

Readiness of School Leavers for the Workplace of the Future

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Executive summary

Advances in 3-D printing, automation, robotics, and artificial intelligence are certain to change the workplace of the future. The shape and form of such a workplace is less certain, but, the emerging phenomenon of gig work enabled by digital platforms allows a peek into that future.

A digital platform is essentially software that connects suppliers of services to clients for gig-work or one-engagement-at-a-time interactions, bypassing traditional employer-employee relationships. The socio-economic issues arising out of this type of work is addressed in depth elsewhere (ILO, 2018). Focus of our research is on the readiness of the workforce for this type rapidly of work environment.

LIRNEAsia's research on those who find work on digital platforms such as 'freelance.com', 'Upwork' or Uber in Myanmar, India and Sri Lanka has highlighted the importance of 'adaptability' as a baseline competency for the workforce of the future. Adaptability is a combination of specific cognitive skills and socio-behavioral skills that are applicable in any work setting (World Bank, 2013). For decades, educationists have been advocating more or less the same set of competencies as desired outcomes of education, but using terms like Generic, Basic or Transversal competencies. These competencies are also known as 21st Century competencies (P21, 2009).

As far back as 1992 in Sri Lanka, the National Education Commission (NEC) identified a set of five basic competency categories –i.e. competencies related to Communication; Social, biological and Physical Environment; Ethics and Religion, Play and Use of leisure and Learning to Learn – that cut across subjects competencies. These five categories have been reiterated and/or modified since then, but unfortunately, to date, they have not been put into practice. School education is organized around the subjects that are tested at the three major public examinations in Sri Lanka – Scholarship Examination at end Year-5, GCE (O/L) at end of Year 11 and GCE (A/L) at end of Year-13. Competitive pressures for these exams are such that a typical student relearns in tuition classes after school and on weekends the same material he/she learned in class, leaving little time for much else.

According to statistics on public university system (UGC, 2016), only 6-7% of the cohort of children, who entered school, say, in Year-one 18-24 years ago, would reap the benefits of a free higher education at a public university today. National examination system in Sri Lanka essentially is a mechanism to filter out more than 90% of youth from a free-of-charge university education. It is time school education was refocused on the national objectives of education and the related competencies (NEC, 1992).

Succeeding governments have introduced various measures to address the high dropout rates at higher grades, but reforming education is a massive task which requires a multi-stakeholder effort. The uncertainties of the workplace of the future make it even more important that civil society works with the government to speed up reforms. The purpose of the symposium held on August 28th at BMICH in Colombo was to consult a cross-section of key stakeholders (Appendix 2) to explore how transversal competencies needed for the workplace of future can be imparted and assessed. There was general agreement at the symposium that the curricula, teaching and learning processes and assessment in our schools in Sri Lanka should be examined and reoriented urgently to ensure that our schools give our student an appropriate balance of subject competencies and transversal competencies.

UNESCO in its 2016 report titled “Assessment of Transversal Competencies: Policy and Practice in the Asia-Pacific” identifies attitudinal and definitional issues that underlie challenges to imparting and assessing transversal competencies in schools. The report notes the need for each country/jurisdiction to define TVCs, determine their place in the school curriculum and develop teacher-guides and assessment templates.

As a follow-up to the symposium of August 28th, 2018, LIRNEasia plans to coordinate a TVC research group in Sri Lanka in consultation with education authorities in the country and with links to expertise in the Asia-Pacific region. The network of educationists who were brought together through the symposium, and the participation of Prof. Esther Care of University of Melbourne, an expert on transversal competencies, in the symposium are first steps in that regard.

1. Workplace of the Future

Advances in 3-D printing, automation, robotics and artificial intelligence are certain to change the work place of the future, but the nature of these changes is uncertain. A peek into this workplace of the future is possible through the labor markets facilitated by the emergent technology of digital platforms.

Digital platforms are essentially software that allows individual suppliers of goods or services to reach users and vice versa. Platform-enabled jobs and the labor markets they create raises two issues relevant to the workplace of the future. First, these platforms by-pass the traditional employer-employee relationship in the formal labor markets, and turn jobs into gigs (or one-engagement-at-a-time relationships between a service providers and a user). Secondly, these platforms link a national workforce to global labor markets as never before, giving a glimpse of what a digitalized global economy of the future may mean to local labor markets.

National policies can make these gig labor markets or other technology-driven labor markets more formal¹ or safer² through various legal and fiscal policy instruments. Building the competencies of a workforce to meet the unforeseen changes in the workplace of the future is the subject of this paper.

2. Transversal Competencies for Readiness

As the World Bank noted – “Automation is reshaping work and the skills needed for work. Demand for advanced cognitive skills and socio-behavioral skills are increasing. Demand for narrow job-specific skills is waning. There is increasing demand for skills associated with ‘adaptability’. These are a combination of specific cognitive skills (critical thinking and problem solving) and socio behavioral skills (creativity and curiosity) that are transferable across jobs (World Bank, 2013).

Such cross-cutting competencies, but in different words, have been also advocated through past three centuries or more by philosophers in education such as Jean-Jacques Rousseau (1712-1778) and John Dewey (1859-1952), and more recently by international organizations (UNESCO, 1991; P2P, 2009 and UNESCO, 2016). Yet, these concepts have failed to take root in school systems except those in a few select countries like Finland. In a

¹ See ILO (2018a) for an introduction to formal and informal sectors in a labor market and the recent trends in those.

² Safer, as opposed to a vulnerable labor force. See ILO (2018b) for details.

survey of education systems across Asia, UNESCO found that the implementation of transversal competencies remains poor across the region (UNESCO, 2016).

For developing economies where only a fraction of youth go onto higher education, schools offer the best chance of preparing youth for the workplace of the future. Sri Lanka is a case in point. Sri Lanka's basic education is almost universalized with an island-wide network of state funded schools and various welfare measures to facilitate school attendance. However progress at higher levels of school education is hampered by the inability of students to succeed at the GCE (O/L) or the General Certificate of Education (Ordinary level), a mandatory public examination faced by all children at age 16 or after eleven years of schooling. According to an analysis based on the 2016 Household Income and Expenditure Survey (HIES) of Sri Lanka, only 51 per cent of the initial cohort of students progressed to further education after year-11,³ and only 21% would continue onto tertiary education of some sort.⁴

Government of Sri Lanka has already taken the initiative of ensuring all youth are entitled to 13 years of education by opening a new vocational stream in schools, but how do we prevent the new vocational track from becoming another examination-centered track that ignores cross-cutting competencies that are critical for the workplace of the future? Are the others who succeeded in progressing to Years 12-13 in the academic track learning anything other than the ability to succeed in examinations? What would be a realistic approach that combines the subject competency required for socially important credentials in public examinations with cross-cutting competencies required for the workplace of the future?

3. Assessing Readiness of School Leavers

The objectives of education as defined in the Delors report (UNESCO, 1991) include four pillars of learning –Learning to know, Learning to do, Learning to be and Learning to be together- as general objectives of education (Table 1, Column 1).

A second notable attempt is the initiative by the Partnership for Twenty-first Century Skills or P21. This organization founded in 2002 in USA by business leaders, consultants, and educators (<http://www.p21.org>), conceptualized a framework for twenty-first century skills. This framework consists of eleven competencies which are classified into three gist elements including (1) learning and innovation skills, (2) information, media, and technology skills, and (3) life and career skills (P21, 2009). The framework also entails a support system that embodies standards, assessments, curriculum, instructions, professional development, and learning environments (Table 1, Column 2).

The latest initiative by UNESCO synthesizes cross-cutting competencies past and present as transversal competencies which are divided into six broad categories. They are Critical and innovative thinking, Intrapersonal skills, Interpersonal skills, Global citizenship, Media and information literacy and Other (Table 1, Column 3).

Table 1.

³ <http://www.ips.lk/talkingeconomics/2018/08/13/education-matters-addressing-inequities-and-skills-development-gaps-in-sri-lanka/>

⁴ http://www.ips.lk/wp-content/uploads/2017/03/DN_23June_Bridging-the-skill-gap.pdf

Objectives of learning (UNESCO, 1991)	Skills for the 21st century ⁵ (P21, 2009)	Transversal competencies (UNESCO, 2016)
Learning to know Learning to do Learning to be Learning to be together	1. Learning and innovation skills ⁶ 2. Life and career skills ⁷ 3. Information, media and technology skills ⁸	1. Critical and innovative thinking 2. Interpersonal skills 3. Intrapersonal skills 4. Global citizenship 5. Media and information literacy 6. Other (e.g. health, values)

Alluded to in these discussions on transversal competencies but not addressed in detail is the high value placed by society on success at examinations and its implication for the importance, or lack thereof, given to transversal competency development through the school curriculum. In fact, despite various global initiatives, and follow-up initiatives at the national level, education systems, those in Asia in particular, seem to move more and more towards examination-orientation. Several reasons could be at play here. Firstly, schools, parents and students are overwhelmed by examination pressures. Secondly, what gets done is what gets measured. Schools are assessed in terms of examination success. Society too values examination outputs. In the absence of any requirements to assess and report transversal competencies, schools naturally do not pay attention to transversal competencies. Indicators of subject competency have not to be complemented by indicators of transversal competencies.

3.1. Outcome indicators

International

Beginning in the 1990s, when the possibility of Information technology to transform the workplace was becoming apparent, there were attempts to capture attributes of an IT ready workforce (Luyt, 2006). The Network Readiness Indicator (World Economic forum, 2016), Knowledge Index (World Bank, 2004) and Information Society Indicators (OECD, 2009) are examples (Appendix 3). The knowledge and skills components of these indicators were largely limited to enrollments in primary, secondary or tertiary education, literacy rates or quality of education in Math and Science.

Van Dijk and van Deursen (2014) used conceptual analysis and empirical observations to go beyond simple education enrollment or attainment data to identify five sets of skills needed in the use of digital media, primarily computers and the Internet. These skills are categorized as “operational, information, communication, content-creation and strategic”, but no attempt has been made to measure those at national or international levels.

There are also efforts to capture cultural attributes or values of a population. The Waves Value Survey series⁹ and the Cultural Dimensions approach by Geert Hofstede¹⁰ are two such

⁵ Includes core subjects and twenty-first century themes (English, reading or language arts World languages Arts Mathematics Economics Science Geography History Government and civics)

⁶ Creativity and innovation, Critical thinking and problem solving, Communication and collaboration

⁷ Flexibility and adaptability, Initiative and self-direction, Leadership and responsibility; Social and cross-cultural interaction; Productivity and accountability

⁸ IT literacy, Information literacy, Media literacy

⁹ World Values Survey, Malaysia (2014) accessed on 10.02.2017
<http://www.worldvaluessurvey.org/WVSDocumentationWV6.jsp>

¹⁰ Power distance index, Individualism vs. collectivism, Uncertainty avoidance index, Masculinity vs. femininity, Long-term orientation vs. short-term orientation, Indulgence vs. restraint

attempts, but such broad-brush characterizations of countries are not helpful as indicators to be used for policymaking.

The Program for Student Assessment (PISA) and Trends in Mathematical and Science Study (TIMSS) provide indicators of knowledge and skills of school leavers for cross-country comparisons. The PISA tests have been improved considerably over time with the current tests being more authentic¹¹ than ever before.¹² However, participation in these surveys is not universal. For example, Indonesia, Malaysia, Singapore, Thailand and Vietnam are the only countries in developing Asia that participated in the PISA in 2015.

National

Ideally, national examinations should align with authentic examination models elsewhere. However, due to the considerable amount of expertise and resources that are needed to be deployed for these kinds of authentic examination systems, it is unlikely that we will see the wide use of such examinations in the developing world in the foreseeable future.

School-based

Authentic assessments are expected to be more feasible in school-based assessments where there is no pressure to produce individualized scores on a large scale as in national examinations in a country. Student portfolios present one way of capturing transversal competencies which are not testable.

3.2. Process indicators

When an employer interviews a potential employee the interview process allows judgments on the quality of the credentials presented to them. Often students from reputable schools can get a foot in the door because of the reputation of their school. Their exam scores may be similar to others in the applicant pool, but by virtue of attending a reputable school, some candidates are expected to have learned more than what is captured through examination scores.

In international ranking of higher education institutions, for example, these reputational criteria used by recruiters to judge the quality of credentials are formalized as reputational scores. Reputational scores essentially capture difficult to measure attributes such as roundedness of an education received, but such scores can be misleading if not accompanied by other objective measures of the teaching learning process.¹³ For example, the University League Tables published by the Guardian newspaper in UK uses responses from the National Student Survey of UK, a comprehensive survey of graduates from public universities in UK as well entry criteria, student to teacher ratios and financial data from each university.

IT is more difficult to assess the teaching and learning process in school education because, the clientele or the consumers of education are children and individual schools in public education system schools have little leeway in admission criteria or funding. One approach

¹¹ Authentic assessments are Criterion-referenced interpretations of student achievement and future decisions are informed by skill descriptions as well as numbers. Traditional assessments in contrast are standards referenced and future decisions are informed by numbers in the form of scores, percentages etc.

¹² <http://www.oecd.org/pisa/PISA2015>

¹³ Philip G Altbach and Ellen Hazelkorn (2017, January 08). Why most universities should quit the rankings game. University World News. Issue No:442.

<http://www.universityworldnews.com/article.php?story=20170105122700949>

would be to use time-use studies as a way of measuring the well-roundedness of an education given by different schools in a public education system.¹⁴ Here objective measures of how much time is used for which type of activity are used to assess schools. Each school system has to develop its own set of criteria and processes. Several approaches suitable to a Sri Lankan context are described in the next section.

4. Contextualizing to Sri Lanka

In Sri Lanka, a typical school is organized around teaching of subjects and testing of same. Families organize their lives around the three major public examinations – Scholarship examination at Year-5, GCE (O/L) taken at end of Year 11 and the GCE (A/L) taken at the end of Year-13. The curriculum is content heavy and rote learning is the norm, and private tuition to bolster examination preparedness is considered a must (MoE, 2013). Parents or the general public rarely ask what is tested for what purpose. Media is quick to lavish adulations on ‘winning’ students or schools producing most winners. Nearly fifty percent of the original cohort of 350,000 or so children drops out of school system after year-11, having failed to qualify at the GCE (O/L). Only 6-7% of the original cohort would enter public university, free of charge entry to which makes the examination system so competitive. Is the education system designed to select this 6-7% and deselect other is a question worth asking.

An authentic evaluation of the quality of the teaching and learning process in schools in Sri Lanka is sorely needed. The Ministry of Education annually designates hundred or so schools as ‘popular schools’ and publish entry criteria for those. As the Power Law demands, popular schools attract more of applicants and become more popular. Class sizes in these schools can be 50 or more students per class with no room left for a quality learning experience. In fact, it is an open secret that the students in these popular schools perform at public examinations thanks to the natural abilities they bring and the boost from tuition classes. The clamor for these schools by parents from across the island has become a corrosive effect on the school system as a whole.

As discussed earlier, authentic examinations may deter rote learning to some extent but such outcome evaluations are resource intensive. At the stakeholder consultation on Transversal competencies by LIRNEasia (Appendix 1), participants felt that Sri Lanka lacks the capacity at the national level to bring more authenticity to national examinations and the best option is to encourage school-based assessments that are more authentic. Mandating changes to the teaching-learning process at school level can be more productive.

According to a preliminary study by Mampitiya,¹⁵ Sri Lankan students in Years 10 and 11 spend 90% of their time in school studying for 9 subjects at the GCE (O/L) examination that they face at the end of Year 11. In contrast, in UK, students finishing eleven years of schooling sit for 6 subjects for which they had spent 60% of their time in school. Current policy proposals in Sri Lanka include a proposal to reduce the number of subjects offered for national examinations to six and move the other mandatory three subjects to be learned and assessed through activity-based learning using formative methods of assessment.

Student portfolios, for example, can be powerful tool in school-based assessments. The National Education Commission has mandated the use of student portfolios to assess health

¹⁴ <https://www.timeandlearning.org/sites/default/files/resources/caseformorelearningtime.pdf>

¹⁵ Personal communication

and physical education as well as the second language (NEC, 2016, p. 28). The Ministry of Education has already included student portfolios as one of the tools to be used in school based assessments as per circular #23/2017. The portfolio concept exists in theory in primary schools, but not applied.

The new vocational education stream which is scheduled to be offered system wide beginning in 2019 includes a general education modules in its curriculum. A school inspectorate is also in the policy proposals.

What is lacking is a sense of urgency in implementing these proposals by bringing them together under the theme of competencies for the workplace of the 21st century.

If each new initiative by each succeeding government is not brought under one broad policy goal, each initiative will be no more than another additional burden on the public education administration and delivery system in Sri Lanka. For example, a reduction in the workload preparing students for national examinations is essential for the good-faith execution of school-based assessment by teachers. Otherwise teachers will be overwhelmed by conflicting requirements and compelled to treat the SBAs as another set of paperwork. Introducing technology stream in 2009 and the new vocational stream in 2019 are two instances of good policy initiatives executed as stand-alone initiatives. The two new streams give more choices to students after eleven years of schooling or at 16+ years of age, but at what cost? The number of curricula to be prepared, teachers trained has risen to multiples 100+ and subjects to be tested by Department of Examination to nearly the same. Future education reforms should be centered on the question “What immediate reforms are needed to ensure that our children receive an education that balances subject competency with cross-cutting competencies that they need to face the workplace of the future.”

5. Contextualizing to other countries in Asia

The 2016 UNESCO report on Assessing transversal competencies draws on reports from nine participating countries/jurisdictions in the Asia-Pacific: Australia, Hong Kong (China), India, Malaysia, Mongolia, Philippines, Republic of Korea, Thailand and Viet Nam. These country reports in turn drew upon responses from individuals in their education systems at policy and school levels to identify their perceptions of the current state of practices associated with the assessment of transversal competencies. In all nine countries except Thailand better performing schools in general and/or in TVCS were selected as case studies, averaging at about 5 case studies per country.

According to the case studies, TVC have been integrated into the curriculum via three main modes: 1) within specific subjects; 2) as a cross-cutting subject or multi-disciplinary subject; or 3) through extracurricular activities. Most case study schools integrated TVC into their school curriculum through all three modes, but the majority of schools integrated TVC within specific subjects as national language, science, and mathematics. Visual and performing arts and Health and physical education' curricula are particularly amenable to incorporating TVCs.

The activities used to impart TVCs included hands-on assignments, project work, debates, seminars, publishing and learning outside the class through field work or work experience. Agriculture, recycling or energy saving projects ((including costing and entrepreneurship) too have been incorporated into subjects as appropriate. Extra-curricular programs include Student leadership or well-being programs. A significant process improvement called 'moderate classroom time, enhanced learning time' was announced in 2015 by the Ministry

of Education in Thailand where scheduled classroom teaching times were to be reduced and more time allocated to extracurricular activities in the afternoon designed to enhance students' TVC, such as creativity and collaboration.

Implementation of TVCs through these new initiatives presents many challenges. At first sight the challenges seem to be the usual operational issues such as lack training and/or incentives for teachers, classroom materials, technical expertise or resources in general. However, as pointed out by Care and Luo (UNESCO, 2016), educational philosophy and policy issues and lack of understanding of TVC and their teaching, learning and assessment, are responsible for these operational challenges. A pre-requisite for a successful implantation of TVCs in schools, they argue, is (a) Policy level agreement on the importance of situating TVCS in par with subject competencies and (b) Research to establish detailed descriptions of each of the TVC in terms that identify the student behaviors that teachers might expect to see; Locate where these behaviors might appropriately be manifested within mainstream school subjects, and how they might be evaluated; and Develop activity, task, and assessment templates which may be applied across subjects for teachers to adopt.

5.1. Overall assessment and recommendations

The readiness of school leavers for the workplace of the future can be assessed overall as follows:

- a. Adaptability of a workforce to new situations is the best indicator of readiness of a workforce for an IT-driven workplace of the future
- b. With most youth in the developing world terminating their education and training before or at age eighteen, the best place for inculcating adaptability is the school.
- c. Transversal competencies which have been advocated by educationist for decades encompass attributes that are necessary for adaptability to any new situation.
- d. Transversal competencies are largely ignored by schools because of high value placed on success at examinations testing subject knowledge.
- e. Research and advocacy on imparting and assessing TVCs at country level, but informed by regional or global efforts, is needed urgently.

Reforming school education is a massive task where civil society organizations such as LIRNEasia have a role to play. Based on our work summarized here, the immediate recommendations for actions for civil society are to:

- a. Carry out research on defining, imparting and assessing TVCs, while engaging policymakers in the process
- b. Share the findings and continue to campaign for situating TVCs in par with subject competencies in the school curriculum

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Appendix 1. Consultation on Transversal Competencies

August 28, 2018, Committee Room E, BMICH, Colombo 7, Sri Lanka

List of Attendees:

Dr. Anula Hettige	Senior Lecturer, Faculty of Education, University of Colombo
Mr. Asitha Seneviratne	International Labor Organization (ILO)
Ms. Chandani Gamage	Teacher, Devi Balika Vidyalaya, Colombo
Mr. D. A. Chandrasiri	Commissioner, Department of Examination
Mrs D. Nandani Perera	Principal, Pannalgama Maha Vidyalaya, Ampara
Dr. Dayantha Wijesekera	Chairman, Tertiary and Vocational Education Commission of Sri Lanka
Mr. Gershaun Arulanantham	Director, Distance Learning Center, SLIDA
Ms. H. D. Jayanandanie	Teacher, Dharmaloka Maha vidyalaya, Kelaniya
Dr. Indira Lilamani Giige	Assistant Director General (former), National Institute of Education
Mr. Keerthi Wijesekera	Distance Learning Center, SLIDA
Ms. Laleema Senanayake	Researcher, LIRNEasia
Mrs. Mallika Karunaratne	Member, National Education Commission
Prof. Marie Perera	Professor, Faculty of Education, University of Colombo
Dr. P. S. Skantharajah	Commissioner, Department of Examination
Mrs. Poorna Perera	Assistant Director of Education, Ministry of Education
Ms. Priyanka Jayawardena	Researcher, Institute of Policy Studies
Dr. Sanjiva Weerawarana	Chairman, WSO2
Dr. Sujata Gamage	Senior Research Fellow, LIRNEasia
Mr. T. Senduran	Deputy Director, NVQ Division, TVEC
Dr. Thanaraj THaiyamuthu	Dean, Faculty of Education, Horizon Campus, Malabe, Sri Lanka
Mr. Upali Chandrasiri	Chairman, Campaign for a Better Education
Dr. Upali Mampitiya	Senior Lecturer, University of Kelaniya

Appendix 2. Second Consultation on Transversal Competencies

September 18, 2018, LIRNEasia, 12, Balcombe Place, Colombo 8, Sri Lanka

List of Attendees:

Mr. Gershaun Arulanantham	Director, Distance Learning Center, SLIDA
Dr. Indira Lilamani Giige	Assistant Director General (former), National Institute of Education
Mr. Keerthi Wijesekera	Distance Learning Center, SLIDA
Prof. Marie Perera	Professor, Faculty of Education, University of Colombo
Ms. Priyanka Jayawardena	Researcher, Institute of Policy Studies
Dr. Sujata Gamage	Senior Research Fellow, LIRNEasia
Dr. Thanaraj THaiyamuthu	Dean, Faculty of Education, Horizon Campus, Malabe, Sri Lanka
Dr. Upali Mampitiya	Senior Lecturer, University of Kelaniya

Appendix 3. IT readiness Indicators

	Network Readiness Indicator (WEF, 2009)	Knowledge Index (World Bank,	Information Society Indicators (OECD, 2009)
Objective Measures	<ol style="list-style-type: none"> 1. Adult literacy rate 2. Enrollment rate of secondary education and 	<ol style="list-style-type: none"> 1. Adult literacy rate 2. average years of schooling 3. secondary enrollment 4. tertiary enrollment 5. primary pupil-teacher ratio 6. flexibility of people to adapt to new challenges 7. 8th grade achievement in mathematics 8. 8th grade achievement in science 9. Professional and technical workers as % of the labor force. 10. Public spending on education as % of GDP 	Not Available
	<ol style="list-style-type: none"> 3. Quality of the education system 4. Quality of math and science education 	<ol style="list-style-type: none"> 11. National culture being open to foreign influence 12. Extent of staff training and Management education locally available in first class business schools. 13. Well educated people do not emigrate abroad and 14. University education meets the needs of a competitive economy 	