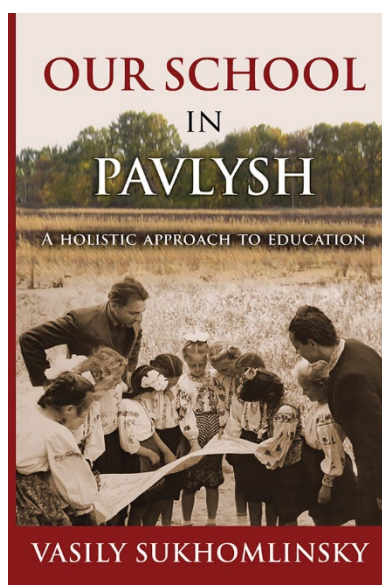


**Sample Passages from**  
***Our School in Pavlysh***  
**By Vasily Sukhomlinsky**



**Collective Research** (pp 96–101)

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*Collective research*

When each teacher delves ever deeper into the details and intricacies of the education process, analysing their work and the mental work of their students, there is a kindling of living thought among the staff who seek answers to questions posed by life itself. An educational idea provides the wings upon which collective innovation can soar. An idea inspires the staff, and there begins the most interesting and necessary thing in the life of a school—collective research.

Twenty years ago, while analysing one of the lessons I had visited, I began thinking about why students' answers were so dismal, so -colourless and inexpressive. Why were children's words not expressing their own living thoughts? I began to record these answers to -analyse students' vocabulary and the logical and stylistic elements of their speech. I realised many of the words and

phrases students used were not connected in their minds with clear concepts or the objects and phenomena of the surrounding world.

Analysing observations in my own lessons and those of my -colleagues, I tried to find answers to the following questions. How does a word find its way into a child's consciousness? How does it become an instrument of thought? How does a child learn to think with the help of words? How does thought, in its turn, develop speech? What were the weaknesses afflicting our educational management of that most complex and subtle thing in the spiritual life of a school—a child's thought?

My research focused mainly on my own work, my own lessons and the answers of my students. For example, one child was describing the journey of a drop of water. I was looking for an account of the awakening of the first spring streams, spring rains, a rainbow, the quiet lapping of a sleeping lake. These are things a child should speak about, describing the world that surrounds them and feeling themselves a part of living nature. But what did I hear? Tortured, clumsy phrases learned by rote: word combinations, the meaning of which was hazy to the children. I listened carefully and reflected on the children's speech and gradually realised that we, as teachers, do not teach a child how to think. From the very beginning of their school lives, we close a door on the captivating world of the children's natural surroundings, so they stop listening to the babbling streams, the sound of spring raindrops and the song of the lark. They just rote learn dry, colourless sentences about all these wonderful things.

I took my Grade 5 class to the school orchard. Half the sky was covered with a dove-grey rain cloud. The sun lit up a rainbow. The apple trees were in bloom—milk-white, pink and red—and the air was filled with the quiet humming of bees.

'What do you see, children? What excites you, delights you or amazes you?' I asked my companions. Their eyes sparkled joyfully, but they struggled to express their thoughts, to find suitable words. My heart ached for the children: words had entered their consciousness unaccompanied by vivid images. Instead of being exposed to sweet-scented, living flowers, they had been presented with dried flowers, pressed between the pages of a book, a mere reminder of their vibrant life.

No, we should not continue like that. Forgetting about the most important source of knowledge—the surrounding world of nature—we push children towards a world of rote learning, and in so doing, blunt their thought. We forget the lessons learned by classic educators such as Comenius, Pestalozzi, Ushinsky and Diesterweg.

Lesson after lesson, I began to take the children into that inexhaustible and ever-new source of knowledge—into nature—to the orchard, forest, riverbank and fields, and we began to study the art of conveying in words the subtlest observations of objects and phenomena.

A lark sings in the sky while the wind drives a billowing wave through a field of wheat, all the way to the horizon... Through a dark blue haze, far, far in the distance, ancient Scythian burial mounds reach up to the sky... Amidst 100-year-old oaks, in a forest thicket, babbles a transparent stream, while above it an oriole sings its artless song... All of these things should be described precisely and beautifully.

More and more new books appeared on my desk: educational essays about object lessons, dictionaries, books on botany, -ornithology, astronomy and flower growing. On quiet spring mornings I would walk to the riverbank, into the forest or orchard, and study the surrounding world, trying to convey as accurately as possible in words its forms, colours, sounds and movement. I started an exercise book to record my miniature compositions about a rose bush, a lark, a crimson sky, a rainbow. I began to call my excursions into nature ‘journeys to the source of living thought’. Gradually they became richer and richer in their purpose and in the forms of intellectual work undertaken by the children.

Sometimes I recite my miniature compositions and poems to my students. It gives me joy to share with them my thoughts and impressions of the surrounding world, nature and people. I notice the children are especially moved by any compositions and poems which reflect their own experiences. When one of my compositions or poems touches their hearts and souls, the children themselves take up their pens and try to express their feelings. It seems to me that sensitivity to language and the urge to express in words the subtlest movements of the human soul are among the most important sources of genuine human culture.

Here are two examples of such miniature compositions:

### *Autumn*

The warm, golden days of autumn have arrived. The air has become transparent and pure. Now we can see deep into the steppe. The distant Scythian burial mounds appear ash-grey in the gentle light of the distant sun. By the road is a bright chamomile flower. Drops of morning dew sparkle on its petals like emeralds—the melting remnants of the first frosts. Yet, the flower lives on and does not shed its petals.

In the evening, the sky turns greyish pink. Ravens, their dark shapes silhouetted against an orange-ashen sunset, seem like creatures from a fairy tale as they fly with wings outspread towards their nests. The forest stands quiet and thoughtful, only a few distant leaves rustling from the troubled stirrings of a cold autumn breeze. With each minute the field grows darker. It is as if the dusk is flowing in waves from the gullies and ravines, covering the earth and spreading a blanket over the forest. In the grey sky a lonely star loses its grip and falls to Earth.

### *Sunrise*

The sky blazes with the dawn. I am standing next to a field of clover. Its gigantic, multi-coloured carpet trembles as it is flooded each minute with waves of changing hue. It is as if it is being deluged with thousands of multi-coloured pebbles: sky-blue, lilac, pink, orange, crimson and gold. Now it is being sprinkled with sky-blue pebbles, but as soon as the eye manages to capture this hue, it turns to lilac, which then is transformed into pink. Then the pink disperses, and the whole field appears engulfed in flame. In the distance, where the earth meets the firmament, shines the blinding light of a golden rim. Soon the sun will rise.

A lark bursts from the clover and soars upwards, then halts. This trembling little ball of grey turns golden in the rays of the sun. Soon sparks of sunlight play in the drops of dew on the clover flowers, and bees hum over their opening petals. It is as if the whole field is singing, the whole world is singing, as spellbinding music floods the earth.

Then I turned my attention to my school lessons. The lessons I conducted were primarily lessons in thought. At one lesson, the children and I began to discuss the concepts of phenomenon, cause and effect. At my suggestion, the children began to seek cause-and-effect relationships in the surrounding world and describe them.

Before my very eyes the children's thinking gradually became more and more clear, rich and expressive. Their words took on emotional colouring and came to life. I became aware of an amazingly rich area for developing pedagogical skill, inexhaustible in its beauty: the ability to teach children how to think. This discovery inspired me, and I experienced the exceptional happiness that comes with creativity.

I told my colleagues about my thoughts and observations, and they began to accompany me on lessons out in nature. I read them my miniature compositions. One day in early autumn, the teachers and I walked to an oak grove to admire the trees' many shades of colour and attempted to describe this beauty as clearly and expressively as possible.

The teachers became interested in these journeys to the source of living thought, and began to take the children on similar excursions themselves. During spring and autumn, we began conducting nearly a third of our lessons outdoors, and nobody complained of a lack of time. The primary school teachers began to compete with me to see who could write the best miniature compositions.

Gradually our staff became focused on the idea of the unity of language and thought. We began to come together to discuss this interesting idea, and gradually our discussions gave birth to the understanding that every teacher, regardless of the subject they teach, must be a teacher of language. Language is our main pedagogical tool, and nothing can replace it. Nature, with its inexhaustible richness and diversity, is the main source of thought and the main school for developing intellectual ability.

These truths gradually became educational convictions shared by all our staff. The primary school teachers acquired exercise books for their miniature compositions. Ms Novitskaya began to analyse the vocabulary that children could learn during an excursion to the source of living thought during different seasons of the year, for example, by visiting an orchard in autumn, spring, summer and winter. She wrote down the nouns, adjectives, adverbs and verbs that could be introduced to children's active vocabulary during observations. She told the staff about her interesting experiences in a presentation on 'Vocabulary and a child's thought processes'.

Mr Filippov began to take children to natural settings to teach them how to think and how to express their thoughts in a logical sequence. 'We need to teach logical thought in natural surroundings', he told us subsequently in a presentation on his observations about this interesting aspect of intellectual work. 'We forget that physics is a science about nature. I have now planned

nature excursions for the first three years of physics lessons. I will show the students causal, temporal, and functional dependencies and relationships as illustrated by natural phenomena, and in doing so, I will teach them how to think. My senior students will write reports on their continuous observations of natural phenomena.'

As we uncovered the secrets of children's thought processes, this collective research work brought us all together. The primary school teachers and I began to work on a book describing our lessons during excursions to the source of living thought. Each excursion was dedicated to some natural phenomenon or season of the year (e.g., 'The living and the non-living in nature', 'Everything in nature changes', 'The sun is the source of life', 'Nature wakes from its winter slumbers' and 'Birds in the forest in winter'). Our descriptions were passed from hand to hand, discussed and criticised. It was interesting that these excursions turned out to be necessary for the physics teacher, mathematics teacher and chemistry teacher. This intensive, collective work has now been going on for 15 years. We have compiled a book entitled *Three Hundred Pages from the Book of Nature*, containing descriptions of 300 lessons. We are still collectively researching this issue and teaching children how to think.

Currently, our teachers are interested in a new aspect of this issue. We are conducting research into the emotional colouring of words that arise in the process of observing nature. We are excitedly considering the unity of thought and feeling. We are delving ever deeper into the didactic details of our lessons and researching thought processes at different stages of instruction.

The creativity of our staff involves scientific research into our own work and a deep study of each child.

## **Educating Sensitivity and Empathy** (pp 208–213)

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### *Educating sensitivity and empathy*

In moral education, an important role is played by the development of subtle moral feelings: a sense of duty, sensitivity, empathy. To put into practice the principle that 'each human being is a friend, comrade and brother or sister', requires that each child from an early age is sensitive and attentive to the spiritual world of each person they meet. Further, that the source of each person's happiness is found in the moral purity, beauty and refinement of deeply personal, intimate relationships.

The ABC of educating humaneness is that a child finds personal joy in giving the warmth of their soul to others. In our experience, the most important thing in this subtle area of educational work is that the child should feel the sorrows, cares and suffering of another human being and personally respond to the one who needs help or sympathy.

The early childhood years are especially favourable for this sort of educational work, as little children react particularly sensitively to others' suffering. Since grief, worries and suffering are always present in our social environment, a thoughtful and sensitive teacher who can talk about such things expressively, will always be able to conjure up vivid images in a child's imagination and influence the feelings of the little ones listening to them.

We tell children about people who need help, sympathy and heartfelt consideration. Once I told our little Grade 1 students about a seven-year-old boy named Misha who had been bed-ridden due to illness for two years and could not come to school. Straight away the children wanted to visit the boy. The first visit to the sick child left a deep impression on the children's souls. They told him about school and brought him toys and drawings. The next day they brought him a box of alphabet blocks. After that, visiting the sick boy was not something they had to do, but something they deeply wanted to do, an inner imperative. Each one visited Misha whenever they wanted. Misha memorised the alphabet and learned to read. In the school workshop, some of the students made a little table on which he could write. All the students in the older classes, as well as in Grade 1, wanted to be part of Misha's success. For his part, the boy wanted to do something to express his thanks to his friends. It turned out he had an exceptional gift for drawing, and he drew pictures and gave them to his friends.

Summer came and Misha spent whole days in the open air. His bed was put in the shade of some trees and the children helped him to undergo a course of sunbaking. They played on the grass near his bed, told him stories, and acted out dramatised versions of folk tales. Misha could read aloud very expressively, and he began to read poetry and stories to his friends.

Another year passed, and again the children spent the summer with Misha. He kept up with them in his studies and transitioned successfully to Grade 3. The boy grew stronger. In the words of the children, his sick legs 'woke up'. When Misha stood on his own two legs and walked several steps, each of his friends experienced this as their own personal good fortune. For several months the children brought Misha to school in a little wheelchair. During the spring Misha's walking improved significantly, and when lessons started he walked to school himself. Each year his health improved. He graduated from secondary school and works as a metalworker at a car factory. He has become a sportsman.

Caring for their friend played a major role in the spiritual life of the children. Each one felt they had invested their strength and energy in a person who had been brought back to life. Each child who had befriended and helped Misha developed a trait that could be called gentleness or tenderness.

Human grief has many faces and is unique in each case. The important thing is that children are able to bring joy to others. Then they will feel others' grief naturally and will themselves find a way to engage in that most joyful creative labour that is humaneness.

I told those same Grade 1 students about the life of former partisan Andrei Stepanovich N. During the Great Patriotic War, fascists killed his wife and took his two little sons, aged two and four, to Germany. They published a note in the local newspaper stating that the partisan's sons would be educated in the Aryan spirit and would become enemies of communism. When the war

ended, Andrei Stepanovich went to search for his sons but his efforts were fruitless. He could not forget his terrible grief. He worked as an electrician on the state farm but kept to himself and avoided contact with people. In such cases a special kind of help is needed: a sensitive, tactful awareness of the feelings of the grief-stricken person. The person who needs such help is sensitive to the slightest insincerity or artificiality. I tried to awaken feelings in the hearts of the little children that would allow them to offer help and sympathy in a way that did not rub salt into painful wounds but gave warmth through their kindness. They simply needed to bring joy to the man. In the remote lane where Andrei Stepanovich lived, we pulled out the weeds and planted apple trees. Andrei Stepanovich did not pay any attention to us for a long time, and we were disappointed. But then he began to come out of his house to see us. We saw how he was drawn to the sound of the children's voices. Then he asked us to bring him some grapevines. This request brought us great joy.

Andrei Stepanovich planted the grapevines, invited us into his house, and gave us apples to eat. A lively conversation followed. Andrei Stepanovich asked the children about school. The children told him about their games and their walks in the forest and shared their secrets. They had a little cave in the forest in which they hid their toy weapons. They knew of a secret place on the bank of the lake where pike swam.

The following Sunday, Andrei Stepanovich went with the children to the forest. It was an unforgettable day. Andrei Stepanovich could talk very engagingly about nature. He showed the children a hare's burrow and a fox's den, a squirrel, and a muskrat by the dam wall.

It was as if the man had been waiting for years to meet people who really felt his grief but would never mention it. Andrei Stepanovich stopped being a loner. The long extinguished need for human -company awoke in him again. Each Sunday, the children went with him to the forest, riverbanks, lakes and steppe, and everywhere they discovered something new and previously unknown. During the spring and -summer holidays, they rowed to an island, chose a remote spot, cooked dinner, and collected natural specimens and botanical samples. During ten years of friendship, no-one broke the promise they had given. Not a single word was spoken about Andrei Stepanovich's past as a partisan; no-one asked him to tell them anything about the cruel years of the war. The students became adults, and their friendship with him became even stronger.

The years of friendship, filled with the mutual creation of joy for each other, educated a sensitivity in the children to a person's inner world, an urge for human fellowship. One who has this urge is led by some sixth sense to people in need of kindness. My pupils found such people when they were studying in Grade 4. Returning home from the forest one day, they saw an old man. It was a hot day and the old man was also making his way home. The children helped him to carry some clothes. The children's heartfelt sensitivity allowed them to see that the old man was sad about something. 'He is grieving about something big,' said the girls. They learned from their parents that their new friend was a 70-year-old retired doctor who had recently moved from a neighbouring village. Several months ago, he had -buried his wife of nearly 50 years and moved away from there so that nothing would remind him of the loss of such a dear person. Now he went every Sunday to his wife's grave with flowers he grew in a little greenhouse.

The children sensed that the old man needed sympathy and friendship. On the eve of the following Sunday they took the doctor a bunch of roses. The old man was moved. They asked his permission to accompany him to the neighbouring village, but he declined. They accompanied him only as far as the forest and waited for his return. They kept doing that every Sunday. The children were not deterred by rain or cold.

The children began to help their new friend look after his flowers, and he taught them the secrets of floriculture. He was delighted that the children were so interested in flowers. He passed on to the children his love of beauty, teaching them to appreciate its subtlest shades.

The children wanted to bring Petr Afanasievich (that was the old doctor's name) some joy. They found out when his former wife's birthday was celebrated and placed a bouquet of flowers on her grave the day before. Petr Afanasievich was deeply moved, and from that time, he did everything in his power to show his appreciation. In spring he helped the children establish a nursery of gladioli and a new grove of lilac bushes. Looking after the flowers brought the children new joys. Each of them created a flower bed at home, and some built greenhouses. Flowers became part of the spiritual life of their families. Vera T.'s parents had been quarrelling a lot. Vera planted some ornamental flowers in the shape of their initials in front of their window. This had an amazing effect on her parents. The arguments stopped, and peace reigned.

Two years later, the old doctor died. His death was a great loss for us. He was buried next to his wife. From time to time bouquets of flowers appear on their graves. The young people do not forget the one who showed them another facet of human beauty and kindness.

We consider such lessons in humanity an important component of moral education. Here we are dealing with the education of positive emotions. Many years of experience have convinced us that the education of emotions is not an isolated, narrow task but the very essence of the whole process of establishing a person's moral character.

For 20 years, I have been observing our students' perception, interpretation and reinterpretation of the concepts, truths and norms that make up the values of our society. These observations confirm that a child's sensitivity, thoughtfulness and personal attitude to the words of a teacher who is explaining the essence of moral values, depends on the extent to which they have developed positive emotions. A student who has not developed positive emotions remains indifferent to the teacher's words. If a student takes the misfortunes and suffering of others to heart, if they have frequently experienced a burning desire to come to another person's aid and have expressed that desire in action, they take a teacher's words as a challenge directed to them personally, even when the teacher has not directly addressed them.

We have become deeply convinced that emotional sensitivity and emotional refinement stimulate thought and reflection on the essence of moral exhortations and advice. Soviet research proved long ago that activity in the cortex of the brain is stimulated by the emotional centres of the sub-cortex. 'The main impulse for the activity of the cortex comes from the sub-cortex', wrote I.P. Pavlov. 'If these emotions are excluded, the cortex will lose its main source of energy.' Neurological science relating to the higher functions of the human nervous system helps explain



what goes on in the hidden recesses of a child's psyche. It also helps us find a pathway to educate children properly.

The most significant of all the complex processes taking place in the spiritual worlds of our students is the formation of personal convictions and personal views—the process of transforming truths into the flesh and blood of actions and behaviour. There can be no doubt that this process depends hugely on emotional education and the formation of positive feelings. Educating humane feelings is one of the most important aspects of developing moral refinement.

Humaneness is impossible without sensitivity to other human beings. It is simpler to love humanity at large than to love a single person. It is more difficult to help a single human being than to affirm that 'I love my nation'.

Each person embarking on life must be not only a skilful worker able to produce material goods but also a warm, responsive, sensitive human being. Belinsky's words, spoken over 100 years ago, will never lose their significance: 'We may be carpenters, metalworkers, or factory workers; but will we be true human beings—that is the question!' The most important and most difficult challenge is ensuring our students embark on life as genuine human beings.

## **Learning and Intellectual Development** (pp 256–264)

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### *Learning and intellectual development*

One must not see the aim of instruction as being to ensure by any means that pupils master the material in the curriculum. One must not assess the effectiveness of the means and methods of instruction only by the quantity of knowledge acquired by the pupils. The aim of instruction is to ensure that the process of acquiring knowledge contributes to the optimum level of general development, and the general development achieved through the process of instruction should facilitate greater success in the acquisition of knowledge. In our school, we assess the effectiveness of instruction methods by the extent to which they facilitate a child's general intellectual development; that is, the extent to which the process of instruction is simultaneously a process of intellectual, moral, philosophical and aesthetic education.

Many teachers are troubled by the question: why is it that a child who studied well in primary school and acquired knowledge without exceptional effort finds study more and more difficult as they progress through the school? Why does the knowledge acquired appear to be a heavy burden requiring ever greater effort to maintain? A gulf forms between the acquisition of knowledge and intellectual development because the teacher sees the aim of instruction as acquiring a certain volume of knowledge and fails to see instruction as a means of educating a developed mind. A

developed mind will find studying easier as new knowledge is acquired. Integrating the processes of instruction and intellectual development may well be our most important educational challenge.

The integration of instruction and intellectual development begins with studying a child's development. Our teachers get to know future Grade 1 students long before they begin schooling. During summer and spring, they take them on excursions to the forest, fields and orchards. During winter, the preschoolers play in a room especially allocated for that purpose. The features of each child's thinking processes are ascertained and studied, and their intellectual interests are aroused.

Children's thinking is manifested in their active relationship with the surrounding world. They think about what they see, observe and do. We have several locations that suit our future Grade 1 students where the surrounding environment stimulates thought. We observe how they explore the world, and predict how they will study and where they may encounter difficulties. In one of these locations there are dozens of plants: trees and fruit-bearing shrubs. The children observe their development from spring to autumn, and they have many occasions to ask 'why?' There is also a room with dozens of working models of machines and mechanisms; another location with pictures showing the life and behaviour of animals; and another with pictures showing the life of nations around the world.

This preschool preparation helps us to identify, study and become aware of the specific characteristics of each child's thinking processes. We begin with the idea that studying is an activity of the brain. To understand the individual characteristics of each child's intellectual development, we need to observe that activity long before a child sits behind a desk. The activity of the brain is discrete. The brain instantaneously switches from one thought to another, then to a third, back to the first, and so on. This switching happens instantaneously, and the ability to make sense of the object of cognition depends on the speed with which this switching occurs.

This switching of thoughts occurs in a way that is characteristic for each child: it will be extremely rapid in one child and extremely slow in another. We study all of this, reflecting on how best to develop each child's brain, how to concentrate their thought on one object and switch it instantaneously to another. This is an extremely important process in intellectual development. The ability to rapidly switch thoughts is quick-wittedness, which determines the quality of a developed mind. To develop this ability, we conduct lessons in thought with our preschoolers and then at school. The children investigate and make sense of the objects and phenomena of the surrounding world.

When the children are only five or six years old, we identify a group of children whom we call investigators. They investigate the plant world in the orchard and the vegetable garden. These little children come to school in March, a year and a half before they commence school. They gather again every day or so in the school greenhouse or the orchard. They sow the seeds of grain crops (wheat, buckwheat, barley, millet) and fruit trees (apples, pears, peaches, plums, sour cherries, sweet cherries), and plant grape and rose cuttings. They water the soil with the help of pumps made especially for the little ones. Soon the first shoots of the grain crops appear, then shoots appear on the fruit trees and leaves appear on the cuttings.

The more significant the results of this work, the more questions the children have: why does one plant produce a harvest in the first year, while another takes several years? Why does the peach tree grow a metre over summer while the oak seedling produces only four leaves? Why does an ear of wheat look different to an ear of millet? Why does a watermelon keep its seeds in a 'sweet storeroom' while wheat has no such 'storeroom'? During moments of intense thinking about each of these questions, a child's thought switches thousands of times as the object is studied from all angles. The child learns to think while observing and observe while thinking; this is the essence of these lessons in thought. Before learning to study, a child learns to think.

Another group of children investigates plants in the forest, steppe and meadow. A third group observes life in the pond and the lake; a fourth gets involved with the working models; a fifth constructs little houses, factories and power plants from little wooden parts; a sixth breeds fish in an aquarium; a seventh grows flowers; and an eighth is attracted by unusual phenomena. We have one location where everything is unusual: pumpkins growing on a tomato plant, wheat grafted on to maize. Everywhere they look prompts one question after another: what, how, why? Every child is thinking about something and asking questions of the teacher, club leader or older student. Each one develops an interest in something. Without interest, there is no joy of discovery, no talent or ability, no living soul or human individuality. Even during these preschool years, theoreticians and dreamers stand out among the children. The theoreticians immerse themselves in the details of phenomena and try to get to the essence. We discern a tendency to reason and seek logical proof in their thoughts. Dreamers and poets see an object or phenomena in its general outline. The beauty of a sunset or a storm cloud makes a great impression on them; they admire the play of colours, while the theoreticians pose questions: why is the same area of sky azure one moment, and then scarlet the next? Why is the sun golden overhead but crimson on the horizon?

Each child's thought has its own path of development; each is intelligent and talented in their own way. There is not a single child who has no ability and no talents. It is important that each child's mind and talents provide a foundation for success in study, so that no child studies below their level of ability. In each class, in each generation of children, we greet the appearance of talented mathematicians, horticulturalists, mechanics and constructors of models and, as they get older, talented chemists, linguists and historians. We try to kindle the spark of these abilities during the preschool years.

Each child produces what they are capable of in their studies. The realisation of this principle allows us to achieve the holistic intellectual development of all students and to prevent failure. We do not allow talented, gifted children to work below their abilities. If a student who should be an investigator of nature, a young experimenter and future scientist descends to the level of an average crammer, those who lack clearly expressed gifts and talents will also fail to fully develop their abilities. To avoid failure among weak students, we consider it necessary for talented and gifted students to go beyond the curriculum in those subjects and spheres of activity for which they have exceptional ability. For example, if a student in Grade 7 or 8 shows a special interest in botany, we do not limit their studies to the secondary school textbook. We encourage them to study biochemistry and investigate the microflora of the soil. This also has a major impact on the weaker

students' development of abilities because the intellectual life of the school community is an integrated process. We became convinced that no students will fail physics in a class where several students have gone beyond the curriculum and are studying contemporary problems in science: semiconductors, quantum generators, electronic equipment. When studying literature, even the weakest students are assisted by learning about a difficult area of literature, such as the works of Vissarion Belinsky, whose essays of literary criticism are not included in the curriculum but are studied by their more capable friends who prepare essays on them that contain elements of research. One talented young man studied articles about Belinsky written by Lunacharsky and other scholars and then wrote an essay on the topic 'The evolution of Belinsky's philosophy of life'. Now he is a young scholar and teaches literature at a tertiary institute. The influence of stronger, more mature, more gifted students on weaker and average students is an extraordinarily complex process involving constant spiritual exchange. A major role in this exchange is played by clubs devoted to school subjects and technology, and other extracurricular work such as evenings of science and technology, competitions and quizzes.

Teachers of mathematics give their students problems with several levels of difficulty. Each student is given the opportunity to tackle the level of difficulty that accords with their abilities. But because this work is conducted in a class setting, it takes on a competitive quality. Nobody wants to appear weak; each tries to test their strength on the difficult problem. This competitive atmosphere facilitates the unfolding of talents. In each graduating class of 40 or 50 students, there are two or three talented mathematicians. While still in secondary school, they begin to study material and solve problems from the tertiary course in higher mathematics.

If a teacher can lead the most capable students beyond the curriculum, the intellectual life of the school community becomes rich and diverse. Consequently, the weakest students do not fall behind. Our physics teacher Mr Filippov works on the principle of 'from each according to their abilities'. When studying each section of the curriculum, he plans theoretical questions and problems intended for the most capable students. They are acquainted with this material during lessons and continue studying it during extracurricular work. For example, when studying electricity and molecular and atomic theory, the most capable students were introduced to the following topics:

The production of an electrical current without a generator; thermonuclear reaction; the properties of plasma; the electromagnetic state of plasma; the electromagnetic fields of the planets of our solar system; the electro-hydraulic effect (discovered by the Soviet scientist Lev Yutkin); the applications of semiconductors in modern technology; superconductivity of materials; magnetohydrodynamic generators; physical and chemical processes occurring in the deepest layers of the Earth; matter and energy; elementary particles known to science at the present time; light and matter; problems connected with vacuums; the origins of cosmic rays; the structure of the Synchrophasotron; the Van Allen radiation belts and their origin.

In acquainting students with these topics during lessons, the teacher stimulates an interest in extracurricular work and reading. Relevant scientific books and pamphlets are displayed in stands

dedicated to new developments in science and technology in reading rooms, the school library and the physics laboratory. Issues in science and technology become topics of conversation and discussion. Truth is born in discussion, and so is intellectual maturity. This is a particularly important extension of the school curriculum. When the teacher is convinced that the ground has been adequately prepared, he encourages the most capable students to prepare talks and essays, to publish a wall newspaper for the science and technology club, and to write abstracts. There are science and technology mornings and evenings and lectures delivered by students. Clubs focus their activities on specific problems. In the atmosphere engendered by this rich intellectual life, even the weakest students hear a lot, learn a lot, and have much food for thought, which motivates them to work more intensely. Thanks to all this extracurricular exposure, it becomes easier for them to understand and master the compulsory curriculum.

It is important that reading gives students the experience of intellectual joy. If students are interested in reading extracurricular material, they will also take an interest in the textbook. While reading, they also stop and reflect on what they are reading. For reading to stimulate a rich intellectual life as early as possible, a person must acquire solid practical skills. In primary school, children must master the skills of reading, writing, thinking, observing and expressing their thoughts. A child cannot study successfully in Grade 8 if their essays are transcribed sentences learned by heart and not an expression of their own thoughts. In Grades 5–7, we try to ensure children can abstract themselves from the process of writing and concentrate all their attention on the content they are trying to convey. Most creative writing assignments in the primary and middle years are accounts of what children see, observe, think and do.

Reading for interest, with no expectation that the material will be memorised, prevents study overload. Overload is a relative concept. Material is too difficult when a student cannot make sense of it because of limitations imposed by their age. The volume of material that can be absorbed at any age varies greatly depending on the intellectual life of the community and the individual. Even the most insignificant, modest volume of material may be too much for students if the intellectual life that forms a background to study is narrow and impoverished.

We try to ensure that our students read magazines and popular scientific literature. The more they are motivated to read out of interest in books and science, the more easily they master the basics of science and the less time they need to spend on homework.

For our students, reading is accompanied by work in technological or young naturalists' clubs, listening to lectures given by older students, observing natural phenomena, conducting experiments, and other voluntary extracurricular activities. Because of involvement in such activities, students do not encounter insurmountable difficulties in their studies. The more they read, write, think and observe, the less burdensome their studies seem. Overload occurs when intellectual work is too one-sided, and a student spends all their time memorising. Limiting the curriculum is not the best way to avoid overload. Instead, we pay attention to the content and characteristics of students' intellectual life by providing a rich intellectual background to students' studies. Before hearing about the structure of an atom at a physics lesson, our students have already read engaging articles and notes about elementary particles. Even if they have not understood much

of what they have read, their interest in the material presented during the lessons is strengthened. Before studying a work of literature in a lesson, they will already have read it, and most importantly, will have experienced the associated moral and aesthetic emotions. We try to ensure the treatment of any difficult topic from the physics, chemistry or geography curricula is always preceded by relevant extracurricular work.

We make sure every student has books that engage their mind and heart and an older friend with whom they can share their thoughts and feelings. For example, if a student shows an aptitude for technological creativity at an early age, they are given popular science books corresponding to their interest by the Pioneer organisation, the Komsomol committee, the principal, or the collective farm management (in the form of a prize or present). By the time they graduate from school, they will have compiled a personal (home) library. These books enrich the spiritual life of the family.

Our science subject-based clubs provide an important avenue for developing intellectual interests in technology, mathematics, chemistry, biology, biochemistry, physics, ethnography and astronomy. We refer to the clubs dedicated to each of these subjects as 'scientific'. This may be a slight exaggeration, but the word does reflect the creative work of our senior students, their experimentation and research. The students are delighted and inspired by the extent to which they experience the scientific approach to intellectual work.

The participants in these clubs are interested in issues that take them far beyond the confines of elementary knowledge and represent the achievements of science. For example, in the scientific biochemistry club, senior students study biochemical processes occurring in the soil and approaches to stimulating the growth of grain and other commercial crops. In the scientific astronomy club, they have been studying theories concerning the formation of stars and the nature of cosmic rays for several years.

The activities of the science subject-based clubs take the form of lively news reports, talks and papers full of interesting, striking facts. Construction and modelling play an important role in the activities of these clubs. During the past five years, members of the automation and radio electronics club have constructed more than 25 devices based on the principles of radio electronics.

At the heart of each science club is a teacher who is deeply interested in the latest achievements of science. One of the technical clubs for automation and radio electronics is led by our physics teacher, Mr -Filippov. He does not just supervise the club; he works alongside its members and has his own bench in their workshop.

A student's intellectual immersion in a particular area of science means they acquire considerably more knowledge in the corresponding school subject than is required by the curriculum. The deeper this immersion, the wider the compass of the student's intellectual interests. Moreover, we are convinced that this extended learning by some students in certain subjects is an essential prerequisite for the community's rich intellectual life and the development of each individual's talents. An intelligent, mature student always goes beyond the curriculum in one or more subjects. Deep, substantial knowledge of all subjects, combined with the development of particular interest in one subject, is an important prerequisite for a person's holistic development.

Depending on their individual talents, abilities and interests, students of the same age and in the same year level may master subjects to varying degrees. For those who have no aptitude for the theoretical thought and practical activities associated with a given subject, and consequently experience significant difficulty mastering the material, the compulsory curriculum may be the maximum they can achieve. Conversely, those students who have no difficulty understanding theoretical issues, who show an aptitude for theoretical thought and intellectual work that incorporates elements of scientific research, are exposed to a wider circle of knowledge by the teacher. One of the most significant challenges of the education process is to correctly determine the strengths, abilities, talents and interests of each student, to determine their capabilities.

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