

The development of medical pedagogy in Russia in the first half of the 19th century

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Abstract

This article analyses the specific features of the development of medical pedagogy, an area of pedagogy that includes professional pedagogy, and the methods used to teach individual professional disciplines in Russia in the first half of the nineteenth century, as well as the new system of clinical training for future doctors that emerged in the 1830s and was implemented by Nikolai Pirogov, Nikanor Skandovsky, Fyodor Inozemtsev, Alexei Filomafitsky, Grigory Sokolsky and Iosif Varvinsky, graduates of the Professorial Institute in Dorpat. The authors examine the methods used to communicate professional knowledge and experience by the young professors, who, as recalled by their former students, were able to grab their audience’s interest and “infect” them with their enthusiasm for the subject being taught. The teachers achieved a high level of expertise thanks to their systematic work on the content of their lectures and the methods they used to present their material. The authors show that the combination of treatment practices with research and teaching activity may be regarded as one of the basic principles of medical pedagogy in this period. Pirogov’s concept of scientific education entailed students rapidly developing the skills needed to work with specialist literature, and the ability to use it freely and competently. In their research and teaching activities, the young professors paid a great deal of attention to methodological support for the teaching process: they developed course programmes, procedural guidelines, textbooks and teaching materials. At the same time, their activities were not confined to universities: they did a lot of outreach work. Thanks to the graduates of the Professorial Institute, an idea of the professional qualities required by a professor of medicine emerged in the higher medical education system in Russia in the first half of the nineteenth century.

Keywords

history of medicine, medical pedagogy, new breed of professors, graduates of the Professorial Institute, system of clinical training for future doctors

Medical pedagogy is an area of pedagogy that includes professional pedagogy and the methods used to teach individual medical disciplines. In Russia, it developed in particular in the first half of the nineteenth century, when the need to reform its universities arose.

The first universities in Russia sought to emulate the ideal model of university education in Europe around the turn of the nineteenth century: the University of Göttingen. Their principal goal in this period was to train specialists in those professions that were firmly part of the fabric of

society (civil servants, lawyers and doctors), and were not required to make scientific discoveries. Modern researchers have observed that a common feature of Russian universities until the early 1830s was the fact that “the absence or weakness of scientific life was not considered a sign that a university was in crisis” (Vishlenkova, Galiullina, Ilina 2012, p. 147). Many talented and highly knowledgeable teachers were slow to share their knowledge with their students, as they were busy with their practical work, but their classes were an obligation for them. This shortcoming was most often seen in teachers in faculties of medicine with a private medical practice. For example, the fourth-year faculty clinic at the Imperial University of Moscow (IUM) was headed in this period by Professor Alexander Over, who was so busy with his extensive practice in Moscow that he appeared at the university clinic once or twice a month. Though aware of their professor’s impeccable professional reputation, his students could only guess how talented he was, because he was not quick to share his knowledge with them (Belogolovy 1956). The purpose of the faculty clinic course was to give the students systematic knowledge of internal medicine, but, according to the recollections of students who were at the University of Moscow at the time, the classes at Over’s clinic started with an assistant listening to reports from the students who had been on duty the day before, after which “the professor’s round of the clinic, accompanied by the assistant and the students, began”: “If an important change was, according to the assistant, observed in the condition of an old patient, the professor verified what had been said, examined the most interesting of the new arrivals in our presence, made a diagnosis, and prescribed treatment” (quoted in: Smotrov 1940). As such, the professor replaced the systematic course with an analysis of individual clinical cases.

Pirogov wrote: “Here in Russia, only two types of scientists are candidates for the department: first, distinguished professors, that is, for the most part, old or very elderly people; second, young people who have just completed a course in the sciences. As for people who have trained for a relatively long time for work in departments, we either have none at all, or they are so rare that they are almost never competitors for work in departments” (Pirogov 2011, p. 552).

The reforms implemented at German universities in the early decades of the nineteenth century, aimed at establishing a new university model, free from mediaeval scholasticism and “the stagnation of the old university order”, were a factor influencing the development of a system for training professors for Russian universities as well.

Such a system was established at the Dorpat¹ Professorial Institute. Its graduates spent almost seven years preparing “for work in departments”, and through their activities they did indeed make a significant contribution to the development of Russian universities in the 1830s to 1850s. Contemporaries observed that Russia’s universities flourished in this period: a new breed of professors, filled with a spirit of civic consciousness, began to appear in their departments.

The graduates of the Professorial Institute who chose medicine as their specialty were Nikolai Pirogov, Nikanor Skandovsky, Fyodor Inozemtsev, Alexei Filomafitsky, Grigory Sokolsky and Iosif Varvinsky. The start of their teaching career coincided with reforms to the higher medical education system in Russia, which involved implementing a new system of clinical training for future doctors. Accordingly, the first decade of the young professors’ teaching career was devoted to reorganising education at the University of Moscow’s Faculty of Medicine: they were not happy with its existing teaching system, particularly for surgery and therapy. They believed that the scope of the practical classes where students visited patients in clinics needed to be expanded.

Fyodor Inozemtsev wrote multiple letters to the Ministry of National Education, in which he cited existing successful practices in teaching medical disciplines at European universities. In 1840, having carried out a detailed review of hospitals in Moscow and Saint Petersburg, he gave a report at a meeting of the Medical Faculty Council on the teaching of practical medicine in Russia. In this, he suggested that the Moscow Academy of Medicine and Surgery and the University of Moscow’s Faculty of Medicine needed to merge, and raised the issue of establishing faculty and hospital clinics where practical classes

¹ Now Tartu.

with students might be held (Arhangelskiy 1959). The Faculty Council supported Inozemtsev's proposal, but it was not carried out until 1845.

Like Inozemtsev in Moscow, Nikolai Pirogov sought to reform the system of surgical education at the Saint Petersburg Academy of Medicine and Surgery in 1841. At his insistence, a department of hospital surgery was established for the first time at the Academy of Medicine and Surgery. The world's first institute of anatomy was established on his initiative in 1846. This was founded with the goals of creating conditions for organising and running practical classes on surgical anatomy with students and doctors, opening a museum of anatomy, and creating conditions for performing experiments on animals, and for training teachers and prosecutors, both for the Academy of Medicine and Surgery and for faculties of medicine at Russian universities. At Pirogov's recommendation, "demonstration" examinations in surgery, anatomy and therapy were introduced for the students (Perelman 2010).

Contemporaries observed that a distinctive feature of the clinics established in the 1840s was their approach to working with students. The young professors had an expert command of methods of teaching medicine. Faculty clinic classes began with the professor conducting a detailed analysis of the clinical cases, after which the students independently examined the patients and questioned them on the manifestations of their symptoms. At a hospital clinic, the students performed the inspection, examination, questioning and diagnosis, and prescribed treatment, first, and then the professor performed a comprehensive analysis of the clinical cases and the mistakes made by the students in their independent work with the patients.

During this period, Inozemtsev opened a home clinic, the purpose of which, his students observed, was "to give young doctors the opportunity to begin their practical activities under the supervision of an experienced professor" (Arhangelskiy 1959, p. 45). Later, this community of doctors, led by Professor Inozemtsev, came to be known in Moscow as "Inozemtsev's fine fellows" (Belogolovy 1956, p. 211). The practical classes held at the clinic allowed the young doctors to improve their skills, learn new treatment methods, and conduct research. Their research results were presented in publications.

Inozemtsev advocated compulsory general medical education for surgeons. Until the middle of the 1830s, most doctors believed that surgeons did not need to have a general medical education; their main job was to be able to perform operations. Through his professional and teaching activities, and in his lectures and speeches, Inozemtsev established the notion of a new image of the surgeon.

Alexei Filomafitsky, who did research and teaching work in the IUM's Department of Anatomy, Physiology and Forensic Medicine, made a significant contribution to improving the methods of teaching physiology, managing to combine scientific research and the development of specifically physiological matters with the interests of practical medicine (Makarov 1986). Filomafitsky introduced experimental methods of study into approaches to teaching physiology. It was he who first introduced the name of the discipline of "pathological physiology" (Makarov 1986, p. 33).

Analysing his own research and teaching activities, Pirogov observed that a teacher of medicine "apart from scientific knowledge and expertise, also needs a good conscience, acquired only through the difficult art of self-awareness, self-possession, and knowledge of human nature" (Pirogov 2011, p. 553). These comments can also be applied to teaching in general, as illustrated by the professional activities of the graduates of the Professorial Institute.

Iosif Varvinsky was a full professor at a fifth-year hospital therapeutic clinic. Contemporaries observed that the students at his lectures seemed to have "entered a promised land where matters were conducted extremely properly, and where their desire for clinical understanding was adequately satisfied."² Varvinsky was "an educated and knowledgeable practitioner", who had a good command of research methods, gave due importance to pathological anatomy, and kept up with the international clinical literature. In his report for the 1848/1849 academic year, he described in detail the pattern of the classes held at the hospital clinic: "The trainee student, having received the patient, attempts to discover the

² Report on the state and activities of the Imperial University of Moscow for the 1848/49 academic and 1849 civil years. Moscow, 1850, p. 213. (In Russ.)

causes influencing the emergence, development and intensification of their disease. The Trainee reports to the Professor in writing on the results of the questioning and investigations. The Professor, in the students' presence, listens to the information provided by the Trainee and verifies it, by questioning and examining the patient himself. On noticing errors by the Trainee concerning the discussion and assessment of previous illnesses, their consequences, and their relationship to the present illness, the Teacher corrects the errors and points out their source.”³

Professor Inozemtsev held classes as part of the faculty clinic course. As his former students observed, he took his responsibilities very seriously and, though he built up a very substantial private practice over the years, never missed his clinical lectures because of it. Contemporaries recalled that “audiences always flocked to his lectures and considered themselves much-indebted to him; they were drawn to him by his talent for presentation, keen interest in science and aspiration towards accurate analysis of clinical patients, which produced in his audience the necessary observation skills, and a sincere and humane attitude to patients” (Belogolovy 1956).

Pirogov was guided in his work by the following objective: “To hide nothing from my students, and, if not now, then later, without delay, to reveal to them any errors I make, be it in the diagnosis or in the treatment of the illness” (Pirogov 1950, p. 406). To this end, Pirogov published the *Annals of a surgical clinic* – a collection of his clinical lectures containing descriptions of the clinical cases observed in the first two years of his work as a professor. The young professor thought nothing of his reputation, and described in detail all the mistakes and errors he made when treating patients. Former students of the University of Dorpat regarded the relationship between the young professor and his students as almost like a friendship and the publication of the *Annals* only strengthened his authority.

The professors at the Russian universities realised that they would not be able to earn the

respect of those around them without being demanding of themselves, and without respecting their chosen profession.

In the nineteenth century, the main form of delivering teaching at Russian universities was the lecture, but there were various difficulties with this. On one hand, the students were not academically mature enough: many of them were not ready for the demands of universities. The students wrote down only the main conclusions stated by their professors, omitting the explanations and examples. On the other, for many teachers who were unskilled in the art of oratory and did not possess great scientific erudition, the leading role of the lecture in university teaching made it a way to achieve a reputation whereby what they said could not be subjected to doubt.

Pirogov strongly opposed this state of affairs. In one of his works, he writes: “I knew ...one distinguished professor who advised newcomers to teaching that the best remedy for shyness was to regard one's audience as utterly stupid; he himself openly told his audiences that they were donkeys” (Pirogov 1863, p. 40). Pirogov believed that student audiences should be entitled both to have their own opinions and to express them. He reasoned that “If a book is not read at all, and a lecture is not listened to by anyone, they cannot be called good: there is probably something wrong with them” (Pirogov 1863, p. 37). In this case, the teacher should take note of this and find out why their lecture is thus perceived.

The former students of certain Russian teachers noted their ability to grab their audience's interest right from the start and “infect” them with their enthusiasm for the subject being taught. They had an expert command of various ways to attract their audience's attention, and made extensive use of visual aids in their teaching (Karnaukh 2014). For example, Professor Filomafitsky's students recalled that “his presentation style was remarkably clear and interesting.” The presentation methods he used were chosen taking account of the specific characteristics of the students, who had just started studying medicine: physiology was taught to second-year students. Possessing excellent knowledge of his subject, he tried to find the most successful ways to teach it to his students. His lectures were informative and logically coherent; “the professor presented

³ Report on the state and activities of the Imperial University of Moscow for the 1848/49 academic and 1849 civil years. Moscow, 1850, p. 32.

the subject in its modern state.”⁴ The professor aimed for the material he presented to be understood by his students, so, one after another, they had to describe the experiments and submit their descriptions to him. After reviewing each section, the professor interviewed each student on the questions asked earlier. Having established through the interviews how well the students had understood the material, Filomafitsky returned in the classes to the topics that they had understood poorly. The students often came to the professor with questions, which he was happy to answer.

Professor Filomafitsky devoted a lot of attention to developing his students' independent work skills. He used methods of checking their understanding such as interviews and written work, and conducted weekly reviews, including “a critical analysis of the records of the experiments performed by the students during the lectures” (Makarov 1986, p. 34).

The teaching activities of Nikanor Skandovsky made a substantial contribution to the development of the internal medicine clinic at the University of Kazan. He sought first and foremost to develop his students' independent professional thinking skills. He said that a medical professional needed to be unbiased, not to blindly follow any one theory, and to have “healthy powers of reasoning, good senses, observation skills, and curiosity” (Ilinskiy 1894, p. 42). In his classes, Skandovsky analysed interesting cases in detail, had a good command of modern methods of patient examination, and taught this to his students.

Pirogov started his teaching career at the University of Dorpat, where he worked for five years. He recalled that at his first lecture the students laughed at his “broken German”. After two or three lectures, however the students forgot about the shortcomings in his speech: “Not only medical students, but also students from other faculties came to hear Pirogov's lectures on such a specialist subject, they were so interesting” (Afonskiy

1911, p. 43). Contemporaries observed that no one before Pirogov had taught surgery with such use of visual aids. Through his teaching activities, he established a new approach to teaching surgery: not through brief visits by students to a clinic, but through classes in a hospital environment. He came to the conclusion that surgery and anatomy needed to be taught in this way from analysing his student years at the IUM, where “the visual side of teaching and demonstration could be found only at Loder's lectures; but even when anatomy was being studied, compulsory practice on corpses was not required from the students at all.” Pirogov recalled: “In all my time at the university, I never once practised on corpses in the dissecting room... I did not prepare a single muscle and made do with what I saw prepared and presented after Loder's lectures. And, strangely, until I joined the University of Dorpat, I never felt any need to learn anything from my own experience, visually. I made do with what I learned from books, copybooks, and lectures. I said just now that this was strange. No; it was not strange at all, when the majority of my tutors were of the same belief” (Pirogov 2011, p. 374). This situation was typical for faculties of medicine at other Russian universities as well.

During their studies at the Professorial Institute, Pirogov, Inozemtsev, Filomafitsky, Varvinsky, Sokolsky and Skandovsky came to realise that medicine needed to be taught using visual aids.

Filomafitsky, a professor of physiology, believed strongly that “observations and experience are the basis of knowledge, the only criterion of their veracity” (Makarov 1986, p. 35). Accordingly, he demonstrated experiments on animals in his lectures. His former students observed that in his lectures and practical classes he “sought not just to present existing facts, but... to inspire in his students a curiosity capable of inspiring new ideas and thoughts in the future doctors” (Makarov 1986, p. 36). Filomafitsky paid a lot of attention to the visual side of teaching: he repeated experiments by famous physiologists, and set up his own, to explain particular bodily functions. He believed that a teacher could achieve a high level of expertise through dedicated and assiduous work, including on the content of lectures, and on improving the methods of presenting them.

One of the value orientations in the young professors' teaching activity was Russian science.

⁴ Biographical dictionary of the professors and teachers of the Imperial University of Moscow in the past hundred years, from the date of its establishment on 12 January 1755, to the date of its anniversary on 12 January 1855, compiled by the efforts of the professors and teachers working in its departments in 1854, and arranged in alphabetical order, part 1. Moscow, Universitetskaya tipografiya, 1855, p. 516. (In Russ.)

In 1842, Pirogov wrote in a letter to his ex-wife, Yekaterina Berezhina, about the role played by science in his life: “What would the years of life I have lived have been like, if not for those sweet moments and hours afforded me by the pursuit of science; they have made me forget the petty narrow-mindedness of preconceptions ... Science has raised me above the crowd; science has made me love the truth, science has served to develop in me the sacred idea of duty and obligation” (Pirogov 1950, p. 468–469). These comments could apply to all the graduates of the Professorial Institute, who developed a “taste” for research activities while studying at Dorpat.

In his writings, Pirogov more than once expresses the view that the two areas of university activity – research and teaching – should be closely connected: “Teaching cannot be separated from research at a university. But research, even without teaching, will still shine and give warmth, whereas teaching without research, however attractive it appears, will only glister” (Pirogov 1863, p. 15). He believed that the standard of students’ scientific training needed to be raised, and that higher education classes should be treated as creative activities. Pirogov’s concept of scientific education entailed students rapidly developing the skills needed to work with specialist literature, the comfortable use of which was regarded as essential to the emergence of a future specialist’s scientific thinking, and for them to develop research skills early. Pirogov said: “A professor should remember that book printing was discovered back in the fifteenth century; therefore, there is no reason for them to speak in their teaching about things that anyone can read in a textbook. Teaching should be devoted only to that which is most difficult and complicated, through Socratic questioning. The rest of the time gained is better used to produce a good guide to their subject. All university life should serve a lofty and important objective: to throw light onto the darkness of public life, but for this the public needs to be familiarised with science; what is taught at university needs to be publicly discussed” (Pirogov 1863, p. 17).

Graduates of the Professorial Institute such as Inozemtsev, Pirogov and Filomafitsky worked on the systematic study of the effects of ether anaesthesia in Russia. A teacher’s research activity is a sign of their capabilities and talent, and determines their students’ attitude to them. For

example, Inozemtsev put “so much ardent and youthful enthusiasm and love of science” into his lectures “that he communicated this to his audience as well without even trying” (Belogolov 1956, p. 211). His former students recalled: “From him, we heard for the first time phrases then new to us: *Russian science, Russian medicine*. The meaning was not that which we had heard given it by our other, German teachers. Not within the narrow framework of a constricted, limited patriotism, that scorns everything that is not ours, was Russian science presented to us in his lectures and conversations. No: there was complete respect for both the experience and the achievements of others, but at the same time also a desire to contribute our own mite to the general treasury of science” (Smirnov 1872, p. 22). In introducing his students to research activity, Professor Inozemtsev also spoke about the moral qualities of a scientist: “Honesty in science is as obligatory and important as honesty in life” (Smirnov 1872, p. 24). Inozemtsev’s contemporaries recalled that his “lectures captivated their audience, and there was the kind of silence at them that could not always be achieved by external measures. Is it surprising that these brilliant lectures, which always bore the stamp of originality, prompting new questions, had an influence on their audiences, and inspired in them a love of science?” (Kolosov 1930, p. 349).

Inozemtsev regarded the development of the future doctors’ observation skills as one of the main goals of teaching. We can read a report on the work with the students in the clinic, which may be seen as a kind of guide to working with students. Having described in detail the teacher’s activities, he draws the following conclusion: “The aim of such teaching was for a student starting out in their career to become more as accustomed as possible to rational explanation of each disease symptom and to understand the reason for all the teacher’s practical approaches and actions.”⁵ Professor Inozemtsev followed his students’ achievements closely, and believed that each student should keep a patient diary, as

⁵ Russian State Historical Archive (RGIA). F. 733. Op. 95. D. 211. A brief report on classes with students and the research activities of the professors at the University of Moscow. L. 50. (In Russ.)

this would help them to understand the progress of their disease.

Filomafitsky, a professor in the Department of Physiology at the IUM, was an excellent educator and organiser of scientific research. He “gave physiology a genuinely scientific character” (Makarov 1986, p. 13), basing his teaching on a close relationship between his research work, existing developments in specifically physiological matters, and the interests of practical medicine. In explaining physiological matters, he drew on extensive historical material: historical insights featured in all his research work. Experts have described Filomafitsky’s research publications as notable for their “forethought, thoroughness of analysis and caution in the assessment of the evidence obtained. All the conclusions and postulates he put forward in his works were underpinned by experiment and based on strictly verified factual material” (Makarov 1986, p. 40). He made a significant contribution to the fact that physiology was established once and for all as an experimental science in Russia in the 1840s. Professor Filomafitsky devoted a considerable amount of time to devising physiological experiments aimed at testing theories. He combined experimental research on animals with work at Inozemtsev’s university clinic, where he carried out observations of patients.

Pirogov’s time at Dorpat, when his teaching and clinical activities were closely connected to his anatomical and physiological research, played an important role in the development of his views on the natural sciences. In his *Diary of an Old Doctor*, he recalls how he was fully occupied every day: he gave lectures in several academic course (he was the university’s only professor of surgery at the time), taught practical classes, worked in the university clinic, and prepared for the next day’s classes (Pirogov 2011). During this period, Pirogov supervised ten doctoral dissertations on some of the most crucial issues of clinical medicine. In the course of this work, the supervisor’s working hypotheses were tested, and general conclusions were drawn from the results of his clinical observations (Geselevich 1956).

In their academic activities, the graduates of the Professorial Institute paid a lot of attention to methodological support for the teaching process. An important objective for Russian universities in the first half of the nineteenth cen-

tury was to produce teaching materials. Those produced at the time typically set out their material in a considered and systematic way and presented data from experimental research, both by the author and by other scientists, Russian and foreign. Such textbooks encouraged students to perform their own research. In 1836, at the very start of his teaching career, Filomafitsky wrote a textbook called *Physiology, published as a guide for my students*, which was regarded for a long time as one of the best guides to the discipline published in Russian. In 1849, Nikanor Skandovsky’s *Brief human physiology, compiled for students at the Kazan Seminary studying popular medicine* was published. According to contemporaries, “the appearance of this textbook was a significant event in Kazan’s medical life. It was also notable that the first physiology textbook in Kazan was written by a clinician rather than a theoretician.”⁶

The Russian Academy of Sciences awarded the Demidov Prize to the authors of the best textbooks and scientific works. In the field of medicine, this prize was shared in 1841 between two graduates of the Professorial Institute: Filomafitsky, the author of *Physiology, published as a guide for my students*, and Pirogov, the author of *The surgical anatomy of arterial trunks and fibrous fascia*. Subsequently, Pirogov was awarded the Demidov Prize three more times: in 1844 for *A complete course in applied anatomy of the human body*, in 1844 for his atlas *The pathological anatomy of Asiatic cholera*, and in 1844 for his atlas *The topographical anatomy of sawing performed on frozen corpses* (Mezenin 1987). In addition, Pirogov, at the academy’s request, reviewed works submitted for the prize, and was awarded a gold medal for this work in 1837.

The graduates of the Professorial Institute also engaged in outreach work. New scientific societies were founded on the initiative of the professors at Russia’s universities. For example, Pirogov initiated the establishment of a scientific society of surgeons (the Pirogoff’scher Verein) in 1843. Over 12 years, 140 reports on topical medical issues were presented at its meetings (Khazanov 1986).

⁶ A medical book: people, years, life. (In Russ.) <https://mfvt.ru/medicinskaya-kniga-lyudi-gody-zhizn/> (accessed on 4 June 2021).

Inozemtsev founded the Society of Russian Doctors in Moscow. The society's charter, which Inozemtsev helped to draft, stated that it was founded "to facilitate both general and specialist scientific and practical education of Russian doctors; to facilitate scientific, practical and professional communication between Russian doctors."⁷

⁷ Russian State Library (RGB). Manuscript research department. F. 208. Op. 5. No. 110. Minutes of the 1st meeting of the Society of Russian Doctors in Moscow, 15 June 1861. (In Russ.)

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