broadly based general and theoretical courses and by extending into related fields so as to provide the student with some appreciation of the interdisciplinary nature of much of his work and give him the necessary versatility. The curricula are also designed to allow for continuing education and plans are under way to expand "refresher programs" to keep the stock of specialists in touch with recent developments in their discipline.

In spite of the rapid growth of the student population at the various institutions of higher education, the demand today far exceeds the available places. The immediate reason for the pressure created by social demand at the higher education level is due to the rapid increase of graduates from the complete secondary school. In 1928 when 28,700 students graduated from secondary schools, nine out of every ten high school graduates entered higher schools; by 1940 the proportion had decreased to five out of ten; in 1950 it rose again to eight out of ten; it fell by 1960 to 2.5 out of 10; and in 1973, when about 700,000 students graduated from high school it reached a ratio of 2 to 9. As the date when complete

secondary education is to be made compulsory for all approaches, predictions are that the ratio will fall as low as one out of ten.\* The reason for this development is that the Soviet Union keeps a tight lid on all expansion of higher education in accordance with the projections of manpower planning. There is not only unhappiness among potential students and their parents about this policy, but social scientists and other members of the academic establishment have been critical of the restrictions which they regard as excessive. Some of the critics regard the projections as entirely inadequate, given the anticipated rapid advance and change of technology. They feel that the number of students graduating annually from institutions of higher education should be equal to about 10% of the total number of scientists and higher technical personnel of the country. This, they point out, had been the case between 1950 and 1965, but since then the figure has dropped to as low as 8.6%. Their argument is that the need for people with higher education is still great, which they say is demonstrated by the fact that in 1967 only 68% of the managers in industry were graduates of higher education institutions and that in 1970 only 52.7% of secondary school teachers had a higher education.\*\*

The existing general labor shortage, such critics claim, will not be overcome by directing those unable to obtain higher education into the labor force. Rather, greater automation and the use of sophisticated technology is, so they maintain, the only way to meet the problem, and this would require expansion of higher education.

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\*Literaturnaia gazeta, no. 42, Oct. 18, 1972, p. 10.

\*\*Ibid., see also pp. 63-64 below.

Yet, there are also indications that the imbalance between the supply and demand for highly trained specialists may in some disciplines be a matter of oversupply. Current figures show the distribution among students of higher education by broad categories as follows: 45% train in universities, in education and the humanities, including arts; 40% engineering, 7% agricultural specialities and 8% in health and physical education.\* Given the clearcut nexus between manpower planning for the economy and the educational program at the higher and specialized secondary level, it is not surprising that from the beginning proportionately greater emphasis was given to training in the exact sciences and in engineering disciplines. Thus, between 1928 and 1969, the share of engineers among graduates from institutions of higher education rose from one fifth to one third of the total number. At the same time, there has been a noticeable increase in the proportion of engineering and technical personnel to the number of workers. Between 1950 and 1966 alone the former increased by 241%, while the latter increased by a mere 187%. By 1968 a total of six million graduate engineers and technicians were employed in the national economy, which equals 40% of all specialists at the intermediate and higher level and corresponds to about one fifth of Soviet personnel in predominantly intellectual occupations. Altogether, engineers are today no longer an elite group. This is clearly demonstrated by the average ratio between graduate engineers and intermediate level technicians, which for 1968 amounted to 1:1.75, although some Soviet experts set the desirable rate at 1:3 or even 1:4. As evidence, they point to the large number of graduate engineers, especially among young engineers, who at present are

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\*Report by V.P. Yeliutin, U S S R Minister of Higher and Specialized Secondary Education, Pravda, July 18, 1973, p. 4.



filling positions which could just as well be held by technical personnel. A survey conducted in Leningrad showed that more than half of the young engineers were overqualified for the work they performed.\* And indications are that this condition is relatively widespread and not merely a phenomenon for cities such as Leningrad or Moscow, which are much preferred places of residence. The reason for this discrepancy between qualifications and work assignments is, however, only partly due to a lack of trained technicians. In part, it is due to the absence of economic incentives to make efficient use of trained labor resources, a condition which is only slowly being mitigated by recent economic reforms.\*\* In part, it too reflects the desire of Soviet management to obtain prestige for their enterprise by showing a large proportion of highly trained staff on their personnel roster, a tendency which has also been observed in the United States.

The question arises whether manpower planning agencies in this instance have accepted deficient data on personnel requirements, such as inflated qualifications submitted by the enterprises - or whether the existing surplus of engineering personnel has led to the hiring of overqualified specialists. In a period such as the sixties, when the number of graduates in engineering expanded drastically, it is conceivable that a distortion in qualified manpower supplies could have been caused also

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\*S. A. Kugel and O. M. Nikandrov, Molodye inzhenery, (The young engineers), Moscow, 1971.

\*\*Until the reforms, success indicators of Plan fulfillment did not depend on efficient use of labor resources. The reforms in fact were designed to counteract the underutilization of labor and the attending low level of labor productivity.

by unduly slow turnover at the higher level. The previously mentioned figures, which show that in 1967 only 68% of managers in the Soviet Union had completed higher education - and men with engineering degrees have traditionally held managerial positions in the USSR. -- suggests

that senior management personnel have been able to hold onto their positions although they lacked educational qualifications comparable to those of their junior staff.

Finally, the balance between various scientific and engineering disciplines is not easy to project when policy decisions at the national level create sudden demand for manpower in a specialized discipline. When new training facilities and programs must be developed, the lag will be substantial. Thus, the Eighth Five Year Plan for 1966-70 included, among others, an extensive program of land reclamation throughout the Soviet Union (irrigation, drainage and desalination). However, by 1973 the whole country counted only 200-300 qualified specialists in land reclamation, entirely inadequate to direct the many widely dispersed projects in progress. The poor results of the costly program are being blamed for it.\* Similar bottlenecks developed for specialists in the chemical and petrochemical industries during the sixties.

Imbalances in the supply of labor are difficult to avoid with a relatively inflexible, highly detailed system of manpower planning. Soviet planners strive to obtain exact figures and on this basis set narrow limits for access to professional training. However, since Stalin's death, as administrative constraints were removed and employment opportunities improved, the country has experienced a growing mobility of manpower at all levels of training. Problems arise when such human factors as preferences for residence in a particular area, or restlessness among young who move from job to job, tend to distort even the best manpower projections. In addition, the increasingly complex economy and

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\*Sel'skaia zhizn, August 9, 1973.



rapid technological change make exact manpower projections as required by Soviet planning more hazardous than ever.

The new training programs which promise to prepare more broadly educated specialists with greater versatility will permit greater substitutability, but they are also likely to facilitate greater choice in employment and mobility for the individual. As Soviet society becomes more affluent, it may be possible that restrictions on admissions will be loosened, at least somewhat. At present, some Soviet critics assert that the selection process is not efficacious in providing access to higher or specialized secondary education for the most deserving, while allowing individuals with poor motivation to get in. And an increasing number of voices are raised demanding that higher education not just be geared to provide highly trained cadres, but that those who desire and have the capabilities be given the opportunity to study. Expansion of the humanities departments especially is recommended; and broader and more varied means of access to higher education are called for, such as programs allowing for self-education or allowing graduates from technicums easy access to higher education.\*

That access to higher and specialized secondary education today is provided without discrimination against women and nationalities can be demonstrated by the figures shown in tables III, IV and XI. As has been noted previously, there is a tendency for women on the average to be better educated than men, especially among the younger generation. Thus, for every 1000 persons between the ages of 20 and 30, the educational level for men and women according to the 1970 census is as follows:

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\*Komsomol'skaia pravda, February 9, 1973, p. 2 and Literaturnaia gazeta, No. 42, October 18, 1972, p. 10.

	Men	Women
Higher education	41	59
Incomplete higher education	48	49
Specialized secondary education	93	159
General secondary education	291	312
	<hr/>	<hr/>
Total	473	579

At the beginning of 1972, over ten million graduate specialists (3,800,000 with higher, the other with specialized secondary education) or 59% of that category in the labor force were women. It is only at the highest level in the field of sciences that the representation of women noticeably declines. Only 39% of Soviet scientists are women and they comprise only 27% of degree holders at the candidate level and a mere 13% at the doctor level.\*

Higher education is today widespread among the various nationalities: Georgians, Ossentians, Altay, and above all Jews show a higher proportion of their population with higher education than both the national average and the average for Russians (see table IV).

On the other hand, there is every indication that the rural population is still seriously underrepresented in institutions of higher education, although Soviet authorities have been making special efforts to equalize opportunities for rural youths. The major problem is that (a) rural youths tend to leave school earlier and in larger numbers than their urban counterparts, and (b) rural high schools do not provide as good an education as the larger, well equipped urban schools. The latter

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\*Figures are taken from the article by V. Perevedentsev, op. cit.

is largely due to the demographic dispersion of the population which cannot support the same size schools as can urban centers. Although nationwide statistics on the consequences of these conditions have not been published, general reports and individual studies attest to this fact and is supported by some of the measures taken by Soviet authorities in order to counter the existing disadvantages for rural youths. A survey of young graduate engineers in industrial enterprises in Leningrad shows the following distribution of parental occupations:\*

	Parental Occupations in Percentages	
	fathers	mothers
Workers	24.7	28.4
Kolkhoz farmers	4.2	5.6
Specialists with higher education	35.4	20.0
Specialists with secondary education	10.0	17.4
Kolkhoz specialists with higher education	1.5	0.8
Kolkhoz specialists with secondary education	2.2	0.7
Administration personnel in the economy	7.2	3.3
Book keepers, trade employees, etc.	3.8	10.3
Other	11.0	13.8

Even when account is taken of the facts that the survey was conducted in Leningrad and the profession and place of work are more likely to attract urban youths, the excessively low representation of rural youth

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\*Kugel and Nikandrov, op. cit., p. 171.

is clearly demonstrated. Special provisions and programs designed to attract gifted students from rural areas are attempting to alleviate their disadvantages, but only a concentrated settlement pattern for the rural population is likely to bring about true change. This would not only allow for larger and better schools, but would provide a culturally enriched life, the flow of information and above all a modernized social setting - all conducive to intellectual growth and greater awareness of educational opportunities for the young. Soviet authorities are aware that rural youths do not only lack adequate educational preparation, but that they face special problems in adjustment and orientation. For these youths, as well as for selected individuals from among workers and army veterans who were identified as having the needed potential for higher education, special preparatory divisions\* at a number of institutions of higher education have been created to prepare such students for admission, to obtain a better social balance among students and to spread the recruiting network, so as to mobilize new creative talents. In some sense this is an admission that the present education system does not function adequately as a selection system. It also appears as a revival of the "rabfaks." And, as the experiences of the twenties and thirties showed, it is not enough to help the educationally disadvantaged to meet entrance requirements: for such programs to function properly it is necessary that students receive continuous support for at least the first years of study; else, a large proportion of failures and drop-outs can be expected.

As Soviet higher and specialized secondary education is attempting to adjust to meet the requirements of an increasingly complex economy

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\*See chapter II, p. 43.



which is beset by the need to keep up with rapid technological change, more openness and flexibility in admission policies, structure and programs of the system will be required. It is likely that the ties developed between economic enterprises and organizations on the one hand and educational institutions on the other will continue to expand. It is also likely that continuing education, especially in the form of refresher programs, will become more prevalent and that in order to improve overall quality of education, greater emphasis will be placed on research experience for trainees and the upgrading of teacher qualifications.

## CHAPTER IV

### Lessons for Developing Countries from the USSR

Before we suggest how Soviet experience may be relevant to improvement of educational policy in developing countries, we note certain basic features of Soviet education to underscore the extent to which that country's practices are bounded by economic and political realities. No one can contend that Soviet education is open and expansionist at the higher levels; indeed, it is not even thoroughly meritocratic.

1. Soviet education, in contrast to the Chinese model, has been basically geared towards satisfying the needs of the urban/industrial sector, i.e., the educational system has reflected the needs of the growing Soviet industry. The peasantry and the agricultural sector as a whole were to bear the costs of rapid industrialization by furnishing both labor and foodstuffs, but were to receive few if any benefits during most of the Soviet era. For years policy was designed to attract rural youths to the urban/industrial areas, and not keep them on the farms. Today the rural/agricultural sector is still the most backward and economically deprived in the USSR. Those educational programs specifically developed to meet the needs of the rural/agricultural sector (especially agricultural mechanics and other vocational-technical training) often did not serve the needs of providing trained manpower for the rural regions, but rather, acted as transmission

belts for urban immigration.\* It is generally agreed that since the thirties education has been a primary means for the urban labor market to obtain the services of rural youths. As this condition persists it poses a problem at a time when several rural regions are experiencing serious labor shortages, especially for able-bodied educated youths.

Generally, rural youths have fared poorly under the highly competitive conditions which determine access to higher education. Rural general education schools are often small scale, provide inferior services (teachers, for example, prefer urban schools), and are frequently located in a culturally dismal setting. The wide dispersion of schools, especially secondary schools, the relative scarcity of boarding facilities and their cost to the student's family all are to the disadvantage of the rural child. General education programs are not specifically geared to rural life, though vocational and work programs have been introduced. To counter some of the disadvantages experienced by rural youths in obtaining access to higher education, special preparatory programs as well as quotas for preferential admissions have been established.\*\* These, however, are at best palliative measures.

On the other hand, children from urban low income groups do not face the same disadvantages. While it appears that completed secondary education followed by higher education has been more prevalent among children from affluent, educated families than it has been from among blue collar,

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\*See Kahan, "The Economics of Vocational Training in the USSR," *op. cit.*, pp. 76-77. Kahan suggests that this effect was not entirely unintentional: it was less expensive to train rural youths before moving them to urban centers.

\*\*See Chapter II, pp. 43 above.

low income groups, this is more a question of social and cultural factors affecting the student and his family, and is only marginally due to the economic status of his parents (well-off parents can afford private tutoring and the means to replace or supplement the student's modest stipend). Thus urban students, even from low income groups, are able to compete for access to specialized secondary or higher education, provided they have the necessary talent and motivation.

2. Since all education in the USSR is free of charge and students in other than general education institutions may qualify for stipends to cover living expenses which are generally based on both academic performance and need, the USSR has probably a better record than most developed countries in providing fair access to education for the poor. Yet, there is clear evidence that children from affluent, establishment parents are enjoying advantages in gaining access to higher education,\* due not only to enjoyment of a culturally richer environment, and an ability to afford private tutoring, but as recurrent press reports indicate, to a fairly common practice among parents of using parental influence and even bribes to assure access to higher education for their off-spring. The special problems which rural youths face in this respect has been dealt with under number 1 above.

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\*As the introductory statement by Jonathan Pool, Jeremy Azrael, Jaan Pennar, Ivan Bakalo and George Bereday to the chapter "Education" in the Handbook of Soviet Social Science Data, Ellen Mickiewicz (ed.) notes, ". . . the student body of the better Soviet universities and institutes is drawn predominantly from the ranks of the "state bourgeoisie" and is no more democratic in its composition than comparable groups in the West."

3. In recent years no attempt has been made to burden the students or their parents with a greater share of financial costs, which in any event is small in the USSR. Instead, various enterprises, institutions, or organizations who rely on highly skilled labor are encouraged to assume responsibility, including financial support, for educational institutions which supply them with needed trained manpower. The effects are difficult to assess at the present time and very little hard data has been made public on this score. In the area of pre-school education and rural general education, there exists a long standing program for enterprises and collective farms to finance the building of such facilities.

4. Controlling school enrollment at various levels has never been much of a problem in the rigorously regimented society of the USSR. After the initial period of instability of the early twenties, official efforts were directed towards providing universal general education at the primary level, with secondary education (especially senior secondary education) and higher education not readily available. Centrally controlled investment in education of various kinds based on manpower projections directed social demand for education into established channels and the labor reserve system assigned students to schools and jobs. Fees for senior high school and higher education, introduced in 1937 and only abolished in 1956, placed an added restraint on social demand for education, at least for poorer families. The next phase saw the expansion of secondary education. Higher education remained at first relatively free from pressures of social demand, since the number of candidates (senior high school graduates) remained relatively small until the early fifties, i.e., the major shut-off valve proved to be high school graduation. As the number of secondary school graduates grew, restric-

tions controlling access to higher education became more crucial. Presently, at a time of almost universal secondary education, social demand for higher education is pervasive. Nevertheless, restrictions of access to higher education are maintained by use of the numerus clausus with the aid of strict selection procedures including competitive examinations. Access to specialized secondary education is similarly regulated. These measures were developed in accordance with manpower requirements determined by manpower planning. While continued expansion of general education was fostered, training of qualified manpower remains narrowly circumscribed by manpower projections under the Economic Plan, and the Soviet Government is committed to maintain full employment by providing trained people with suitable jobs.

5. Under the Soviet system wages and prices are fully administered. During the early decades substantial wage rate differentials were instituted for skilled as against semi-skilled and unskilled labor. Such differentials have since declined as in all developed countries. The comprehensive system of manpower planning, which is implemented by suitable hiring practices and labor legislation makes for broad integration between the educational sector and the economy.

What guidance, then, does the USSR offer to developing countries as they seek to make their educational systems more functional? We do not, of course, suggest that there is a single pattern of education in developing nations

nor that all such countries face similar problems. We do feel, however, that the Soviet experience offers a number of applications that are potentially valuable in the developing world generally and that are substantially different from the policy prescriptions that the developing nations sometimes receive from Western European and North American experts.

(i) In response to the finding, not easily contradicted, that the classical curriculum so many developing nations inherited from their former colonial masters is not functional in today's world, some developing countries have decided to shift curricular emphasis towards skill training, called vocational education. This attack on classical curriculum focuses on the secondary school. Soviet experience would indicate that such a response to inappropriateness of curriculum is unwise. The objective should be to provide high level general training through the lower level secondary schools, emphasizing language, including writing, mathematics, and science.\* These subjects are seen as the basis for learning not only the higher manual skills but also for acquiring competence to work in the various occupations described by the term "technician." Except that the classical curriculum may place too much emphasis on foreign literature of no particular meaning to life in the given country, the problem becomes one not so much of inappro-

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\*It is not intended to suggest that LDC's have actually transformed lower secondary education into skill training nor that this would even be possible, but the point is that vocationalization of secondary education is often presented as a major, rather indiscriminate objective, while improvement of quality of general secondary education has low priority.

priateness of curriculum as one of inadequate standards of quality.\*

(ii) Universities in many developing countries resist change. Yet, from almost any perspective chosen, change is needed. In Asia, the programs taken by students often lack depth and specificity. The Soviet experience suggests that intense specialization is the sine quo non of higher education. Whereas, general education is the hallmark of formal programs through lower secondary school in the USSR, specialization takes over with a vengeance in higher education. True, the rigidity and narrowness of Soviet higher education is said to be inappropriate in the light of the country's rapid technological advance, but this is not a condition the developing nations will face for a long time to come.

On the other hand, in Latin American universities, specialization is extreme, but various specialities are much overcrowded, e.g., law, relative to the occupational requirements of the countries. In the USSR, the number of places in the different specialities are regulated by projections of future manpower requirements. For all the deficiencies in manpower projec-

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\*The preference of production executives in a sample of U.S. manufacturing firms for high school graduates who had superior general secondary training (language, maths, sciences) over those who were graduates of vocational secondary schools was displayed in two papers of one of the authors: C. Benson and P. Lohnes, "Skill Requirements and Industrial Training in Durable Goods Manufacturing," Industrial and Labor Relations Review, vol. 12, No. 4, July, 1959, pp. 540-553 and C. Benson and P. Lohnes, "Public Education and the Development of Work Skills," Harvard Educational Review, vol. XXIX, No. 2, Spring, 1959, pp. 137-150. The manufacturers reported that what they looked for, in general, were new, young employees who were quick to learn, rather than employees who had been given an introduction - and rarely more than that - to machine trades, etc., under conditions, i.e., conditions in secondary vocational schools, that were remote from the pace and standards of the modern workplace. It is believed that these observations are still appropriate today, and especially in the developing nations.



tion techniques one can point to, along with consequences of those deficiencies, it might well be that control over university specialities by manpower controls is preferable in the developing country context to any known alternative.

(iii) In many developing countries, university attendance is strongly a matter of class and caste. The USSR has sought strenuously, though not with overwhelming success, to break the link between privileged birth and university entrance. The developing nations, almost all of them, could well emulate the effort, if for no other reason than symbolic. Moreover, to some degree, university admission in the USSR is dependent on the applicant's demonstrated and estimated commitment to nation-building. This is also a practice that deserves much wider application. Lastly, on this topic, the Soviet Government provides students with virtually all the costs and expenses of attending university. In return, the Government expects students to work hard in preparing themselves for their examinations, spending time neither in slothful pursuits nor in gainful employment. The commitment to studies thus found in the USSR, seems, on the average, to be stronger than that found in the U.S. and in most developing countries as well.

(iv) Developing countries in Asia, particularly the larger ones, seem inclined to "give up" on achieving universal literacy, even as they continue to include literacy among their social objectives. The USSR demonstrates that a large nation can provide literacy for its population, notwithstanding that the population at the time that literacy was achieved was mainly rural and presumably "backward." We do not claim that we have evidence to convince that general literacy offers gains in productivity in the short run, either in the monetized or non-monetized sectors of the economy. Indeed, correlation between percent of population literate and income per capita in the

developing world is weak.\* However, we support the objective of universal literacy on equity grounds in the first instance: where economic power is held predominantly by the literate, which is the general case, spread of literacy is one step to prevent abuse of that power. It is interesting to note, furthermore, that the Soviet authorities, instead of trying single-mindedly to prescribe one dominant language, see to it that the schools offer instruction in a large number of local languages - not, of course, that there isn't one dominant language in the USSR. The point is that language skills in the first instance are often most easily built on the basis of a local language.\*\*

(v) When the post-revolutionary government in Russia tackled the job of improving and developing the educational system, they concentrated initially on primary schools. This is in line with a recommendation made by one of the authors in 1970 in Pakistan. "It would be desirable to have a progressive or rolling readjustment of the general education system with respect to quality. Presently, levels of expenditure in many schools and colleges fall below the threshold at which one begins to provide instruction

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\*The real costs of attaining universal literacy, moreover, may be quite low in many LDC's, providing governments have the power to mobilize educated unemployed (and underemployed) to the task. These persons require a subsistence income in any case and possibly little more than that is needed to obtain their services as teachers.

\*\*In U.S. experience, difficulties of teaching young children in a language different from the one they used at home were documented in the Report of the New York State Commission on the Quality, Cost and Financing of Elementary and Secondary Education (Fleischmann), New York, Viking Press, 1973, Vol. II. Subsequently, in 1974, the U.S. Supreme Court declared in the Lau decision (Lau et. al. v. Nichols et. al., 414 U.S. 563, (1974)) that children have a constitutional right to instruction by teachers who are fluent in the language used in the childrens' homes.

in an effective manner, i.e., a manner to cause lasting effects in the minds of the student. Resources do not exist to reform the whole general education system overnight. Further, education is sequential; hence, an effort to create high quality in the colleges would run into the obstacle that the students are not qualified by their previous education to benefit greatly from improved instruction. One must be selective and the place to start is in the primary schools . . . once improvement had been well set at the primary level, the middle level would be tackled, and so on."\*

(vi) The Soviet system of education is largely free of sex discrimination. In the Middle East and much of Asia, China excluded, women are effectively barred from educational opportunities. We quickly admit that European countries generally, the U.S., Canada, Australia, etc., do moderately well in seeing that opportunities are made available to women, but the Soviet Union excels in this matter and it began making substantial progress at a time when it was still quite poor economically, just as most underdeveloped countries are.

Nations which do not provide education generously for females suffer under several handicaps. In the first instance, they forego the service of approximately half of the superior intellects that would otherwise be available to them. In the second, women with the necessary minimum amount of education are more likely to be attracted to primary school teaching than are men. Primary school teachers in the developing world, most of it anyway, receive low salaries, and this is not a situation that is likely to change anytime soon. But women suffer salary discrimination in general, so the

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\*Charles S. Benson, Finance of Education, Training and Related Services in the Public Sector (Islamabad: Planning Commission, Government of Pakistan, 1970), p. 78.

teaching salaries do not appear to be so differentially low to them as they do to men. Hence, we could expect schools to be able to employ a more energetic, committed female for the given salary than a male, on the average, because of the lack of other opportunities open to females.\* The loss is compounded when developing countries attempt to launch non-formal education programs to provide, inter alia, instruction to village women about nutrition and health care of their infants, for there are not nearly enough female teachers - the obvious choice to serve as part-time, non-formal education staff members - to carry the work into the village homes; men obviously cannot do it. In the third place, given that nursing and para-medic work is a natural line of endeavor for female high school graduates, the developing countries, those, that is, that slight the education of women, forego an opportunity to undertake a very important approach to income redistribution.\*\* It may well be more important to villagers to have improved medical and dental service, reducing the need to rely on "natural medicine," than to have a few more rupees or pesos in cash income. In the fourth instance, educated women seem much better able to fulfill their roles as wives, mothers, and family counselors.

(vii) In providing supplementary education services, the Soviet system appears to be pre-eminent in the world. The Government recognizes that the formal education system cannot be all things to all students, for the costs

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\*See Nagat Morsi El-Sanabary, A Comparative Study of the Disparities of Educational Opportunities for Girls in the Arab States, Ph.D. Thesis, School of Education, University of California, Berkeley, 1973.

\*\*It may be objected that females would not be allowed to engage in nursing and para-medic work in Islamic countries. However, two points should be made. In the more economically advanced Islamic countries, such as Turkey, females are found in such occupations, so these problems may give way to time and per capita income growth. Second, in the poorer Islamic countries, females are deprived of medical services and only females can acceptably treat them. Because females are more responsible for child rearing than males, the slighting of female health services must, in turn, have deleterious effects on the health of their children, i.e., the rising generation.

would be astoundingly high. What the formal system can do, up to and including secondary level, is provide instruction in basic, preparatory exercises, giving youth a kind of "common denominator" intellectual bill of fare. The Pioneer Palace program, on the other hand, caters to specialized interests, both in exploratory ways and, for those who are able to benefit, in depth.

For example, it would make no sense to equip each secondary school with an expensive telescope, cameras, and a Ph.D. in astronomy as instructor for the 10 to 20 students who might be seriously interested in the field. Some of the standard courses may offer an introduction to this exotic branch of science and that must suffice, as far as the contribution of the formal education system goes. But it does make sense to include a first-rate astronomy lab in the Pioneer Palace of any large city, for the catchment area of the Palace may draw 200 students who are interested seriously in the subject. In this instance, voluntarism, i.e., the making available of opportunities to youth who are willing to spend their time freely and without compulsion to take advantage of them, becomes a workable form of rationing of scarce resources.

It may be contended, of course, that developing countries need few astronomers. That misses the point. By having such opportunities as we have described available, at least in major population centers, some youth would be sufficiently stimulated to take their conventional studies more seriously, thus to end up being better chemists, agronomists, etc., which types of skills the developing do need.

(viii) It seems to be a characteristic of education in developing countries that many schools are too small to function effectively and provide even that basic level of specialization the formal system itself must tend.

Often, secondary schools lack the necessary size to afford science labs and a balanced science faculty at any tolerable level of costs. The USSR appears to have been successful in consolidating schools up to an appropriate size.\* Developing countries could well examine just how this was done.

(ix) The Soviet Government places considerable emphasis on skill development programs that are conducted in the workplace. Yet, it is well-known that only the larger factories, offices, etc., can carry on a proper program of training.\*\* In the USSR, the larger firms appear willing to train in excess of their own needs, thus supplying smaller organizations with the skilled manpower they require.

Study of how such an arrangement was established would be a useful exercise for the education and training authorities in the developing countries. At the present time, it is generally difficult to obtain information about the geographic dispersion of large vs. small companies in a given industry, the common and specialized requirements of firms in different

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\*See page 30 on the consolidation of Soviet schools and the standardized sizes see V.F. Kotliarov et. al., Organizatsiia i planirovanie narodnogo obrazovaniia v Belorusskoi SSR (Organization and Planning of Public Education in the Belorussian SSR), Minsk, 1971. A substantial part has been translated in Soviet Education, vol. XV, No. 11, September, 1973.

\*\*On-the-job training is not a costless process for the enterprise. Trainees spoil materials and damage equipment. They require time of craftsmen that could otherwise be put on production. Large firms, because they require relatively big numbers of trainees, can spread these costs so that they can be absorbed without difficulty. This includes costs of sending trainees out of the workplace for a few hours each week to receive complementary academic training in such subjects as maths, science, drafting, etc. Large firms, lastly, are better able, simply by their size to channel trainees into those specific lines of work they are best fitted by nature and aptitudes to do - and to re-channel trainees when the initial screening process made an error.

industries for particular types of skills, the training potential of different firms, the types of incentives that are appropriate to use in stimulating on-the-job training programs that meet acceptable standards of quality, and so on.

As we have said, the educational systems of developing nations are themselves at different points of development. Each tends to have certain identifiable strength and weaknesses. Thus, not everything that, in principle, is worth copying from the USSR should be copied by any given country. Yet, by and large, the new directions offered by Soviet education are not necessarily very expensive.\* No massive expansion of higher education is called for, and "vocalization" of secondary education, with attendant cost for teachers, labs, and workshops may in many circumstances be socially unacceptable.

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\*Reliable, comprehensive data on the costs of Soviet education for the early years are scarce and, in addition, do not provide a basis for meaningful comparison with conditions in Western nations. This is due in part to the budgetary system and accounting practices, as well as to the manipulated value, both internal and external, of the ruble. However, the following figures will illustrate the approach. During 1933/34, when significant expansion of general education had gotten underway, a total of 22 million students were enrolled in the system. Of these 80.7% were enrolled in grade school (grades 1 through 4), 18.5% were attending grades 5 through 7 (incomplete secondary) and 0.8% attended grades 8 through 11 (senior or complete secondary). The average expenditure per pupil was 77 rubles a year with the total budgetary expenditure for general education for the year reaching 1.7 billion rubles. Harold J. Noah, Financing Soviet Schools, New York, Teachers College, Columbia, 1966, p. 103. As DeWitt has noted, the low costs per student rose rapidly once enrollment in secondary school spread. Nicholas DeWitt, Education and Professional Employment, *op. cit.*, p. 70. Thus, by the school year 1940/41 total enrollment had reached 34.5 million with a distribution of 61.8% grade school, 31.2% incomplete secondary and 7% complete secondary. Budgetary expenditures had risen to 8.86 million rubles and cost per student to 223 rubles. Noah, *op. cit.*, p. 103. The rising costs during the years since are not only due to growing enrollment and the expansion of secondary school attendance, but they also reflect the general upgrading of the educational services, such as better trained and paid teachers, better facilities, including boarding schools and better equipment. Costs for other programs were also initially very modest and rose only with rising GNP.

What is required to benefit from the Soviet experience is considerable political power and social will. Many of the reforms initiated in developing countries look as good at first glance as those carried out in USSR, but the phrase "carried out" is the operative one. Too often, LDC reforms are exercises in imagination of what should be done if the government could only exert sufficient pressure in their behalf, if the government could withstand counter-pressures of teachers and students, etc. The Soviet government was able to maintain pressure in behalf of its educational reforms and it was able to do so in part because of the fact that it had a relatively closed economy and in part because of the multi-national character of its society.



TABLE I

Student Enrollment and GNP in the Soviet Union

	<u>Population*</u> (in millions)	<u>Grades 1-4***</u> (in millions) (as % of pop.)		<u>Grades 5-8***</u> (in millions) (as % of pop.)		<u>Grades 9-10(11)***</u> (in millions) (as % of pop.)		<u>GNP***</u> (in billions of 1966 U.S. \$)	<u>GNP</u> <u>Per Capita***</u> (in 1965 U.S. \$)
1914-15	159.2 (1913)	9.00	5.65%	0.05	0.03%	0.15	0.09%	62 (1913)	447 (1913)
1922-23	136.1 (1922)	3.7	2.72%	--	--	--	--	--	--
1927-28	147.0 (1926)	9.91	6.74%	1.40	0.95%	0.052	0.04%	66 (1928)	436 (1928)
1932-33	160.6 (1931)	17.68	11.01%	3.58	2.23%	0.003	0.001%	71 (1932)	442 (1932)
1937-38	170.6 (1939)	20.76	12.17%	8.25	4.84%	0.145	0.26%	98 (1937)	591 (1937)
1940-41	194.1 (1940)	21.38	11.01%	11.96	6.16%	1.180	0.61%	119 (1940)	603 (1940)
1950-51	181.6 (1951)	19.67	10.83%	12.81	7.05%	0.716	0.39%	140 (1950)	777 (1950)
1955-56	197.9 (1956)	13.58	6.86%	11.52	5.82%	2.998	1.51%	201 (1956)	1007 (1956)
1958-59	208.8 (1959)	17.73	8.49%	9.52	4.56%	2.204	1.06%	241 (1959)	1114 (1959)
1962-63	223.5 (1963)	19.34	8.65%	16.23	7.26%	2.720	1.22%	285 (1963)	1268 (1963)
1965-66	232.2 (1966)	20.17	8.69%	18.11	7.80%	4.863	2.09%	348 (1966)	1493 (1966)
1970-71	243.9 (1971)	20.46	8.39%	19.86	8.14%	4.764	1.95%	395 (1969)	1641 (1969)

\* TsSU SSSR, Naselenie SSSR 1973 (Population of the USSR in 1973), Moscow, "Statistika," 1975, p. 7, and Mickiewicz, op. cit., p. 51. Figures from 1940 onwards include the newly acquired territories. The table reflects the distortion in normal population growth caused by the war, especially the drastic decline of the birthrate from 1941 onwards. For hypothetical population estimates by age groups, 1946-1967, see DeWitt, Educational and Professional Employment in the USSR, op. cit., p. 581.

\*\* TsSU SSSR, Narodnoe obrazovanie, nauka i kultura v SSSR, op. cit., p. 78, Fitzpatrick, op. cit., p. 285, and N.A. Prokofiev et. al. (eds.) Narodnoe obrazovanie v SSSR, 1917-1967 (Public education in the USSR, 1917-1967), Moscow, "Prosveshchenie," 1967, p. 64.

\*\*\* Mickiewicz, op. cit., p. 93.

TABLE II

## Literacy Rate of the Population Ages 9-49\*

Urban and rural population	Percentage of literate population (ages 9-49)		
	Both sexes	Men	Women
1897	28.4	40.3	16.6
1920	44.0	57.4	32.2
1926	56.6	71.5	42.7
1939	87.4	93.5	81.6
1959	98.5	99.3	97.8
1970	99.7	99.8	99.7
Urban population			
1897	57.0	66.1	45.7
1920	73.4	80.6	66.6
1926	80.9	88.0	73.9
1939	93.8	97.1	90.7
1959	98.7	99.5	98.1
1970	99.8	99.9	99.8
Rural population			
1897	23.8	35.5	12.5
1920	37.7	52.2	25.2
1926	50.6	67.3	35.4
1939	84.0	91.6	76.8
1959	98.2	99.1	97.5
1970	99.5	99.6	99.4

\*Narodnoe obrazovanie, nauka i kultura v SSSR, op. cit., p. 21.

TABLE III

## Rate of Education for Men and Women\*

	Higher and secondary (including incomplete or junior high school)		Higher		Secondary	
	Men	Women	Men	Women	Men	Women
Per 1000 of population over 10 years of age:						
1939	127	90	11	5	116	85
1959	392	338	27	20	365	318
1970	522	452	48	37	474	415
1973	560	491	56	43	504	448
Per 1000 of population employed in the national economy:						
1939	136	104	16	9	120	95
1959	434	431	34	32	400	399
1970	654	651	68	62	586	589
1973	718	717	80	73	638	644

\*Narodnoe khoziaistvo v 1972 g., op. cit., p. 39.

TABLE IV

Achievements in providing equal access to education to various  
Soviet nationalities

	1*	2a*	2b*	3a*	3b*	4a(1)**	4a(2)	4b(1)**	4b(2)	5a***	5b
Total	241,720	94.3	93.9	17.3	4.2	6852.6	2.83	9988.1	4.13	927,709	0.38
Russians	129,015	99.8	99.8	0.1	3.0	4033.6	3.12	6425.9	4.98	611,883	0.47
Ukrainians	40,753	87.7	85.7	36.3	6.0	1031.2	2.53	1613.7	3.95	100,215	0.25
Uzbeks	9,195	98.4	98.6	14.5	3.3	139.6	1.52	131.5	1.43	12,140	0.13
Belorussians	9,052	84.2	80.6	49.0	7.3	204.1	2.25	337.7	3.73	18,968	0.21
Tatars	5,931	92.1	89.2	62.5	5.3	109.2	1.84	173.5	2.93	11,617	0.20
Kazakhs	5,299	98.4	98.0	41.8	1.8	96.8	1.83	104.9	1.98	7,905	0.15
Azerbaydzhanis	4,380	97.6	98.2	16.6	2.5	98.2	2.24	107.4	2.45	13,017	0.30
Armenians	3,559	89.9	91.4	30.1	6.0	128.1	3.60	102.1	2.87	20,194	0.57
Georgians	3,245	98.6	98.4	21.3	1.0	149.3	4.60	110.4	3.40	18,433	0.57
Moldavians	2,698	95.2	95.0	36.1	3.6	32.7	1.21	45.4	1.68	2,485	0.09
Lithuanians	2,665	97.8	97.9	35.9	1.9	66.8	2.51	103.3	3.88	8,168	0.31
Jews	2,151	21.5	17.7	16.3	28.8	356.8	16.58	181.8	8.45	64,392	2.99
Tadzhiks	2,136	98.1	98.5	15.4	12.0	29.6	1.39	26.8	1.25	2,358	0.11
Chuvashes	1,694	90.8	86.9	58.4	5.5	25.8	1.52	42.5	2.51	1,786	0.11
Turkmens	1,525	98.9	98.9	15.4	1.3	26.0	1.70	21.8	1.43	1,825	0.12
Kirgiz	1,452	98.7	98.8	19.1	3.3	24.0	1.65	22.2	1.53	1,902	0.13

	1*	2a*	2b*	3a*	3b*	4a(1)**	4a(2)	4b(1)**	4b(2)	5a***	5b
Latvians	1,430	95.1	95.2	45.2	2.4	43.2	3.02	62.6	4.38	5,953	0.42
Daghestanis	1,365	96.2	96.5	41.7	8.9	18.8	1.38	26.4	1.93	1,770	0.13
Mordvinians	1,263	78.1	77.8	65.7	8.1	13.7	1.08	26.8	2.12	1,069	0.13
Bashkirs	1,240	61.9	66.2	53.3	2.6	14.7	1.19	23.2	1.87	1,420	0.11
Estonians	1,007	95.2	95.5	29.0	2.0	35.7	3.55	49.5	4.92	4,693	0.47
Udmurts	704	89.1	82.6	63.3	6.9	8.4	1.19	16.3	2.32	503	0.07
Chechens	613	98.8	98.7	66.7	1.0	3.1	0.51	4.5	0.73	150	0.02
Mari	599	95.1	91.2	62.4	6.2	5.6	0.93	10.3	1.72	280	0.05
Ossetians	488	89.1	88.6	58.6	10.7	18.0	3.69	18.5	3.79	1,579	0.32
Komis	475	88.7	83.7	64.8	5.2	8.4	1.77	19.8	4.17	571	0.12
Buryats	315	94.9	92.6	66.7	2.7	12.4	3.94	10.5	3.33	1,185	0.38
Yakuts	296	97.6	96.3	41.7	1.1	8.1	2.74	11.2	3.78	614	0.21
Kabardinians	280	97.9	98.0	71.4	0.8	5.1	1.82	6.3	2.25	475	0.17
Karakalpaks	236	95.0	96.6	10.4	3.6	5.4	2.29	4.7	1.99	367	0.16
Ingush	158	97.9	97.4	71.2	0.9	1.3	0.82	1.4	0.89	100	0.06
Karelians	146	71.3	63.0	59.1	15.1	2.4	1.64	6.1	4.18	171	0.12
Touvinians	139	99.1	98.7	38.9	0.4	2.4	1.73	3.3	2.37	90	0.06
Kalmyks	137	91.0	91.7	81.1	1.5	2.1	1.53	3.2	2.34	148	0.11
Karachay	113	96.8	98.1	67.6	1.2	3.2	2.83	2.2	1.95	126	0.11

	1*	2a*	2b*	3a*	3b*	4a(1)**	4a(2)	4b(1)**	4b(2)	5a***	5b
Adyge	100	96.8	96.5	67.9	1.4	2.9	2.9	2.9	2.9	165	0.17
Abkhazians	83	95.0	95.9	59.2	2.8	2.4	2.89	2.1	2.53	208	0.25
Khakas	67	86.0	83.7	65.5	3.4	1.4	2.09	1.6	2.39	83	0.12
Balkars	60	97.0	97.2	71.5	2.5	1.3	2.17	1.5	2.50	111	0.19
Altay	56	88.5	87.2	54.9	3.2	2.6	4.64	1.7	3.04	65	0.12
Circassians	40	89.7	92.0	70.0	2.5	1.2	3.00	1.4	3.50	101	0.25

1. Population by nationality for 1970 (in thousands).
2. Percentage of population literate in native language: a) 1959 and b) 1970.
3. Percentage of population which is also fluent in a second Soviet language (1970): a) in Russian; and b) in another language.
4. Specialists with higher or secondary professional-technical education employed in the national economy according to nationality for 1970 (national economy includes the educational, health, scientific and governmental sectors).
  - a) higher education
    1. in thousands
    2. percentage
  - b) secondary professional-technical education
    1. in thousands
    2. percentage
5. Number of "scientific workers" by nationality - personnel with advanced degrees working in scientific research institutions, universities, and government, in both research and administration (at end of 1970):
  - a) in thousands
  - b) percentage

\*Narodnoe khoziaistvo SSSR v 1970 g., op. cit., pp. 15-17.

\*\*Narodnoe obrazovanie, nauka i kultura v SSSR, op. cit., p. 240.

\*\*\*Ibid., pp. 270-271.

TABLE V

The Composition of Students Accepted into Vocational  
Schools (in thousands)\*

	1940-45	1946-50	1950	1960	1965	1970
Total number of students admitted	3703	3568	385	864	1211	1837
Urban youth	1315	814	85	337	501	782
Rural youth	2388	2754	300	527	710	1055
Boys	2761	3218	355	729	981	1361
Girls	942	350	30	135	230	476

\*Narodnoe obrazovanie, nauka, i kultura v SSSR, op. cit., p. 222 and Narodnoe khoziaistvo SSSR v 1958 g., op. cit., p. 694.

Table VI

## The Training of Skilled Labor\*

	Total of trained workers (in thousands)	Those trained at the enterprise (in thousands)	Those trained in permanent vocational schools (in thousands)	Percentage of skilled workers within the labor force trained in permanent vocational schools
1941-1945**	2756	2261	495	18%
1946-1950**	2939	2261	678	23%
1951-1955**	2953	2480	473	16%
1958	3258	2605	653	20%
1965	4447	3407	1042	23.4%
1968	5464	4058	1406	25.7%***

\*Krevnevich, V. V. Vlianie nauchno-tekhnicheskogo progressa na izmenenie struktury rabochego klassa SSSR; (The influence of progress in science and technology on changes in the structure of the working class in the USSR), Moscow, "Nauka," 1971, p. 311. Figures include mechanics for agriculture.



Table VII

Graduates of Vocational Schools as Percentage of the  
Labor Force in Various Sectors of the Economy\*

	1965	1966	1967	1968
Total percentage of graduates within the labor force	21	19.8	21.9	22.7
According to the following sectors:				
Industry	10.6	10.2	12.5	13.1
Construction	28.5	26.3	29.9	31.0
Transportation	9.7	10.1	10.9	11.2
Communication	48.9	49.4	50.2	31.5
Trade and food services	--	10.0	11.0	20.3
Local industry and personal and household services	17.4	19.8	24.9	27.7
Other sectors	--	--	12.1	12.2
Agriculture	43.2	44.6	45.5	50.8

\*Krevnevich, op. cit., p. 312.

TABLE VIII

Training and Raising of Qualifications for Workers and Employees at  
Their Places of Work (in millions)\*

	1940	1946	1950	1960	1965	1970	1971	1972
Total number of workers and employees trained for new professions or specializations	1.9	2.9	2.6	3.0	3.7	5.0	5.1	5.2
number of workers	1.6	2.5	2.3	2.8	3.4	4.8	4.9	5.0
Total number of workers and employees who upgraded their qualifications through training	1.7	4.0	5.0	6.8	9.4	12.1	12.7	13.1
number of workers	1.5	2.9	3.5	5.4	7.2	9.0	9.3	9.6

The above data does not include the training of personnel on collective farms. In 1972 1.7 million people underwent training on collective farms for new professions and specializations or for raising their qualifications.

\*Народное хозяйство СССР в 1972 г., op. cit., p. 528.

TABLE IX

## Institutions of Higher Education (at the beginning of the academic year)\*

	1922-23	1940-41	1960-61	1965-66	1970-71	1971-72	1972-73
Total number of higher educational institutions	248	817	739	756	805	811	825
Students enrolled (in thousands):	217	812	2396	3861	4581	4597	4630
daytime programs		558	1156	1584	2241	2309	2386
night programs	217	27	245	569	658	647	636
correspondence programs	---	227	995	1708	1682	1641	1608

\*Narodnoe khoziaistvo SSSR v 1972 g., op. cit., p. 637.

TABLE X

## Admission to Institutions of Higher and Specialized Secondary Education (in thousands)\*

	1928	1932	1937	1940	1960	1965	1970	1971	1972
Number of students admitted to institutions of higher education:	42.8	245.8	158.3	263.4	593.3	853.7	911.5	920.3	930.2
to daytime programs				154.9	257.9	378.4	500.5	516.6	532.3
to night programs	42.8	245.8	158.3	6.6	77.2	125.2	127.4	125.4	125.2
to correspondence programs**	---	---	---	101.9	258.2	350.1	283.6	278.3	272.7

The projections for 1975 according to the ninth Five Year Plan envisage an enrollment of 977,000 with 582,500 attending daytime programs.\*\*\*

Number of students admitted to institutions of specialized secondary education:	56.2	424.0	368.7	382.9	769.3	1099.7	1388.4	1349.6	1346.6
to daytime programs				318.6	415.0	581.8	837.0	844.8	849.3
to night programs	56.2	424.0	368.7	12.6	130.0	170.1	159.7	157.5	152.3
to correspondence programs**	---	---	---	51.7	224.3	347.8	341.7	347.3	345.0

Projected enrollment for 1975 is 1,453,200 with 932,900 attending daytime programs.\*\*\*

\*Narodnoe khoziaistvo v 1958 g., op. cit., p. 835, and Narodnoe khoziaistvo SSSR v 1972 g., op. cit., p. 644.

\*\*Up to 1938 students in correspondence programs were included as students following individual extension courses.

\*\*\*Gosudarstvennyi piatiletnii plan razvitia narodnogo khoziaistva SSSR na 1971-75 g. (The government's Five Year Plan for the development of USSR public education for 1971-1975), Moscow, polit. literatury, 1972, p. 313.

TABLE XI

Women in Higher and Specialized Secondary Education  
(at the beginning of the academic year)\*

	1927-28	1940-41	1950-51	1960-61	1965-66	1970-71	1972-73
Percentage of women enrolled in institutions of higher education	28	58	53	43	44	49	50
studying for occupations in the following fields:							
industry and construction, transportation and communication	13	40	30	30	31	38	39
agriculture	17	46	39	27	26	30	32
economics and law	21	64	57	49	54	60	60
public health care, physical education and sports	52	74	65	56	54	56	56
education, art and cinematography	49	66	71	63	66	66	68
Percentage of women enrolled in institutions of specialized secondary education	38	55	54	47	50	54	53

\*Narodnoe khoziaistvo SSSR v 1972 g., op. cit., p. 650 and Narodnoe obrazovanie, nauka i kultura v SSSR, op. cit., p. 186.

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