Investment in Human Capital: Vocational vs. Academic Education

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Introduction

The present paper discusses the issues connected with academic vs. vocational education. The overarching theme of the paper is the acknowledgment of the importance of cost-benefit analysis when arguing for or against either type of education: academic or vocational. The dilemma of providing effective education particularly in developing countries with limited resources and ambiguous calculations of rates of return due to unstable economies and labour market fluctuations makes it an absolute necessity to consider costs and benefits associated with each type of education.

Through argumentation and scholarly literature analysis the paper brings together the benefits of academic education and emphasizes its multiple positive implications as opposed to secondary-school level vocational education that has a number of problematic issues to tackle. The argument further develops towards shifting vocational education from secondary-school level to on-the-job short-term technical trainings.

Finally, the paper also brings some arguments from scholarly literature that while rich developed countries can afford certain amount of vocationally oriented subjects incorporated into comprehensive secondary school curricula, the most optimal way for developing countries to find the solution to the problem would be to conduct vocational training courses at job places and adhere to general academic education in secondary schools.

Manpower forecasting and vocational education fallacy

Manpower forecasting - the process widely spread in countries with planned economies back in the 1950s and 60s - was most commonly associated with vocational education that prepared

workforce according to the demands of the economies of those countries. Centralized governmental control in some developing countries was also named as the 'crucial variable in determining the effectiveness of an agricultural or a technical program' (Foster, 1965: 143). However, there were certain problems connected with manpower planning: it didn't follow the graduates to labor market, hence, it wasn't clear whether the graduates of a particular vocational school actually followed the career that suited their specialization; humanities and social sciences were ignored, thus, a considerable share of labor market possibilities was practically lost. Most importantly, vocational education didn't provide the academic flexibility for the graduates to fit their knowledge and skills to the changing demands of labor market. They were *apriory* restricted in their job choice to the limited skills and knowledge that they had acquired at vocational schools. Foster (1965) warned against reliance on the manpower planning which at that time was fashionable, and he warned against investments on a large scale in vocational training within "the school system" (Foster, 1965).

The debates regarding vocational versus academic education in terms of practicability go further back in history. 'This classic difference of opinion on what constitutes the 'most practical' education was personified among American educators by the famous W.E.B. du Bois / Booker T. Washington debates in the 1920s and has been played out since then in countries as diverse as China and Brazil….The basic question today has not really changed since the origin of the controversy at the turn of the century. What constitutes basic education? …Should a country spend three times more on teaching woodshop than on mathematics?' (Heyneman, 1985: 283, 288). 'Essentially the same debate was conducted in the white community between John Dewey and Charles Prosser. The debate continues and is reflected in the legislation passed by Congress, originally in the form of the Smith-Hughes Act, and is reflected today in the provisions of the

Carl D. Perkins Act for Vocational and Applied Technology Education Act of 1990. Washington and Dubois were instrumental in shaping the debate which will continue and enrich the discussion of which type of education is of most value for generations to come' (Frantz, 1997).

Later the controversy regarding vocational education (particularly on the example of Africa) was sharpened by publications of the British economist, Thomas Balogh, in 1961 who was criticized by Foster. 'Balogh's views, stated in perhaps more measured terms, are paralleled in a recent United Nations publication in which it is observed that one of the chief educational priorities in economically developing areas is "the creation of a fully integrated system of agricultural education within the general framework of technical and vocational education' (Foster, 1965: 142). Whereas, Foster prioritized "small scale vocational training schemes closely associated with actual ongoing developments, so far as possible, divorced from the formal educational system…" Rather than exclusively focusing on school leavers / graduates … he wrote that "maximum effort can be undertaken with individuals already involved in specific forms of economic activity' (Foster, 1965 cited in Lauglo speech, March 2008). This would in today's jargon mean "nonformal" short courses, for example, the ambition of strengthening productivity in the informal economy by teaching simple accounting and management skills to small scale entrepreneurs' (Lauglo, March 2008).

Foster (1965) put some key questions regarding curriculum planning and implementation for vocational schools:

- What would an educational scheme adjusted to developmental needs look like?
- What role would the schools themselves play in such a program?
- At what stage should vocational subjects be begun?
- How would technical and agricultural schools be integrated with the general system?

- What are advantages and limitations of various types of educational programs?
- Then there is the problem of the content of studies; frequently vocational curricula are ill designed to serve the needs of developing countries' (Foster, 1965: 143).

Foster argued that vocational education was least practical. Besides, students migrated to cities for better career opportunities that often made their vocational education irrelevant for the job aspirations that they pursued. Therefore, vocational education was ineffective and counterproductive (Foster, 1965). Foster discusses the situation in Africa: 'In practice, the demand by Africans for western education was and is predominantly oriented towards the provision of more academic-type schools. This preference springs, I contend, from a remarkably realistic appraisal of occupational opportunities generated within the exchange sector of the economy as a result of European overrule' (Foster, 1965: 145).

Criticism of vocational education by Phillip Foster

Below is the summary of criticisms that Phillip Foster (1965) offered regarding vocational education. He stated that as a result of vocational education:

- Trained individuals might be produced for whom there is no demand in the labor market.
- Skilled personnel might not enter the jobs for which they have been trained but might choose the job with better opportunities.
- Hence, skilled personnel might not be utilized and instead be involved in tasks not relevant to their training. 'It is frequently evident, for example, that highly trained engineers in some areas are heavily involved in routine administration and paperwork which could be effectively performed by individuals possessing no professional skills' (Foster, 1965: 155).

- The result would be 'wastage of skills' due to discrepancy between students' and planners' expectations. 'It must be recognized that wherever technical education is given largely in institutions which are part of the formal educational structure, the expectations of the students may pervert the intentions of the planners' (Foster, 1965: 155).
- Farmers might be involved in constraints of traditional rural structure, hence *progressive farming* would be hazardous. This would divert potential farmers to urban clerical jobs.

Vocational education vs. academic education – flexibility issue

The inclusion of vocational subjects in secondary school curriculum has appeared the most debated issue across countries. 'Vocational education has remained a contested theme since Foster's seminal paper' (Lauglo, March 2008). It has become even more debated alongside with increasing international labor market demands that heavily rely on commercial and service consumerism and therefore, require academic flexibility from the job applicants. Shifting demands of modern life require academic flexibility to adjust to the changes constantly going on in the labor market. Therefore, vocational education is perceived as a disadvantage for a job applicant due to the limited skills and knowledge that the vocational schooling has provided for him. Comprehensive academic education is, on the contrary, regarded as an advantage that equips students with the general knowledge and flexibility of adapting to changing demands that are so characteristic of modern labor market.

Example: The importance of general education for agricultural growth

A good example of the benefits of academic education even for the fields usually associated with vocational education is provided by Wharton (1965) who associates the process of providing farmers with general education with the creative process of self-discovery that helps them increase productivity with even basic general knowledge. 'Education pushes back cultural

limits or prohibitions; it widens the scope for decision-making, because it broadens the individual's notions of the 'possible'…Education increases the farmer's inquisitiveness, which heightens the likelihood of self-discovery of new knowledge concerning the operation of his own farm with its unique bundle of resources…Given the physical and climatic heterogeneity which is so characteristic of agriculture, self-discovery is an important ingredient necessary for agricultural growth' (Wharton, 1965: 206). With minimum expenses and basic education low-income countries (the majority of which are agricultural) can significantly improve their economies. Because low-income countries are 'starved for capital …additional capital is truly the key to their more rapid economic growth' (Schultz, 1971: 31-32). Hence, even basic general education will contribute to the 'self-discovery' of the farmer and consequently, to the development of agriculture and economic growth of a country.

Vocational vs academic school curricula – cost-efficiency and equity issues

The most important issue to be considered while juxtaposing academic and vocational education is the type of curriculum and school subjects that each of them requires, and the key question to be put in this respect is: 'What do we want these subjects to do?'

Psacharopoulos (1987) develops the idea of considering two important effects while designing new school curricula. These are efficiency and equity effects.

Efficiency effects of curricula

Efficiency should maximize social wellbeing (W) subject to available resources (R). Social wellbeing may be operationally defined as consisting of total real income (Y) and its distribution (Var Y). The following formula illustrates how efficiency effect could be calculated:

Max W = f (Y, Var Y) Subject to R

Obviously, curriculum with the highest cost-benefit ratios would be the best option for any educational institution (Psacharopoulos, 1987). Besides, 'vocationalization entails reallocating resources among alternative uses which have differential productivity, and the benefits and costs of which are differently distributed across socio-economic groups in the population' (Psacharopoulos, 1987: 189).

However, while the cost of a given curriculum is easy to estimate, benefits are relatively difficult to discern (Psacharopoulos, 1987). This becomes most evident while comparing the expenses for the equipment and technology necessary for vocational classes with the inexpensive arrangement of general academic classes, and thereafter comparing rates of return to vocational vs academic education. The analysis across countries at all levels of education has consistently shown relatively low rates of return for technological, agricultural and science fields compared to the rates of return to the fields of social sciences and humanities (Psacharopoulos, 1987). The acute lack of resources has been dominating the discourse of efficient vocational education organization. Vocational education is considered to be more expensive than general education (Oketch, 2005: 138).

The table below illustrates relative unit costs for different types of secondary school curriculum, which reveals high costs for technical / industrial curriculum compared with general academic.

Table 1. *The Relative Unit Cost Structure of the Secondary School Curriculum*
(Index: Academic = 100)

	Curriculum			
Country	**Academic/ General**	**Agricultural**	**Commercial**	**Technical/ Industrial**
Colombia	100	119	101	125
Tanzania	100	119	109	113
Malaysia	100	-	163	163
Barbados	100	139	158	142
Jordan	100	-	-	196

Source: *Psacharopoulos, 1987 in Heyneman, 1987: 67.*

Another table shows rates of return to vocational and non-vocational secondary education in different countries, where the higher returns to non-vocational education are evident:

Table 2. *Rates of return to vocational and academic secondary education*			
		Curriculum	
		Academic	Vocational
Cyprus	1975	10.5	7.4
	1979	6.8	5.5
France	1970	10.1	7.6
Indonesia	1978	32.0	18.0
Liberia	1983	20.0	14.0
Taiwan	1970	26.2	27.4

Source: *Psacharopoulos, 1985b, Table B-3 in Heyneman, 1987: 68.*

The estimation process of benefits is a difficult process due to the time-span necessary to reveal the connection of one's education with labor market prospects and success. The procedure becomes even more complicated in the context of high mobility and changing trends in job market that makes it difficult to track the progress of one's career.

Regarding high costs of vocational subjects, another key issue that rises is the definition of their goals and then potential attainment of these goals. 'If vocational subjects are costly and complex, then the question of whether they achieve the goals set out for them becomes all that more important. …It is far from obvious what their goals are. A key question is whether they are seen as part of a well rounded general education, or whether they in fact are seen as "vocational" in the sense of teaching occupation-specific skills' (Lauglo, 2008). Thus, the debate again comes to the point of considering country cases for the definition of what 'is most needed' and the stage at which this 'needed' training should be introduced (Lauglo, 2008).

Equity effects of curricula

Equity effects are another important issue to be considered in curriculum design or deciding the type of curriculum to be introduced in secondary schools. The key questions offered by Psacharopoulos (1987) are:

1) Do less privileged groups have access to rewarding jobs as a result of a new curriculum?

This could be calculated with the formula:

$I_c = E_{ci} / P_i$

Where, I – is representation index; E – represents entrants to a particular curriculum (c); P – denotes population disaggregated by socio-economic group.

2) Who pays for education?
3) Are the rewards distributed more equally as a result of a new curriculum? (Psacharopoulos, 1987).

The time-span necessary to track populations' socio-economic dynamics and high expenses connected with conducting such an empirical analysis make it difficult to give accurate answer to the above questions. However, one argument in favour of academic education offered by Psacharopoulos is that by intentionally diverting low-achieving students towards vocational education many countries exacerbate social inequalities, while academic education gives equal opportunities to different SES students and hence provides more equitable chances. And finally, 'Curriculum change is an ineffectual tool for changing young people's occupational interests. Rather, occupational expectations and ambitions of students are shaped by perceived educational and labour market opportunity…(Lauglo, March 2008). However, according to recent findings, '…students attending secondary schools with vocational subjects were more interested in pursuing careers in "technological fields" than those attending "purely academic" secondary school' (Lauglo, March 2008).

It seems that the issue still remains controversial and needs further study.

The possibility of hybrid curricula?

Lauglo and Mclean (20050 discuss *industrial education* back in the 1980s in lower secondary schools on an example of Kenya. 'This was a lightly vocationalized secondary school curriculum

which still remained mainly ‘academic’ or general. The subjects included woodwork, metalwork, electricity and power mechanics. Students could take such subjects (some 4-5 hours a week) and yet remain on the preparatory path towards higher education’ (Lauglo and McLean, 2005; Lauglo, March 2008). However, the questions that could be put in this respect are: what would the ‘hybrid’ curriculum look like? What would be the year in which vocational training could be introduced in parallel with the academic subjects? Would such a school be operationalizable? If yes, how would be the balance between vocational and academic subjects be maintained? Which vocational skills and knowledge would be given priorities? Who would be in charge / responsible for making the choice of the relevant subjects, skills or trainings? Would there be a board of headmasters from different spheres to determine this instead of just one headmaster? How would they agree over disputed issues? What would be the degree of their accountability to the wider public, to students / parents, to the government? How inclined or motivated would the students be to attend such schools? How would schools adapt vocational school subjects to changing labor market? And most importantly, how would all this undertaking be feasible with limited resources and high costs associated with vocational education?

On the other hand, Oketch (2005) puts forward an idea that in modern times it is a matter of definition of what is implied by ‘vocational education’: is it more technology-agriculture oriented or service-consumerism oriented, for the significant part of the western developed world is actually moving towards more vocatioanlized skill-oriented instruction, be it communicative skills, practical problem-solving skills, or other (Oketch, 2005). The issue is that while there is high demand in such service or customer oriented labor market in the west, the developing countries are in the process of constant defining and re-defining of vocational priorities in their respective countries. This lack of clarity seems to be contributing to the much debated issue of

vocational vs academic curriculum, in the context where the first issue that needs to be solved is the definition of priorities (Oketch, 2005).

Who should provide vocational education?

There are certain industrial countries (US, Norway, Sweden, Finland, Germany) that have offered the choice of vocationally oriented education at a secondary school level (Lauglo, March 2008)[1]. For instance, in the US there is "cooperative education" in some high schools. However, institutional models that fit industrialized countries do not necessarily fit developing countries, the majority of which cannot offer such options owing to financial limitations[2]. Therefore, Psacharopoulos (1987) raises issues to be further explored, namely, 'where best vocational education should be provided', and 'who wants to be vocationally trained', pertaining to supply side and demand side respectively (Psacharopoulos, 1987: 201).

In reply to the posed questions, Psacharopoulos (1987) provides recommendations regarding vocational education: 'The provision of skills in a given economy does not have to be school-based, and even if it were school-based, it does not have to take place in the mainstream educational system. Employment-based training has been the traditional mode by which skills have been formed for centuries….Even better would be a case where the specialized training were provided to those *already* in the profession, i.e. by on-the-job training within the employing firm'. Furthermore, such an arrangement of training would also attract graduates who would be 'willing or committed *ex ante* to exercise that particular profession upon graduation' (Psacharopoulos, 1987: 201-202). Thus, the best way to tackle the issue for them would be to

[1] Lauglo emphasizes that 'if there is a recent trend in OECD countries, it is probably that more vocational skills training is carried out than previously, in relatively comprehensive schools at the post-compulsory level' (Lauglo, March, 2008).

[2] Teaching the use of ICT (Information and Communication Technology) is regarded as a shared challenge both for rich and poor countries.

offer on-the-job trainings that would be more relevant, more responsive to technological change and would allow more choice (Psacharopoulos, 1987).

Foster (1965) also argues that it would be more realistic and efficient under the conditions of limited resources to introduce short training courses that will be provided by employers and more relevant to particular requirements of the given company. 'Such activities are clearly advantageous to both employer and government, and there is no reason why training of this type should not be aided through tax remissions or partial government subsidy. It is important for the governments of these areas to appreciate that the best kind of vocational education is that which is partially paid for by those who participate in the market for the skills to which the training is directed' (Foster, 1965: 156).

Besides, Foster states that 'The expansion of ongoing programs is likely to be more economical and the wastage of trainees is almost certainly likely to be less than it has been from vocational training schools which are part of the formal educational system' (Foster, 1965: 157). Foster emphasizes the importance of involving institutions in training courses for adults: 'It would seem desirable in the future that a large number of enterprises (public and private) have built into them some provision for training of middle-range personnel, often in association with alternate short courses in technical institutions' (Foster, 1965: 157). Hence, there would be no 'wastage of skills' that have been usually associated with vocational training (Foster, 1965: 146). Vocational skills ought to be taught with close connection to their work application. Training would then be more realistic and a better balance could be achieved between the supply and demand of skills.

In Foster's footsteps, Bowman (1988) later referred to such key communication skills taught in general education as "portable" because these skills can be applied in a variety of educational and occupational tasks' (Lauglo, March 2008).

The World Bank has also decreased financing vocational secondary education and instead shifted towards financing in-service trainings. 'Absolute VET investment reached a peak of $845 million in FY80, and has fluctuated annually since then around an average of $500 million. Within VET, there has been a significant shift away from investments in secondary diversified and vocational schools towards nonformal training centers and university-level programs. Investments in VET for industry have increased, while those for agricultural education and training have decreased substantially' (Middleton and Demsky, 1989).

According to the World Bank estimates, 'Secondary vocational schools in middle income countries have been more effective than those in low income countries, particularly those in Africa. The explanation lies in the fact that many of the effective schools have acquired characteristics -- such as linkages with enterprises, incentives to attract and retain qualified instructors and students, good "feedback" systems -- which are most often thought characteristic of nonformal modes'(Middleton and Demsky, 1989). This fact again reverberates the argument that while more industrialized countries can afford secondary-school level vocational subjects, low-income countries should primarily concentrate on in-service vocational trainings.

How much involvement from the government?

The degree of independence of vocational schools from governmental control is another important issue that determines the efficient implementation of vocational education and its beneficial implementation in a country. Oketch (2005) offers less involvement of governments in vocational trainings and education (Oketch, 2005: 138)**.** The World Bank also emphasized the

importance of private provisions of vocational education or training due to high costs of provision and the abundance of private providers (Middleton, et al., 1993). 'Seven institutional modes for vocationally-specific education and training are identified: university, teacher training for general education, diversified secondary, post-secondary, secondary and nonformal. Taken together, these modes define the universe of types of vocational education and training in which the World Bank has invested' (Middleton and Demsky, 1989). Depending on the industrialization and income-level of countries the World Bank develops appropriate financing strategies that make vocational education system more independent from government involvement (Projects discussed in Middleton and Demsky, 1989).

Hence, it would be much more efficient to entrust vocational educational and training programs to private providers who would keep track of labour market changes and demands more effectively and would provide more relevant, up-to-date trainings at their expense, thus freeing significant portion of public money.

Conclusions

Disadvantages of secondary-school level vocational education

Following noteworthy conclusions can be drawn from the overall discussions in the paper. To start with, several significant disadvantages of secondary-school level vocational education could be summarized as follows:

- Vocational education is more expensive at all levels;
- Rates of return to agriculture, technology and science fields are low;
- Involuntary streaming into vocational education exacerbates social inequalities;
- Perceptions of vocational education are poor because it is considered as a second-class education that makes it difficult to proceed to higher education;

- Gender stereotyping: Some vocational training programmes like dressmaking, hairdressing, and cookery are associated with girls;
- In many developing countries there is a lack of qualified instructors in vocational subjects;
- Inadequate ICT infrastructures: Material resources are not available or are too expensive;
- Vocational education leads to 'specific human capital' due to imparting specific job-relevant skills to students that do not allow for flexibility and adjustability;
- Pupils arrive at dead-end as far as higher education is concerned.

Suggestions regarding vocational trainings:

To tackle the above shortcomings several suggestions have been made. 'The provision of vocational education must be directly related to those points at which some development is already apparent and where demand for skills is beginning to manifest itself'(Foster, 1965: 153). Hence, Foster recommends small-scale vocational trainings related to ongoing economic developments and separate from secondary-school curricula. 'Training which is closely related to work situations is very desirable' (Foster, 1965: 156).

Psacharopoulos (1987) makes similar noteworthy suggestions on where vocational trainings could take place and why. He offers to allow vocational training to take place outside of the mainstream school system because it:

- Allows for more student choice;
- Is more efficient, because it is more responsive to technological change;
- Is more relevant – the manager knows the necessary skills and trainings that are required for a particular company.

Benefits of general academic education

Finally, the benefits of academic education compared to vocational education can be summarized as follows:

- General academic education is more flexible, cost-effective and equitable;
- Creates general human capital;
- Creates flexibility and portability over one's life and from one's job to another;
- Enables pupils to continue in their schooling to higher levels;
- Is capable of responding to economic and labor force changes in society.

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