Loughborough University

This item was submitted to Loughborough's Research Repository by the author.
Items in Figshare are protected by copyright, with all rights reserved, unless otherwise indicated.

Russia in transition: the concept and practice of technology education in schools - the programme "technology and enterprise education in Russia"

PLEASE CITE THE PUBLISHED VERSION

PUBLISHER

© Loughborough University

LICENCE

CC BY-NC-ND 4.0

REPOSITORY RECORD

Pitt, James, and Margarita Pavlova. 2019. “Russia in Transition: The Concept and Practice of Technology Education in Schools - the Programme "technology and Enterprise Education in Russia"”. figshare. https://hdl.handle.net/2134/1461.

Loughborough University

This item was submitted to Loughborough's Institutional Repository by the author and is made available under the following Creative Commons Licence conditions.

creative commons

COMMONS DEED

Attribution-NonCommercial-NoDerivs 2.5

You are free:

- to copy, distribute, display, and perform the work

Under the following conditions:

Attribution. You must attribute the work in the manner specified by the author or licensor.

Noncommercial. You may not use this work for commercial purposes.

No Derivative Works. You may not alter, transform, or build upon this work.

- For any reuse or distribution, you must make clear to others the license terms of this work.
- Any of these conditions can be waived if you get permission from the copyright holder.

Your fair use and other rights are in no way affected by the above.

This is a human-readable summary of the Legal Code (the full license).

Disclaimer

For the full text of this licence, please go to:
http://creativecommons.org/licenses/by-nc-nd/2.5/

Russia in transition: the concept and practice of technology education in schools - the programme "technology and enterprise education in Russia"

James Pitt* and Margarita Pavlova+
University of York*, La Trobe University, Melbourne, Australia+

Abstract
This paper describes and analyses a programme aimed at developing a humanistic, design-based approach to Technology education in Russian schools. Most Russian children are still taught craft skills in wood and metal (boys) and cooking and sewing (girls). There is no tradition of teaching design, nor of developing problem-solving capabilities. However, the Russian Education Law of 1992 demands curriculum reform which is humanistic, and geared towards developing a creative, proactive individual, capable of life-long learning.

The programme started in 1994, and was adopted by the Ministry of Education of The Russian Federation in 1996. The authors describe some of the difficulties – there is no Russian word for 'Design'; teachers need to reinvent a wide range of pedagogical technologies; the climate is uncertain politically and disastrous economically. Issues of impact assessment are considered, and a possible structure for national curriculum order outlined. Finally, the paper raises questions of the suitability of such an approach for Russia.

1 How the programme started

This project has grown from action and research in the field of Technology education in Russia. From 1991 to 1994 Margarita Pavlova was training Technology teachers at Herzen University (the main initial teacher training institute in St Petersburg) and St Petersburg State University for Pedagogical Arts (the INSET university). She based her work on the results of her research into the Design and Technology curriculum in the UK[1]. This caught the imagination of many of her students, some of whom began to try a 'project approach' in school. They were supported by a two-week seminar given by James Pitt in October 1994. By 1996 Margarita Pavlova was able to visit a number of other Russian cities – Moscow, Bryansk, Pskov, Nizhniy Novgorod with two British teachers, and show examples of pupils' work from St Petersburg and schools in England. Again, there was huge interest – not least requests for seminars from fifteen other pedagogical universities where Technology teachers are trained. (figure 1 overleaf). The Federal Ministry of Education and The Institute for General Secondary Education at The Russian Academy of Education supported the idea of a programme based on experiments in four pilot regions, and 'Technology & Enterprise Education in Russia' came into being.

2 Programme structure and activities

Figure 2 (overleaf) gives an overview of the proposed programme. The starting point is the pilot projects (Phase 1). There are ten official pilot schools in each of St. Petersburg, Nizhniy Novgorod and Kaliningrad. By the end of February 1997 there had been six training courses (in a design-based approach) for teachers in St Petersburg, three in Nizhniy Novgorod and two in Kaliningrad. Teachers in all these areas had tried 'a project approach' in their schools. They are trying out new methods and developing materials in Russian. These are being collated and edited by the authors, who are primarily responsible for Phase 2. Thirty Russian teachers and lecturers visited schools in England in June 1997 as part of the programme. Possibilities for Phases 3 (teacher training), 4 (dissemination) and 5 (extending beyond Russia) depend on funding.

The programme is managed by a co-ordinating committee with representitives from the



Figure 1 Cities where universisites have expressed interest in the programme

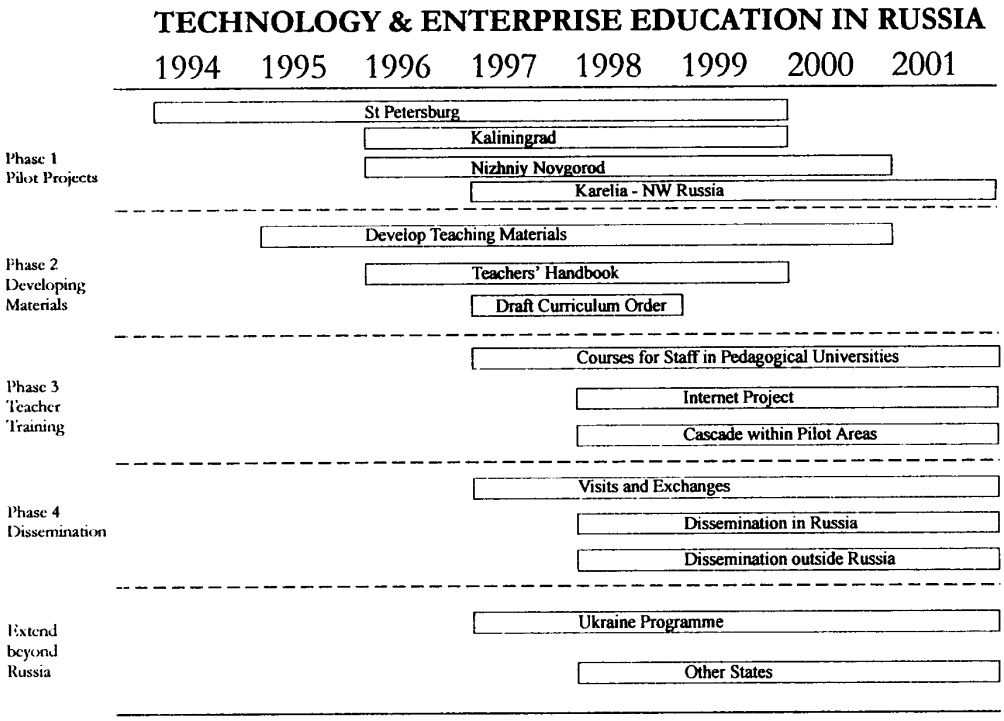


Figure 2 outline of the different phases of the programme

Russian Ministry of Education, the pilots projects, the Institute of General Secondary Education of The Russian Academy of Education and experts from the UK (Her Majesty's Inspectorate, Schools Council and Assessment Authority, Nuffield Design and Technology, The British Council) and the authors. There are also advisory panels of experts in UK and Russia.

3 A snapshot of some problems

(a) *Problems of teaching and learning for students and teachers*

The 'normal' method of teaching in Russia has been frontal exposition of fact or skill. Teachers have relied on the official text-book. There is no tradition of teacher-generated curriculum development. The curriculum was developed in the centre and disseminated through the bureaucratic structure.[2] The seminars we have presented have been based partly on lecture format (with extensive use of slides to show examples of pupils' work in the UK), and partly through group-work, brainstorming and one-to-one peer teaching. These methods have caused as much interest as the content. However, many teachers have not found it so easy to use different teaching methods in the classroom. The pupils expect the teacher to know what is what and to explain it to them. For a teacher to reply to a question with the words, "I don't know! How do you think we might find out?" is fairly shocking.

Secondly, some teachers are expecting to be told (in a prescriptive way) how to run their classes in an enabling rather than prescriptive manner. Since each person's teaching style is essentially personal, such advice is inappropriate. It is not clear whether general admonitions of "do what comes naturally" are useful. Curiously, this expectation of being told what to do in the classroom is in marked contrast with Russians' flexibility in day-to-day living in which the unexpected is forever happening and people have excellent problem-solving skills for coping!

Thirdly, both teachers and pupils expect to see progression or results in answering questions correctly, and in making standard artefacts to an increasingly high quality. Designing has never been part of the curriculum and the idea that one can progress in holistic skills of designing is not easy to grasp. The design sheets of 11 and 12 year old Russian pupils tend to be very formal and beautifully laid out, reflecting a tradition of careful presentation. To demand quick concept sketches, with immediate annotation, is again asking pupils to set aside everything they have been taught up until now.

Finally, there is little tradition of product evaluation, which we are calling 'design analysis'. Children are not used to being asked for their own views[3].

(b) *Problems of language*

The word 'design' in Russia has had a chequered history. When the 20th century concept of design emerged in the West after the Second World War, Stalin actually banned its use. By the end of the 1980's the word 'dizajn' really meant 'styling' in the sense that a product could come in a number of different designs, but it was essentially the same product. You cannot easily talk of 'designing a product' as a purposeful response to human need. There are a number of Russian words in use. You can 'invent' a new product ('razrabotat'), or develop / modify an existing product ('modifizirovat'). An engineer or architect might be engaged in 'projecting' a bridge or new building ('sproektirovat'). Whereas in English we have one word 'design' for 'Design (a) and Technology', the 'design (b) process', 'the design (c) of a control system', coming up with some original 'designs' (d), in Russian there are many different words – 'dizajn' (a), 'proektirovanie I izgotovlenie' (b), 'razrabotka' (c) and 'predlozhenie' (d). That 'design' is inseparable from 'technology', or that designing should be construed as a human-centred rather than purely technical activity, are novel ideas to many Russians, and far removed from the ideals of Communist education. A similar problem arises with trying to translate the word 'plan' or 'planning', which in Russian has connotations with an instructional chart or a five-year economic objectives.

(c) *Problems of programme management and acceptability*

Funding has been, and remains, a central problem. At the end of the 1980s Labour

Training ranked as the third most important subject in the Russian Secondary school curriculum as measured by timetable allocation, after Russian and maths, and just in front of all the sciences put together[2]. It still remains a huge commitment in terms of time and resources. Yet no one seems to be taking it seriously as an area for curriculum reform[4]. Both statutory and NGO Western agencies have taken the view that priorities in Russia should be education in Humanities – in this they are following the lead of the Minister of Education[5] - and in the mechanics of transition to a market economy. It is difficult to generate interest in a humanistic approach to Technology education. Everyone we speak to says that this is an important area and surely one of the others ought to be funding it. The impression of the authors is that funding agencies and grant-giving bodies like to generate their own programmes, rather than support initiatives which have grown from the base. It is difficult to break into their charmed circle.

A second problematic area could be called 'ownership of the programme'. Is it a Russian response to a new situation in Russia, or a British / Western import? Who will make money from it - Russian teachers and academics, or foreign experts on ex-patriot level 'allowances'? Will the programme be vulnerable to a Slavonic backlash against Western influence in Russia?

Thirdly, there are problems around communication. Email is not widespread in Russia, and phone calls and faxes are very expensive. The cost of internal travel has risen hugely (the price for the ticket between St. Petersburg and Moscow was Rb12 in 1990 and Rb120,000 in 1997).

(d) *Problems for participants*
There are difficulties around the role of the INSET training establishments. Many teachers have had bad experiences of them in the past. Training is often based on residential courses: since most Russian teachers are women and most Russian women are expected to have a full-time job and run the home, attendance is not easy[6].

Secondly, teachers' salaries have dropped. Most teachers need second or third jobs to survive, which leaves little time or energy to participate in an experimental programme. Salaries in education are low compared to industry – average salaries were 26% lower in 1996[7]. When the federal budget for 1996 was being formulated, the notional salary for a teacher was Rb316,000 per month, which was considerably lower than actual salaries paid in November 1995[8]. There were teachers' strikes in May 1996 as there was no money in the budget to pay salaries. There is a similar budget deficit for 1997. In 1995/96 the budget covered only for 60-65% of real needs in education[9]. These are the official figures; reality is worse.

On top of this there is the uncertain political climate. The experience of the authors is that most of the participants of the programme, and probably most professionals in the public sector, have adopted a 'wait-and-see' stance towards macro-political and economic change. But it does make working for change an act of faith, with little guarantee of success or personal reward.

(e) *Problems of assessment*
The aim of the programme is to establish a humanistic approach to Technology education in Russian schools[10]. How should the impact of the programme be assessed? The traditional way of assessing innovations in Russia is to set up an experiment, acquire quantitative data and form a conclusion. When we operate with concepts such as 'creativity', 'proactivity', 'problem-solving capability' it is difficult to assess them in quantitative terms. We have already provided two tests, in which control and experimental classes were involved. We wanted to assess the achievement of the students and analyse the difference. Certainly the "experimental" students demonstrate more "original" or "creative" ideas as judged by the teachers: but it was difficult to measure the level of creativity in numbers. We also have difficulty in finding matching control groups, because in every pilot school the classes of the same age students are streamed by achievement in the main subjects. So, if the teacher chooses one class as the experimental group the other class

will not be matched. However, we have to continue to develop such tests in order to propose a rigorous way of assessing the programme. From an English perspective, more appropriate tools might be illuminative evaluations and case studies, generated through participant observation.

4 Draft curriculum order

In the meantime, we have been asked by the Federal Ministry of Professional and General Education to propose an alternative 'Standard' or structure for a national curriculum order[11]. In the past, the content of what should be taught and learned was prescribed by the central authorities. The exact role and status of these new 'standards' is being worked out at present. But the first draft standard for Technology was really little different from the old syllabus plus textbook[12]. Essentially knowledge-based, it is a far cry from children developing their design and technological capability through a mixture of design and make projects, focussed practical tasks and design analysis.

'Technology Education in Russia' is proposing a very different model to the version currently on offer. First there is a philosophical section covering the general aim of education (creative, proactive children), the aims of Technology and Enterprise education, and the concepts of 'Technology'. The draft then proposes three main dimensions in the development of design and technological capability.

1 *The design-technology process* – stressing the holistic rather than linear nature of the design cycle, three types of activity (design analysis, practical exercises, creative projects), and requiring children to work individually and in groups.
2 *Development of Entrepreneurial skills* – marketing, identifying opportunities, teamwork and people management, negotiating, problem-solving, project design and management, writing a design specification, legal considerations, economic/business concepts, financial modelling, book-keeping, quality control.

	Aspects of Technology							
Techno-logical areas		Econo-mics & Enterprise	Human Factors	Quality	Safety	Ecology	Tech-nology & Science	Other Cultures & Times
	Materials (inc. food)							
	Information Technology							
	Production Technology (industrial & craft)							
	Eectronics & Control Technology							
	Structures & Mechanisms							
	Biotech-nology							

Figure. 3 Areas and Aspects of Technology
Proposed content of alternative 'Standard' for use in Russian Schools

3 *Areas and Aspects of Technology* - this is constructed as a grid (figure 3). It lists the areas to be covered during Classes 1- 9

5 Will it work?

Russia is in the grips of a transition traumatic for teachers. Their salaries have been cut, traditional teaching methods are unsuitable for meeting the aspirations encoded in the Education Laws, and there is a desperate shortage of suitable teaching materials. Although the programme is seen in Russia as a home-grown initiative[11] it is possible that active teaching methods could be construed as some form of cultural imperialism. Furthermore, Russia is a country of size almost unimaginable to Westerner Europeans, with huge ethnic and political diversity. (The Russian Federation includes 21 republics, 6 territories, 49 provinces, two cities of federal significance – Moscow and St. Petersburg - the Jewish autonomous province, and 10 autonomous areas – each with its own institutions.) Change from the top down is fraught with difficulties[13] – hence the strategic decision to build the programme from the base upwards.

Despite this, the authors have received a huge response to their seminars, both within the pilot areas and from further afield. Perhaps the most promising sign is the response from many teachers, heads and pupils. Not untypical are these comments from a Technology advisory teacher in St Petersburg:

> "The training seminars have clarified the philosophy of the new subject 'Technology'. Together we developed a curriculum and possible projects. During the last quarter I tried these with my students. I saw the enthusiasm of the children, their desire to realise their projects, their activity. They proposed a lot of ideas and taught me how to make some things! In total, their behaviour was completely different compared to previous classes. I am not young, but I am very glad that at last I have found the approach which I tried to find my whole life. I felt that something existed in the methods of teaching which made my students happy. Now I know what it is."[14]

References

1 Pavlova, M. B. *Socio-pedagogical foundations for preparing the British youth for adult working life at the compulsory school.* Dissertation for Doctoral Degree.
Moscow Academy of Pedagogical Sciences (1991) (in Russian)

2 Muckle, J. *A. Guide to The Soviet Curriculum – What The Russian Child is Taught in School*. Beckenham, Kent Croom Helm, 1988, pp 5,6

3 Karakovsky, V. A. The School in Russia Today and Tomorrow. *Compare* Vol. 23, No 3, 1993, pp 277-288

4 Authors' conversations with Yelena Lenskaya at The Federal Ministry of Education, The British Council, Ford and MacArthur Foundations, Open Society Institute, European Union).

5 For a better understanding of the terms 'humanisation' and 'humanitarisation' see Borisov, V. M. An Interview with E.V. Tkachenko. (English translation) *Russian Education and Society* Vol. 36 No 8 August 1994 pp 43-50 and Tkachenko, E. V. The Humanisation of Russian Education. (English translation) *Russian Education and Society* . Vol. 38, No 10, October 1996, pp 47-56.

6. Graham, P. and Moon, R. *A. Feasibility Study Examining the Potential for Developing Distance Education Materials and Programmes in Planning for Retraining Social Sciences and Humanities Teachers in Russian Secondary and Higher Education* Milton Keynes. Internal paper of The Centre for Research in Teacher Education, Open University, 1992.

7 *1995/96 Academic year: results, problems, perspectives*. Moscow. Ministry of Education of Russian Federation, 1996, p 81.

8 Ibid. p 27

9 Ibid. p 9

10 Policy document *Technology Education In Russia* adopted at the first meeting of the Co-ordinating Committee in January 1997.

11 Letter from G. K. Shestakov (Head of Department of Educational Standards and Programmes at The Federal Ministry of Education) to Prof. Irina Sasova (Director of the Programme 'Technology Education in Russia') 14th January 1997.

12 Khotunsev , Y. (Ed.) *Draft of the Standard in Technology Education* (not published) 1996.

13 Committee on Education and Science, State Duma. *Education and The National Security of Russia in Documents* No 2 Moscow, State Duma 1996.

14 Schmidova, V. A. (Technology Advisory Teacher School N233, St Petersburg) personal communication to authors, 1996.