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Education Development and Talent Retention in the Philippines: Weeds among the Wheat

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ABSTRACT

Various education statistics suggest that the country is making improvements in providing access to children, whether in basic, technical-vocational or tertiary education. Despite these gains, the country needs to address a number of demand-side and supply-side issues that serve as barriers from ensuring that all children attain quality education and lifelong learning. With the emerging Fourth Industrial Revolution likely to have an impact on the nature of future work and the labor market, the tri-focalized education system needs to work in sync, as well as with all education stakeholders, to ensure that human capital gets future ready.

Keywords:
access to education, quality education, future skills, Fourth industrial Revolution

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1. INTRODUCTION

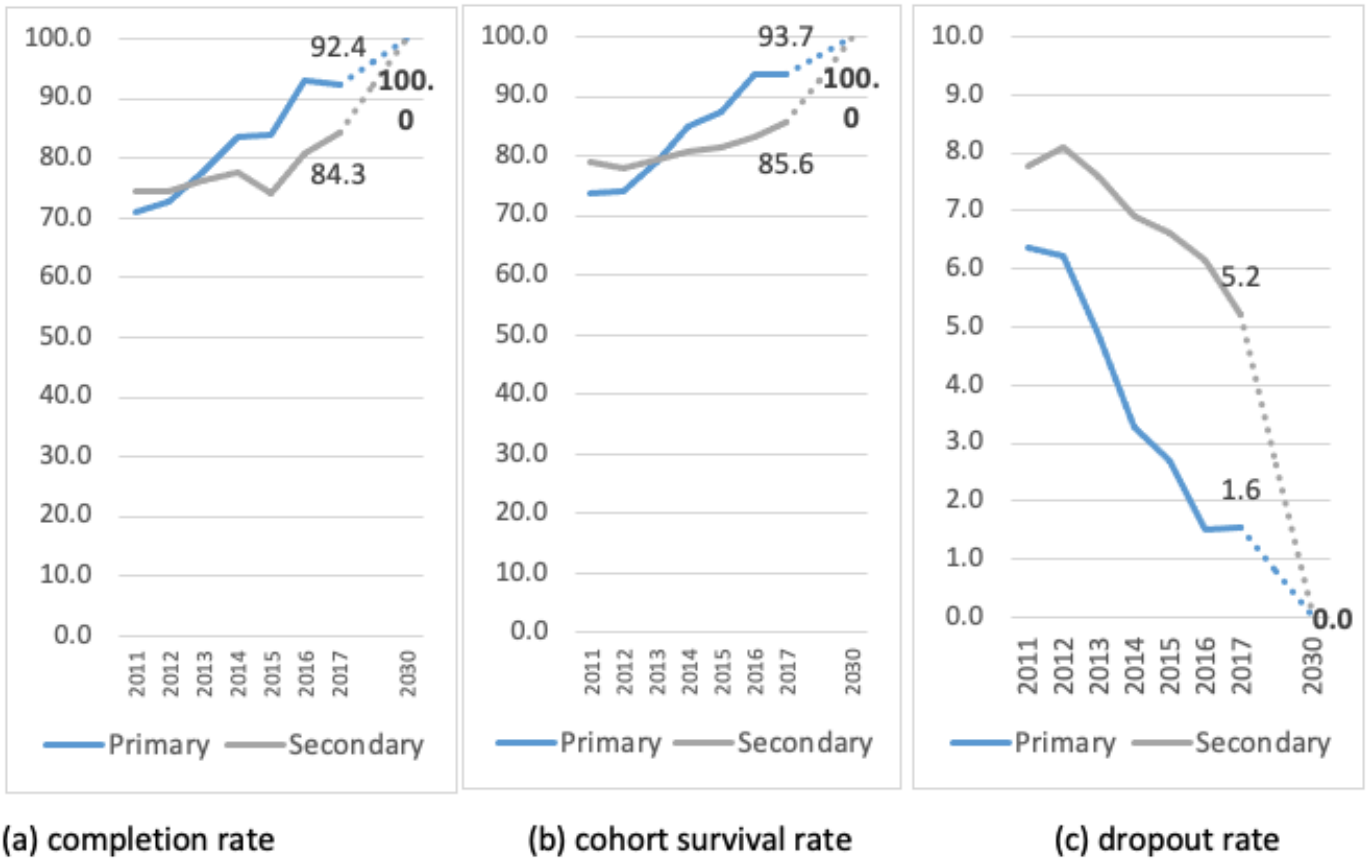
The entire world has committed to ensuring quality education and lifelong learning for all, aside from 16 other Sustainable Development Goals (SDGs) by 2030 (UN 2015). The SDGs and their 169 targets extend the unfinished work of the Millennium Development Goals, and put forward a more ambitious number and coverage of goals and targets across economic, social, environmental, and governance dimensions. The guiding principle of the SDGs is "leaving no one behind", which is at sync

with our own Philippine Development Plan 2017-2022 (NEDA 2017) and the current government's 0+10 Point Socioeconomic Agenda, (that focuses on ensuring more equitable and inclusive development), as well as long term aspirations of Filipinos articulated in AmBisyon Natin 2040 (NEDA 2016).

This paper examines what recent education statistics, sourced either from administrative data or nationally representative surveys, say about the education sector. In the next section, an overview of how the country fares in the global goal of attaining quality education and learning for all is provided. Then, the paper discusses the extent of children excluded from basic education, as well as results of national assessments on the quality of education. Finally, the paper discusses the likely impact of the Fourth Industrial Revolution, particularly as regards the demands on the current and future workforce arising from the changing nature of work, and how the country can better equip young and adult Filipinos with skills for jobs of the future.

2. IMPROVEMENTS IN ACCESS TO EDUCATION

According to the 2019 Voluntary National Review (VNR) Report of the Philippines (PIDS and NEDA 2019), the country has seen marked improvements as regards SDG 4 on quality education and learning for all. Various performance indicators in basic education, from net enrolment to completion, and cohort survival rates have significantly improved in the past 10 years, and together with this, dropout rates are declining (Figure 1). However, these indicators all pertain to access to education, and do not describe quality of learning.



(a) completion rate (b) cohort survival rate (c) dropout rate

Figure 1. Trends in Completion Rate, Cohort Survival Rate and Dropout Rate: 2011-2017. Source: PIDS and NEDA (2019) as sourced from Learner Information System, Department of Education (DepEd).

While every child has a right to basic education, some children are excluded from basic education due to various demand-side or supply-side bottlenecks. Further, the rates of improvements in access vary considerably across regions in the country. The Department of Education (DepED) is making efforts to reach out to last mile-children, including out-of-school youth, and various vulnerable groups through Alternative Delivery Modes, and the Alternative Learning System. With the support of government, the DepED has made strong efforts to reduce congestion in classrooms by hiring more teachers, with current teacher to pupil ratios at around 1 is to 32 (at the primary level) and 1 teacher to 32 learners at the secondary level. Other school inputs, including ICT tools such as computers, are also being made more available, though a continuing challenge is improving internet connectivity with only a fourth of schools having internet access.

The country is also making headway in increasing access to both technical-vocational education and training (TVET) and tertiary education. The Technical Education and Skills Development Authority (TESDA) continues to implement training programs in over 4000 TVET institutions, while higher education is provided through 2353 higher education institutions (HEIs) and satellite campuses. Greater gains in enrollment for TVET and tertiary courses are expected with the passage of the Universal Access to Quality Tertiary Education Act (RA 10931) in 2017, although some studies have expressed concern that free college in state universities and colleges (SUCs) may actually lead to less equity with the poor and low-income getting crowded out of access to publicly-supported TVET and tertiary education (Orbeta and Paqueo 2017). Given the trifocalized governance of the education system, it is important for DepED, TESDA and the Commission on Higher Education (CHEd) to develop synergies in budgeting and planning processes, and in working with education stakeholders given persisting challenges.

3. BEYOND SDG4 (QUALITY EDUCATION AND LEARNING FOR ALL)

Prevalence and Trends in Children Excluded from Formal Basic Education

While we continue to improve access to basic education, some children are still excluded from the formal school system. Using data from the Annual Poverty Indicator Survey conducted by the Philippine Statistics Authority (PSA), David et al. (2018) estimated the prevalence of Out of School Children (OOSC) aged 5 to 15 years old at 5.3% in 2017 (corresponding to over a million children), showing no improvement from 2014 when it was estimated at 5.2%, although still much lower than the 11.7% figure in 2008 (Table 1).

Table 1. Out of School Children in the Philippines: 2008-2017.

Level	2008	2014	2017	
	Magnitude	Magnitude	Magnitude	Rate
5 year old	776,000	177,000	189,000	9%
6-11 years old	1,270,000	420,000	571,000	4.5%
12-15 years old	980,000	660,000	475,000	5.6%
16-17 years old		---	768,000	17.4%

Note: David et al. (2018), based on analysis of microdata from Annual Poverty Indicator Survey (APIS), Philippine Statistics Authority (PSA).

Among 5-year-old children (who are supposed to be in kindergarten), 189 thousand did not attend school in 2017. This is much lower than 776 thousand in 2008, but higher than the 177 thousand in 2014. In 2017, the number of primary-aged or 6 to 11 years old stood at 571 thousand, representing an increase from 2014 when it was 420 thousand, but still much lower than 1.27 million in 2008. At the lower secondary age (12 to 15 years old), the total number of OOSC declined in 2017 to 475 thousand, from 980 thousand in 2008 and 660 thousand in 2014. This represents an OOSC rate of 5.6% for the secondary level, the lowest it has been since 2008 when it was 10.5% and 2014 when it was 6.2%. A much higher percentage of those in the upper secondary age range of 16 to 17 years old, 17.4% corresponding to 768 thousand children, were not attending school.

Across all levels, the OOSC rate is not evenly distributed by region (Figure 2). ARMM has the highest OOSC prevalence, with slightly over 12% of children of school age not attending school. Regions 12 (SOCCSKSARGEN, formerly called Central Mindanao), CALABARZON, and MIMAROPA follow ARMM with prevalence rates over 6%. The lowest OOSC rates at or below 4% are in NCR, Central Luzon, Bicol, and CAR.

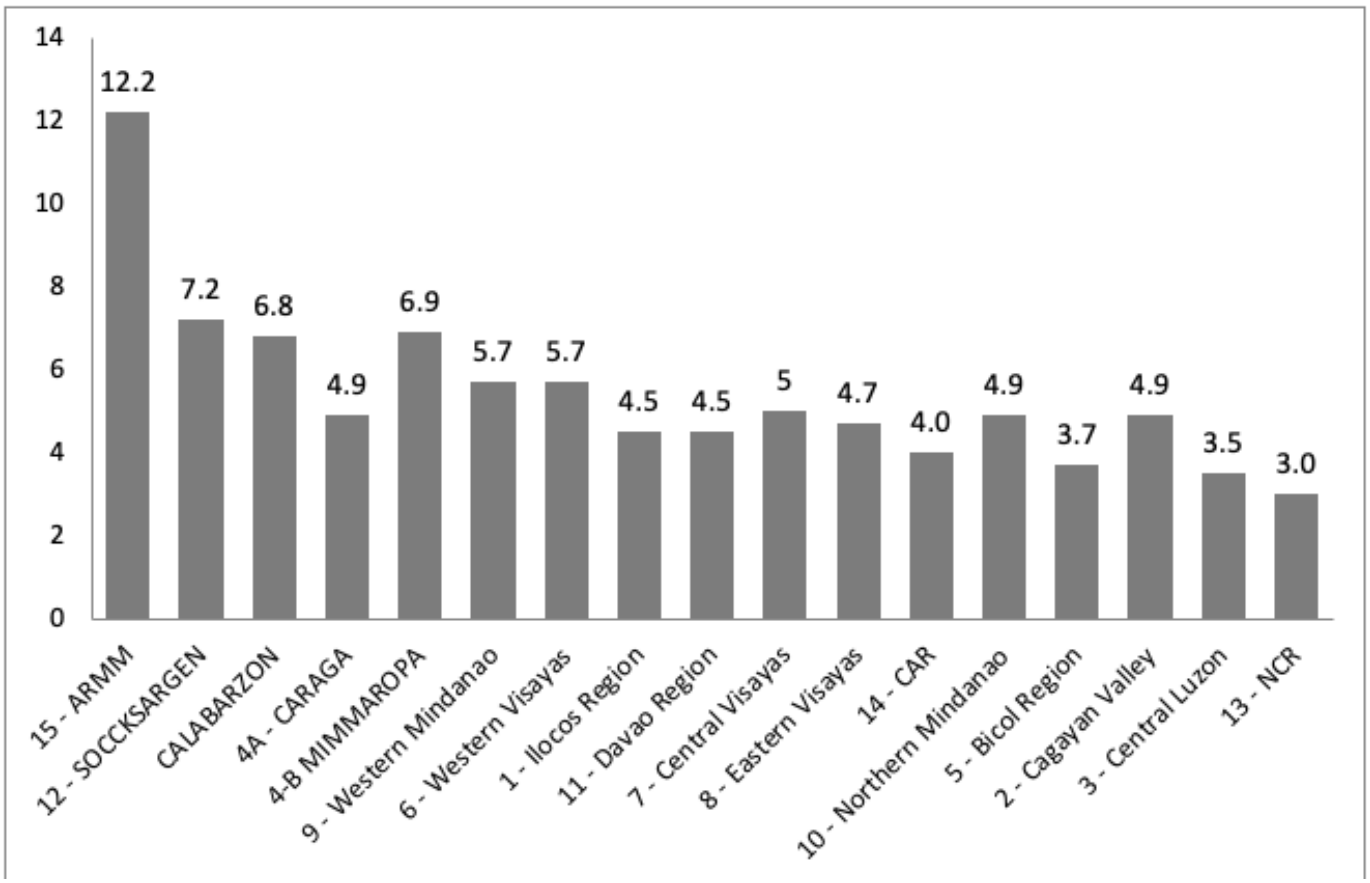


Figure 2. Proportion of Children who are Out of School, by Region, 2017. Source: David et al. (2018), based on analysis of microdata from 2017 APIS, PSA.

A key intervention strategy that should be considered by DepED is to focus on dramatically reducing dropout rates in high-OOSC areas which likely have acute economic and access constraints owing to generally underdeveloped nature of the provinces within those regions. For example, it is likely that physical access constraints in island provinces of MIMAROPA remain a challenge. Lack of resources and high poverty rates in ARMM and SOCCKSARGEN require a holistic approach to guiding children through school.

School attendance is still largely associated with poverty (Figure 3), but economic issues interplay with gender issues, with boys more disadvantaged.

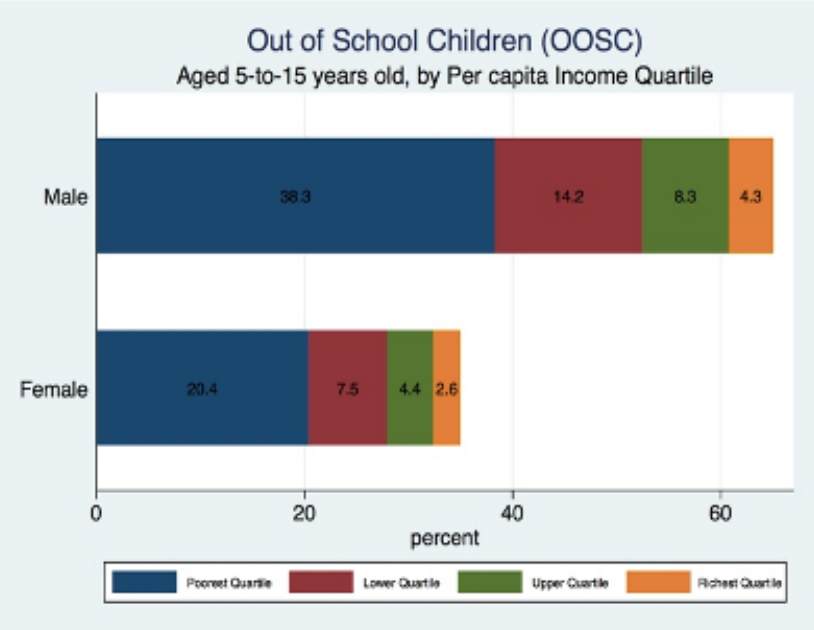


Figure 3. Proportion of Children who are Out of School, by Region, 2017. Source: David et al. (2018), based on analysis of microdata from 2017 APIS, PSA.

While three fifths (58.7%) of the 1.2 million out of school children aged 5 to 15 in 2017 belong to families in the bottom 25 percent of the per capita income distribution, two-thirds (65.0%) of the total OOSC aged 5 to 15 in 2017 are boys and an even higher proportion of OOSC can be found among those aged 5 to 17 (Table 2).

Table 2. OOSC Prevalence Rate (in %): 2017.

Age Group	Boys	Girls
5 year old	9.1	8.9
6-11 years old	5.4	3.4
12-15 years old	8.0	3.1
16-17 years old	22.3	11.6
Philippines (5-15 years old only)*	6.7	3.8
Philippines (5-17 years old)	10.7	5.7

Note: David et al. (2018), based on analysis of microdata from Annual Poverty Indicator Survey (APIS), Philippine Statistics Authority (PSA).

Among primary-aged OOSC the most commonly selected reason for leaving school is "lack of personal interest," followed closely by illness and disability, then by the high cost of education (Table 3). Since the OOSC rate for primary aged children is quite low, the remaining OOSC, i.e., the "last mile" children, may have acute difficulties and challenges keeping them from school. Primary-aged girls are more likely to be kept home because they are perceived as being too young for school, and are, for some unexplainable reason less likely to report having no nearby schools than boys in the same age group. Among secondary aged children, lack of interest is also the main reported reason for not being in school, followed by costs, then by illnesses.

Learning Outcomes in Basic Education

Recent data made available by DepEd show persisting low proficiency, i.e. Mean Percent Score (MPS) < 50 in the National Achievement Test (NAT) for grade 6 and grade 10 whether for problem solving, information literacy or critical thinking. For Grade 6, scores are highest in Filipino. For grade 10, low proficiency in all subjects, and least in Science and Math (PIDS and NEDA 2019). Proficiency varies across regions. Among Grade 6 students in 2018,

Table 3. Reported Reasons for not being in School among Primary Aged and Secondary Aged Children, by Sex: 2014 and 2017.

Reasons for not being School	Primary Aged Children						Secondary Aged-Children					
	2014			2017			2014			2017		
	Boys	Girls	Both Sexes	Boys	Girls	Both Sexes	Boys	Girls	Both Sexes	Boys	Girls	Both Sexes
Lack of personal interest	38.2	30.5	36	31.4	27.8	30.2	51.2	29	44.1	60.6	41.8	53.2
High cost of education	15.3	11.2	14.1	13.7	6.4	11.4	25.2	38.3	29.4	22.4	18.9	21
Too young to go to school	9.5	14.6	11	6.9	18.3	10.5						
Illness/ Disability	33.7	37.1	34.7	27.0	32.5	28.8	10.4	16.7	12.4	7.8	9.8	8.6
Lack of nearby schools	2.1	2.1	2.1	14.0	0.0	9.6	0.6	2.7	1.3	4.6	4.7	4.6
Employment				0.0	2.6	0.8	6	1.9	4.7	3.4	12.5	7
Other reasons (incl. school records, marriage, housekeeping)	1.2	4.5	2.1	1.4	1.2	1.3	6.6	11.3	8.1	1.2	12.4	5.6

Note: David et al. (2018), based on analysis of microdata from Annual Poverty Indicator Survey (APIS), Philippine Statistics Authority (PSA).

overall proficiency is best in NCR, CALABARZON and ARMM, and least in Davao Region, Bicol Region and Zamboanga Peninsula. Meanwhile, Grade 10 students in the NCR and CAR recorded overall nearly proficient levels particularly for problem solving and information literacy, while students in SOCCSKSARGEN and Zamboanga Peninsula recorded the lowest proficiency levels in all aspects tested.

The mounting evidence on education disparity against boys is not only as far as in school participation but also in performance metrics. Table 4 shows that for schoolyear 2016-2017, females score better on the NAT than boys in both primary and secondary levels and in every subject tested. A decade ago, David et al. (2009) discuss the potential contributory factors for the underperformance of boys and the possible corrective policy actions that could arrest such a trend in the wake of a need to ensure gender equality in education outcomes.

Supply and Demand of College Graduates

As regards higher education, according to Orbeta et al. (2016), while the Philippines has increased access to college over the years, the distribution by discipline has hardly changed. The bulk of college graduates are in social sciences, business and law; followed by medical, engineering and architecture, and third we have education and fine. Only less than a tenth get into the sciences, although that share has risen from 2.7% to 7.5 %.

Further, Orbeta et al. (2016) also point out that the wage premium of college graduates over high school graduates can be used as an indicator of whether the country is producing enough college

Table 4. National Achievement Test Mean Percent Score by subject, residence and sex (SY 2016-2017).

Residence	**Science**				**HEKASI/Araling Panlipunan**				**Overall**			
	Grade 6*		Grade 10**		Grade 6*		Grade 10*		Grade 6*		Grade 10*	
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
Rural	31	29	37	34	43	35	51	43	41	36	46	41
Urban	34	33	37	35	47	39	52	45	46	40	47	42
Total	33	30	37	34	44	36	51	44	43	37	46	41
	Filipino				**Math**				**English**			
Rural	56	48	54	48	35	37	39	36	42	34	48	42
Urban	59	52	55	50	39	37	38	36	49	42	50	43
Total	57	49	54	49	37	34	39	36	44	37	49	42

Note: David et al. (2018), based on data supplied by DepED.

graduates. A disaggregation of data by sector or discipline also reveals rising wage premiums means there is more demand for the discipline than there is supply pushing the wage premium upwards. Examining data from the Labor Force Survey across the years, Orbeta et al. (2016) report that, in the aggregate, we still have a short supply of college graduates.

Orbeta et al. (2016) also report that two disciplines – agriculture as well as humanities & theology – have declining wage premiums, i.e. less demand for the discipline. Medical, engineering and architecture, social sciences, business and law, services and general education, on the other hand, have rising wage premiums throughout the decade. Education and sciences have shown a decline in wage premiums at the beginning of the decade before rising in the later part of the decade. The relative positions of the wage premium lines indicate that graduates of medical, engineering and architecture are generally paid better than science or communications and other disciplines. It may be surprising to find that social sciences, business and law graduates are paid better than science graduates, but this may provide reason why few are taking sciences courses and many more take social sciences, business and law. Further, it should be noted that education graduates (that is, teachers) are paid relatively higher than others, e.g., humanities, arts, & science.

In its Special Chapter to the 2015 Key Indicators for Asia and the Pacific, the Asian Development Bank (ADB) looked into a cross country examination of job mismatches, and noted that in the Philippines, as in Fiji and Kazakhstan, overqualification is more prevalent. The ADB (2015) report also pointed out that because most farm work continues to rely on traditional and labor-intensive technologies, employment in many Asia-Pacific is still predominantly in low-skilled occupations where a quality primary education is typically sufficient.

According to Orbeta et al. (2016), demand for skills is driven by both the local market and the international labor market. Comparing the educational qualification of migrant workers and domestic labor market shows that the international labor market demands more educated workers. It should thus not be surprising then given trends in the amount of tertiary level students, as well as data on the demands of the domestic and international labor markets, we can expect college graduates of science to go outside our borders.

4. OPPORTUNITIES AND CHALLENGES IN THE WAKE OF THE FOURTH INDUSTRIAL REVOLUTION (FIRE)

Throughout history, technology has been changing production systems. Thus far, there have been three significant periods called industrial revolutions when we have improved industry by migrating from established production methods to utilizing cutting-edge technologies. First, we used steam and water power; then we used electricity and assembly lines; then starting more or less in the 1970s, we had the third industrial revolution (also called the Digital Revolution) which involved computerization. Now, we live in the era of the emerging Fourth Industrial Revolution (FIRe), marked by technology breakthroughs in a number of fields, including advanced robotics, artificial intelligence (AI), nanotechnology, quantum computing, big data, blockchain, biotechnology, innovative materials, Internet of Things (IoT), 3D printing, virtual reality, energy capture, storage and transmission (Dadios et al. 2018; Schwab 2016).

Likely Impact of FIRe

The prospects for use of technology to bring a lot of good in the future, particularly for attaining the SDGs, are very bright, but technology also causes a lot of disruptions that carries some risks to our current ways of living. Unintended consequences in technology use can result in the labor market causing technological unemployment, increased inequality, erosion of personal privacy, and weaponization of technology (Table 5). The late physicist Stephen Hawking even suggested that AI provides an existential threat to humanity (Cellan-Jones 2014). Nobel laureate Joseph Stiglitz (2017) warns that current inequalities existing in society will become even larger as a result of the FIRe.

Conceptually, technology affects jobs in three ways: (a) technology replacing human labor, (b) new jobs getting created because of technology; and (c) current jobs being complemented by technology. How this is going to play out will depend on the magnitude of each of these. A recent study of staff of the International Labor Organization suggests that nearly half of our wage workers are at high risk of getting affected, more women than men (Chang and Huynh 2016). Further those at high risk of getting affected tend to be those with low education who are in jobs that have repetitive tasks. The same report suggests that in the Philippines, among BPOs, as much as 9 out of 10 workers are found at high risk of getting affected from automation. There is also suggestion that FIRe, particularly automation, is also triggering selective reshoring, nearshoring and

Table 5. Implications of Emerging FIRe Technologies across Domains.

Technology	Economic Implications	Socio-Cultural Implications	Political & Security Implications
Robotics and AI	• Technological unemployment • Income Inequality • Disruption of traditional business models and global value chains	• Rise of monopolies and oligopolies	• Political polarization • Instability • Data and access security risks to automation • Espionage, Terrorism, Autonomous warfare
IOT	• Disruption of traditional business models	• Erosion of personal privacy	• Lack of trust in institutions • Cybersecurity problems • Data fraud
3D-printing	• Disruption of existing business processes		• Weapons proliferation • Cyber-sabotage

other structural changes to global value chains, and putting many jobs at high risk of getting affected, but new jobs are also being created. For instance, the Philippines is considered globally to be the fifth largest supplier of "online labor" (Kässi and Lehdonvirta 2018).

Further, high risk of getting affected does not necessarily mean people will lose their jobs. Consider the case of bank tellers. In the 1990s when ATMs were invented, some thought that bank tellers will no longer be needed, but the number of bank tellers has even increased considerably over the years, but the nature of their work has changed with repetitive tasks taken away, and customer relations management tasks added. Disruptions in business models and in the labor market is both good news and bad news for those in businesses and our laborers: good news because technological advances always create new jobs and new opportunities, but bad news because these new jobs are going to be different from the jobs that have been misplaced and they require workers to learn some new skills.

Autor (2015) argues that the extent of machine substitution for human labor tend to be overstated. Although computers substitute for workers in performing routine, codifiable tasks, they also amplify the comparative advantage of workers in supplying problem-solving skills, adaptability, and creativity. He adds, however, that even if automation does not reduce the quantity of jobs, it may affect the qualities of jobs that are available. This means that human capital investments are crucial and forms the core of any long-term strategy for producing future skills

5. PREPARING THE FUTURE WORKFORCE

In the Philippines, the introduction of the K to 12 Program through Republic Act (RA) 10533, also called the Enhanced Basic Education Act of 2013, has provided the country the mechanism to radically change basic education. But are these changes enough to prepare our future workforce for the jobs of the future? Are all the curriculum changes in basic, tech-voc and tertiary education making our workforce future-ready?

Skills and competencies developed in school should be like lego blocks which can be flexibly used to create different figures using the same building blocks. Learners should learn both technical and also soft skills. Pedagogy should go beyond transmitting knowledge into encouraging reconstruction of knowledge. Learning measurement should likewise evolve out of the traditional cognitive skills testing. Given that production systems are evolving with technologies, a key characteristic of education and human capital development is continuous lifelong learning. The World Economic Forum WEF (2015) lists and describes future skills required and clusters them into three groups, namely, (a) foundational literacies, (b) competencies, and (c) character qualities (Figure 4).

All these education statistics are suggesting that while we have had successes in bringing about more kids to school, but keeping them in school, and ensuring that they gain quality learning to prepare them for the jobs of the future are continuing challenges.

We need to make sure that students are learning the basics (3Rs: reading, writing, 'rithmetic) in basic education, ensure work-integrated learning in tech-voc, as well as master "systems thinking" in tertiary education, aside from getting skills in 4Cs (Communication, Critical thinking, Collaboration, Creativity and Innovation). Education and training should be responding fast to needs of industry (e.g., creating new fields such as "data science") and experimenting even with assessments (simulations, games) rather than traditional examinations that are geared more toward cognitive skills. We should be providing incentives for enterprise-based training, and for industry to value "training certificates", especially from well-known Massive, Open, Online Course providers such as Coursera. We should start studying what works and what doesn't to foster "flexibility" in workplace, and experiment with diagnostics for measuring "soft skills". We should be upscaling models that work (e.g., the Dynamic Learning Program, see Carpio-Bernido 2019). And

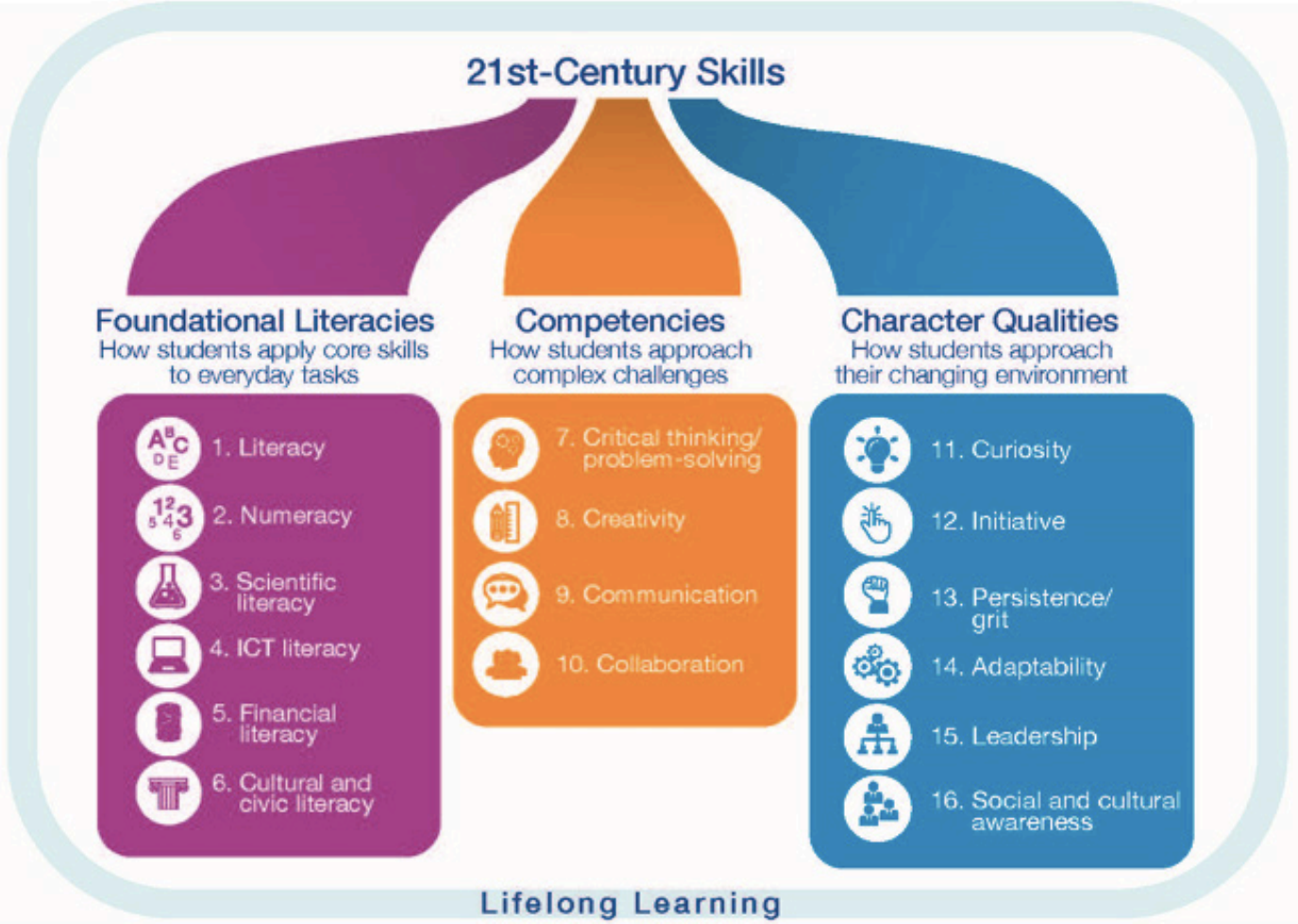


Figure 4. Future Skills Needed. Source: WEF (2015).

we also need to start building systems for life-long learning —whether in the public or private sector. Clearly we need to plan ahead, as well as understand the vastly changing landscape and demands so that our youth technical and soft skills can be given the flexibility and readiness to go from our career to another, or to work together with artificial intelligence and harness technology for the common good.

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