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The central role of humanities and social sciences education in powering economic innovation

It is simplistic to argue that a shift in content away from the humanities and social sciences to vocational and technical education will improve technological innovation and economic progress. There are two reasons for this: (1) In the dimension of intellectual processes, humanities and social sciences education equips young graduates for innovative thinking. (2) Innovation is a process that is quintessentially social; therefore a humanities and social sciences component in education that improves social and institutional functioning also improves innovation.

Keywords: *Humanities education, innovation, vocationalism, Khrushchev education reform, computerisation*

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Провідна роль гуманітарної та суспільної освіти як каталізатор економічних інновацій

Є значним спрощенням дійсності підхід, який ґрунтується на уявленні, що при зменшенні частки гуманітарних та суспільних предметів в освітніх програмах й акцентуванні уваги на технічних науках відбувається покращення технічних інновацій та забезпечується економічний розвиток. Це пояснюється, принаймні, двома причинами. (1) В розрізі інтелектуальних процесів саме гуманітарні та суспільні науки спрямовують молодих випускників вишів до інноваційного мислення. (2) Інновація – це процес по своїй сутті суспільний, отже гуманітарні та суспільні предмети сприяють кращому інституційному функціонуванню інновації та подальшому економічному розвитку.

Ключові слова: Гуманітарна освіта, інновація, технократизм, Хрущовська освітня реформа, комп'ютеризація.

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Центральная роль гуманитарного и общественного образования как катализатор экономических инноваций

Значительно упрощает действительность представление о том, что при уменьшении удельного веса гуманитарных и общественных предметов в образовательных программах и большем акценте на технических науках происходит улучшение технических инноваций и обеспечивается экономическое развитие. Это обуславливается, по крайней мере, двумя причинами. (1) В разрезе интеллектуальных процессов гуманитарные и общественные науки ориентируют молодых выпускников вузов на инновационное мышление. (2) Инновация – это процесс по своему существу общественный, поэтому гуманитарные и общественные предметы способствуют лучшему институциональному функционированию инноваций и последующему экономическому развитию.

Ключевые слова: Гуманитарное образование, инновация, технократизм, Хрущёвская образовательная реформа, компьютеризация.

Introduction

The vocational paradigm and an elitist technocratism characteristic of the former USSR still holds considerable sway in the thinking of CIS and Ukrainian policymakers. This attitude is also widespread in Western countries, where it is abetted by the ideology of economic neo-liberalism. Consequently, many countries have adopted narrowly techno-economic policies in their secondary and higher education. [1] In the view of post-Soviet technocrats and Western neo-liberals, humanities and social sciences (HSS) education is considered, if not irrelevant to the modern world, then at least an expensive luxury that detracts public investment from education in the STEM (science, technology, engineering, mathematics) sectors thought to be more necessary for technological innovation in a competitive world economy.

In contrast to this view, citing extensively from empirical research conducted by a Canadian author, Robert Allen, the main argument of this article is that the HSS are central to technological innovation and economic progress. The reason is that the implementation and realisation of technological progress are fundamentally a *social* process [2]. In support of this reasoning, other authors assert that there is a “flawed belief” that scientific results are the primary input into innovation processes. In particular, these authors say, commercialisation of academic science through patenting, licensing, and creation of spin-off companies is an activity that receives too much attention compared to its volume and significance [3]. Gulbrandsen and Aanstad assert from an innovation perspective that general education and training of a nation’s future workforce are more important for innovation than basic (natural sciences) research. However, the contribution of education and training to innovation is *indirect*; that is, general knowledge enables secondary and scientific school graduates to be more ef-

fective in innovative technological work. Gulbrandsen and Aanstad note further that the main challenge of innovation processes “is rarely a lack of [natural] science ideas (they tend to proliferate) but the corresponding ability to put [innovations] into practice ... through good user linkages.” Therefore courses focused excessively on the STEM fields may have little economic impact. Furthermore, innovation – defined simply as “something new that is put into practical use” – is commonly found in low-technology and service industries [4].

Brief literature review

Selected works in the fields of Soviet and Western innovation processes and educational systems design are Berliner, J. (1957), De Witt, N. (1961), Clifford, G. (1975), Bailes, K. (1978), Beissinger, M. (1988), Connor, W. (1991), Lane, D. and O’Dell, F. (1978), Malle, S. (1990), Matthews, M. (1982), Sorrentino F. and Curcio, F. (1986), Khrushchev, N. (1958), Dneprov, E. (1991), Glazunova, N. (1987), Iagodin, G. (1990), Kuraev, A. (1989), Subbotina, K. (1985), Tomin, V. (1982), and Zel’tserman, B. (1986). General Western works on education and innovation are Soltys, D. (1997), Gulbrandsen M. and Aanstad, S. (2015), Kent, E. (2012), Abreu M. and Grinevich, B. (2013), Jacobs, J. (2012), Evans, M. (2010), Wihlborg, M. and Teelken, C. (2010), Kanter, M. (2014), Allen, R. (2004), and Neuman, S. (2005).

The author of this article (Soltys D.) studied the Ukrainian education problems and its trends over the years [5, 6, 7, 8].

Purpose

Ukrainian policymakers should be careful in the selection of the sources of their policy ideas. Some ideas seem universal; some are old enough to seem national and common-sensical; but often, in the post-Soviet context, the origins of ideas can be traced to the banal practices and justifications obtaining under the USSR. A case in point is the old debate over the right balance in education between the humanities and social sciences on the one side and vocational-technical courses on the other.

Historically, the advanced European countries and USA had, and still have, large HSS components in their education; and built their successful economies on the basis of such education. These educational designs are actually pre-industrial, something that shows, paradoxically, that a large HSS component encourages economic development [9]. The very top universities – the Harvards, Stanfords, and Oxfords – have been able to resist the vocationalism and commodification of education currently advocated by neo-liberals, that threatens to submerge less prestigious universities. The most prestigious universities have survived decreased neo-liberal state budgets and increased “quality assurance” bureaucracies, because even the detractors of HSS have recognized that these universities produce intellectual value that more regulated and vocationalised universities may no longer be able to do well [10].

For its part, the USSR was the veritable homeland of vocationalism, and the proletarianisation of teachers and faculty attained extreme proportions. Vocationalism was integral to the legitimisation of the Soviet regime, whose priority was the control of nations and territories, not civic society and free intellectual development. Inevitably, Ukrainian citizens and policymakers became colonised intellectually, and still often remain so. As for the West, the never completely victorious neo-liberal, vocational paradigm is now losing ground for lack of evidence of its effectiveness; therefore Ukrainians should be careful not to accept as “national” or “modern” the outdated policies of a foreign empire.

Results

Unfortunately, however, vocationalist policy trends intensify in a weak economy, and result in a narrowly technical sort of education that creates a labour force that is passive at work and inactive civically [11]. As the economy declines because of misconceived education and labour policies, this causes a downward spiral that seems to justify yet more vocationalism. This is what graphically occurred with the education reforms of Nikita Khrushchev of 1958, the Brezhnev education reform of 1984, and the Gorbachev initiative of 1988. This author's own research shows that the decline in the vigour of Soviet general and science education, and in economic performance, was accompanied by the policy triumph and then stagnation of the Khrushchev-Brezhnev-Gorbachev education measures [12].

Essentially, Soviet policymakers lost their courage and opted for a "small" view of education and human abilities. Soviet budgets and institutional efforts retreated from fundamental (pure or abstract) scientific research to applied research, and from general secondary education to a more narrowly vocational one. At the same time, the Soviet economy failed to make the transition from a primarily commodities-based and steel-making one to a services- and knowledge-based one. Accordingly there was no inter-sectoral shift of labour and investment in the 1970s and 1980s from commodities and steelmaking industries to more modern electronics and service industries. There was also a downward shift of students away from intellectually more-demanding general and science education towards vocational education, creating less intellectual value-added. That is, the talents of youths which could have been realised in more ambitious, knowledge-based professions were tragically wasted by a misconceived vocational-technocratic policy of inducing youths into downward professional mobility and under-employment. And, as we witness today, the Russian economy remains undiversified.

It is well known that Soviet spending and efforts in Research and Development (5% of GDP) significantly underperformed; and only very late did Soviet policymakers understand that the economy was hindered by an under-developed service sector – a sector that comprises about 70% of the labour force in the most advanced Western economies. In this regard there is a substantial Western literature on the "innovation avoidance" of Soviet industry [3]. Most of the reason for poor innovation was the rigidities and disincentives caused by central planning, but also poor institutional functioning and the proverbial "waiting for instructions from above" by passive managers and workers. The underperformance of Soviet Research and Development and of a labour force trained for deference to authority underlines the importance for innovation of good institutional functioning and personal initiative, which a HSS education encourages.

As an alternative to the scene above, Allen takes issue with what he calls "techism," – the view that the maintenance of a country's prosperity, in this case Canada's, requires a redirection of resources towards more technical education. Allen states that techism is advocated by people whom he calls "techniks," and comes in two forms. "Highbrow techism" emphasises the need for highly educated scientists and engineers to promote the expansion of manufacturing and related businesses. "Lowbrow techism" accents the need for the technical skills taught in one- and two-year college programs. He says that while techniks are right that the demand for technically trained workers is growing, the same is true for graduates in teaching, the humanities, and social sciences. These latter fields, he says further, are in demand because the widespread utilisation of computers and information technology has revolutionised the organisation of business and government. The new-style organisations put a premium on workers who can relate models to real situations, work well with other members of a management team

or with clients, and who can speak and write effectively. These skills are developed in HSS programs. Techism, which concentrates on the production of new technologies and on the small details of their operation, misses the organisational revolutions that accompany the adoption of new technologies. In sum, Allen attributes the usefulness of the HSS to improved *social and institutional functioning*, which in turn helps to more effectively implement technological innovations.

Another Canadian writer, Shirley Neuman, [14] describes what occurs *intellectually* as children and youths read and study in the HSS. Her eloquent defence of reading novels for developing integrated thinking deserves to be quoted at length:

When I read descriptions of integrative thinking, I recognize the activity of a trained reader of a novel. Between page 1 and the end of a novel, a trained reader charts her way through another society and culture, or through some particular manifestations of her own – its politics, laws, customs, religion, history, and values. She masters the more or less extended kinship system and the professional and friendship networks of the characters that populate the fiction, often in historical circumstances quite different from her own. She comes to understand the psychological makeup of the characters, their motivations, and their relations with one another; the situation or plot in which they find themselves; the alternatives open to them; the inevitability of their end, if it is inevitable, and the alternatives their author has denied them, if it is not. A well-trained reader will also understand the place the novel holds in the author's national literature and in the history of literature itself. She will be able to define the ways in which the novel draws on well-established traditions and the ways in which its language, form, characterization, or plot map out new territory in the national psyche or advance new answers to the question of how writers represent lives, cultures, communities, and histories.

A novel, in short, is a highly complex and integrated system. Students who are taught to read novels carefully, analytically, and holistically – like those who can approach music or a painting or a philosophical treatise in this manner – have been taught the basics of integrative thinking.

In other words, the HSS prepare people for many skills such as contextualisation, creativity, ability to imagine alternatives, empathy, understanding of foreign cultures, problem-solving, and other skills that are concretely useful for the economy, particularly the fluid and globalised economy of the present day.

Having in mind both social and intellectual processes, Allen makes the findings summarised below from a careful empirical study using Canadian census data: First, graduates of lowbrow techism schools (junior colleges) did rather poorly in terms of employment rates and income in the employment market, in fact more poorly than their counterparts with junior HSS degrees. Thus the lowbrow techniks' argument in favour of greater junior vocational education was not upheld. At the doctoral end of highbrow techism, STEM graduates did less well in terms of employment growth and income than did graduates in the HSS. In this, Allen was careful to show that the Canadian labour market was not distorted by the skill profile of graduates supplied by public schools and universities, but was pulled by the demands of the business market itself. It was the market, not public policies, that rewarded graduates who had studied in the HSS.

Allen then reiterates the argument that the creation of STEM innovations is less important than their utilisation. The first example that he offers is that of the computer industry. Canada has no significant computer industry of its own, though the country's economy is highly computerised and Canada's record of implementing innovations is just as good as in the leading American and West European economies. The second example is agriculture. Canada has a relatively small bio-science industry, and so this

industry's direct contribution to the national economy is small. However, Canada's agriculture industry is large, therefore the utilisation of new plant cultures or animals developed by bio-science is correspondingly large. Likewise, the computerisation of farm machinery and handling of inputs increases productivity on a vast scale, in what was traditionally a low-technology industry.

Allen says his evidence shows that specific skills training, by itself, has no payoff in a knowledge-based economy; that is, specific skills are brought to life only if accompanied by general education. And as per Neuman's description of the intellectual process within HSS education, one of the outstanding features of the knowledge-based economy is the breadth of advanced education and the skills it requires. Thus the issue is not whether an employee knows how to operate an Excel spreadsheet, so much as whether the employee can apply a model to a problem, deal effectively with customers and other members of a management team, write and speak clearly, and make informed and independent judgements. So, what sort of knowledge was in demand in Canada?, Allen asks. He found that HSS graduates in the high-growth province of British Columbia had the highest rate of employment growth. The physical sciences came in second; engineering was third – an unexpected result for techniks. Equally surprising was the strong showing of the humanities, which came in fourth, beating out commerce at five. Health, nursing, teaching, fine arts, and the biological sciences followed.

At the same time, the widespread utilisation of computers in Canada explains why the demand for arts and social sciences graduates has been growing rapidly. Information technology has revolutionised business organisation and cut the cost of information. Concomitantly, the falling cost of information has made the hierarchical organisation of business inefficient. Expensive senior managers no longer have the time to deal with all the information that can be cheaply and usefully produced. Citing Herbert Simon, a Nobel Prize-winning economist, Allen notes that "The scarce resource is not information, it is the processing capacity to attend to information. Attention is the chief bottleneck in organisational activity, and the bottleneck becomes narrower and narrower as we move to the tops of organisations."

The result of the computer revolution has been threefold, relates Allen. First, there is an increased demand for people who can understand the information generated by computer systems, analyse it, relate it to the real world, and act on it. These kinds of general intellectual abilities are the sorts that are developed in HSS programs. Second, organisational structures have become flatter. Instead of multiple layers of managers doing routine information processing, there are fewer layers in the hierarchy and the employees are charged with analysing and acting on the greater volume of processed information available. There is much greater demand for people who can make critical and independent judgements, and whose capacities are cultivated, again, in HSS programs. And third, the new-style middle managers need greater interpersonal and communication skills both to deal with customers of the firms and to work together in self-directing teams. Once again, a HSS background makes employees more effective. In sum, the evidence produced by Allen contradicts the lowbrow and highbrow technik vision of the emerging modern economy.

Fortunately, there seems to be a growing recognition within the Canadian business community of the value of HSS education; accordingly chief executive officers of several large firms asked the Canadian government to support undergraduate education in the arts and social sciences. Likewise, the prestigious Rotman School of Management at the University of Toronto has identified the contribution of what it calls integrative thinking for organisational success. [14] Echoing Allen's empirical findings, Martha Kanter, Under Secretary, United States Department of Education, has asserted that,

Advocates who dismiss the importance of the humanities might be surprised to learn that the skills most frequently identified by employers seeking new hires are those that are often the most readily learned through humanities disciplines such as literature, theater, and the applied behavioral sciences [15].

Kanter's views are reinforced by similar data assembled by Northeastern University in 2013, the United States Chamber of Commerce in 2013, and the American Association of Colleges and Universities [15].

Conclusion

From all the above and from recent Western education policy literature, it is evident that the techist, neo-liberal paradigm of education and labour training is losing its persuasiveness. To be sure, the Ukrainian context differs from the Canadian one, but in any case policy should be informed by empiricism and not driven by ideology or stereotype. Accordingly it would be a great error for Ukrainian policymakers to repeat the techist mistakes of Khrushchev and subsequent Soviet leaders. Policymakers should avoid what Evans [10] calls the "overmanagement of knowledge" and should not try to force the national economy into areas it does not need to go. Most of all, policymakers should not de-skill and de-intellectualise the young graduates of Ukraine, who have the ability for higher attainment than these policymakers might believe.

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