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SENATE

COMMITTEE REPORT NO. 643

Submitted by the Committee on Sustainable Development Goals, Innovation and Futures Thinking, jointly with the Committee on Basic Education, Arts and Culture on **MAY 2 3 2022** .

Re: Senate Resolution Nos. 393 and 413

Recommending the adoption of the recommendations contained therein and their immediate implementation.

Sponsor: Senator Pia S. Cayetano

MR. PRESIDENT:

The Committee on Sustainable Development Goals, Innovation, and Futures Thinking, joint with the Committee on Basic Education, Arts and Culture to which was referred **Senate Resolution No. 393**, introduced by Senator Pia S. Cayetano entitled:

"RESOLUTON URGING THE COMMITTEE ON SUSTAINABLE DEVELOPMENT GOALS, INNOVATION, AND FUTURES THINKING TO CONDUCT A HEARING, IN AID OF LEGISLATION, ON THE EFFECTS OF THE COVID-19 PANDEMIC ON VARIOUS SECTORS, THEIR INNOVATIONS AND

STRATEGIES TO PREPARE FOR AND ADAPT TO THE NEW NORMAL, AND THEIR ACTION PLANS TO PREPARE FOR ALL POSSIBILITIES AND OUTCOMES IN THE NEW NORMAL AND POST-COVID-19, TAKING INTO CONSIDERATION STRATEGIC FORESIGHT TO ANALYZE POSSIBLE FUTURES BASED ON AVAILABLE INTELLIGENCE AND KNOWLEDGE"

and **Senate Resolution No. 413**, introduced by Sen. Pia Cayetano, entitled:

"RESOLUTION URGING THE COMMITTEE ON SUSTAINABLE DEVELOPMENT GOALS (SDGs), INNOVATION, AND FUTURES THINKING TO CONDUCT A HEARING, IN AID OF LEGISLATION, ON THE EFFECTS OF THE COVID-19 PANDEMIC ON THE FUTURE OF THE EDUCATION SYSTEM OF THE COUNTRY AND ITS IMPACT ON SDG 4 CONCERNING QUALITY EDUCATION, IN LIGHT OF THE NEW NORMAL AND MAPPING NEW AND RESPONSIVE WAYS AND SYSTEMS OF LEARNING IN THE CURRENT PANDEMIC AND FOR FUTURE HEALTH EMERGENCIES"

have considered them and have the honor to submit its report back to the Senate, recommending the adoption of the recommendations as contained in this Report and their immediate implementation.

Respectfully submitted:

CHAIRPERSONS

SEN. PIA S. CAYETANO
Committee on Sustainable Development
Goals, Innovation and Futures Thinking;
Member, Committee on Basic Education,
Arts and Culture

SEN. WIN GATCHALIAN
Committee on Basic Education, Arts
and Culture

VICE-CHAIRPERSON

SEN. JOEL VILLANUEVA
Committee on Basic Education, Arts
and Culture;
Member, Committee on Sustainable
Development Goals, Innovation and
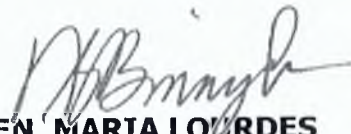Futures Thinking

MEMBERS

SEN. CHRISTOPHER BONG GO
Committee on Sustainable
Development Goals, Innovation and
Futures Thinking;
Committee on Basic Education, Arts
and Culture

SEN. SONNY ANGARA
Committee on Sustainable
Development Goals, Innovation
and Futures Thinking

SEN. CYNTHIA A. VILLAR
Committee on Sustainable
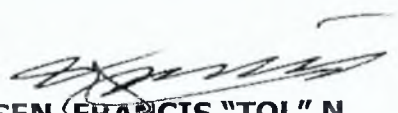Development Goals, Innovation and
Futures Thinking

**SEN. MARIA LOURDES
NANCY S. BINAY**
Committee on Sustainable
Development Goals, Innovation
and Futures Thinking;
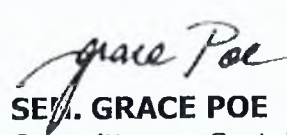Committee on Basic Education,
Arts and Culture

**SEN. EMMANUEL "MANNY" D.
PACQUIAO**
Committee on Sustainable
Development Goals, Innovation and
Futures Thinking

**SEN. MANUEL "LITO" M.
LAPID**
Committee on Sustainable
Development Goals, Innovation
and Futures Thinking;
Committee on Basic Education,
Arts and Culture

**SEN. FRANCIS "TOL" N.
TOLENTINO**
Committee on Sustainable
Development Goals, Innovation and
Futures Thinking

SEN. GRACE POE
Committee on Sustainable
Development Goals, Innovation
and Futures Thinking;
Committee on Basic Education,
Arts and Culture

SEN. RONALD "BATO" DELA ROSA
Committee on Sustainable
Development Goals, Innovation and
Futures Thinking

**SEN. RAMON BONG REVILLA,
JR.**
Committee on Sustainable
Development Goals, Innovation
and Futures Thinking;
Committee on Basic Education,
Arts and Culture

SEN. RISA HONTIVEROS
Committee on Sustainable
Development Goals, Innovation and
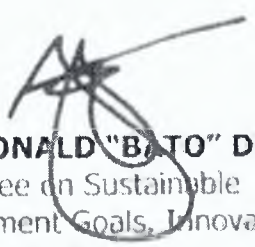Futures Thinking;
Committee on Basic Education, Arts
and Culture

SEN. LEILA M. DE LIMA
Committee on Sustainable
Development Goals, Innovation
and Futures Thinking
Committee on Basic Education,
Arts and Culture

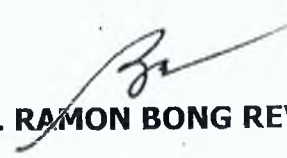**SEN. FRANCIS N. PANGILINAN**
Committee on Sustainable
Development Goals, Innovation and
Futures Thinking;
Committee on Basic Education, Arts
and Culture

SEN. PANFILO M. LACSON
Committee on Basic Education,
Arts and Culture

SEN. IMEE R. MARCOS
Committee on Basic Education, Arts
and Culture

**SEN. AQUILINO "KOKO"
PIMENTEL III**
Committee on Basic Education,
Arts and Culture;

SEN. RICHARD J. GORDON
Committee on Basic Education, Arts
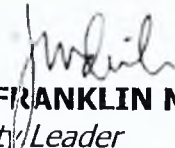and Culture

Ex Officio Members

May amend

SEN. RALPH G. RECTO
President Pro-Tempore

SEN. JUAN MIGUEL F. ZUBIRI
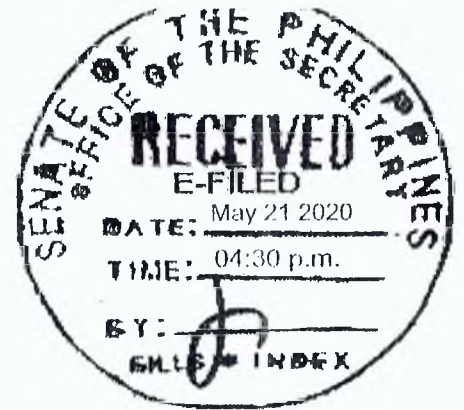*Majority Leader*

SEN. FRANKLIN M. DRILON
Minority Leader

HON. VICENTE C. SOTTO III
Senate President

EIGHTEENTH CONGRESS OF THE)
REPUBLIC OF THE PHILIPPINES)
First Regular Session)

SENATE

P.S. Res. No. 413

Introduced by SENATOR PIA S. CAYETANO

RESOLUTION
URGING THE COMMITTEE ON SUSTAINABLE DEVELOPMENT GOALS (SDGs), INNOVATION, AND FUTURES THINKING TO CONDUCT A HEARING, IN AID OF LEGISLATION, ON THE EFFECTS OF THE COVID-19 PANDEMIC ON THE FUTURE OF THE EDUCATION SYSTEM OF THE COUNTRY AND ITS IMPACT ON SDG 4 CONCERNING QUALITY EDUCATION, IN LIGHT OF THE NEW NORMAL AND MAPPING NEW AND RESPONSIVE WAYS AND SYSTEMS OF LEARNING IN THE CURRENT PANDEMIC AND FOR FUTURE HEALTH EMERGENCIES

1   **WHEREAS,** the effects of the COVID-19 pandemic raised the need for the
2   country's education system to shift towards new ways and systems of learning that
3   observe public health standards in response to the health crisis, while maintaining
4   accessibility and ensuring the delivery of quality education;

5   **WHEREAS,** with the new normal as an impending reality, existing practices in
6   learning, such as face-to-face interaction, field engagements, and extracurricular
7   activities, are not viable for now, as the conditions call for alternative modalities with
8   less physical interactions or better social distancing measures;

9   **WHEREAS,** the use of alternative modalities of learning, such as distance
10   learning and blended learning, come with existing challenges in aspects of
11   connectivity, availability of the latest technology, preparedness of parents and
12   students for virtual learning, and the competencies of teachers in such alternative
13   teaching modes, which are all essential elements in shifting towards new ways of
14   learning;

1   **WHEREAS,** the necessity of shifting to new ways and systems of learning

2   requires the use of futures thinking as a strategy, as it develops a range of alternatives

3   and possible futures for the country's education system, enabling it to become

4   prepared for the challenges and uncertainties of both current and future times;[1]

5   **WHEREAS,** futures thinking allows for a systematic assessment of the

6   education system and the development of strategic responses towards the effective

7   delivery of education in light of the new normal, while enabling new competencies in

8   teaching, establishing collaborations, and facilitating technology and innovation;

9   **WHEREAS,** such strategy will allow the government to build the direction and

10   capacities of the country's education system, addressing the quality and accessibility

11   of education in the new normal, ensuring its flexibility and responsiveness to health

12   emergencies, and allowing learners to adapt to new careers and skills required in the

13   future;

14   **WHEREAS,** futures thinking will also allow the Philippines to recalibrate its

15   approach to meet the SDGs by 2030 given the impact of COVID-19, especially on SDG

16   4, which calls for ensuring inclusive and equitable quality education and promoting

17   lifelong learning opportunities for all;

18   **NOW, THEREFORE, BE IT RESOLVED,** to urge the Committee on

19   Sustainable Development Goals, Innovation, and Futures Thinking to conduct a

20   hearing, in aid of legislation, on the effects of the COVID-19 pandemic on the future

21   of the education system of the country and its impact on SDG 4 concerning quality

22   education, in light of the new normal and mapping new and responsive ways and

23   systems of learning in the current pandemic and for future health emergencies.

Adopted,

PIA S. CAYETANO

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[1] Inayatullah, S. (2008). Six pillars: Futures thinking for transforming. Foresight, 10(1). 4-21.
doi:10.1108/14636680810855991

Introduced by SENATOR PIA S. CAYETANO

RESOLUTION

URGING THE COMMITTEE ON SUSTAINABLE DEVELOPMENT GOALS, INNOVATION, AND FUTURES THINKING TO CONDUCT A HEARING, IN AID OF LEGISLATION, ON THE EFFECTS OF THE COVID-19 PANDEMIC ON VARIOUS SECTORS, THEIR INNOVATIONS AND STRATEGIES TO PREPARE FOR AND ADAPT TO THE NEW NORMAL, AND THEIR ACTION PLANS TO PREPARE FOR ALL POSSIBILITIES AND OUTCOMES IN THE NEW NORMAL AND POST-COVID-19, TAKING INTO CONSIDERATION STRATEGIC FORESIGHT TO ANALYZE POSSIBLE FUTURES BASED ON AVAILABLE INTELLIGENCE AND KNOWLEDGE.

1   **WHEREAS,** the COVID-19 pandemic has affected the globe and all parts of
2   society, disrupting the usual way of life, requiring stay-at-home orders for millions of
3   people and devastating economies, including the Philippines;

4   **WHEREAS,** the impact of COVID-19 in the Philippines has forced all sectors in
5   the country to innovate for the New Normal, where society will have to continue with
6   the virus until a vaccine is discovered, while taking into account different possibilities
7   outside of COVID-19, and adapt with those in mind as well;

8   **WHEREAS,** futures thinking is an avenue for these sectors to strategically think
9   about the future, providing a systematic approach to "examine the full realm of
10 'possible futures', with the goal of identifying unforeseen opportunities and de-risking
11 propositions";[1]

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[1] Prosser, Z. and Basra, S., 2019. Futures Thinking: A Mind-Set, Not A Method. [online] Medium. Available at: <https://medium.com/touchpoint/futures-thinking-a-mind-set-not-a-method-64c9b5f9da37> [Accessed 5 May 2020].

1   **WHEREAS,** futures thinking also expands stakeholders' understanding of the

2   horizon of the present situation, how it affects us over time, and the scope and

3   relationships of various factors that can affect outcomes,[2] and the need to address

4   overall systems rather than individual elements;[3]

5   **WHEREAS,** it is important to learn from experts who can provide insights on

6   the New Normal and the world after COVID-19, what best practices can be adopted,

7   as well as map out the different possibilities and outcomes post-COVID-19 in order to

8   enlighten present decision-making;

9   **NOW, THEREFORE, BE IT RESOLVED,** to urge the Committee on

10   Sustainable Development Goals, Innovation, and Futures Thinking to conduct an

11   inquiry, in aid of legislation, on the effects of the COVID-19 pandemic on various

12   sectors, their innovations and strategies to prepare for and adapt to the New Normal,

13   and their action plans to prepare for all possibilities and outcomes in the New Normal

14   and post-COVID-19, taking into consideration strategic foresight to analyze possible

15   futures based on available intelligence and knowledge.

Adopted,

PIA S. CAYETANO

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[2] Cascio, J., 2009. Tomorrow Matters: Ignoring The Future Is Undermining The Present. [online] Fast Company. Available at: <https://www.fastcompany.com/1274088/tomorrow-matters-ignoring-future-undermining-present> [Accessed 5 May 2020].

[3] Ibid, note 1.

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Executive Summary

In 1991, the Congressional Commission on Education, chaired by the late Sen. Edgardo J. Angara and co-chaired by Rep. Carlos M. Padilla, in its report, *"Making Education Work: An Agenda for Reform"*, captured the Philippines' vision for a better education system,[1] and changes were made in basic, higher, and technical-vocational education in the hopes that the needs of these three focal points of education are met. However, 31 years later, challenges remain. The current COVID-19 pandemic showed the importance of planning for different outcomes and innovating the education sector to ensure its adaptability to any situation, its relevance to changing trends, and the continuity of quality education for all learners under all circumstances. Further, the International Commission of the Futures of Education (2021)[2] found in its report that there is an urgent need to reinvent education to address the common challenges that threaten the future of humanity and our planet.

According to Dr. Peter Bishop, Founder and Executive Director of Teach the Future in Houston, Texas, "most educators and the society at large believe that the mission of education is to transmit knowledge and experience" to the next generations.[3] However, he noted that this view means that "knowledge and experience is useful only to the extent that [what] the students [will] have in the future is the same as the world of the past" and "much of what schools teach their learners might actually be irrelevant if the world of the future is not the same as the past."[4]

Futures thinking is an important concept that provides a different way of envisioning the possible futures of education. **Futures thinking involves "a set of approaches and tools designed to help their users identify emerging issues, negotiate uncertainties, articulate scenarios, develop a common vision of a desired future through wide participation, introduce innovation, and design robust policies and strategies."[5] We begin by asking ourselves: what does education look like in 10, 15, 20 or 30 years from now based on the decisions we make today? What are the new skills and competencies that future generations are going to need? How are we preparing students for jobs that do not yet exist?**

In the future of Philippine education, students are not only learning in the classroom, since blended learning and technology allow them to study and learn in different environments. Family members play a larger role in their education after being equipped to use technology for their child's education. Classrooms are more focused on innovative and creative learning, and use technology and virtual reality to enhance students' learning experience. In preparation for Industry 4.0[6], curricula and courses are

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[1] Congressional Commission on Education. (1991). *Making education work, an agenda for reform.* http://hdl.voced.edu.au/10707/24194

[2] International Commission of the Futures of Education. (2021). *Reimagining our futures together: A new social contract for education.* United Nations Educational, Scientific and Cultural Organization. https://unesdoc.unesco.org/ark:/48223/pf0000379707.locale=en

[3] Dr. Peter Bishop, Founder and Executive Director of Teach the Future in Houston, Texas. TSN from 17 June 2020 Hearing, p.6.

[4] Dr. Peter Bishop, Founder and Executive Director of Teach the Future in Houston, Texas. TSN from 17 June 2020 Hearing, p.7.

[5] Asian Development Bank. (2020). *Futures thinking in Asia and the Pacific: Why foresight matters for policy makers.* https://www.adb.org/sites/default/files/publication/579491/futures-thinking-asia-pacific-policy-makers.pdf

[6] The World Economic Forum defines Industry 4.0 as "the 'smart' and connected production systems that are designed to sense, predict, and interact with the physical world, so as to make decisions that support production in real-time." [Sirimanne, S. (2022, April 28). *What is 'Industry 4.0' and what will it mean for developing countries?* World Economic Forum.

redesigned to address the needs of the future economies and technologies. **Students are more focused on 21st century skills and the 4 Cs: critical thinking, collaboration, creativity, and communication. Learning is also more personalized to the capabilities of students. Students score well at standardized examinations, if there are any, without sacrificing individuality – they excel but they are not robots.** With the focus on innovation and creativity in the classroom and curricula, students learn and understand different approaches to problem solving and in their application of theoretical knowledge. **Education is refocused away from learning one field to developing multiple abilities and skills for a variety of fields, keeping future workers adaptable to shifting work environments.**

On the other hand, if we stay at the current course, students will remain bound to classroom-based learning without any flexibility. Our classrooms and learners, particularly in remote areas, will be left behind without the ability to take advantage of technology to expand their learning environments and creativity, and learners will lack the skill set to thrive in a more competitive and connected work environment. Without innovation, critical thinking and creativity ingrained in their studies, learners will only be able to provide standard answers and will be unable to adapt and learn quickly.

A lot of work needs to be done to achieve our preferred future. To this end, Dr. Alex Brillantes of the National College of Public Administration and Governance, University of the Philippines, **emphasized the importance of cooperation, competition, and thinking globally and acting locally.** In 2018, our students performed below global standards in the Programme for International Student Assessment (PISA), the first time the Philippines joined such an assessment. Like many countries around the world, we remain stuck in the factory model of education, where we mass produce students with little consideration for their individual needs as well as the country's needs for the future. The lack of connectivity, technology, and appropriate equipment, as well as the lack of sufficient training for teachers on blended learning, exacerbated the issues brought about by the school closures during the pandemic.

The gaps in the education system, including those mentioned above that had been revealed or aggravated by the pandemic and those already known to us, such as, but not limited to, lack of classrooms and other facilities, shortage of quality school textbooks and equipment, and the need to improve teacher quality, prevent us from achieving the Sustainable Development Goals (SDGs), which the country has committed to achieve by 2030. Achieving SDG 4 on Quality Education will help us realize all the other SDGs and will empower Filipinos with the skills needed to build a successful, dignified life, contributing to not just on the national but on the global stage as well.

Recognizing where we want to be in the future, and what the problems are that keep us from creating that future is the first step towards actually working towards the future we want. By employing futures thinking at the policy level, we can have a systematic assessment of education and its direction in light of the potentials of the future.

Technology is not the only factor, but it will have to be at the forefront of education, given the demands of the future of work. Curricula will have to be redesigned to prepare for Industry 4.0, where many processes will be automated, as digital literacy

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https://www.weforum.org/agenda/2022/04/what-is-industry-4-0-and-could-developing-countries-get-left-behind/

and soft skills become ever more important. Teachers will still be vital despite all these changes. While they will need new training to adapt to the changes in the classroom and the curricula, the primary role of teachers as educators remains important in this new and more inclusive, technology-driven, collaborative, and holistic learning environment. Teachers will be instrumental in teaching the skills needed by learners to succeed in the future, and must shift their focus to teaching these skills as embodied by the 4 Cs. Teachers will also continue to play a critical role in the early detection and identification of the talents as well as the specific needs of each learner, including mental health and special needs, and providing the necessary interventions as early as possible.

This Committee Report seeks to explore what the future of Philippine education can be in the next decade or more. It will discuss the current situation, problems, aspirations, and the Committee's recommendations based on discussions with experts during the hearings and further study, in order to secure the best possible future for education. The Report also presents the Futures Triangle, which provides a summary of where we are now and where we want to be in education, allowing us to see the big picture. It is hoped that this Report can provide some insight into the direction of Philippine education, and with Futures Thinking, steer current policy and legislation towards a future we want for all Filipinos.

I. *Prefatory Statement*

A. The discussion on the future of education revolves not only on education in the new normal. It goes beyond looking into the governance of the education system by framing the question on what is the preferred future of education that the students and educators want. In thinking of the best future of education, Dr. Alex Brillantes **emphasized how important it is to cooperate, compete, and think globally and act locally,** if we are to achieve our preferred future.[7] This is discussed further in Chapter IV, Section B (10).

B. It should be noted that this Committee Report and the interventions proposed herein are primarily focused on basic education, although it examines and considers the whole education system from early childhood education to post-graduate studies, and includes the futures of work.

   1. Pertinent to P.S. Res. Nos. 393 and 413, this Committee Report covers "a systemic assessment" of the country's education system and its attainment of SDG 4 on Quality Education, and to develop "strategic responses towards the effective delivery of education in light of the new normal, while enabling new competencies in teaching, establishing collaborations, and facilitating technology and innovation".[8]

   2. The recommendations herein seek "to build the direction and capacities of the country's education system, addressing the quality and accessibility of education" in order to ensure "its flexibility and responsiveness to" volatilities and uncertainties, "and allowing learners to adapt to new careers and skills required in the future".[9]

C. Future Proofing Education for a VUCA World

   1. The government's vision for a better education system, as embodied in the report prepared by the Congressional Commission on Education (EDCOM) in 1991 has led to changes in basic, higher, and technical-vocational education. Three decades since, challenges remain, and the context in which new education reforms will be undertaken has changed.

   2. The world we live in is volatile, uncertain, complex, and ambiguous (VUCA). This is exhibited by the global challenges we currently face, such as war, climate change, ecological and environmental degradation, widening social and economic inequities, rapid population growth, scarcity of resources, and now, a pandemic. With these changes come rapid extraordinary technological advances, including the uptake of digital technology, which has had one of the most profound impacts on human activity.

      (a) The pandemic also triggered a huge spike in the prevalence of mental health issues. Now more than ever, it has become

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[7] Dr. Alex Brillantes, National College of Public Administration and Governance, University of the Philippines. TSN from 27 May 2020 Hearing, p.57.

[8] Urging the Committee on Sustainable Development Goals, Innovation, and Futures Thinking to conduct a hearing, in aid of legislation, on the effects of the COVID-19 pandemic on the future of the education system of the country and its impact on SDG 4 concerning quality education, in light of the new normal and mapping new and responsive ways and systems of learning in the current pandemic and for future health emergencies, P.S. Reso. No. 413, (May 21, 2020) (Phil.).

[9] Urging the Committee on Sustainable Development Goals, Innovation, and Futures Thinking to conduct a hearing, in aid of legislation, on the effects of the COVID-19 pandemic on the future of the education system of the country and its impact on SDG 4 concerning quality education, in light of the new normal and mapping new and responsive ways and systems of learning in the current pandemic and for future health emergencies, P.S. Reso. No. 413, (May 21, 2020) (Phil.).

vital to give importance to mental health, and to ensure that the students, teachers, parents and all those involved in the education of a child are prepared to face the educational challenges brought about by a VUCA world. This shall be discussed further in Chapter IV, Section A (4)(a); Chapter IV, Section A (5)(c)(1); and Chapter IV, Section C (1)(d)(6)(ii).

3. The VUCA and rapidly advancing world we live in requires us to future-proof our actions and policies to ensure we are not caught off-guard once the future arrives. COVID-19 hastened the need for us to future-proof education.

    (a) Future-proofing the country's education system can mean harnessing existing skills, such as Filipinos' general competence in the English language. As the workforce becomes more globalized and collaboration with a diverse network of people has become more important than ever, English will open doors for Filipinos, not just in terms of job opportunities but for lifelong learning as well. This will allow Filipinos to compete and think globally, as Dr. Brillantes stated.

    (b) We can also ensure that we remain competitive in industries we already excel in, such as the Information Technology (IT) industry. Further investments can be made to ensure we do not fall behind in this sector, given the rapid pace of technological growth worldwide, and also to create an enabling environment for research and innovation. This can mean introducing science and technology early, in learners' education that can, and should be, fostered throughout their studies.

4. Surprisingly, cartoons like *"Betty in High School 2021 A.D."* originally published in Betty #46, February 1997, have shown a glimpse of what this future of education can be when we have prepared and future-proofed the same. We can already see some of these today. The start of the comic shows Betty attending online school at home.

Script: George Gladir / Pencils: Stan Goldberg / Inks: Mike Esposito / Letters: Bill Yoshida / Colors: Barry Grossman

Source: archiecomics.com

D. **The future if things remain the same**

    1. The Factory Model of Education

        (a) When schools for masses were first established in Europe, the education offered to them was limited to reading, writing, math, and religion, which is considered enough knowledge for students to learn about the existing social order and be employed in the factories, but not so much that they would think about pursuing meaningful lives.[10]

        (b) Schools were essentially a factory for knowledge acquisition. There is precise division of labor between administrators, teachers, and students. Learners were grouped by age and progress through the system in sequential stages like an assembly line. Schools provide incentives for good work; have an impersonal system of inspection through standardized tests; have strict attention to efficiency; and espouse economic use of space.[11]

        (c) This remains true today. As observed by the Organization for Economic Cooperation and Development (OECD), in the

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[10] Hansen, U. J. (2021). *The future of smart: How our education system needs to change to help all young people thrive.* (pp. 77-78). Capucia Publishing, LLC.

[11] Hansen, U. J. (2021). *The future of smart: How our education system needs to change to help all young people thrive.* (p. 78). Capucia Publishing, LLC.

current global education system, decisions are made by a distinct group of people and everyone has a distinct role; the curriculum is linear and standardized; academic performance is prioritized; and students are assessed through standardized tests.[12]

2. In *The Future of Education*, Hezki Arieli starts his book with a scenario where his deceased great-grandfather travels to the future and marvels at all the changes in every aspect of life except education:

> *"My great-grandfather was ready to go back to his 'life' and share his traumatic experiences with his friends. Just before leaving, and after giving my son and me a final hug, he turned and asked, 'Out of all the realms of life, why did you preserve the schools of my time? How come you kept this institution — which is probably the most important for your children's future and the world they live in — unaffected by all the other big changes in the world?'"[13]*

He further discussed in the book that, "[w]hile traditional economies were mostly based on manufacturing and production using natural resources, knowledge-based economies rely on creativity, innovation and originality of ideas for their industry and services."[14] To emphasize this, he quoted what British Prime Minister Sir Winston Churchill said after the Second World War, "The empires of the future are the empires of the mind." Despite this, Arieli observed that, "the schools of today are teaching the children of tomorrow about the world of yesterday."[15]

The empires of the future are the empires of the mind.

WINSTON CHURCHILL

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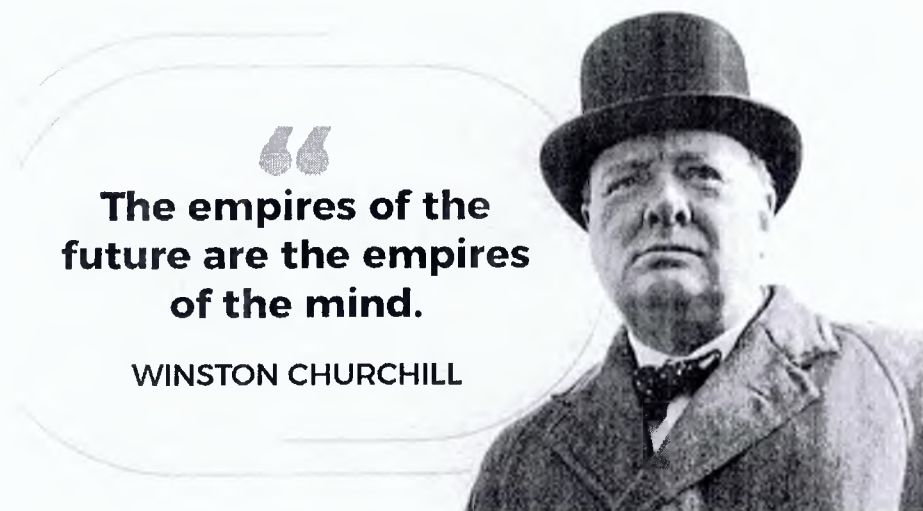
[12] EduSkills OECD. (2019, October 22). *OECD future of education and skills 2030: The new "normal" in education.* [Video]. Youtube. https://youtu.be/9YNDnkph_Ko

[13] Arieli, H. (2021). *The future of education: How to evolve 'old schools' to exciting & innovative learning hubs.* (p. 17).

[14] Arieli, H. (2021). *The future of education: How to evolve 'old schools' to exciting & innovative learning hubs.* (p. 20).

[15] Arieli, H. (2021). *The future of education: How to evolve 'old schools' to exciting & innovative learning hubs.* (p. 21).

E. The ideal future: What does education look like 10, 15, 20 or 30 years from now?[16] What are the new skills and competencies that future generations are going to need? How are we preparing students for jobs that do not yet exist? For the Committee, the following are the preferred outcomes should we be able to prepare for and work towards the ideal future of education:

1. Students are not only learning in the classroom. Blended learning will facilitate learning in different environments. Students meet with their teacher to study theoretical aspects of the curriculum, but can continue applying their lessons in the real world, supervised by their teacher remotely. Because the learning environment has become more diverse, parents have been trained to use technology for their child's education and get to play a more hands-on role in the education of their child.

2. Schools have created classrooms that foster innovative and creative learning. Classrooms use technology to enhance students' learning experience. Students use virtual reality to learn in environments that would have otherwise been inaccessible to them.

3. Curricula and courses are redesigned to address the needs of the future economies and technologies, since the Fourth Industrial Revolution has already begun. Students are not only taught to memorize, but lessons are focused on 21st Century skills such as the 4 Cs: critical thinking, collaboration, creativity, and communication. Leadership, innovation, adaptability, and agility are also important skills to learn, including basic technological skills to meet the demands of a global workforce that places great importance on digital literacy. **Because technology has evolved to solve all types of mathematical data and predict trends, in lieu of simply memorizing formulas, students instead learn how to interpret data using their own reasoning and applying their own theoretical knowledge in a way that makes such data usable and relevant for real-world applications.**

4. Learning is more **personalized to the capabilities of students.** Students who are at an above-average level are given more challenging lessons to stimulate their learning, while those who have difficulty are given more time to learn and reach the required level of proficiency, while further honing their competence in their areas of interest.

5. While students do well at standardized examinations, if there are any at all, they are not robots. Because the classrooms and curricula are designed with innovation and creativity in mind, students also learn to apply their knowledge differently from one another, and not just in any one standardized way.

F. As Dr. Anita Sykes-Kelleher, Founder and Director of Designer Futures, Australia, stated in the hearings of the Committee, it is not possible to

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[16] Henny, C. (2016, June 1). *9 things that will shape the future of education: What learning will look like in 20 years? eLearning Industry.*
https://elearningindustry.com/9-things-shape-future-of-education-learning-20-years;
Boudreau, E. (2020, December 11). *What the future of education looks like from here.* Harvard Graduate School of Education. https://www.gse.harvard.edu/news/20/12/what-future-education-looks-here;
University of Southern California. (2020, October 1). *What will education look like in 20 years?* USC Rossier. https://rossieronline.usc.edu/blog/education-20-years/

predict the future accurately as it is not predetermined[17]. It depends on the choices we make today. We need to recognize that more than one future is possible, and we need strategic plans that will enable us to prepare for all futures. But how are we preparing for the most desirable future of education described above? How do we prepare and educate our learners for the future of work? How do we ensure that they have the necessary skills to compete with a global workforce?

1. A list of seven (7) critical competencies, which expands the skills already captured by the 4 Cs, was compiled following interviews with business leaders to discover what skills young people need to be successful and close "the global achievement gap":[18]

   (a) Critical thinking and problem solving
   (b) Collaboration across networks and leading by influence
   (c) Agility and adaptability
   (d) Initiative and entrepreneurship
   (e) Effective oral and written communication
   (f) Accessing and analyzing information; and
   (g) Curiosity and imagination

G. The COVID-19 pandemic has been an opportune time to rethink, revisit, and reform our education system and to look at it decades towards a future that cares for the next generation. Ms. Christine Reyes, Director of Aptissimi Development Innovations Inc., an organization which aims to contribute to the development of the Filipino people through various innovative development interventions and to the creation of knowledge for development, accurately stated that the pandemic is an opportunity to shift from where we are to where we want to go.[19] Professor Herisadel Flores of the University of the Philippines also discussed how the pandemic showed the importance of science and technology and paved the way for students to focus more on these disciplines.[20] Further, the pandemic informed us better on the ethical, social, and economic implications post-COVID-19.

H. It is thus imperative to provide an enabling environment to nurture and hone students' knowledge, skills, attitudes, and values to prepare them for a post-COVID-19, highly technological and globalized future.

1. Laws such as the "Open Distance Learning Act",[21] "Open High School System Act",[22] and the "Early Years Act"[23] are intended to

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[17] Dr. Anita Sykes-Kelleher, Founder and Director of Designer Futures. TSN from 17 June 2020 Hearing, p. 43.

[18] Whitman, G. &, Kelleher, I. (2016). *Neuroteach: Brain science and the future of education.* (p. 17). Rowman & Littlefield Publishers.

[19] Ms. Christine Reyes, Director of Aptissimi Development Innovations Inc. TSN from 27 May 2020 Hearing, p. 64.

[20] Professor Herisadel Flores, University of the Philippines. TSN from 27 May 2020 Hearing, p. 55

[21] Open Distance Learning Act, Republic Act No. 10650, (December 9, 2014) (Phil.); originally authored by Senator Edgardo J. Angara and sponsored in the 16th Congress by the undersigned Chairperson as the then-Chairperson of the Committee on Education, Arts and Culture. Co-sponsored by Senators Cynthia A. Villar, Ralph G. Recto, Antonio "Sonny" F. Trillanes, Miriam Defensor Santiago, Jinggoy P. Ejercito-Estrada, and Juan Edgardo "Sonny" M. Angara ("Angara"); and authored by Senators Villar, Recto, Trillanes, Defensor Santiago, Ejercito-Estrada, Angara, and the undersigned Chairperson.

[22] Open High School System Act, Republic Act No. 10665, (July 9, 2015) (Phil.); sponsored in the 16th Congress by the undersigned Chairperson as the then-Chairperson of the Committee on Education, Arts and Culture. Co-sponsored by Senators Ramon A. Revilla Jr., Vicente C. Sotto III, Defensor Santiago, Angara, and Recto; and authored by Senators Revilla Jr., Villar, Defensor Santiago, Angara, Recto, and Sotto III.

[23] Early Years Act, Republic Act No. 10410, (March 26, 2013) (Phil.); sponsored in the 15th Congress by Senator Edgardo J. Angara as the then-Chairperson of the Committee on Education, Arts and Culture. Co-sponsored by Senators Alan Peter "Compañero" S. Cayetano, Franklin M. Drilon, and Teofisto "TG"

provide such an environment by creating learning experiences that are conducive to the needs of students, and the "GMRC and Values Education Act"[24] seeks to inculcate in students the concepts of human dignity, respect for oneself, and giving oneself to others in the spirit of community, and to teach them the skills and values they need to be conscientious, responsible, caring, patriotic, and law-abiding citizens.

2. Institutional change in education in order to advance student learning needs support from academic leadership.[25] Thus, Department of Education (DepEd) Undersecretary Nepomuceno A. Malaluan informed the Committee that the agency's Basic Education-Learning Continuity Plan, which laid down the direction of basic education in the time of COVID-19, will serve as the bridge to the future of education. Its Education Futures Unit will also help the DepEd to prepare for the future.[26]

I. It is not difficult to envision the Philippines' preferred future of education. Simply observing what is being done in other countries like Canada, Finland, Japan, and Singapore would show us the possibilities out there. These countries have different education systems that produce outstanding graduates, and they all score highly in education rankings.[27] Notably, certain common characteristics like strategic long-term plans for education, a focus on teacher quality and excellence, strong social supports such as benefits for families and healthcare, curriculum revisions focused on technology and 21st Century skills, and funding support likely contributed to their success,[28] despite their differing approaches to education and their implementation.

J. Futures thinking is a concept that can help us envision and anchor our systematic assessment of our preferred future of education. It involves "a set of approaches and tools designed to help their users identify emerging issues, negotiate uncertainties, articulate scenarios, develop a common

Guingona III; and authored by Senators Edgardo J. Angara, Drilon, Cayetano, Ejercito-Estrada, Defensor Santiago, Revilla Jr., and the undersigned Chairperson.

[24] GMRC and Values Education Act,Republic Act No. 11476, (June 25, 2020) (Phil.); sponsored in the 18th Congress by Senator Sherwin Gatchalian as Chairperson of the Committee on Basic Education, Arts and Culture. Co-sponsored by Senators Angara, Maria Lourdes Nancy S. Binay, Ronald "Bato" Dela Rosa, Christopher Lawrence T. Go, Risa Hontiveros, Panfilo "Ping" M. Lacson, Manuel "Lito" M. Lapid, Imee R. Marcos, Emmanuel "Manny" D. Pacquiao, Francis "Kiko" N. Pangilinan, Aquilino "Koko" Pimentel III, Francis "Tol" N. Tolentino, Joel Villanueva, Juan Miguel "Migz" F. Zubiri, Richard J. Gordon, Grace Poe, Villar, Drilon, Revilla Jr., Sotto III, Recto, and the undersigned Chairperson; and authored by Senators Zubiri, Villar, Villanueva, Binay, Lacson, Gatchalian, Angara, Dela Rosa, Drilon, Go, Hontiveros, Lapid, Marcos, Pacquiao, Pangilinan, Pimentel, Revilla Jr., Sotto III and Tolentino.

[25] Kim, J. &, Maloney, E. (2020). Learning innovation and the future of higher education (p. 80). Johns Hopkins University Press.

[26] Atty. Nepomuceno A. Malaluan, Undersecretary of the Department of Education. TSN from 27 May 2020 Hearing, p. 12.

[27] According to the ranking in the Best Countries for Education Report 2021, conducted by US News and World Report, BAV Group, and the Wharton School of the University of Pennsylvania, Canada ranks no. 4, Japan ranks number 7, Finland ranks number 15, and Singapore ranks number 21. [Best Countries for Education. (n.d.). U.S. News & World Report. https://www.usnews.com/news/best-countries/best-countries-for-education.]. Based on PISA 2018 results as computed for their average scores in each test area (science, reading and mathematics), Singapore ranks number 2, Japan ranks number 4, Canada ranks number 6, and Finland ranks number 7. [Armstrong, M. (2019, December 3). PISA 2018: The Top Rated Countries. https://www.statista.com/chart/7104/pisa-top-rated-countries-regions-2016/.]

[28] National Center on Education and the Economy. (n.d.). Top performing countries. https://ncee.org/top-performing-countries/

vision of a desired future through wide participation, introduce innovation, and design robust policies and strategies."[29]

K. **FUTURES TRIANGLE:** One of the tools we can use to simplify the discussions and introduce futures thinking is the Futures Triangle.

1. According to Professor Shermon Cruz, Founder, Executive Director, and Chief Futurist of the Center for Engaged Foresight, "the futures triangle is a tool that enables policymakers and analysts to map the big picture and grapple with the convergence of multiple drivers of change and facets of a policy, anchored on 1) gaps created by past events and experiences that bars people, institutions and organizations to move forward; 2) opportunities that are pushing change forward; and 3) preferred and shared future visions or the future we want. These are desired visions that pull us or motivate us to change our behaviors and decisions to bring about the aspirated vision."

2. The Futures Triangle mapped the trends, innovations, drivers of change, historical barriers, and insights, including probable and preferred visions that were shared and that emerged during the Committee hearings.

3. Below is the future of education triangle, which can serve as our guidance for the discussions below:

Where do we want to be? (Shared vision for the preferred future)

4th Industrial Revolution Ready; Develop transformative budget and financial instruments; Seamless and agile education strategy/approach, Education governance and pedagogies anchored on futures thinking, Lifelong learning driven; Invest on upskilling and knowledge co creation with a focus on capability enhancement (soft skills); Adoption of frontier education technologies to liberate teachers and learners from traditional learning interfaces and mindsets.

What are the opportunities? (Drivers of change that push towards the preferred future)

Pandemic as the Great Reset; Ongoing pedagogic innovations and delivery systems; Emerging bottom-up and contextual approach to education management/delivery; Increasing global interconnectedness that fosters multi-stakeholder dialogue;

What are the gaps? (Barriers and deep structures that resist change)

We are stuck in the 2nd Industrial Revolution: Factory Model; Budget prioritization and budgeting system; Siloed approach; Traditional and deficit mindset (Isip talangka); Highly centralized systems; 3.4% of the country's total GDP; Declining functional literacy and comprehension; Lack of continuity, consistency, futures thinking and foresight

L. The Committee acknowledges the following Committees and Chairpersons, who have been supportive of institutionalizing and mainstreaming futures thinking in the education sector: the Committee on Basic Education, Arts and Culture and its Chairperson, Senator Sherwin Gatchalian; the Committee on Higher, Technical, and Vocational Education

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[29] Asian Development Bank. (2020). *Futures thinking in Asia and the Pacific: Why foresight matters for policy makers.*
https://www.adb.org/sites/default/files/publication/579491/futures-thinking-asia-pacific-policy-makers.pdf

and its Chairperson, Senator Joel Villanueva; and the Committee on Finance and its Chairperson, Senator Juan Edgardo "Sonny" Angara. [30]

1. Senator Angara has adopted the undersigned Chairperson's recommendation of funding various futures thinking initiatives in the last three years, such as the creation of a futures thinking office in DepEd, Department of Health (DOH), and Department of Science and Technology (DOST); capacity building in futures thinking for local government officials and national government employees through the Development Academy of the Philippines (DAP); capacity building in futures thinking for all SUCs; and research grants on futures thinking, among others.

2. Senator Gatchalian, in a hearing on the Second Congressional Commission on Education, recognized the importance of futures thinking and agreed that it is important to assess where we are, to come up with solutions to the problems we find, and to look at the future. He added that it is not enough to look at the present problems, but also to look at where we are going. [31]

3. Senator Villanueva, during his sponsorship of Senate Bill No. 2492, or the "Revised Higher Education Act of 2022", emphasized the need to integrate futures perspectives in higher education. [32]

M. The Committee also acknowledges the pioneering effort of the DepEd, under the leadership of Secretary Leonor Magtolis Briones, in the creation of the Education Futures Program. According to the Secretary, the Program shall "endeavor to perceive, see, and discern what will happen in education in the near, middle, and perhaps even the far future. This is our response to the need for futures thinking in education, for readiness to confront the rapid changes, the challenges, and opportunities of the future." [33]

II. Call for Hearings

A. Senator Pia Cayetano filed P.S. Reso. Nos. 393 and 413 on innovations of various sectors to prepare for the new normal, and on the future of education.
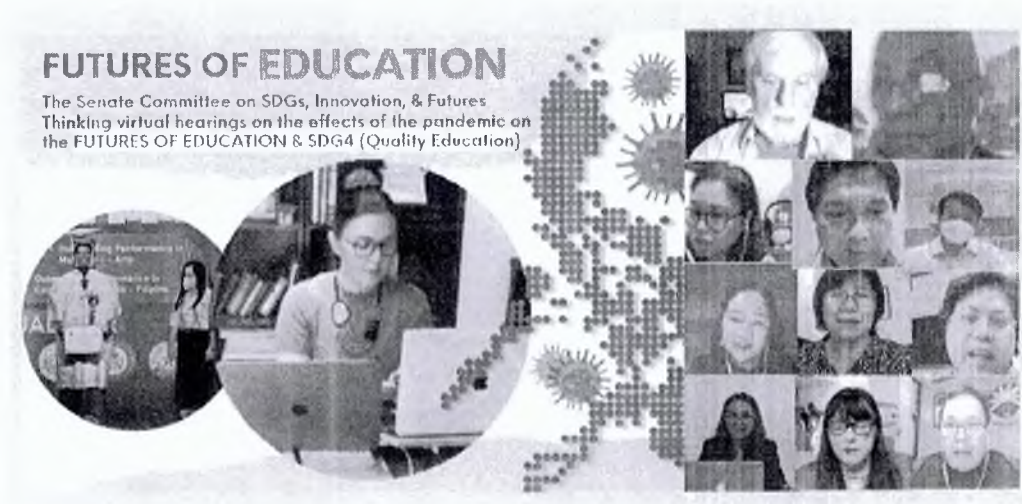
III. Committee's Action

A. The Committee on Sustainable Development Goals, Innovation, and Futures Thinking held a series of hearings and invited experts on the futures of education, and subsequently on the futures of work. The advent of online hearings, made necessary at the height of the pandemic, allowed foreign experts to join the hearings, something that was not possible in the past.

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[30] Senator Sherwin Gatchalian. TSN from 05 July 2021 Hearing on the Second Congressional Commission on Education, p. 141.

[31] Senator Sherwin Gatchalian. TSN from 15 July 2021 Hearing on the Second Congressional Commission on Education, p. 166.

[32] Senate of the Philippines. (2022, January 25). Senate Session No. 25 (January 25, 2022). [Video]. YouTube. https://youtu.be/-72_P4VgsPI.

[33] Department of Education (2021, May 7). *Briones stresses the need for futures thinking in education at SEAMEO Congress 2021.* https://www.deped.gov.ph/2021/05/07/briones-stresses-the-need-for-futures-thinking-in-education-at-seameo-congress-2021/.

FUTURES OF EDUCATION

The Senate Committee on SDGs, Innovation, & Futures Thinking virtual hearings on the effects of the pandemic on the FUTURES OF EDUCATION & SDG4 (Quality Education)

Photos of resource persons and Senator Sherwin Gatchalian attending the online hearing on the futures of education and SDG 4 with Sen. Pia Cayetano, the undersigned Chairperson, presiding. Inset photo of Senator Renato "Compañero" Cayetano Memorial Science and Technology High School, Taguig City cyber-graduation ceremony using student-made robots.

IV. Discussion

A. WHERE ARE WE TODAY?

1. Short History of Philippine Education System
    (a) According to the DepEd's history of the country's education system, [34] pre-colonial education used to be informal, unstructured, and devoid of methods. Education focused more on vocational training and less on academics, and was taught by parents and in the houses of tribal tutors.
    (b) With the arrival of the Spaniards, education became more religion-oriented, and tribal tutors were replaced by Spanish missionaries. Early years of Spanish colonization restricted education to the elite, but was later expanded with the establishment of at least one primary school for boys and girls in each town.
    (c) After the defeat of the Spaniards, free and compulsory elementary education was established under the Malolos Constitution of the First Philippine Republic. [35]
    (d) A secularized and free public school system was established under American rule, and primary instruction trained people for the duties of citizenship. The high school system was supported by provincial governments. English was used as the medium of instruction. Special education institutions, a school of arts and trades, an agricultural school, and commerce and marine institutes were established. In 1908, the University of the Philippines was founded.
    (e) During the Japanese occupation, Filipinos were taught Tagalog, Philippine History, and Character Education. Love for work and dignity of labor was emphasized.
    (f) The Department of Education, Culture, and Sports (DECS) was created in 1987 through Executive Order No. 117, and remained unchanged until the first Congressional Commission on Education

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[34] Department of Education. (n.d.) *History*. https://www.deped.gov.ph/about-deped/history/

[35] The 1899 Malolos Constitution of the Philippines , Article 23, Title IV.

(EDCOM) report, entitled *"Making Education Work: An Agenda for Reform"*, recommended the need for a trifocal system of education.

    (g) In 1994, the Commission on Higher Education (CHED)[36] and the Technical Education and Skills Development Authority (TESDA)[37] were created to supervise tertiary and technical-vocational education, respectively, with DECS covering basic education.

    (h) Succeeding years saw the renaming of DECS to the DepEd and the redefining of the roles of DepEd field offices through the "Governance of Basic Education Act of 2001" (RA 9155). Other landmark measures on education include the "Early Years Act" (RA 10410), "Open Distance Learning Act" (RA 10650), "Open High School System Act" (RA 10665), "Kindergarten Education Act" (RA 10157),[38] "Enhanced Basic Education Act" (RA 10533),[39] "Ladderized Education Act" (RA 10647),[40] and the "Unified Student Financial Assistance System for Tertiary Education Act (UniFAST)" (RA 10687).[41]

2. The current education system is a product of a mishmash of foreign influences bringing in the factory model of education (more on this in Chapter IV, Section A (5)(b) below) prevalent in the West. And although subsequent laws sought to adapt the education system to the Philippine context, there is still much to be done in order to move our education system away from the factory model and towards that which meets the needs of the country and its possible futures. Undertakings to reform the education system, such as the first EDCOM, showed that continuous and painstaking work is always needed to improve and adapt the education system for present and future needs. The education system is not static, but fluid, proactive and progressing with the times.The DepEd led by Secretary Briones has been prioritizing access to quality basic education against all odds, while innovating the agency to face the future.

    (a) Before the pandemic, the DepEd launched *Sulong EduKalidad*, its battlecry for reforms to achieve quality basic education. According to the DepEd, the initiative is in response to the rapidly changing learning environment of present and future learners and will introduce aggressive reforms to globalize the quality of basic education in the Philippines. The four reform areas are symbolized by **KITE**: (1) **K** to 12 curriculum review and update; (2) Improvement of learning environment (3) **T**eachers' upskilling and

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[36] Higher Education Act of 1994, Republic Act No. 7722, (May 18, 1994) (Phil.).

[37] Technical Education and Skills Development Act of 1994, Republic Act No. 7796, (August 25, 1994) (Phil.).

[38] Sponsored in the 15th Congress by Senator Edgardo J. Angara as the Chairperson of the Committee on Education, Arts and Culture. Co-sponsored by Senator Loren B. Legarda; and authored by Senators Recto and Lapid.

[39] Sponsored in the 15th Congress by Senator Edgardo J. Angara as the Chairperson of the Committee on Education, Arts and Culture. Co-sponsored by Senators Recto, Drilon, and Legarda; and authored by Senators Edgardo J. Angara, Legarda, Recto, and Drilon.

[40] Sponsored in the 16th Congress by the undersigned Chairperson as the then-Chairperson of the Committee on Education, Arts and Culture. Co-sponsored by Senators Villar, Recto, and Angara; and authored by Senators Villar, Recto, Angara, and the undersigned Chairperson.

[41] Sponsored in the 16th Congress by the undersigned Chairperson as the then-Chairperson of the Committee on Education, Arts and Culture. Authored by Senators Paolo Benigno "Bam" Aquino IV, Francis "Chiz" G. Escudero, Joseph Victor G. Ejercito, Legarda, Angara, Recto, Revilla Jr., Villar, Ejercito-Estrada, Trillanes, Defensor Santiago, and the undersigned Chairperson.

reskilling; and (4) Engagement of stakeholders for support and collaboration.[42]

SULONG
KALIDAD

(b) In connection with the training of teachers:

(1) A major reform initiative for the upskilling and reskilling of teachers is the National Educators Academy of the Philippines transformation for the professional development of in-service teachers.[43] These reforms have been institutionalized in RA 11713 or the "Excellence in Teacher Education Act", sponsored by Senator Gatchalian in the 18th Congress as the Chairperson of the Committee on Basic Education, Arts and Culture.[44]

(2) The DepEd is also creating a teachers' training program on Education Futures.

3. It is clear that the Spanish government policy of limiting education to the elite was a reflection of the education system in the West. The Philippine government policy of continuing to increase the number of schools after the Spanish regime ended was a clear intent to prioritize the access to education for more children, a daunting task considering the geographic layout of the Philippines. In fact, to this day, the Last Mile Schools Program under the DepEd is still ongoing, and sadly, underfunded.

4. However, COVID-19 revealed political, social, and economic realities that are far more complex than what has been experienced by every person and community.

(a) Complicating these realities further is the increase in mental health problems, where the global prevalence of anxiety and depression increased by 25% in the first year of the pandemic, according to the World Health Organization (WHO). The WHO explains that major causes for this spike include social isolation and loneliness, fear of infection, suffering and death for oneself and for loved ones, grief after bereavement, and financial worries. Exhaustion has been a major trigger for suicidal thinking among healthcare workers. Further, the WHO states that young people and women are

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[42] Department of Education. (2019, December 3). *Sulong Edukalidad: DepEd's battlecry moving forward.* https://www.deped.gov.ph/2019/12/03/sulong-edukalidad-depeds-battlecry-moving-forward/.

[43] Department of Education (2019, March). *Report of the Task Force on NEAP Transformation: Proposed Detailed Design.* https://www.deped.gov.ph/wp-content/uploads/2019/05/DO_s2019_011.pdf.

[44] Co-sponsored by Senators Zubiri and Recto; and authored by Senators Gatchalian, Villanueva, Revilla Jr., Angara, Binay, Zubiri and Recto.

disproportionately affected by thoughts of anxiety, depression, and self-harm.[45]

    (1) As illustrated in *"Betty in High School 2021 A.D."* (originally published in Betty #46, February 1997), Betty and her friends exclaimed how fun it must be for students attending in-person classes to socialize, discuss the day's events, share their meals, and engage in activities together.

Source: archiecomics.com

5. Previous issues in the education system remain stark and unaddressed.

    (a) PISA RESULTS

        (1) Courageously, the DepEd under Secretary Briones had the Philippines participate for the first time ever in the 2018 PISA as part of its Quality Basic Education reform plan, with the goal of establishing the baseline of the country's performance against global standards. This will serve as the basis for targeted reforms in the education sector, benchmarking their effectiveness.[46] Though the country had

[45] World Health Organization. (2022, March 2). *COVID-19 pandemic triggers 25% increase in prevalence of anxiety and depression worldwide.* https://www.who.int/news/item/02-03-2022-covid-19-pandemic-triggers-25-increase-in-prevalence-of-anxiety-and-depression-worldwide#:~:text=In%20the%20first%20year%20of,Health%20Organization%20(WHO)%20today

[46] Department of Education. (2019, December 4). Statement on the Philippines' ranking in the 2018 PISA results. https://www.deped.gov.ph/2019/12/04/statement-on-the-philippines-ranking-in-the-2018-pisa-results/

the highest literacy rate in Southeast Asia in 2019,[47] PISA results showed the low performance of our students and schools in basic academic skills.[48]

    i. Out of 79 countries and economies that participated in the assessment, the Philippines scored the lowest in reading comprehension for both boys and girls with an average score of 340, far below the average of 487.

    ii. The Philippines also placed the second-lowest in mathematics scoring 353 (with the average at 489), and in science scoring 357 (with the average at 489).

(2) In its official statement on the 2018 PISA results, the DepEd recognized the urgency of addressing issues and gaps in attaining quality basic education in the Philippines.[49] As the DepEd prepares to participate in PISA 2022, Secretary Leonor Briones has expressed hope that the country will improve its performance in the next assessment.[50]

(3) While the Committee recognizes the importance of standardized tests such as PISA, we also highlight the need for students to learn and retain foundational knowledge and skills to prepare them to live meaningful lives in the future. As Whitman and Kelleher (2016)[51] wrote in their book *Neuroteach: Brain Science and the Future of Education*, "[w]e should not just want students to hold information in their brain long enough to 'pass' a standardized test. We should want core knowledge to remain with students and be foundational for the higher order, creative thinking that their future career choices will demand." In line with this, even DepEd Secretary Briones acknowledged that "[w]hen our children graduate, everything that we have taught them will become irrelevant because knowledge will have changed", which should make us question the pedestal we have placed standardized tests on, and how we have built the learning process around getting good scores.[52]

(b) THE FACTORY MODEL OF EDUCATION

Our education system has remained the same since the 2nd Industrial Revolution.[53]

[47] Philippine Star. (2019, 27 September). National literacy month: UN Ranks Filipinos as most literate in Southeast Asia. *Philippine Star.*
www.philstar.com/lifestyle/on-the-radar/2019/09/27/1955462/national-literacy-month-un-ranks-filipinos-most-literate-southeast-asia
[48] Organisation for Economic Co-operation and Development. (2019). *PISA 2018: Insights and interpretations.*
https://www.oecd.org/pisa/PISA%202018%20Insights%20and%20Interpretations%20FINAL%20PDF.pdf
[49] Department of Education. (2019, December 4). Statement on the Philippines' ranking in the 2018 PISA results.
https://www.deped.gov.ph/2019/12/04/statement-on-the-philippines-ranking-in-the-2018-pisa-results/
[50] Magsambol, B. (2020, November 26). Philippines eyes better ranking in 2022 international student assessment program. *Rappler.*
https://www.rappler.com/nation/philippines-to-join-programme-international-student-assessment-2022/
[51] Whitman, G. &, Kelleher, I. (2016). *Neuroteach: Brain science and the future of education.* (pp. 6-7). Rowman & Littlefield Publishers.
[52] Hernando-Malipot, M. (2022, March 25). Briones underscores the need to prepare Filipino learners for the future. *Manila Bulletin.*
https://mb.com.ph/2022/03/25/briones-underscores-the-need-to-prepare-filipino-learners-for-the-future/
[53] Ms. Christine Reyes, Director of Aptissimi Development Innovations Inc. TSN from 27 May 2020 Hearing, p. 74.

(1) Classrooms then were designed and patterned after the factories that were the drivers of the 2nd Industrial Revolution.

(2) The main design was education for the masses, with the standard lessons and learnings that were deemed important to push for industrialization. Classrooms, class sizes, subject matters, age, and other variables were the same for almost all schools. Children underwent the same process from entry to graduation.

(3) Dr. Hansen, in *The Future of Smart: How Our Education System Needs to Change to Help All Young People Thrive*, further described this factory setup that focused learning on measurable outputs, with emphasis on quantity before quality: "It was essentially a factory for knowledge acquisition: precise division of labor; an assembly-line progression through sequential stages; incentives for good work; impersonal system of inspection; strict attention to efficiency; and economic use of space."[54]

(4) In *Homo Deus,* Prof. Yuval Noah Harari also described how the "mass education systems of the industrial age" led to schools gauging the worth of students according to their scores. Schools, he said, were supposed to focus on enlightening and educating students, but soon schools began to focus on high marks instead. He pointed out that "the skills required to get high marks in an exam are not the same as a true understanding of literature, biology or mathematics."[55]

(5) Our education system, along with many other countries', is still designed based on that factory model. The focus is on the mass production of students, with little consideration for individual needs. Similar to what has been said about the situation of American schools, "Our schools are, in a sense, factories, in which the raw products (children) are to be shaped and fashioned into products to meet the various demands of life. The specifications for manufacturing come from the demands of twentieth-century civilization, and it is the business of the school to build its pupils according to the specifications laid down."[56]

(c) CHALLENGES ON FACE-TO-FACE DELIVERY OF EDUCATION

(1) COVID-19 has made the face-to-face delivery of education challenging because of the health risks. As the country transitioned into remote learning, technological difficulties and financial barriers became very apparent, as most learners and even teachers had intermittent or no internet connection, and lacked the proper equipment and technology to facilitate online learning. Paper-based modules posed their own challenges, including cost, distribution, and environmental impact. The sudden shift

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[54] Hansen, U. J. (2021). *The future of smart: How our education system needs to change to help all young people thrive.* (p. 78). Capucia Publishing, LLC.

[55] Harari, Y. N. (2016). Homo Deus: A brief history of tomorrow. (p. 170). Harper Collins Publisher.

[56] Gelberg, D. (1998, September 30). The 'business' of reforming American schools. *Education Week.* https://www.edweek.org/education/opinion-the-business-of-reforming-american-schools/1998/09

away from face-to-face learning due to the COVID-19 crisis also had an impact on both the teachers' and learners' mental health, prompting the DepEd to launch a mental health helpline system to provide mental health and psychosocial support services, as well as wellness checks.[57]

    i. The WHO further recognizes that school closures have negative impacts on child health, education and development, family income, and the overall economy.[58] The Framework for Reopening Schools also acknowledges the severe impact on a child's ability to learn, as well as other risks to children who are out of school, such as teenage pregnancy, sexual exploitation, child marriage, and violence.[59]

    ii. Recognizing the necessity and importance of face-to-face learning, most countries went back to this modality by 2021. In fact, as early as July 2021, other ASEAN countries have either implemented a full face-to-face learning delivery or a hybrid delivery, and have continued to implement the same with varying health protocols despite the uncertainty brought about by the pandemic. The Philippines was one of the last countries to return to face-to-face classes,[60] only starting its pilot implementation in November 2021[61] despite the push from the DepEd, under the leadership and with the foresight of Secretary Briones, to reopen schools for face-to-face classes even in the earlier days of the pandemic, while prioritizing the health and safety of learners and teachers. Recently, the low COVID-19 case numbers have allowed the country to reopen schools with limited face-to-face classes, but momentum seems to have been lost and progress is slowing to expand this further, especially with private schools.

        1. Based on data submitted to this Committee by the DepEd, as of 27 April 2022, 25,668 public schools or 56.89% of the total number of public schools are already participating and have actually started their face-to-face classes. However, only 676 or 5.47% of the total

[57] Department of Education. (2021, November 8). *DepEd launches mental health helpline system for learners, teachers.*
https://www.deped.gov.ph/2021/11/08/deped-launches-mental-health-helpline-system-for-learners-teachers/
[58] World Health Organization. (2020, September 18). *Coronavirus disease (COVID-19): Schools.*
https://www.who.int/news-room/questions-and-answers/item/coronavirus-disease-covid-19-schools
[59] UNESCO, UNICEF, World Bank, World Food Programme, & UNHCR. (2020, June). *Framework for reopening schools.*
https://www.unicef.org/media/105286/file/Framework%20for%20Reopening%20Schools.pdf
[60] Deiparine, C. (2021, September 8). Only Philippines, Venezuela yet to allow return to classroom learning. *Philippine Star.*
https://www.philstar.com/headlines/2021/09/08/2125759/only-philippines-venezuela-yet-allow-return-classroom-learning
[61] Hernando-Malipot, M. (2022, January 5). DepEd readies report on the pilot study of limited face-to-face classes. *Manila Bulletin.*
https://mb.com.ph/2022/01/05/deped-readies-report-on-the-pilot-study-of-limited-face-to-face-classes/

number of private schools have so far started implementing face-to-face classes.

2. According to the DepEd, they are conducting continuous engagements with private school associations to discuss the issues and challenges being encountered by private schools on the implementation of face-to-face classes.

3. Based on these discussions, most private schools have opted to resume face-to-face classes in the next school year, while some will adopt pure online modality.

iii.   In *"Betty in High School 2021 A.D."* (originally published in Betty #46, February 1997), after seeing how things were done in her parents' "obsolete" high school, Betty wishes she could go back to those days of attending school in person instead of virtually.

Source: archiecomics.com

(2) Even prior to the pandemic, another major challenge to face-to-face delivery existed — the number of our classrooms. It has not kept pace with our population growth, and the country has ever since been trying to catch up. In some cases, there are more students in each classroom than what is recommended for optimum learning. This has

been the situation for many years. As far back as 2004, the DepEd issued Department Order No. 62, adopting the double shift policy in public schools to address the classroom shortage, with up to a 65 students per class.[62] In 2012, then-DepEd Secretary Armin Luistro acknowledged that some public schools even have triple shifts,[63] which still continued as recently as 2018, when it was reported that at least seven schools in NCR were temporarily implementing triple shifting of classes at the start of SY 2019-2020, until the completion of the construction of classrooms [64] As of SY 2020-2021,[65] the computed remaining classroom requirements is 127,039, amounting to approximately P317,597,500,000 (at P2,500,000 per classroom). The DepEd recognized the importance of ensuring there are enough classrooms for the ever-increasing number of learners, and has requested Congress to increase funding for their construction, as well as the repair of existing ones. As far as futures thinking is concerned, it was logical to push for the construction and repair of classrooms during the pandemic, at a time when most learners are forced to stay home, in order to decongest existing classrooms once learners are able to go back to face-to-face classes. This is also an investment into the future, since closing the gap on the classroom shortage would take years and require billions of pesos to accomplish.

i. With this in mind, the undersigned Committee Chairperson, in her capacity as the Senior Vice Chairperson of the Committee on Finance, proposed increases to the DepEd's Basic Education Facilities Fund, which includes budget for the construction and repair of new and existing classrooms and school buildings. Further, funding was placed under the DepEd's Last Mile Schools Program to address the gaps in resources and facilities in schools located in geographically isolated, disadvantaged, and conflict-affected areas. However, in the last two years, the funding available had been limited and was given to other priority spending for the pandemic. The classroom shortage will continue to exist as learners slowly go back to face-to-face classes. Those in geographically isolated areas are at a high risk of being left behind, which is why it is important to

[62] Department of Education. (2004, December 13). *Department Order No. 62, s. 2004 – adoption of double shift policy in public school to address classroom shortage.* https://www.deped.gov.ph/2004/12/13/do-62-s-2004-adoption-of-double-shift-policy-in-public-school-to-address-classroom-shortage/
[63] Quismundo, T. (2012, March 28). DepEd: Many public schools lack space for more classrooms *Philippine Daily Inquirer.* https://newsinfo.inquirer.net/168505/deped-many-public-schools-lack-space-for-more-classrooms
[64] Nazario, D., & Damicog, J., & Panaligan, R. G. (2019, une 4). Classroom shortage pushes 7 schools to have triple shifts. *Manila Bulletin.* https://mb.com.ph/2019/06/04/classroom-shortage-pushes-7-schools-to-have-triple-shifts/
[65] Department of Education submission to the Committee on Finance (Sub-Committee 'D') for the FY 2021 General Appropriations Act.

allocate funding for the Last Mile Schools Program every year and effectively implement other learning delivery platforms.

(3) Other delivery platforms such as distance and blended learning have not been fully developed due to several factors, but mainly because face-to-face learning has traditionally been the most common form of delivery. Dr. Eva Maria Cutiongco-Dela Paz, Professor and Executive Director of the National Institutes of Health, University of the Philippines Manila and an awardee of the Metrobank Foundation Outstanding Filipino Award for Teachers in 2019, who discussed health sciences education during the pandemic and in the future, pointed out that transdisciplinary collaboration, translational research, and flexible modes of learning became even more important and relevant due to COVID-19.[66]

B. WHERE DO WE WANT TO BE?

1. "Education needs to focus on developing healthy, well-adjusted human beings capable of living individually meaningful lives in an increasingly complex world."[67]

2. While the pandemic does not seem to be conducive to long-term planning for the best outcomes, there are many lessons to be learned. When it comes to the future of education, given the urgency of present needs, it is important not to lose sight of the vision we need to work towards and plan for.

3. UNESCO prescribes transforming the education system to that which will prepare learners for the next global crisis. In addition to cognitive skills, they recommend that students acquire "the ability for emotional empathy, sympathy for the plight of others, concern for social justice and human rights, and awareness of the planet we are living on and the other species inhabiting it".[68]

4. The country's ideal future of education begins with quality early childhood education being made available to all. It produces learners who are adaptable, have mastered the 4 Cs (communication, collaboration, critical thinking, and creativity), and are ready for the Fourth Industrial Revolution, being digitally savvy and globally competitive, regardless if they prefer working here or would like to pursue other opportunities abroad. They should be taught by highly-skilled and motivated teachers who can competently use technology and various modes of teaching to create innovative and effective learning experiences. The learning process and the students' holistic well-being, including the physical, mental and emotional aspects, are valued, not just grades and testing. Students are monitored and provided with constant feedback. Decision-making and

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[66] Dr. Eva Maria Cutiongco-Dela Paz, Professor and Executive Director of the National Institutes of Health, University of the Philippines Manila. TSN from 17 June 2020 Hearing. p. 115.

[67] TEDx Talks. (2017, November 29). *The future of smart | Ulcca Joshi Hansen | TEDxCrestmoorParkWomen.* [Video]. YouTube. https://youtu.be/MxAwul1P6xQ

[68] UNESCO. (2022, January 19). *Key recommendations from UNESCO's futures of education report.* [Video]. YouTube. https://youtu.be/quGaJEfehV0

responsibilities are shared among a wide group of education stakeholders, with students being active participants in their own learning.[69]

5. To achieve this, the country needs to further invest in the education system through its national and local budgets; ensure a more seamless and flexible approach to education; craft education policies that are anchored on futures thinking; provide quality early childhood education and development that prepares children for the future through developmentally-appropriate experiences that address their holistic needs; prioritize lifelong learning and other 21st Century skills; make use of the 4 Cs and digital skills to enrich and enhance learning; and create opportunities for innovation in teaching and learning.

   (a) These are aligned with the DepEd's own goals and how they can be achieved. Undersecretary Malaluan acknowledged that one of the agency's goals is to teach durable skills that will make learners prosper in their future jobs. Being able to cope with a fast-changing world is also a priority. Developing work readiness involves thinking, interacting, intrapersonal, and leadership skills, and the need to anticipate educational opportunities arising due to innovation.

   (b) Dr. Brillantes further added that apart from being competitive, learners need to be more involved in the global agenda, or be more globally-oriented. This means incorporating into the learning process the global vision of 2030 embodied in the SDGs.[70]

   (c) The country's early childhood education system, with the Early Childhood Care and Development Council (ECCDC) at the helm, is on the right track in providing programs that cover health, nutrition, early education, and social services for children aged 0-4 years.[71] Even during the pandemic, the ECCDC has ensured that their programs reach young children and their parents (this is further discussed in Section C (1)(d)(6)(i)). However, prioritizing these programs has been a problem, as witnessed by the undersigned Committee Chairperson in her capacity as the Senior Vice Chairperson of Finance who pushed for more funding for the two projects discussed herein:

      (1) For example, the establishment of the National Child Development Centers (NCDCs), the ECCDC's flagship project, needs more support. As of June 2021, 822 NCDCs have been established nationwide.[72] This is woefully short of their goal of having one NCDC in each city and municipality (for a total of 1,634).

      (2) Further, one of the ECCDC's priorities[73] includes the Human Resource Development Program, which shall establish mechanisms for the systematic professionalization of ECCD service providers through enrollment in educational programs in site-based or distance education modes,

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[69] EduSkills OECD. (2019, October 22). *OECD future of education and skills 2030: The new "normal" in education.* [Video]. YouTube. https://youtu.be/9YNDnkph_Ko

[70] Dr. Alex Brillantes, National College of Public Administration and Governance, University of the Philippines. TSN from 27 May 2020 Hearing, p. 59.

[71] Early Childhood Care and Development Council. (n.d.). *About Us.* https://eccdcouncil.gov.ph/?page_id=1369.

[72] Early Childhood Care and Development Council presentation to the Committee on Finance (Sub-Committee 'D') for the FY 2022 General Appropriations Act.

[73] Early Childhood Care and Development Council submission to the Committee on Finance (Sub-Committee 'D') for the FY 2022 General Appropriations Act.

through pre-service or in-service training including continuing education programs, as provided in RA 10410 or the Early Years Act. To ensure the continuous provision of quality early childhood education and development programs, it is important to provide funding and support for this as well.

6. Other countries like Canada, Finland, Japan, and Singapore are good examples of what can be achieved with a clear vision and strategic long-term plans to improve a country's education system. As mentioned in the Prefatory Statement, these countries, however different their education systems may be, have taken steps to address teacher quality and excellence, innovate their curricula, provide strong government support for families and children, as well as prioritize education funding.[74]

    (a) According to the OECD, Canada provides support to disadvantaged students, and their students perform well regardless of their socio-economic status, first language, or whether they are native Canadians or recent immigrants.[75] While its education system is decentralized, and each province and territory has developed its own education system, a strong teacher force, social support, and healthcare for all Canadians are common elements across the country. Strategic plans and visions for education are established at the province level, and education is also funded primarily at the provincial level. Despite different policies in each province, there is a consistent focus on giving all students equal opportunities for success. Parental and childcare benefits also provide support for education. Canada also consistently recruits strong candidates into teaching, and the profession is thought of as a high-status and well-paid job.[76]

    (b) Finland's teachers are highly-respected and receive very high quality training. Teaching is now a highly selective occupation in Finland. The country has raised the bar for entry and has granted teachers greater autonomy over their classrooms and working conditions. Finland also has a program that encourages creative thinking and entrepreneurship in their students, and after-school activities include weekly exercises, videos, competitions, and learning materials to support creativity. These experiences help students gain the knowledge and skills necessary for future work tasks.[77] Finland released a new national curriculum in 2016 to make its education system responsive to the digital era. In 2019, the country created a 10-year strategy for national goals and reforms, which includes improving education. Additional support for education include parental benefits, universal healthcare, and support for school children such as daily hot meals, psychological counseling, and health and dental services.[78]

    (c) In 2011, northern Japan changed its educational practices to help students and teachers in the region strengthen 21st Century skills,

[74] National Center on Education and the Economy. (n.d.). *Top performing countries.*
https://ncee.org/top-performing-countries/
[75] Organisation for Economic Co-operation and Development Better Life Index. (n.d.). *Education.*
https://www.oecdbetterlifeindex.org/topics/education/
[76] National Center on Education and the Economy. (n.d). *Canada.* https://ncee.org/country/canada/
[77] Organisation for Economic Co-operation and Development Better Life Index. (n.d.). *Education.*
https://www.oecdbetterlifeindex.org/topics/education/
[78] National Center on Education and the Economy. (n.d). *Finland.* https://ncee.org/country/finland/

internationalization, and innovation.[79] The country has five major education priorities: support the development of emotional intelligence and physical health in addition to academic abilities; prepare students to participate and innovate in the global economy; promote lifelong learning; expand safety nets for students, such as free access to early childhood education and care; and support the implementation of education policies through increased access to classroom technology, strengthened guidance systems, higher qualifications for teachers, and other factors. It has also accelerated its adoption of technology in classrooms due to the COVID-19 pandemic.[80]

(d) Singapore's education system is highly centralized. As early as 2004, it implemented the "Teach Less, Learn More" initiative, which moved learning away from memorization and repetition and towards deeper conceptual understanding and problem-based learning. Other initiatives include "Every School a Good School", which aims to ensure that all schools have adequate resources to develop customized programs for their students, raise professional standards for teachers, encourage innovation, and foster partnerships between schools and communities; and "Learn for Life", which promotes greater flexibility in teaching, learning, and assessment, and encourages lifelong learning. Only one institution trains teachers in order to limit teacher recruitment to the best qualified. Further, Singapore's leaders monitor educational research and benchmark best practices from around the world so that the system can continue to match the performance of the world's best.[81]

7. In the book *The Future of Smart*, Dr. Hansen wrote that there will be demand for two types of workers in the near future: those who are able to deal with complex, interdisciplinary, multifaceted, and ambiguous tasks, and those who make use of human qualities that artificial intelligence (AI) is unable to replicate.[82] Further, in *Neuroteach*, Whitman and Kelleher mention how today's students may have up to seven different careers in their lifetimes. Whether this is accurate or not, these students will occupy careers that have not been invented yet, and they will need to learn new skills that they do not yet know.[83]

8. To prepare Filipinos for these jobs of the future, the education system must adapt to the needs of those jobs.

(a) The Philippines has recognized that, once transformed through innovation, the basic sectors, such as agriculture, manufacturing, and services, are potential engines for growth.[84] Initiatives to prepare for these growth sectors include improving the competitiveness, innovativeness, and resilience of industries and

[79] Organisation for Economic Co-operation and Development Better Life Index. (n.d.). *Education*. https://www.oecdbetterlifeindex.org/topics/education/

[80] National Center on Education and the Economy. (n.d). *Japan*. https://ncee.org/country/japan/

[81] National Center on Education and the Economy. (n.d). *Singapore*. https://ncee.org/country/singapore/

[82] Hansen, U. J. (2021). *The future of smart: How our education system needs to change to help all young people thrive*. (p. 171). Capucia Publishing, LLC.

[83] Whitman, G. &, Kelleher, I. (2016). *Neuroteach: Brain science and the future of education*. (p. 44). Rowman & Littlefield Publishers.

[84] National Economic and Development Authority. (2021, December 16). *Innovation in basic sectors to serve as country's engine for growth — NEDA*. https://neda.gov.ph/innovation-in-basic-sectors-to-serve-as-countrys-engine-for-growth-neda/

services. To achieve this, the National Economic and Development Authority (NEDA) identified the following strategies under the Philippine Development Plan 2017-2022: *boosting services exports by moving up the global value chain of the IT-BPM industry and increasing the country's market share in international tourism, including health and education services; promoting creative industries that cover both tangible products and intangible services; and developing the potential of the Philippines in digital trade and e-commerce.*[85]

(1) In line with this, we can develop popular existing tourist destinations further through AI and create new destinations for leisure and wellness, and equip tourism workers with necessary new skills. The Department of Tourism already recognizes that while human resources are irreplaceable, AI can boost tourism products and services, thus it is important to upscale the tourism workforce in order to complement new technologies.[86] Meanwhile our healthcare workers, already known worldwide, can also be upskilled to adapt to technology.

(2) It is important to note that the role of professional health workers (or other similar professions that deal directly with people) will not be replaced by AI because soft skills, like empathy and creativity are human skills needed here which cannot be easily replicated by AI. As pointed out above, what will be required of health professionals is an upgrading of their digital skills.

(3) Technology fields will also grow given the rise in digitalization and AI. Basic technological skills will also be necessary. This includes programming skills and a basic knowledge of algorithms, which will allow the workforce of the future to understand and control technology.[87]

9. Our country's competitive advantage is our human resource, and one of our biggest challenges is the diaspora of many skilled and talented Filipinos. Filipino workers are in demand abroad due to their values, work ethic, and English proficiency, among others. This is one of the reasons why the country has lost some of its best and talented skilled workers.

10. Under the Philippine Development Plan, human capital development is viewed not just as a means to an end, but an end in itself.[88] But for the country to develop its full potential, it must develop its human resource for future jobs. And in order to prepare Filipinos for the jobs of the future, the education system must adapt to the needs of those jobs. Regardless of whether a Filipino stays in the Philippines or decides to explore opportunities abroad, the country's education system must equip them for the needs of the future labor market. Dr. Hansen posits that a successful

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[85] National Economic and Development Authority. (2017). *Philippine Development Plan 2017-2022. (pp. 131-132).* https://pdp.neda.gov.ph/wp-content/uploads/2017/01/PDP-2017-2022-07-20-2017.pdf

[86] Department of Tourism. (2019, October 22). *DOT, TIBFI redefine future of tourism jobs.* http://tourism.gov.ph/news_features/TIBFI.aspx

[87] Daheim, C, &., Wintermann, O. (2016, March) 2050: The future of work. Findings of an international Delphi-Study of The Millennium Project. Bertelsmann Stiftung.

[88] National Economic and Development Authority. (2017). *Philippine Development Plan 2017-2022. Chapter 10: Accelerating Human Capital Development. (p. 134).* https://pdp.neda.gov.ph/wp-content/uploads/2017/01/Chapter-10.pdf

education system in the 21st Century should be able to prepare its learners for an uncertain work and professional future.[89]

(a) English, as our window to the world, will have to be given more importance and investment, with the future workforce becoming more connected and globalized, and especially since the average Filipino's familiarity with the language can be further expanded for workplace use. This is also important for Filipinos who stay in the country, as our fluency in English can attract more investments and better job opportunities. In fact, research shows that "countries with higher English proficiency tend to be more innovative and have stronger economies", making English a critical advantage in a globalized world for both workers and companies.[90] Continued investments in maintaining and advancing English proficiency is also aligned with Dr. Brillantes' call to think globally and act locally.

(1) This is especially important given the rise of the number of freelancers. According to Mr. Rex Wallen Tan, Director of the Government-Academe-Industry Network (GAIN),[91] there are 1.5 million Filipino freelancers working at home. This figure is likely taken from a study conducted by PayPal in 2018 entitled *"Global Freelancer Insights Report"*, where it found that the Philippines has one of the highest freelancers per capita of the 22 countries surveyed, at around 2% of the population or approximately 1.5 million.[92] Mr. Tan pointed out that only digital literacy and English skills are needed for these jobs.

(2) Mr. Tan further emphasized the importance of English in a highly digital world. English is the language of most online learning resources, the language used to teach AI and other emerging technology, and English is used even in other careers with increasing digitalization like in healthcare. As Mr. Tan puts it, a lack of proficiency in English will lock one out from accessing these resources, technologies, and careers in the future.[93]

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[89] Hansen, U. J. (2021). *The future of smart: How our education system needs to change to help all young people thrive.* (p. 49). Capucia Publishing, LLC.

[90] Tran, M., & Burman, P. (2016, November 21). Rating the English Proficiency of Countries and Industries Around the World. *Harvard Business Review.* https://hbr.org/2016/11/research-companies-and-industries-lack-english-skills

[91] Mr. Rex Wallen Tan, Director of the Government-Academe-Industry Network (GAIN). TSN from 8 June 2020 Hearing, p.73; *see also* GAIN Position Paper.

[92] Schnabel, C. (2018). Freelancing taking root in the Philippines – study. *Rappler.* https://www.rappler.com/business/199334-freelancer-market-growing-philippines-paypal/

[93] Mr. Rex Wallen Tan, Director of the Government-Academe-Industry Network (GAIN). TSN from 8 June 2020 Hearing, pp. 72-75.

Percentage of websites using various content languages (Feb 2019)

1.7%   1.7%   11.1%   54.0%

2.0%

2.3%

2.9%

3.4%

4.0%

5.0%

5.9%

6.0%
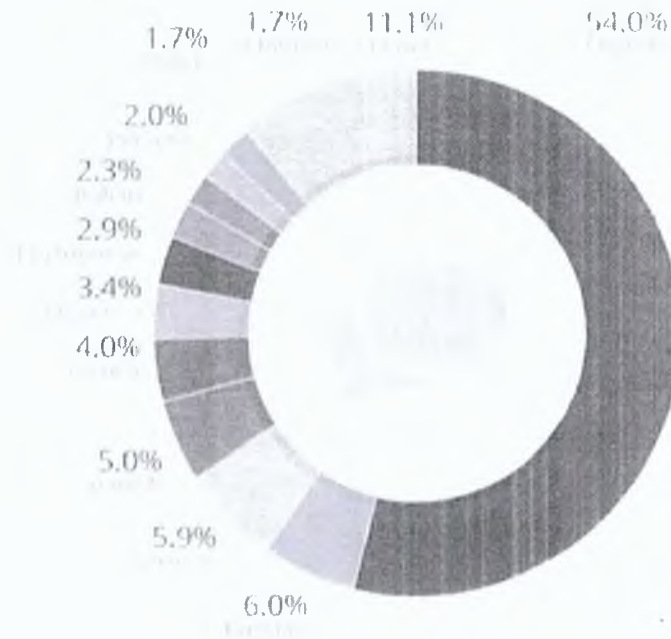
Source: GAIN presentation; statista.com

(b) The 4 Cs should be emphasized and integrated in the curriculum as key competencies for the 21st Century. These are important to prepare learners for the future of work, especially with the rise of technology where AI will be able to replace some aspects of human cognition and capacity,[94] as well as increasing globalization. Creativity and critical thinking are necessary to foster innovation, while communication and collaboration are fundamental in shaping learners' ability to connect and work well with others. The 4 Cs strengthen our learners to find their place in this fast-changing world, not just professionally but personally and socially as well.[95]

   (1) According to Dr. Ethel Agnes Pascua-Valenzuela, Director of the Southeast Asian Ministers of Education Organization (SEAMEO) Secretariat in Bangkok, Thailand, other skills that learners should also have besides digital skills and the 4 Cs, include computational and logical thinking, complex problem solving, and adaptability.[96]

   (2) Prof. Flores' proposal to globalize education through incorporating the global long-term agenda such as the SDGs into the learning process can also be considered.

(c) Dr. Sykes-Kelleher pointed out that "skills in using digital technologies are undoubtedly important [in the] midterm as many products and services are moved from the physical space to online. At the same time, technology is changing so rapidly that the focus

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[94] Hansen, U. J. (2021). *The future of smart: How our education system needs to change to help all young people thrive.* (p. 49). Capucia Publishing, LLC.

[95] The 4Cs: Creativity, Critical Thinking, Communication and Collaboration in Schools. (n.d.). *Teacher Academy.* https://www.teacheracademy.eu/course/the-four-cs/

[96] Dr. Ethel Agnes Pascua-Valenzuela, Director of the Southeast Asian Ministers of Education Organization (SEAMEO). TSN from 17 June 2020 Hearing, p. 74.

on learning how to use it, a hard skill, is quickly outdated and continual upskilling is likely to be required."[97] This shows the importance of building on existing digital skills. In fact, the Philippines' Information Technology and Business Process Management (IT-BPM) sector is one of the best-performing and employment-generating activities in the past four years.[98] It is currently one of the global leaders in the industry, ranking 1st in voice-related services and accounting for 13% of the global market share.[99] There are opportunities for expansion in high-value services, particularly in animation, game development, global in-house centers, health information management, IT, and software development, with the advent of the Fourth Industrial Revolution and the increased digitization of the government, industry and society in response to the COVID-19 pandemic.[100] To harness these opportunities, upskilling current workers with digital skills, making training more accessible, integrating these skills into our curriculum for students to study early on, and training teachers in the use of ICT tools to innovate their teaching will be essential to accelerate the country's digital transformation. Early·development of digital skills shall be discussed further in paragraph (e) below.

(d) This increasing digitalization also means that the use of AI will flourish and more jobs will be done by machines requiring massive technological transformation, so much that development will also be driven by robotics and technology convergence. This will be followed by a transition to a completely new system of working and running the economy. The World Economic Forum (2020)[101] stated that in 10 years, automation technologies and AI are expected to change 50% of jobs, while eliminating 5% of them. Due to this, 9 out of 10 jobs will require digital skills.

(e) Digital skills should be developed early on, since the Fourth Industrial Revolution requires that our learners are capable of handling these new technologies. However, it is important to remain mindful of the valid concerns surrounding the use of technology at an early age, such as decreased attention spans, cognitive delays, addiction to digitals and even aggressive behavior.[102] Even DepEd recognizes that at its extreme, the dangers of cyberspace can include cyberbullying, online gaming addiction, online child abuse and pornography, and harmful internet chats.[103]

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[97] Dr. Anita Sykes-Kelleher, Founder and Director of Designer Futures. TSN from 17 June 2020 Hearing, p. 49.

[98] INDUSTRY.GOV.PH. (n.d.). *IT-BPM.* https://industry.gov.ph/industry/it-bpm/.

[99] Philippine Trade and Investment Center - Berlin. (2021, October 12). *2021/22 Philippines IT & BPO industry performance and outlook.* https://outsourcing-journal.org/philippines-it-bpo-industry-performance-and-outlook/

[100] Philippine Trade and Investment Center - Berlin. (2021, October 12). *2021/22 Philippines IT & BPO industry performance and outlook.* https://outsourcing-journal.org/philippines-it-bpo-industry-performance-and-outlook/

[101] van Eerd, R., & Guo, J. (2020, January 17). Jobs will be very different in 10 years. here's how to prepare. *World Economic Forum.* https://www.weforum.org/agenda/2020/01/future-of-work/

[102] Holmes, J. (n.d.). 9 effects of modern gadgets on children development. *Playground Equipment.* https://www.playgroundequipment.com/effects-modern-gadgets-children-development/

[103] Maraviles, N. (2018, December 4). #BeCyberSafe project aims to shield children from online abuse. *ABS-CBN News.* https://news.abs-cbn.com/news/12/04/18/becybersafe-project-aims-to-shield-children-from-online-abuse

11. The education system should teach critical thinking, basic technological skills, data analysis, the ability to learn, the ability to work independently and entrepreneurial skill sets.[104] These are commonly called the 21st Century skills, summed up by the 4 Cs needed in order to thrive in today's world, and more so in the future: communication, collaboration, critical thinking, and creativity. **Further, the education system should refocus away from learning a profession to the development of a portfolio of abilities and skills that are relevant to a variety of fields, in order to respond to volatile changes in employment and working environments.[105]**

12. Given the profound impact of the Fourth Industrial Revolution in our society, including the futures of work, it is necessary to transform our education system into an adaptive system where formal, non-formal, and informal learning is responsive to the rapidly changing needs of the work environment brought about by these extraordinary technological advances, including the uptake of digital technology.

    (a) Technological advancements, including AI, have made machines better than humans at skills that are taught under the factory model of education, such as organizing, analyzing, and applying knowledge; handling and interpreting data; and analyzing and synthesizing. On the other hand, AI loses its advantage in instances where there are unpredictable possibilities. AI can also never replace human qualities embodied by the 4 Cs, including adaptability, as well as important emotional qualities such as compassion and empathy.[106]

    (b) Visualizing and creating a clear path towards our ideal and preferred future of education that produces globally-competitive, innovative, and technologically-skilled lifelong learners who have mastered 21st Century skills especially the 4 Cs, as well as acknowledging that the current situation of the education system is unlikely to lead us towards this future, has revealed the gaps and opportunities.

C. WHAT ARE THE GAPS?

1. The current education system of the country can be assessed by clustering the gaps into four handles:

    (a) Leadership

        (1) For an education system to thrive in challenging times, leadership matters. It is through genuine leadership that innovations can be facilitated and co-created.

        (2) While leadership remains an old-fashioned indicator, it still plays a pivotal role in strengthening institutions and building capacities.

        (3) According to Ms. Reyes, there is a need to change the way we operate the education system. This starts with

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[104] Maraviles, N. (2018, December 4). #BeCyberSafe project aims to shield children from online abuse. *ABS-CBN News.*
https://news.abs-cbn.com/news/12/04/18/becybersafe-project-aims-to-shield-children-from-online-abuse
[105] Maraviles, N. (2018, December 4). #BeCyberSafe project aims to shield children from online abuse. *ABS-CBN News.*
https://news.abs-cbn.com/news/12/04/18/becybersafe-project-aims-to-shield-children-from-online-abuse
[106] Hansen, U. J. (2021). *The future of smart: How our education system needs to change to help all young people thrive.* (pp.172-173). Capucia Publishing, LLC.

decentralizing decision-making and having school leaders who are agile, resilient, and responsive.[107]

(4) Unfortunately, the major stakeholders in the educational sectors often work within their institutional mandates rather than working as parts of a systemic whole.

(5) There must be shared governance of key stakeholders in the educational system. In fact, the OECD recommends that decision-making and responsibilities be shared among a wide group of stakeholders.[108]

(6) Dr. Sykes-Kelleher also encourages leaders to learn soft skills and how to empower people, and to create a culture of lifelong learning since it is the best way to upskill and remain relevant in a VUCA world. This goes beyond formal education, and includes non-formal and informal learning and development within the workplace, in local communities, at home, and via digital technologies.[109]

(7) Leadership should also include the ability to use strategic foresight and plan for various contingencies so the education sector will not be caught unaware of any possibilities that can positively or negatively affect it. Training in Futures Thinking for decision makers in the public sector, both in the national and local levels, and even the private sector, who are involved in crafting education policy and implementing the same, is important to ensure that long-term plans are aligned with the country's ideal future of education. This shall be discussed further under this Report's general recommendations.

(b) Capacity of Teachers to Teach and Innovate

(1) In the hearings on the "Excellence in Teacher Education Act",[110] teachers were rightly called the heart of the education system.[111] Teachers are units of the learning community that interact with stakeholders, such as students, other teachers, and community members, and shape relationships between and among them.[112] The quality of the country's teachers is very crucial in ensuring the best learning outcomes for our learners. After all, the quality of our education is only as good as the quality of teacher education.

    i. The same hearings revealed that the current curriculum in teacher education is not aligned to professional standards. Cited in the hearing was a study that found that only 20% of the 1,258 Teacher Education Institutions have their curricula aligned with

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[107] **Ms. Christine Reyes**, Director of Aptissimi Development Innovations Inc., TSN from 27 May 2020 Hearing, pp. 75 & 77.

[108] EduSkills OECD. (2019, October 22). *OECD future of education and skills 2030: The new "normal" in education.* [Video]. YouTube. https://youtu.be/9YNDnkph_Ko

[109] Dr. Anita Sykes-Kelleher, Founder and Director of Designer Futures. TSN from 17 June 2020 Hearing, pp. 50-51.

[110] Teacher Education Excellence Act, Senate Bill No. 2152, (May 3, 2021) (Phil.).

[111] Senator Joel Villanueva, Chairperson of the Committee on Higher, Technical and Vocational Education. TSN from 4 November 2020 hearing on the Teacher Education Excellence Act, p. 13.

[112] Hansen, U. J. (2021). *The future of smart: How our education system needs to change to help all young people thrive.* (p. 129). Capucia Publishing, LLC.

the Philippine Professional Standards for Teachers (PPST).[113] While CHED is disputing the methodologies and evidence presented in this study, it has made efforts to address the non-alignment of teacher education curriculum with standards through the development of new programs, standards and guidelines (PSGs) for all teacher education programs in 2012, and the incorporation of the PPST in the PSGs.[114]

ii. Another issue brought up was the difficulty of landing a teaching position in the Philippines even for the best teachers, which led them to search for opportunities in other countries.[115]

iii. It must be emphasized that the said issues are not only detrimental to the quality of education today, but affects how learners are being taught and prepared for the future. This highlights the urgency of the implementation and monitoring of this newly-passed law, as provided in the recommendations below.

(2) The discussions in these hearings have shown that the Fourth Industrial Revolution Era has not been given much attention by many educators in the country, thus the failure to embrace its significance in introducing innovations not just in how they teach learners, but how teachers are educated and trained as well. Further, teacher education and training has not been prioritized even on the basic level of meeting professional standards, which likely affects learning outcomes to the detriment of our learners. Finally, just like with our healthcare workers, the country is losing its best and brightest educators due to low salaries and lack of opportunities. This also affects our ability to recruit the best and brightest senior high school students and even other professionals into pursuing teaching.

(3) **Dr. Jennie Jocson, Vice-President for Academics of the Philippine Normal University (PNU), a CHED Center of Excellence in Teacher Education, also emphasized the importance of teacher training and the need to strengthen the link between the DepEd and the CHED to ensure a roadmap to train teachers from pre-service to in-service training and practice.** She also mentioned the need to quickly align teacher training with the expectations and standards set by the industry, and to ensure that the teacher training curriculum is responsive to the DepEd's needs.[116]

[113] CHED Commissioner Aldrin Darilag, TSN from 4 November 2020 hearing on the Teacher Education Excellence Act, p. 41.
[114] CHED Commissioner Aldrin Darilag, TSN from 4 November 2020 hearing on the Teacher Education Excellence Act, p. 42.
[115] Dr. Rosita L. Navarro, Chairman of the Board for Professional Teachers, Professional Regulation Commission, TSN from 4 November 2020 hearing on the Teacher Education Excellence Act, p. 49-50.
[116] Dr. Jennie Jocson, Vice-President for Academics of the Philippine Normal University, TSN from the 27 May 2020 Hearing, pp. 69-70.

(4) Mr. Ernani Fernandez, Jr., a teacher from Palo National High School, Leyte and an awardee of the Metrobank Foundation Outstanding Filipino Award for Teachers in 2015, further commented that only a few teachers have an idea about 21st Century skills. Even if they are aware, they do not know how to integrate it in their teaching for learners to acquire these skills.[117]

(5) As Alvin Toffler articulated, "the illiterate of the 21st century will not be those who cannot read and write but those who cannot learn, unlearn, and relearn".[118] This should not only apply to our learners, but to our teachers as well. Teacher education and training should value the needs of the future and the importance of innovation, as well as lifelong learning to acquire better skills while unlearning those no longer suited for the future. This shows the lack of skills of teachers to migrate to online platforms.

(c) Relevance of the Education System

(1) Many countries have an education system that is still based on the 2nd Industrial Revolution. Mr. Karthik Krishnan, a member of the World Economic Forum Expert Network and a recognized expert on Education, Healthcare and Information Media,[119] wrote about how the education system is losing its relevance. In an article in the World Economic Forum, he highlighted how the current global education system, which was built on the Industrial Revolution model [also called the Factory Model of Education], focuses on skills that will be "easily and efficiently supplanted by artificial and augmented intelligence (AI)", particularly, memorization and standardization[120]. Similarly, the current education system of the Philippines, which is also based on the factory model of education, does not support our vision[121] of becoming a globally-competitive knowledge economy. Systemic reforms are needed to ensure that our education system will respond to the current and future needs and demands of industries and employment, especially, given that 65% of students today will work in jobs that do not yet exist.[122]

(2) Teaching the English language has not been prioritized. In a news article, Secretary Briones mentioned that this may

[117] Mr. Ernani Fernandez, Jr., teacher from Palo National High School, Leyte, comment via chatbox, 27 May 2020 Hearing.

[118] Hennessy, J. (2002). *Embracing the need to 'learn and relearn'*. Stanford Magazine. https://stanfordmag.org/contents/embracing-the-need-to-learn-and-relearn

[119] *Karthik Krishnan. (n.d.). About* [LinkedIn Page]. LinkedIn. Retrieved May 6, 2022, from https://www.linkedin.com/in/karthikkrishnan1/.

[120] Krishnan, K. (2020). *Our education system is losing relevance. Here's how to update it.* World Economic Forum. Retrieved 6 May 2022, from https://www.weforum.org/agenda/2020/04/our-education-system-is-losing-relevance-heres-how-to-update-it/.

[121] Chapter 1 of the Philippine Development Plan 2017-2022 provides how this development plan has been formulated to lay down the foundation for inclusive growth, a high-trust and resilient society, and a globally- competitive knowledge economy. (emphasis supplied) [National Economic and Development Authority. (n.d.). *Updated Philippine Development Plan 2017-2022. Chapter 1: Introduction. (p.5).* https://pdp.neda.gov.ph/updated-pdp-2017-2022/]

[122] Dr. Ethel Agnes Pascua-Valenzuela Director of the Southeast Asian Ministers of Education Organization (SEAMEO) Secretariat in Bangkok, Thailand. TSN from the 17 June Hearing, p. 73.

have been a factor in the country's poor showing at the 2018 PISA: "[English] is clearly a weakness of our learners and could possibly have an effect on [their] performance."[123] The DepEd acknowledged after the release of the results that it is looking into English as the medium of instruction in schools, especially at the primary level. Secretary Briones stated that the DepEd is studying the debate between starting with the mother tongue language as a medium of instruction versus starting with English as the language used in the rest of the world.[124] Secretary Briones also noted that other Asian countries such as Singapore use English as the medium of instruction in the early grade levels.[125]

(3) Students lack sufficient exposure to ICT and digital skills due to technological and financial barriers while studies[126] show that teachers require more training on the use of complex ICT tools to achieve innovative teaching and learning.

(4) Another side to this discussion on the relevance of the education system is the relevance of testing and assessments, how we are promoting learning, and whether the way we teach learning is still relevant to learners' needs and to the future. *Neuroteach* discussed how schooling tends to focus on promoting and assessing accessibility (i.e. a student's ability to access their knowledge for tests) over mastery of learning: "Accessibility is reflected in a student's current performance, but does not necessarily indicate that underlying long-term learning has or has not taken place...[it is believed] that teachers and school leaders, informed by research, can take on an important leadership role in transforming [assessments] from a mere measure of short-term learning to a crucial component of the teaching and learning process. In this system of assessment, learning becomes personalized and adaptive, encouraging students to adopt a mindset focused on discovery and engagement rather than grades and test scores. Most important, in such a system, the sharp lines between teaching, learning and testing diminish."[127]

    i. *Neuroteach* further discussed the role of teachers in assessing learning in the face of the never-ending grading of students, "[T]he current trend of assigning a grade to everything that moves suggests that a lot

[123] Reysio-Cruz, M. (2019, December 5). Worst PH ranking in math, science, reading prompts DepEd review. *Philippine Daily Inquirer.* https://newsinfo.inquirer.net/1198208/worst-ph-ranking-in-math-science-reading-prompts-deped-review#ixzz67fNfFnOL

[124] The mother tongue policy requires the mother tongue to be the medium of instruction from K to 3, with English and Filipino as the medium starting Grade 4, in accordance with Section 4 of Republic Act No. 10533 or the Enhanced Basic Education Act of 2013.

[125] Galvez, D. (2019, December 10). After low PISA result, DepEd eyes English as medium of instruction in primary years. *Philippine Daily Inquirer.* https://newsinfo.inquirer.net/1200113/deped-looking-into-english-as-medium-of-instruction-in-primary-years-after-low-pisa-result

[126] Marcial, D. E., & de la Rama, P. A. (2015). ICT Competency Level of Teacher Education Professionals in the Central Visayas Region, Philippines. *Asia Pacific Journal of Multidisciplinary Research*, 3(5), 28-38. http://www.apjmr.com/wp-content/uploads/2015/12/APJMR-2015-3.5.1.04.pdf

[127] Whitman, G. &, Kelleher, I. (2016). Neuroteach: Brain science and the future of education. (pp. 81, 100). Rowman & Littlefield Publishers.

of what they are doing is assessing accessibility – the current level of retrieval. Once we understand that this is different from long-term learning, we should shift our practice, both in promoting methods that increase enduring long-term learning and in creating assessments designed to measure enduring long-term learning rather than accessibility."[128]

(5) The current education system must be aligned with the demand of the potential of the future while also being attuned to the heartbeat of time, with the use of foresight to remain relevant.

(d) Technological Platform

(1) Like the rest of the world, the education system in the Philippines is heavily anchored on face-to-face learning, given the benefits of this modality in creating healthy and holistic learning experiences for learners.

(2) While face-to-face learning is the ideal modality, the pandemic has shown the need to invest in technology and training to enable distance and online learning[129] on a far wider scale than we have ever experienced or needed in the past. Beyond the pandemic, this will also improve access to education in geographically isolated and disadvantaged areas, as well as making available educational resources for everyone to promote lifelong learning.

(3) However, maximizing the benefits of distance, blended and online learning remains to be challenging because of limited physical resources (e.g. projectors, computers, and digital tools), unavailability of ICT infrastructure, and lack of access to internet connectivity, which has widened the digital divide. As noted by Dr. Sykes-Kelleher during the hearing,[130] the digital divide creates an inequality of access to good education. She further noted that a learner from a poorer family will have difficulty catching up with regard to ICT skills.[131]

(4) The pandemic further added to these issues:

    i.   Face-to-face teaching has become a health issue due to the easy transmission of COVID-19. To prevent the virus from spreading, schools had to close down, interrupting many learners' education. And they are only starting to reopen now, around two years since

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[128] Whitman, G. &, Kelleher, I. (2016). *Neuroteach: Brain science and the future of education.* (pp. 81). Rowman & Littlefield Publishers.

[129] DepEd defines distance learning as the modality "where a learner is given materials or access to resources and s/he undertakes self-directed study at home or in another venue"; and blended learning as "a combination of face-to-face and distance modalities". Blended learning is a formal education program in which a student learns at least in part through online learning, with some element of student control over time, place, path, and/or pace; at least in part in a supervised brick-and-mortar location away from home, and the modalities along each student's learning path within a course or subject are connected to provide an integrated learning experience. Modular learning is implemented through self-learning modules, which are self-contained, self-instructional, self-paced and interactive learning resources for public school learners intended for learning a specific topic or lesson where the learner interacts actively with the instructional material rather than reading the material passively.

[130] Dr. Anita Sykes-Kelleher, Founder and Director of Designer Futures. TSN from 17 June 2020 Hearing, p. 43.

[131] Dr. Anita Sykes-Kelleher, Founder and Director of Designer Futures. TSN from 17 June 2020 Hearing, pp. 53-54.

the pandemic began. Despite schools reopening for physical classes, blended learning will remain an alternative modality for at least another school year.[132]

    ii. This puts teachers in a problematic position, given that many of them are not skilled to teach through other modalities that will reach and cater to all of their learners' needs.

(5) The observation has been made numerous times in Senate hearings that children could be seen loitering around their neighborhood at all times of the day when they would have otherwise been in school, if not for the pandemic. In fact, when malls were reopened to minors, many were seen flocking to these establishments while schools remained closed to face-to-face learning. In *"Betty in High School 2021 A.D."* (originally published in Betty #46, February 1997), Betty tells Veronica how dreary online home school is, while Veronica finds ways to skip school.

Source: archiecomics.com

(6) The DepEd primarily relied and continues to rely on online and printed modular learning deliveries during the pandemic so learners can continue their schooling at home. While online learning has its challenges, printed modular learning has also been thought to result in the decreased rate of

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[132] Bernardo, J. (2022, April 19). Aug. 22 opening, 'more face-to-face classes' eyed for SY 2022-2023. *ABS-CBN News.*
https://news.abs-cbn.com/news/04/19/22/deped-eyes-aug-22-opening-for-next-school-year

academic performance among learners. It has also been claimed that there are too many activities in the modules, and too little time to accomplish them. The lack of interaction between teachers and learners, and the educational attainment of parents have also been factors in the lack of success of modular (and online) learning.[133]

    i.   Family members, and even the community as a whole, now have to deal with their children learning at home, likely without the necessary equipment and technological knowledge or skill if learning is done through online delivery. This may be more difficult for those with learners who are in their early years of education. This is why efforts being done by the ECCDC during the pandemic are important, and should be continued and supported by stakeholders, in order to ensure that early years education does not lag behind.

        1.   These efforts include: weekly meetings with parents to provide a strong support and guidance system for families through the Child Development Workers (CDWs), Human Resources Development Programs using alternative modalities for teachers and CDWs, use of modules to continue early years education, and *Kwentuhang Bulilit*, an online program produced to help service providers and stakeholders of early childhood care and development gain a deeper understanding of ECCD in the Philippine context.[134]

    ii.   **Gender adds another layer to the issues hounding distance and online learning.** Mothers who, traditionally, are the primary caregivers in their homes, as well as the primary or co-equal providers, are now more than likely acting as teachers to their children. This puts mothers at greater risks of job loss or reduction in work hours and pay, as well as negative impacts on their own mental health, such as greater stress and burnout. If this situation continues, family members, and even the community, must be prepared to play a bigger role, in a modern take of the adage, "it takes a village to raise a child."

(7) But while online learning, blended learning, modular learning, the Alternative Learning System (ALS), and the use of radio and television have been implemented in the past, in certain areas or for particular sectors like out-of-school youths and far-flung areas, these were more the exception than the norm. The standard has always been face-to-face

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[133] Abude, A. J. (2021); The Effectiveness of Modular Distance Learning Modality to the Academic Performance of Students: A Literature Review. *Hmlyan Jr Edu Lte*, 2(6) 44-46.

[134] Mancao, C. (2021, July 21). *Family experiences: Early learning program during the pandemic.* *https://eccdcouncil.gov.ph/?p=4644;*

Early Childhood Care and Development. (n.d.). *Kwentuhang Bulilit.* *https://eccdcouncil.gov.ph/?page_id=1713*

learning, hence making the shift difficult during COVID-19. Further, this makes our education system inaccessible to many learners, which holds back our progress in SDG 4 (Quality Education).

(8) In fact, it was DepEd Secretary Briones who pushed for education for some of the most disadvantaged through the ALS, a key reform which provides equal opportunities to those who will not be covered by the K to 12 program,[135] such as out-of-school youths and adult learners, to develop basic and functional literacy skills and to access equivalent pathways to complete their basic education.[136] Given that hundreds of thousands of learners still depend on the ALS to access quality education, with 239,616 enrollees for SY 2021-2022 (as of November 15, 2021),[137] it remains to be an important component of the country's education system and should not be neglected.

(e) It is difficult to address the gaps or barriers to our ideal future of Philippine education, but it is not impossible. Through Futures Thinking and with proper investments, we can slowly chip away at long-standing bad practices while building on the good ones, and creating opportunities for growth and innovation.

D. WHAT ARE THE OPPORTUNITIES?

1. While the need has always been there, the pandemic highlighted the importance of access to distance education, blended, and online learning.

2. The current situation also presents the opportunity for our students and education system to hasten the integration of 21st Century skills, which are mainly identified with the 4 Cs of communication, collaboration, critical thinking, and creativity.

3. The COVID-19 pandemic has also underscored the importance of science and technology in various aspects of life like medicine, biotechnology, and computing. This opens up the opportunity to provide learners with more exposure to these fields, grow their interest, and inspire them to pursue careers in these disciplines.[138] Dr. Ernelea P. Cao of the Institute of Biology, College of Science at the University of the Philippines, Diliman emphasized the need to teach science at an early age, and to encourage young learners to be more inquisitive. She also highlighted the need for the government to develop and consistently invest in science as well as research and development. This would transform Filipinos from being mere consumers or buyers, to becoming creators of technology.[139]

(a) Republic Act No. 3661, which was enacted in 1963, established the Philippine Science High School, which was mandated to offer, on a scholarship basis, a secondary course with special emphasis on subjects pertaining to the sciences. Its first campus is in Diliman, Quezon City. In 1998, Republic Act No. 8496 consolidated four

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[135] ABS-CBN News. (2016, June 1). *Incoming educ chief to boost alternative learning system.*
https://news.abs-cbn.com/nation/06/01/16/incoming-educ-chief-to-boost-alternative-learning-system
[136] Department of Education. (n.d.). *ALS – Frequently Asked Questions.*
https://www.deped.gov.ph/als-frequently-asked-questions/.
[137] Department of Education submission to the Committee on Finance (Sub-Committee 'D') for the FY 2021 General Appropriations Act.
[138] Development Academy of the Philippines Graduate School of Public and Development Management Position Paper on the Futures of Education.
[139] Dr. Ernelea P. Cao of the Institute of Biology, College of Science at the University of the Philippines Diliman. TSN from 17 June 2020 Hearing, pp. 92-93; Dr. Cao's Position Paper.

existing Philippine High School Campuses in Diliman, Eastern Visayas, Western Visayas, and Southern Mindanao into the Philippine Science High School System. Republic Act No. 9036,[140] which was passed in 2001, mandated the establishment of one Philippine Science High School campus for every region in the country, which shall be under the administrative supervision of the DOST. Currently, the Philippine Science High School System has 16 campuses around the country.[141] In 2016, the last campuses were built in Romblon and Dipolog. This completes the mandate of having one campus per region (except in the Bangsamoro Autonomous Region in Muslim Mindanao).[142]

(b) In 2021, the DOST–National Research Council of the Philippines called on the DepEd and local government units (LGUs) to "put up more science high schools for the talented young people who are future scientists and researchers".[143]

(c) LGUs across the country with their own science high schools include Taguig (where the first cyber-graduation through student-made robots took place in 2020 amidst the pandemic[144]), Valenzuela, Manila, Quezon City, Pasig, Makati, Mandaluyong, Marikina, Baguio, Tagaytay, Dumaguete, Tuguegarao, Mandaue, and Cavite, among others.

4. The country has a long way to go before reaching the strong education systems of countries like Canada, Finland, Japan, and Singapore. These countries have invested in their education systems for years, and continue to invest in them given the fast-changing world.[145] However, aspiring to implement their innovations while solving the most basic problems in the country's education system will go a long way. Addressing overcrowding in schools by building more classrooms, increasing funding for the education sector, and raising standards for teachers[146] are some of the standard solutions that will pave the way for a more innovative and forward-looking education system.

5. Local and foreign experts invited by the Committee contributed many insightful observations and innovative ideas.

(a) **Futures Thinking**

(1) In one of the Committee's earlier hearings, Dr. Sohail Inayatullah, professor in the Graduate Institute of Futures Studies in Tamkang University, Taipei, Taiwan and the

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[140] An Act Strengthening the Governance and Defining the Scope of the Philippine Science High School (PSHS) System, Amending for the Purpose Republic Act No. 8496, Republic Act No. 9036, (March 12, 2001). (Phil.).

[141] Philippine Science High School System. (n.d.). *About the PSHS System*. http://www.pshs.edu.ph/transparency-seal/about-us/the-pshs-system.

[142] Department of Science and Technology submission to the Committee on Sustainable Development Goals, Innovation, and Futures Thinking.

[143] Department of Science and Technology National Research Council of the Philippines. (2021, July 19). *Education Department. Local Government Need to Put More Science High Schools*. https://nrcp.dost.gov.ph/latest-news/751-education-department-local-government-need-to-put-more-scien ce-high-schools; Philippine Science High School. (n.d.). *Frequently Asked Questions*. https://nce.pshs.edu.ph/faq.

[144] CNN Philippines. (2020, May 22). *Taguig City pilots virtual graduation rites through student-made robots*. https://www.cnnphilippines.com/news/2020/5/22/Taguig-City-pilot-cyber-graduation-rites.html

[145] National Center on Education and the Economy. (n.d.). *Top performing countries*. https://ncee.org/top-performing-countries/

[146] American Univeristy. (2019, April 7). *5 Ways Policy Makers Can Improve the Quality of Education*. *School of Education*. https://soeonline.american.edu/blog/5-ways-policy-makers-can-improve-the-quality-of-education

inaugural UNESCO Chair in Futures Studies, among many other professional achievements, asked the following to jumpstart futures thinking: "[O]ne, how is the world changing? It is a learning journey. What things do we have to get rid of in that journey to a new future? What are some of the scenarios that make sense of the changing world? What is the metaphor for I need to relate to my new vision? Most importantly, how do I make this real? How do I link the vision to where I wish to be?"[147]

Dr. Sohail Inayatullah. Source: researchgate.net

(2) Dr. Lizan Perante-Calina, the President of Philippine Futures Thinking Society and Dean of the Graduate School of Public and Development Management of the Development Academy of the Philippines (DAP), manifested during one of the Committee's hearings that Futures Thinking is the anchor to have a systematic assessment of education and move towards delivery of the education system.[148]

(3) Recognizing this, the DepEd under Secretary Briones' leadership became one of the pioneer government agencies to embrace Futures Thinking through the formation of its Education Futures Program.[149] The said program released its concept note entitled, *"Co-Creating Learning Spaces for*

[147] Dr. Sohail Inayatullah, TSN from 12 May 2020 Hearing on Futures Thinking and the New Normal, pp. 13-14.
[148] Dean Lizan Perente Calina, President of Philippine Futures Thinking Society and Dean of the Graduate School of Public and Development Management of the Development Academy of the Philippines. TSN from the 27 May 2020 Hearing, p. 50.
[149] Department of Education (2021, May 7). Briones stresses the need for futures thinking in education at SEAMEO Congress 2021. https://www.deped.gov.ph/2021/05/07/briones-stresses-the-need-for-futures-thinking-in-education-at-seameo-congress-2021/.

the Future", which is discussed further in Chapter V, Section D (9)(b).

(4) As a strategy, Futures Thinking serves as an anchor in the systematic assessment of education and its direction in light of the potentials of the future.

(5) Futures thinking in education offers a viable mechanism for the upskilling and reskilling of the future workforce.

(6) Futures thinking in education requires looking at the sector in a global context, which entails the integration and instruction of the Sustainable Development Goals (SDGs) in the basic education and university curricula.[150]

(7) It is a platform to improve the competitiveness of learners in the world of work – able to cooperate and compete, yet can think globally and act locally.

(8) Effective integration of education policies for the future assumes the fruitful coordination among education agencies in the government, not only in current education responses but in meeting the demands of the future.

(b) Potential of Blended Learning and Other Modes of Delivering Education

(1) Blended and online learning should be viewed not merely as modes of delivering education, but as means to improve the education system. As aptly put, "When [blended and] online learning is discussed, it is mostly positioned purely as a new delivery mechanism—or worse, revenue stream—rather than as a catalyst to improve teaching and learning across the institution."[151]

(2) Blended learning offers a potential for continued learning amidst the pandemic and in other emergencies, as well as expanded access to quality education to all learners at all times, beyond the pandemic and even during non-emergencies. This gives learners who cannot physically attend school due to distance, disability, or any other reason a chance to study.

(3) Common forms of blended learning identified include videoconferencing, webinars and the use of messaging apps in instruction.

(4) Television and radio-based instruction is also a viable mode of delivery. Even exposure to mass media such as quality and educational television shows can be used as a tool to teach English to children.

(5) Self-learning modules are under blended learning modes as well.

(6) Unconventional forms of blended learning include project- or problem-based learning that utilize real-life situations, where students "can work together creating a seamless curriculum into one challenging activity."[152]

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[150] Dr. Allex Brillantes, National College of Public Administration and Governance, University of the Philippines. TSN from the 27 May 2020 Hearing, p. 59

[151] Kim, J. &, Maloney, E. (2020). Learning innovation and the future of higher education (p. 24). Johns Hopkins University Press.

[152] Ms. Regina Cansino, Assistant Principal of Corpus Christi School and an awardee of the Metrobank Foundation Outstanding Filipino Award for Teachers in 1990. TSN from the 8 June 2020 Hearing, p. 64.

(7) Other technologies can also be used, such as virtual or augmented reality, to expand the classroom and provide learners with an opportunity to learn in environments or use tools that would have been otherwise inaccessible to them.

(8) All these modes of blended learning, especially if the technology for online delivery is available, are primarily advantageous to learners in remote and isolated areas, allowing them access to quality education without requiring them to be physically present in a classroom.

(9) However, blended learning comes with its own set of challenges.

    i. To the extent that it includes the delivery of lessons online, the digital divide among students from different income classes pose a threat to equitable access.

    ii. Immediate challenges posed by blended learning are the skills and competencies of instructors in unconventional modes of teaching.

    iii. On the other hand, it also redefines the roles of parents, and the community in general, in learning.

(c) Teacher Education and Training, Including Parents in Teaching

(1) *Neuroteach* emphasized teachers' important and more active role in coaching students than they might be used to, and parents' similarly important role in supporting, coaching, and praising students. School leaders and policy makers need to make excellent teaching a priority in order to improve learning and achievement for all students.[153]

(2) According to Dr. Cao, there is a need to shift the mindsets of teachers from being mere sources of learning towards being facilitators of learning.[154]

    i. **Teachers need to teach the ability to make sense of information, to tell the difference between what is important, and how to combine information.[155]**

    ii. **While in-service education is crucial in training teachers and changing their perception of the profession towards being facilitators of learning, there is an urgent need to make this training and change in mindset available in,and aligned with pre-service or teacher education.**

(3) Further, *Neuroteach* listed the six common components that teachers can use when assessing teaching quality, and proposed that these attributes make up great teaching:[156]

    i. Pedagogical content knowledge. Effective teachers have a deep knowledge of the subjects they teach, and understand how students think about the content and evaluate their thinking.

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[153] Whitman, G. &, Kelleher, I. (2016). *Neuroteach: Brain science and the future of education.* (p. 28). Rowman & Littlefield Publishers.

[154] Dr. Ernelea P. Cao, Institute of Biology, College of Science, University of the Philippines Diliman. TSN from the 17 June hearing, pp. 93-94.

[155] Harari, Y. N. (2018). *Lessons for the 21st Century.* CELA.

[156] Whitman, G. &, Kelleher, I. (2016). *Neuroteach: Brain science and the future of education.* (p. 171). Rowman & Littlefield Publishers.

ii. Quality of instruction. This includes effective questioning and use of assessment.

iii. Classroom climate. This covers the quality of interactions between teachers and students, as well as teacher expectations.

iv. Classroom management. This refers to the teacher's abilities to use lesson time efficiently, use classroom resources and space, and manage students' behavior.

v. Teacher beliefs. There is some evidence showing the importance of why teachers adopt certain practices, the goals they want to achieve and how they are achieved, and their own belief in their roles as teachers.

vi. Professional behaviors. This includes participating in professional development, supporting colleagues, and communicating with parents.

(4) On the other hand, **parents are implored to be partners with instructors** – to cooperate with them, together with the broader community in the overall learning experience of children. This concept was incorporated in the measure institutionalizing inclusive education, or the "Instituting Services for Learners with Disabilities in Support of Inclusive Education Act",[157] sponsored by Senator Gatchalian in the 18th Congress as the Chairperson of the Committee on Basic Education, Arts and Culture,[158] with Senator Edgardo J. Angara filing one of the first versions of the measure in the 13th Congress and which the undersigned Chairperson further developed in the 16th Congress with the assistance of the DepEd Advisory Council for the Education of Children and Youth with Disabilities. The law gave parents and other family members explicit roles in the formal education and care of learners with disabilities. But to be able to do this effectively for all learners, there must also be a change in mindset in the work environment to allow working parents time to be more involved. COVID-19 has shown us that flexible work-from-home arrangements have been effective to accommodate the dual role of working parents. Alternatively, this may also result in the demand for "substitute parents" or tutors, or after-school support programs.

(5) **While teaching technical skills is an important part of 21st Century education, general purpose life skills, such as the ability to deal with change so students can learn new things, must still be included. Also, the 4 Cs should**

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[157] Instituting Services and Programs for Learners with Disabilities in Support of Inclusive Education Act, Senate Bill No. 1907, (November 9, 2020) (Phil.).

[158] Co-sponsored by the undersigned Chairperson, and Senators Villanueva, Angara, Revilla Jr., Binay, Villar, Lapid, Hontiveros, Zubiri, and Pimentel, Aquilino; and authored by the undersigned Chairperson and Senators Lapid, Gatchalian, Angara, Villar, Villanueva, Revilla, Jr., Zubiri, Binay, Hontiveros, Go, Gordon, De Lima, Tolentino, and Pimentel III.

be prioritized, with added emphasis on lifelong learning, resilience, and adaptability.[159]

(6) Finally, schools and teachers should be able to individualize the learning experiences of students in accordance with their capabilities. Educators should recognize the areas where learners are doing well, while giving adequate time and teaching to those who need to be at the proper level of competency. Opportunities to specialize and excel in their areas of interest should be provided. To accomplish this, schools need to hire more quality teachers to ensure each student gets enough individual instruction and direction; provide proper teacher training; transform and innovate their curricula to accommodate individualized learning; and invest in other resources that will assist students to reach their full potential at their own pace. This shift will take long-term planning and investments that the education sector should be prepared to make to ensure the best outcomes.

(d) Changing the Curriculum to Prepare for Industry 4.0

(1) Dr. Sykes-Kelleher aptly described the future of work: "The world of work is changing. Some jobs will remain relatively unchanged; however, automation is expected to disrupt many low-skilled jobs in particular. Anticipating the needs for upskilling and providing programs to retrain workers likely to be displaced can start now. Strategic foresight can be used to explore the potential of new industries in the Philippines and develop strategies to create new jobs."[160]

(2) To prepare for this, adaptability to the jobs of the future entails the need for English communication and digital skills of learners in the ensuing years.

(3) Automation of processes is an inevitable trend affecting the potential jobs in the future.

(4) More sustainable jobs are those that require constant flow of new ideas and human potential.

(5) These emerging trends highlight the preponderance of the 21st Century skills and the rising importance of soft skills in work. Such skills include, among others, creativity, critical thinking, leadership, innovation, adaptability, and agility that are inherent to humans, yet require cultivation in enabling environments.

    i. According to Dr. Cao, there is a need for this enabling environment in order to support and develop, through a redesigned and reinvented curriculum which has been adapted to the future work landscape, the following skills:[161]

        1. Critical thinking necessary for complex problem solving;

[159] Instituting Services and Programs for Learners with Disabilities in Support of Inclusive Education Act, Senate Bill No. 1907, (November 9, 2020) (Phil.).

[160] Dr. Anita Sykes-Kelleher, Founder and Director of Designer Futures. TSN from 17 June 2020 Hearing, p. 55; see also Dr. Anita Sykes-Kelleher's Position Paper/Presentation Notes and Recommendations.

[161] Dr. Ernelea P. Cao, Institute of Biology, College of Science, University of the Philippines Diliman. TSN from 17 June 2020 Hearing, pp. 91-93; Dr. Cao's Position Paper.

2. Creativity necessary for innovations in all sectors, including healthcare, agriculture and fisheries, energy, transportation, and ICT;

3. Interdisciplinary knowledge necessary for collaboration in different fields, because solutions and innovations benefit from a broad range of perspectives and expertise.

(6) Potential future professions identified by experts center around technology and soft skills,[162] such as software developers, financial managers, research scientists, user experience designers, information security and computer systems analysts, medical and health service managers, nurses and other healthcare workers, and elementary and secondary education teachers.[163] However, regardless of what future job opportunity awaits learners whether in the country or abroad, the focus of their education should still be on general skills encapsulated by the 4 Cs as well as technological or digital skills.

    i.   Dr. Sykes-Kellher emphasized the importance of both hard and soft skills in the future: "Hard skills such as digital technologies training are essential for many jobs, yet [are] relatively short-term and people will need to continually learn new and better ways of working. Digital skills are also essential for effective participation in society. [In] a VUCA world, soft skills such as futures thinking, innovation and flexibility are vital capabilities for futures-ready leadership, and an organizational ability to pivot to remain relevant is critical."[164]

(7) Some existing professions will continue to be on demand but will work alongside technology and AI, and will need to adapt to the future. It is important to close the gap between the skills currently required in these existing professions and the skills needed for the future of work, as **those countries that failed to invest in the past on upskilling and reskilling their labor force will risk losing work to automation and technology.**[165]

    i.   This is why Dr. Sykes-Kellher emphasized the importance of lifelong learning to replace the factory model of education: "Education is the foundation for our future. Education is critical in the development of hard and soft skills, and not just formal education, but [also] informal and non-formal; **a learning ecosystem for lifelong learning is essential if people are to**

[162] Dr. Alex Brillantes, National College of Public Administration and Governance, University of the Philippines. TSN from 27 May 2020 Hearing, p.57.

[163] Hoff, M. (2021, December 9). *Looking for a new career? here are 30 high-paying, fast growing jobs that are set to boom over the next decade. Business Insider.* https://www.businessinsider.com/best-jobs-future-growth-high-paying-careers-2021-9#30-electricians-1

[164] Dr. Anita Sykes-Kelleher, Founder and Director of Designer Futures. TSN from 17 June 2020 Hearing, p. 56; *see also* Dr. Anita Sykes-Kelleher's Position Paper/Presentation Notes and Recommendations.

[165] Edgar, J. (2017, March 28). *Working in the future: How humans need to adapt. Euronews.* https://www.euronews.com/next/2017/03/28/working-in-the-future-how-humans-need-to-adapt

successfully adapt as the world of work continues to evolve."[166]

ii. Examples have been previously discussed of such existing professions that will benefit from lifelong learning, upskilling, and reskilling due to technology:

1. In the hearing conducted by this Committee on 14 July 2020 regarding the future of health services delivery, the incoming health workforce must be trained for a future health care system that is more digitized and technology-enabled, patient-centered, collaborative, and with a focus on wellness and prevention, in the context of universal health care.

   a. **Dr. Cutiongco-Dela Paz discussed a similar point, in that the University of the Philippines Manila has foreseen the need to adapt to a VUCA world. A CHED Center of Excellence in medicine and nursing, the University of the Philippines Manila has conceptualized a Smart Healthy City by 2065. At the heart of this Smart Healthy City are sustainable healthcare delivery and improved quality of life.** To achieve this, they have developed a three-dimensional framework: smart infrastructure, smart institutions, and smart people. Dr. Cutiongco-Dela Paz proposed that education for the jobs of the future should address the needs of such Smart Healthy Cities.[167]

   b. Dr. Cutiongco-Dela Paz added: "Health sciences education in the future integrates translational research and innovation in the delivery of health services. We need highly skilled workers and a vibrant, knowledge-based [research and development] from educational institutions."[168]

2. Existing positions in corporate organizations, human resources and talent management will need to improve current practices as the workforce becomes more multigenerational

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[166] Dr. Anita Sykes-Kelleher, Founder and Director of Designer Futures. TSN from 17 June 2020 Hearing, p. 56; *see also* Dr. Anita Sykes-Kelleher's Position Paper/Presentation Notes and Recommendations.

[167] Dr. Eva Maria Cutiongco-Dela Paz, Professor and Executive Director of the National Institutes of Health, University of the Philippines Manila. TSN from 17 June 2020 Hearing, p. 118; *see also* University of the Philippines Manila Position Paper.

[168] Dr. Eva Maria Cutiongco-Dela Paz, Professor and Executive Director of the National Institutes of Health, University of the Philippines Manila. TSN from 17 June 2020 Hearing, p. 119; *see also* University of the Philippines Manila Position Paper.

and diverse, the workplace becomes more flexible, and as businesses focus on sustainability and project-based relationships. [169]

3. Tourism workers will continue to be in demand but will need to adapt to digitalization in order to thrive in the future, especially those working in small and medium enterprises. AI, automation, shared economy, and augmented and virtual reality will all make an impact in the future of tourism, which will require investing in the technical skills and knowledge needed to facilitate the adoption and effective use of new technologies and enact organizational change, innovation, and new business models. [170]

(8) While the common trend is to acquire skills related to technology, **the more important skill may be adaptability.** The explosion of technology means diversity in the digital systems one may encounter, and the worker who has the ability and fortitude to adapt to many systems, search quickly for the relevant information, and learn the fastest will fare the best in the new technological work environment. [171]

(e) Stronger Partnership with the Private Education Sector

(1) Dr. Cutiongco-Dela Paz emphasized the need for an empowered partnership between the government and the private sector in promoting and sustaining flexible learning. [172]

(2) One of the solutions to the shortage of classrooms has been the Government Assistance and Subsidies (GAS) and related programs, wherein the government provides private schools with funding in exchange for the enrollment of a certain number of students. Although the construction of more classrooms and schools should remain a priority and must be consistently funded, the GAS programs have been quite effective as they are immediately able to bridge the shortage of classrooms, and have proven to be a viable intervention in highly congested cities that have difficulty adding schools and classrooms. This partnership was even more critical during the pandemic, when private schools were severely burdened by the disruptions in education. At least 865 private schools in the country have already closed. [173] Further, around two million students (or a 50% decline in enrollment) did not enroll in private schools amid the

[169] GetSmarter. (2020, January 23). *Which jobs will be in demand in the next 10 years?* https://www.getsmarter.com/blog/career-advice/job-demand-10-years/

[170] Organisation for Economic Co-operation and Development. (n.d.). OECD Tourism Trends and Policies 2020. *OECD iLibrary.* https://www.oecd-ilibrary.org/

[171] Rainie, L., & Anderson, J. (2017, May 3). The Future of Jobs and Jobs Training. *Pew Research Center.* https://www.pewresearch.org/internet/2017/05/03/the-future-of-jobs-and-jobs-training/

[172] Dr. Eva Maria Cutiongco-Dela Paz, Professor and Executive Director of the National Institutes of Health, University of the Philippines Manila. TSN from 17 June 2020 Hearing, p. 117.

[173] De Guzman, M. (2022, January 7). Tax relief for private schools signed into law. *Business World.* https://www.bworldonline.com/top-stories/2022/01/07/422166/tax-relief-for-private-schools-signed-into-law

pandemic, according to Coordinating Council of Private Educational Associations (COCOPEA) Managing Director Atty. Joseph Estrada. It was expected that these students transferred to public schools.[174]

(3) The influx of private school students transferring to public schools means we should ensure continued adequate funding for the GAS programs under the DepEd, which is meant to increase accessibility of quality education through subsidies provided to qualified learners in participating private schools, and aid in the decongestion of public schools.

    i.   Unfortunately, GAS continues to be underfunded and is even running a deficit worth Php 21.58 billion, based on discussions on the DepEd budget for Fiscal Year 2022:

        1.   Php 3.13 billion deficit in Education Service Contracting (ESC), a program of financial assistance wherein subsidies called ESC grants are provided to qualified Junior High School (JHS) – Grades 7 to 10 learners in ESC-participating private JHSs.

        2.   Php 18.45 billion deficit in the Senior High School Voucher Program (SHS VP), a program of financial assistance wherein subsidies called SHS VP vouchers are provided to qualified Senior High School – Grades 11 to 12 learners in participating private schools, colleges, and universities; or in non-DepEd public schools (State Universities and Colleges and Local Universities and Colleges), that offer SHS.

    ii.   The undersigned Chairperson of this Committee, as the Senior Vice Chairperson of the Committee on Finance handling the DepEd budget, made efforts to cut the deficit and ensure no learner is left behind, and that all private schools participating in GAS are paid adequately and on time. However, spending on the health sector for the pandemic, including economic recovery, has been a priority which limited the available funds for other sectors, but efforts will continue in order to ensure funding in succeeding years.

    iii.   LGUs such as Taguig City[175] and Pasig City[176] have, on their own, funded similar programs to support the private schools. This support was even more crucial during the time of the pandemic.

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[174] Ramos, C. M. (2020, May 14). 2M students to leave private schools amid COVID-19 says COCOPEA. *Philippine Daily Inquirer.*
https://newsinfo.inquirer.net/1274904/2m-students-to-leave-private-schools-amid-covid-19-says-cocopea
[175] James, N. (2022, March 10). Taguig extends educational assistance. *Metro News Central.*
http://metronewscentral.net/taguig/metro-gen/metro-cities/taguig-extends-educational-assistance.
[176] Agoncillo, J. A. (2020, August 18). Vico Sotto grants reprieve to financially struggling Pasig private schools. *Philippine Daily Inquirer.*
https://newsinfo.inquirer.net/1323113/vico-grants-reprieve-to-financially-struggling-pasig-private-schools

iv. Recognizing the crucial role of private schools as the government's partners in education, the undersigned Committee Chairperson, as the Chairperson of the Committee on Ways and Means, sponsored Republic Act No. 11635 or the "Proprietary Educational Institutions Tax Act", which clarifies the tax regime for private schools and entitling these institutions to preferential tax rates under the "Corporate Recovery and Tax Incentives for Enterprises Act" (CREATE).

6. The country is at a crossroads in education, where it can either go back to how things were or it can take advantage of the opportunities it has been presented in the past two years, and build on advances that were made even before the pandemic and were strengthened as we continue to adapt to it. The pandemic is no longer the future, and it is important to look past these current issues and make decisions today that will lead us to the best possible future, while preparing for all possible futures.

V. *Recommendations*

As Dr. Cutiongco-Dela Paz asserted, education is a human right, and it is a tool for national and cultural development. She also emphasized that addressing the challenges to education revealed by the pandemic, as well as future challenges, require "inclusiveness and a conscious bias for equity, especially to address the needs of the poor and the underserved" and "investing in continuous capacity-building and research and ensuring timely and adequate access to the required resources". Further, "a strong collaboration or partnership among various stakeholders is necessary to make any change sustainable."[177]

Ms. Lovelaine Basillote, Executive Director of the Philippine Business for Education (PBEd), also stressed the importance of having the long view in mind when it comes to policy-making, despite the issues we currently face. She also asked, how might we organize our schools and education system so that it is actually inclusive and builds essential skills and competencies for the world now and the world in the future? How might we incentivize reskilling, upskilling, and lifelong learning?[178]

With these in mind, the Committee compiled recommendations from the experts and resource persons who graciously provided their knowledge and experience, such as the DepEd, University of the Philippines Manila, TESDA, the DOST, Leyte Normal University, Philippine Normal University, PBEd, GAIN, Dr. Bishop, Dr. Sykes-Kelleher, Dr. Perante-Calina, Dr. Brillantes, Ms. Reyes, Dr. Cutiongco-Dela Paz and other Metrobank Foundation Outstanding Filipino Award for Teachers recipients, among others, whose expertise the Committee learned from during the hearings and in the drafting of this Report. Other materials made available for the Committee's study and its own assessment of what the different futures of education may require us to act on today were also used as basis for these recommendations.

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[177] Dr. Eva Maria Cutiongco-Dela Paz, Professor and Executive Director of the National Institutes of Health, University of the Philippines Manila. TSN from 17 June 2020 Hearing, pp. 112-113.
[178] Ms. Lovelaine Basillote, Executive Director of the Philippine Business for Education. TSN from 17 June 2020 Hearing, pp. 124-125.

A. General Recommendations

1. Rethink the role of education, learning, and knowledge while taking into account different futures. **Education must now shift to teaching skills and attitudes, and how to anticipate and influence change in the future; not just facts and knowledge.** There is a need to design a more responsive educational system that supports sustainable development and life-long learning.[179]

    (a) For example, in *The Forgetting Machine: Memory, Perception, and the "Jennifer Aniston Neuron"*, Rodrigo Quian Quiroga wrote about the importance of going beyond memorization, particularly in assimilating concepts and deriving meaning: "Focusing on memorization techniques limits our ability to understand, classify, contextualize and associate. Like memorization, these processes also help to secure memories but in a more useful and elaborate way. These are precisely the processes that should be developed and encouraged by the educational system. We have seen the importance given to memory in Antiquity, especially as a tool for oratory. We have also seen that today, its importance is much more relevant. Curiously, however, memorization is the ability most trained and rewarded by our current educational system as if [as] though we are bent on equipping students to be senators in ancient Rome."[180]

    (b) Dr. Sykes-Kelleher cites the top five most effective actions that can be done on this point:[181]

        (1) Increase focus on developing creativity, critical thinking, human relations, philosophy, entrepreneurship (individual and group), art, self-employment, social harmony, ethics, and values.

        (2) Include futures as we include history in the curriculum. Teach alternative visions of the future, foresight, and the ability to assess potential futures.

        (3) Make tele-education (or online learning) free everywhere as ubiquitous, life-long learning systems.

        (4) Shift education and learning systems more towards mastering skills than mastering a profession.

        (5) Create a hybrid system of self-paced, inquiry-based learning for self-actualization, and retrain teachers as coaches.

    (c) Further, Dr. Perante-Calina proposed the Green Education System Framework as a response to the need for reframing education to prepare for all possible futures, as well as for the realization of the SDGs in the context of the Fourth Industrial Revolution. The Green Education System is anchored on the doctrine of intergenerational fairness, where the rights of future generations must be protected by the

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[179] Dr. Peter Bishop, Founder and Executive Director of Teach the Future in Houston, Texas. Presentation from 17 June 2020 Hearing.

[180] Quiroga, R. Q. (2017, October 3). The forgetting machine: *Memory, perception, and the "Jennifer Aniston neuron"*. (D. Woren, Narr.) [Audiobook]. Audible. (2017)

[181] Dr. Anita Sykes-Kelleher, Founder and Director of Designer Futures. TSN from 17 June 2020 Hearing, p. 52, *see also* Dr. Anita Sykes-Kelleher's Position Paper/Presentation Notes and Recommendations.

present generation. This system also calls for developing new competencies in teaching, establishing international collaboration, and facilitating green technology and innovation.[182]

Green Education System

Source: DAP presentation

(d) Additionally, Dr. Brillantes mentioned that while structural changes are important, changing mindsets is equally important.[183] Our mindsets need to shift towards a more international and future-oriented thinking.

2. Reorient the education system to focus on the whole child and in support of his/her holistic well-being.

(a) In order to thrive in life, learners need to acquire not only cognitive skills, but also "the ability for emotional empathy, sympathy for the plight of others, concern for social justice and human rights, and awareness of the planet we are living on and the other species inhabiting it"[184]. These are among the many values that the education system must reinforce.

(b) As discussed in Chapter IV, Section A (4)(a), it is vital that the emotional and mental health needs of learners be addressed. One of the key interventions to support the mental health and well-being of students is ensuring that all schools have access to guidance counselors. Unfortunately, as revealed during the DepEd budget hearings in the Senate, the stringent qualification requirement to have a master's degree and the lack of a commensurate salary with this required level of education have led to a shortage of guidance counselors in public schools. This needs to be resolved in order to ensure that the DepEd's mandate for the promotion of mental health in educational institutions is

[182] Dr. Lizan Perante-Calina, President of Philippine Futures Thinking Society and Dean of the Graduate School of Public and Development Management of the Development Academy of the Philippines. TSN from 27 May 2020 Hearing. p. 62; Development Academy of the Philippines. Presentation from 27 May 2020 Hearing.

[183] Dr. Alex Brillantes, National College of Public Administration and Governance, University of the Philippines. TSN from 27 May 2020 Hearing. pp. 60-61.

[184] UNESCO. (2022, January 19). *Key recommendations from UNESCO's Futures of Education report.* [Video]/ YouTube. https://youtu.be/quGaJEfehV0

implemented, as provided in the Implementing Rules and Regulations of RA 11036, or the "Mental Health Act".[185]

    (c) Physical well-being is also important. Schools are thus encouraged to promote healthy eating and programs that support a lifelong love for physical activity. According to the United States Centers for Disease Control and Prevention, students who are physically active are more likely to have better grades, school attendance, cognitive performance, and classroom behaviors.[186]

3. Explore the possibility of reintegrating basic education, higher education, and technical-vocational livelihood education. According to a news report quoting DepEd Secretary Briones, Southeast Asian countries that trifocalized or divided up their education system similar to the Philippines went back to unity structural arrangements. She also stated that out of ten Southeast Asian countries, seven of them currently have unified structures. In the same news report, CHED Chairman Popoy De Vera also acknowledged that the matter of trifocalization is a "very valid area to consider", and agreed that many of the ASEAN countries are not trifocalized now. Both Secretary Briones and Chairman De Vera acknowledged the difficulty in trifocalization and the possible reintegration of the three education agencies.[187]

4. Reinforce the science of learning, which may provide insights on how learners develop competencies, expertise, and dispositions in either physical or virtual learning spaces.[188]

5. Promote partnerships between the government and the private schools system to further ensure access to quality education for all through financial assistance to deserving learners, in the form of voucher programs with partner private schools similar to the GAS as discussed earlier, as well as other scholarship programs.

    (a) In addition to its Lifeline Assistance for Neighbors In-Need Program, which offers eight different kinds of scholarships to students pursuing Bachelor's, Master's, and Doctorate degrees, the City of Taguig has the Taguig Learners Certificate program, which covers up to Php 18,000.00 of tuition and a stipend of Php 10,000.00 per year for elementary school graduates who want to continue their education in one of its 53 private school partners.[189]

    (b) Quezon City provides scholarships to senior high school students amounting to Php 10,000.00 per year and a Php 4,000.00 stipend.

[185] Section 25, Implementing Rules and Regulations of the Mental Health Act, Republic Act No. 11036. (n.d.). (Phil.)

[186] United States Centers for Disease Control and Prevention. (n.d.). *CDC Healthy Schools.* https://www.cdc.gov/healthyschools/physicalactivity/facts.htm

[187] Hernando-Malipot, M. (2021, August 14). Back as one? Education executives weigh in on the issue of trifocalization. *Manila Bulletin.* https://mb.com.ph/2021/08/14/back-as-one-education-executives-weigh-in-on-the-issue-of-trifocalization/

[188] DepEd Position Paper; *Neuroteach: Brain Science and the Future of Education* (Whitman and Kelleher, 2016) is also a good resource for the science of learning and teaching.

[189] City of Taguig. (n.d.). *Scholarship Programs.* https://www.taguig.gov.ph/programs/scholarship-programs/

6. Ensure that emergency teaching and learning strategies are in place to adapt to shocks and emergencies that may affect or disrupt regular schooling.
7. Modernize and upgrade learning and training institutions to meet the requirements of the Fourth Industrial Revolution or Industry 4.0. [190]
8. Equip the schools and universities with facilities for effective teaching and learning methods that can be used individually or in groups, such as teleconferencing. [191]
9. Improve academic infrastructure such as enhancing library facilities and services, [192] and prioritizing the continuous construction of classrooms that meet the needs and the number of learners nationwide.
10. Increase the budget for research and development (R&D) to at least 1% of the country's gross domestic product expenditure, in line with the United Nations Educational, Scientific and Cultural Organization's (UNESCO) standard for R&D spending for developing countries. [193]
    (a) Leyte Normal University, in its position paper, emphasized that the core of innovation is the creation of new knowledge. "Research must be continuously conducted to study effects, changes, and shifts in teaching and learning processes. In addition, research must be focused on the agenda of simulation technology, augmented and virtual reality, and teaching innovations...." [194]
11. Enable an environment for Futures Thinking in education and related agencies, and explore mechanisms to institutionalize it. [195] Existing programs that institutionalize Futures Thinking, such as DepEd's Education Futures Program, should receive continued support, and their work such as the concept note on *"Co-Creating Learning Spaces for the Future"* should be made available to all education stakeholders to guide their decision and policy-making and implementation.
12. **The education system and stakeholders within the public and private sectors must adopt a strategic foresight framework to create a futures system culture that would prepare students and educators to a forward-looking future in education.** Legislation such as the "Excellence in Teacher Education Act" and the "Instituting Services for Learners with Disabilities in Support of Inclusive Education Act", which create a roadmap for teacher education and inclusive education, respectively, to ensure the implementation and progress of both measures, are examples of institutionalizing a framework that is forward-looking while taking into account present needs.
13. Besides the education agencies (DepEd, CHED, and TESDA), training on Futures Thinking and institutionalizing the same in other government agencies and bodies such as the Office of the

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[190] TESDA. Presentation from 27 May 2020 Hearing.
[191] University of the Philippines Manila Position Paper.
[192] University of the Philippines Manila Position Paper.
[193] DOST Position Paper.
[194] Leyte Nomal University Position Paper.
[195] Leyte Nomal University Position Paper.

President, the Senate, House of Representatives, LGUs who have more direct and immediate impact in the education systems within their jurisdictions, state universities and colleges, and the schools themselves, should be undertaken.

    (a) Through Futures Thinking and using foresight, the government can better provide evidence-based policies in the following ways:[196]

        (1) Better anticipation: to better forecast and prepare for changes that could emerge in the future;

        (2) Policy innovation: to reveal options for experimentation with innovative approaches; and

        (3) Future-proofing: to stress-test existing or proposed strategies and policies

    (b) This, in turn, must be communicated very clearly to the legislature, the LGUs, the communities, the parents, and the youth so that there is a clear understanding of what needs to be done to attain the best possible outcomes from our education system.

    (c) The DepEd and CHED should engage the private education institutions and education partners in the private sector in Futures Thinking workshops and encourage them to invest in their own training on Futures Thinking and implement their own strategic foresight framework that is consistent with the government's policies while fostering innovation.

14. Track and monitor the latest research and innovation, and follow and study trends and phenomena through the use of foresight tools such as the Futures Triangle illustrated earlier, the Futures Wheel, [197] and the Futures Radar[198] as introduced by Dr. Tuomo Kuosa and Mr. Saku-Juhani Koskinen of Futures Platform, Helsinki, Finland in the Committee's 12 May 2020 hearing. Given how fast the world is changing and the uncertainties of what the next step should be, by the time we implement one thing, we might already need to implement something else. These tools can be used to plot possible futures and prepare for the best courses of action. In the illustration below, various possible scenarios, phenomena, and trends are monitored, which occur during or after the initial shock found at the core of the wheel or radar, and the likelihood and unlikelihood of these scenarios, phenomena, or trends materializing are also considered.

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[196] Organisation for Economic Co-operation and Development. (n.d.). *Strategic foresight - organisation for economic co-operation and development.* http://www.oecd.org/strategic-foresight/

[197] Connor, T. (2021, June 8). *A Future Planning Exercise — The Futures Wheel.* Medium. https://medium.com/10x-curiosity/a-future-planning-exercise-the-futures-wheel-794b5d012096.

[198] Futures Platform. (n.d.). *Instructions: What can radars be used for?* https://info.futuresplatform.com/hub/what-can-radars-be-used-for.

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FUTURES PLATFORM

Source: Dr. Tuomo Kuosa and Mr. Saku-Juhani Koskinen's presentation during the Committee's 12 May 2020 hearing

Futures Wheel sample. Source: barryoreilly.com

B. On technology

1. Adopt a comprehensive legal and regulatory framework that encourages investments in internet connectivity and services, lowers costs, and fosters creativity.[199]

2. Explore a multitude of technologies for remote learning and online education to allow for an inclusive, responsive, and adaptable education system that addresses barriers and inequalities in education and improves opportunities for underserved and disadvantaged groups.[200]

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[199] Dr. Eva Maria Cutiongco-Dela Paz, Professor and Executive Director of the National Institutes of Health, University of the Philippines-Manila. TSN from 17 June 2020 Hearing, p. 115; *see also* University of the Philippines Manila Position Paper.

[200] University of the Philippines Manila Position Paper.

(a) The DepEd is already open to adopting features of distance learning once the country adapts to the new normal. These learning deliveries should be further developed beyond the pandemic to ensure continued education during emergencies and to provide access for learners in remote areas.[201]

3. Provide support and training for teachers in using effective learning technologies, tools, and online educational resources.[202]

4. Provide support and training for parents of learners undergoing remote learning and/or online education.

5. Partner with telecommunication companies[203] to reach more learners nationwide through their services.

6. Establish and procure reliable ICT infrastructure and equipment to ensure network connectivity.

7. Encourage and support community-based access initiatives, educational networks, and local research and development initiatives, which enable diverse models for access and use.[204]

8. Explore the potential of AI in education.[205]

9. Since it will not be possible to provide anytime soon the connectivity and technology needed for everyone to participate in online and blended learning when necessary, the reliance on printed and non-digital modules that have been in use even before the COVID-19 pandemic, will have to continue.

C. **On curriculum**

1. Reframe the curriculum by prioritizing essential or cross-cutting knowledge, skills, and mindsets in order to develop 21st Century competencies such as the 4 Cs and digital skills, that cut across subject areas and are responsive to the needs of industry.[206]

(a) Ms. Basillote also emphasized the need to improve curriculum content, and to focus on key skills and competencies. According to her, there is a need to go back to the basics and teach soft skills and the 4 Cs. It is also important to involve industry/employers in order to design a curriculum that is responsive to the needs of work[207] while catering to learners' needs.

(b) On this point, the DepEd is working with Microsoft to offer certified courses that will help learners gain digital literacy necessary for the digital economy and in jobs of the future.[208]

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[201] Rita, J. (2022, February 3). DepEd exec: Many distance learning features to be maintained when we go back to normal. *GMA News.*
https://www.gmanetwork.com/news/topstories/nation/820550/deped-exec-many-distance-learning-features-to-be-maintained-when-we-go-back-to-normal/story/?top_picks&order=1

[202] University of the Philippines Manila Position Paper.

[203] DepEd Position Paper.

[204] University of the Philippines Manila Position Paper.

[205] DepEd Position Paper.

[206] DepEd defines these terms as follows: "Innovation means formulating a solution that is better and has social or economic impact. On the other hand, agility refers to the ability to move quickly and gracefully, while synergy is a collaboration that creates an output, which is greater or bigger than the sum of the individual contributions. These are three powerful capacities that can ensure human flourishing despite adversities." *(DepEd Position Paper)*

[207] Ms. Lovelaine Basillote, Executive Director of the Philippine Business for Education. TSN from 17 June 2020 Hearing, p. 127.

[208] Department of Education (2021, November 4). DepEd, Microsoft PH collaborate to promote digital literacy in Project B.T.S. 2.0.

(c) However, as Dr. Cutiongco-Dela Paz pointed out, any changes to the curriculum and teaching methods must be relevant, culturally appropriate, rights respecting, gender sensitive, and technologically appropriate.[209]

2. Innovate how students learn and how they are taught. In *Neuroteach*, Whitman and Kelleher listed their top 12 research-informed strategies for teachers:[210]

(a) Class periods should be designed with an understanding that what students will recall most is what takes place in the first part of the class and what students will recall second most will take place in the closing minutes of the class.

(b) Students should be given more frequent, formative, and low-stakes assessments of learning.

(1) Ms. Regina Del Rosario Cansino, Assistant Principal of Corpus Christi School and an awardee of the Metrobank Foundation Outstanding Filipino Award for Teachers in 1990, made the same point, that frequent feedback on progress is very important so learners can see their progress and be motivated to continue.[211]

(2) This is part of her overall concept of gamification, or the incorporation of gaming principles in the way education is delivered. This is in response to learners' tendency to have short attention spans, and the need to continually keep them engaged. This means providing goals or motivation, gradually adding complexity, frequent feedback, and rewarding learners.[212]

(c) Students need more opportunities to reflect on their learning and performance.

(d) Students need to know that the pervasive way they choose to study is actually hurting their ability to learn for the long term and that self-testing is much more effective than reading one's notes.

(e) Students, parents, teachers and school leaders need to understand that sleep is critical to memory consolidation. Without sufficient sleep, we create a system that perpetuates the illusion of learning.

(f) Students need to know that "effort matters most", and that they have the ability to rewire their brain to make themselves better learners and higher-achieving students (called "neuroplasticity").

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https://www.deped.gov.ph/2021/11/04/deped-microsoft-ph-collaborate-to-promote-digital-literacy-in-project-b-t-s-2-0/

[209] Dr. Eva Maria Cutiongco-Dela Paz, Professor and Executive Director of the National Institutes of Health, University of the Philippines-Manila. TSN from 17 June 2020 Hearing, p. 113.

[210] Whitman, G. &, Kelleher, I. (2016). *Neuroteach: Brain science and the future of education.* (p. 27). Rowman & Littlefield Publishers.

[211] Ms. Regina Del Rosario Cansino, Assistant Principal of Corpus Christi School and an awardee of the Metrobank Foundation Outstanding Filipino Award for Teachers in 1990. TSN from 8 June 2020 Hearing, p. 67.

[212] Ms. Regina Del Rosario Cansino, Assistant Principal of Corpus Christi School and an awardee of the Metrobank Foundation Outstanding Filipino Award for Teachers in 1990. TSN from 8 June 2020 Hearing, p. 67.

(g) Students need more, but well-judged, opportunities for choice in their learning, which enhances engagement and intrinsic motivation.

(h) Students need to recognize the impact stress, fear, and fatigue have on the higher-order thinking and memory parts of their brain.

(i) Students need opportunities to transfer their knowledge through the visual and performing arts.

(j) Students need their teachers to vary the modality of teaching and assessment based on the content (as well as the time of day). All students learn best when taught in a variety of modalities, and when the modality is chosen with the content in mind rather than the student.

(k) Students need to know the anatomy of their brain, especially the role different parts of the brain play in their learning.

(l) Students need frequent opportunities during the school day to play.

3. Embed multiliteracies in the curriculum, such as information, scientific, health, financial, and civic literacies.[213]

4. Emphasize life-long, life-wide, life-deep, life-wise learning,[214] and make lifelong learning systems.[215]

5. Provide some focus on project-based learning and collaborative works to engage students in the learning process while allowing them to pursue "thinking creatively within constraints."[216]

6. Design a next-generation leadership and innovation program to train younger generations in digital skills and soft skills including futures thinking, collaboration, creativity, empathy, agility, cultural evolution, innovation, ethics, values, and purpose-driven organizations.[217]

(a) Alongside the DepEd, Microsoft has launched the Microsoft Youth Ambassador (MYA) Program,which seeks Junior High School (JHS) and Senior High School (SHS) learners from DepEd schools to serve as ambassadors who will champion technology for learning and advocate mentorship among students.[218]

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[213] Ms. Regina Del Rosario Cansino, Assistant Principal of Corpus Christi School and an awardee of the Metrobank Foundation Outstanding Filipino Award for Teachers in 1990. TSN from 8 June 2020 Hearing, p. 67.

[214] *Lifelong* – connected to a purpose; *life-wide* – connected to real-world contexts; *life-deep* – learning for mastery and greater autonomy; and *life-wise* – learning beyond self and enriching practical wisdom and values. *(DepEd Position Paper)*

[215] Dr. Anita Sykes-Kelleher, Founder and Director of Designer Futures, Position Paper/Presentation Notes and Recommendations.

[216] Dr. Peter Bishop, Founder and Executive Director of Teach the Future in Houston, Texas. Presentation from 17 June 2020 Hearing; Ms. Regina Cansino, Assistant Principal of Corpus Christi School and an awardee of the Metrobank Foundation Outstanding Filipino Award for Teachers in 1990, Position Paper.

[217] Dr. Anita Sykes-Kelleher, Founder and Director of Designer Futures, Position Paper/Presentation Notes and Recommendations.

[218] Department of Education (2021, November 4). DepEd. Microsoft PH collaborate to promote digital literacy in Project B.T.S. 2.0.
https://www.deped.gov.ph/2021/11/04/deped-microsoft-ph-collaborate-to-promote-digital-literacy-in-project-b-t-s-2-0/

D. **On teaching**

1. Review the teacher education curriculum[219] and develop a teacher academy roadmap that is collaborative, outcome-based and holistic, standards-based, experiential, and relevant.[220] The roadmap should align with those of CHED's, through Teacher Education Institutions (TEIs) (pre-service training) and DepEd's (in-service training). Other government agencies like the Professional Regulation Commission (PRC) must be on board. The roadmap is a holistic view of how teachers are 'made'.[221] This is closely related to the implementation of the "Excellence in Teacher Education Act", mentioned below.

2. Strengthen faculty competence in curricular activities through massive teaching training programs and activities to facilitate the rapid design process and implementation of adaptive responses to the emerging educational challenges.[222]

3. Provide online training for teachers (i.e. CyberLab@Home Project, Taguig City; Teachers' Distance Learning and Development, Apolinario Mabini Elementary School). Systems for instruction must maintain its capacity for digitization and online delivery even as we go back to face-to-face instruction. Also, in preparation for disaster and natural calamities, systems must be secured and protected to ensure the continuance of services.[223]

4. Ensure that teachers have the competencies necessary for multimodal distance delivery.[224]

   (a) In an effort to increase teachers' digital literacy and competencies in remote learning, the DepEd, in partnership with Microsoft, trained teachers (as well as learners) on the use of the latest productivity tools for digital education practices during the *Project Be Techie in School (B.T.S.) 2.0: A Balik Eskwela Digital Literary Starter Pack* event last October 2021.[225]

5. Acknowledge and reward innovations made by teachers and schools in their teaching methods through incentives and awards from the government as well as the private sector. While there are many awards recognizing teachers' accomplishments in general, innovation should be specifically rewarded.

   (a) The Committee recognizes that the DepEd has been facilitating nominations of its teachers to various award-giving bodies, both national and international. It also recognizes the agency's own initiatives to reward innovation

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[219] Ms. Christine Reyes, Director of Aptissimi Development Innovations Inc., Position Paper.

[220] Collaborative - ensure the link between key education stakeholders; Standards-based - raise the importance of having a core to support all actions on teacher quality; Experiential - refocus education to be an experience (outcome-based); Relevant- respond to the national and international education thrusts. *(PNU Position Paper)*

[221] Collaborative - ensure the link between key education stakeholders; Standards-based - raise the importance of having a core to support all actions on teacher quality; Experiential - refocus education to be an experience (outcome-based); Relevant- respond to the national and international education thrusts. *(PNU Position Paper); also* Philippine Business for Education Position Paper.

[222] University of the Philippines Manila Position Paper.

[223] Leyte Normal University Position Paper.

[224] Ms. Christine Reyes, Director of Aptissimi Development Innovations Inc., Position Paper.

[225] Department of Education (2021, November 4). DepEd, Microsoft PH collaborate to promote digital literacy in Project B.T.S. 2.0. https://www.deped.gov.ph/2021/11/04/deped-microsoft-ph-collaborate-to-promote-digital-literacy-in-project-b-t-s-2-0/

such as the DepEd TV Awards, which aims to recognize the outstanding performance of teacher-broadcasters and production teams of the DepEd TV program, who have worked hard to continue education despite the pandemic;[226] and the Gawad Siklab Awards, which recognizes the accomplishments and significant contributions of teachers and administrators, among others.[227]

(b) It is worth noting that we have had teachers who were recipients of the Ramon Magsaysay Award, Asia's premier prize and highest honor given to those "whose selfless service has offered their societies, Asia, and the world successful solutions to some of the most intractable problems of human development."[228] Christopher Bernido and Ma. Victoria Carpio Bernido were awarded in 2010 for "ensuring innovative, low-cost, and effective basic education even under Philippine conditions of great scarcity and daunting poverty."[229] In 2014, Randy Halasan was awarded for transforming the lives of his Matigsalug students and their community "through quality education and sustainable livelihoods, doing so in ways that respect their uniqueness and preserve their integrity as indigenous peoples in a modernizing Philippines."[230]

(c) The Committee likewise acknowledges the DOST-Science Education Institute's Brightest Science Teacher Academy for the Regions (STAR) Awards, which "is given to exemplary science and mathematics teachers who have been continuously applying their STAR training in their teaching practice and teaching communities. The citation serves to uplift teachers' morale [and] cultivate a culture of innovation among teachers."[231]

(d) In the private sector, the Committee recognizes the Metrobank Foundation which has, since 1985,[232] awarded outstanding teachers who have made a long-standing

[226] Department of Education. (2021, July 9). *DepEd TV Awards launched to recognize outstanding teacher-broadcasters, production teams.* https://www.deped.gov.ph/2021/07/09/deped-tv-awards-launched-to-recognize-outstanding-teacher-broadcasters-production-teams/.

[227] Department of Education. (2021, October 28). *Outstanding learners, teachers, and administrators recognized in Gawad Siklab 2021 Awards.* https://www.deped.gov.ph/2021/10/28/outstanding-learners-teachers-and-administrators-recognized-in-gawad-siklab-2021-awards/

[228] The Ramon Magsaysay Award Foundation. (n.d.). The Ramon Magsaysay Award. Retrieved on May 12, 2022 from https://www.rmaward.asia/awards.

[229] The Ramon Magsaysay Award Foundation. (n.d.). Honoring greatness of spirit and transformative leadership in Asia: Bernido, Christopher. Retrieved on May 12, 2022 from https://www.rmaward.asia/awardee/bernido-christopher; The Ramon Magsaysay Award Foundation. (n.d.). Honoring greatness of spirit and transformative leadership in Asia: Carpio, Ma. Victoria. Retrieved on May 12, 2022 from https://www.rmaward.asia/awardee/bernido-ma-victoria-carpio%20https.

[230] The Ramon Magsaysay Award Foundation. (n.d.). Honoring greatness of spirit and transformative leadership in Asia: Halasan, Randy. Retrieved on May 12, 2022 from https://www.rmaward.asia/awardee/halasan-randy.

[231] Department of Science and Technology Science Education Institute. (2021, March 9). *Public school teachers from Region X, NCR hailed 2020 Brightest STARs by DOST-SEI.* https://www.sei.dost.gov.ph/index.php/news-archive/336-public-school-teachers-from-region-x-ncr-hailed-2020-brightest-stars-by-dost-sei

[232] Metrobank Foundation. (n.d.). *Roster of Awardees: Award for Teachers.* https://www.mbfoundation.org.ph/wp-content/uploads/2021/08/MBFI-roster-of-awardees-for-teachers_1985-2021.pdf.

positive impact and have provided concrete contributions for the development of their communities.[233]

6. Refocus the role of teachers as facilitators of learning, rather than just providers of information.[234] *Neuroteach* provided the following ways to facilitate learning and keep students engaged:[235]

(a) Work to ensure that students feel heard, listened to, and known.

(b) Design the curriculum so that students will see meaning, relevancy, or emotional connections to their own lives. Actively work at helping students make these connections.

(c) Actively work both to provide students with experiences and environments that aid identity validation, and to eliminate factors that may cause or enhance identity threat.

(d) Students need to know that "effort matters most" and the brain has the ability to rewire itself (neuroplasticity). Coach students that deliberate effort can rewire the brain and lead to enhanced academic achievement.

(e) Teaching students the mechanism behind how the brain operates, and teaching them approaches they can use to work those mechanisms more effectively, helps students believe that they can create a more intelligent, creative, and powerful brain.

(f) Provide students with specific learning objectives.

(g) What does your classroom look like? Is it stimulating but not overstimulating? Does it change? Do you show recent student work that changes to keep up to date? Do you create novelty? Are the key objectives of your class prominently displayed at the front of your class? Research shows that a stimulating and changing classroom appearance correlates to attention and engagement.

(h) Teach and assess in multiple modalities. Vary the modality to better suit the content, not to match individual students' learning styles. Doing so leads to increased engagement and deeper understanding and consolidates learning in more powerful ways than traditional teaching.

(i) When you return work, do so quickly, and allow students time to struggle to correct their errors, rather than simply marking it right or wrong or giving them the answer.

(j) Students need more opportunities to reflect and think on their learning strategies and performance. Build in moments for reflection. For example, before each assessment, have students reflect on how they will study and what demands a particular assessment will have on their brain. At the end of each assessment, require students to answer a few reflection questions concerning how they studied, how effective their methods were, or what they think their grade might be.

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[233] Metrobank Foundation. (n.d.). *About the Metrobank Foundation Outstanding Filipinos.* https://www.mbfoundation.org.ph/outstanding-filipinos/about-the-program/
[234] Philippine Business for Education Position paper; Dr. Ernelea P. Cao, Institute of Biology, College of Science, University of the Philippines Diliman. TSN from 17 June 2020 Hearing, pp. 93-94.
[235] Whitman, G. &, Kelleher, I. (2016). *Neuroteach: Brain science and the future of education.* (pp. 89-91). Rowman & Littlefield Publishers.

(k) Offer students choice in subject matter and/or assessment.

(l) Students need opportunities to transfer their knowledge through the visual and performing arts, so integrate art into the content of non-arts subjects to enhance learning.

(m) Use play constructively, in age-appropriate ways, to help build student engagement.

7. Make education the course of choice by establishing a campaign to recruit and encourage outstanding high school graduates to pursue an education degree and enter the teaching profession.[236] Other qualified professionals may also be recruited, in accordance with existing laws and regulations. This should include periodic reviews of teacher salaries to ensure it remains competitive with other career options.

8. Make postgraduate studies for teachers the norm instead of the exception. This can be done in a number of ways, including the provision of more scholarships. In order to have high quality teachers, high quality teacher education and opportunities to pursue continuing education must be made available. For example, in Finland, it is the norm for teachers to have a master's degree, including pedagogical studies and teaching practice.[237]

9. Manage physical learning spaces and recognize informal and virtual learning spaces,[238] and encourage and support new designs on the school's and classrooms' physical environment for learning, given that the physical space contributes to a child's wellness and ability to focus and learn.

(a) In its position paper, Leyte Normal University pointed out the growing obsolescence of classrooms and other spaces such as libraries.[239] While face-to-face learning should still be the primary mode of learning delivery given its benefits, redefining learning spaces and accepting virtual ones should also be embraced.

(b) In a step towards the right direction, the DepEd's Education Futures Program wrote a concept note entitled *"Co-Creating Learning Spaces for the Future"*, inviting "education stakeholders to imagine and co-create the kind of learning spaces that we want for our Filipino learners". The note explores the concept of learning spaces, the current challenges and opportunities, aspirations for public schools of the future, existing initiatives in the Philippines to redefine learning spaces, as well as global trends in learning spaces and the future of classrooms. It ends with a call to action to co-create future learning spaces that deliver quality, accessible, relevant and liberating basic education, over the next 30 years.

(1) Efforts similar to this concept note, which attempts to innovate and look into the needs of the far future, should be given more importance and consideration

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[236] Ms. Christine Reyes, Director of Aptissimi Development Innovations Inc., Position Paper.
[237] Finland Toolbox. (n.d.). *Teachers in Finland – Trusted and Respected Professionals.* https://toolbox.finland.fi/life-society/teachers-in-finland/
[238] *See* DepEd Position Paper.
[239] Leyte Normal University Position Paper.

by education stakeholders in order to guide policy making and implementation today.

(2) The Education Futures Program, with the continued support from the DepEd and other stakeholders, should further explore different possibilities and aspirations for other factors in education, such as teaching, the curriculum, and the use of technology, and how all of these factors can come together to achieve our ideal future of education and prepare for other possible futures.

E. **On work**

1. Anticipate and prepare for the needs of the rapidly evolving work environments by identifying relevant knowledge, skills, and dispositions or mindsets in preparation for the adoption of different technologies, and design capacity-building programs and materials aligned to the following (but not limited to) innovations:[240]

   - Collaborative innovation spaces
   - Commons-based resources
   - Digital credentialing
   - Gamification
   - Read/write culture (vlogging, personal live streaming, digital content creation)
   - Life caching
   - Civic technology
   - Self-organizing virtual communities
   - Local food circles
   - 3D printing food/glass/large objects
   - Additive manufacturing
   - Augmented Reality (AR)
   - Chatbots
   - Emotion/speech/touchless gesture recognition
   - Bioplastics
   - Biomedicines
   - Technologies for disaster resilience
   - Energy harvesting
   - Precision farming
   - Automated indoor farming
   - Drone technology
   - Smart house
   - Desalination techniques

   (a) An example of this initiative is Oplan TAWID, or Technology-Assisted Work Immersion Delivery. The DepEd, in partnership with technology leaders Microsoft and CloudSwyft, has launched Oplan TAWID, which aims to increase SHS students' employability by enhancing their digital literacy and soft skills, as well as linking them to employers in relevant industries.[241]

2. Equip learners for Industry 4.0 with Science, Technology, Engineering, and Mathematics (STEM)-related skills, essential skills, and emotional skills. Essential skills include complex problem-solving, critical thinking, creativity, people management, coordinating with others, emotional intelligence, judgment and

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[240] DepEd Position Paper.
[241] Bernardo, J. (2022, February 2). DepEd program offers digital literacy training to raise SHS students' employability. ABS-CBN News. https://news.abs-cbn.com/news/02/02/22/deped-offers-digital-literacy-training-for-shs-students#:~:text=Ja ehwa%20Bernardo%2C%20ABS%2DCBN%20News&text=MANILA%20%E2%80%94%20The%20Depar tment%20of%20Education,bid%20to%20raise%20their%20employability.

decision making, service orientation, negotiation, and cognitive flexibility.[242]

3. Align local standards to international requirements.[243]

4. Ensure that our local workforce is prepared to join the global workforce through training in English proficiency and digital literacy.[244]

5. Establish partnership mechanisms between the government, education institutions, and industry to facilitate seamless progression from education to work.

   (a) One example is the IBM P-TECH (Pathways in Technology Early College High School) education model. This model links high school, college, and the industry, and provides early exposure to careers in industries and disciplines involving STEM as early as in senior high school. This was piloted in the Philippines through a partnership between the City of Taguig and IBM.[245]

6. Design upskilling programs for those likely to be displaced by automation over the next 10 years. Focus on knowledge and expertise to work with new technologies.[246]

7. Ensure that the PRC tests for professional standards that are in line with global standards for the future of work.

F. Legislative action

1. Legislation on workforce development[247] "that aligns the country's human capital development to respond to future and current needs of the economy, and bridges education and employment by streamlining and channeling resources towards" the following:

   (a) Partnership among the government, the private sector, the academe, and training institutions in standards setting and delivery, at the local and national level;

   (b) Industry involvement in the review of existing funding mechanisms, identifying skills demand, standards setting, and training delivery;

   (c) Supporting a sectoral and local Labor Market Information that is consolidated at the national level and made easily available to the public.

   Such legislation should enable and incentivize the continuous involvement of the private sector in identifying the skills and demands, setting standards and delivering training.

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[242] TESDA. Presentation. from 27 May 2020 hearing.
[243] TESDA. Presentation, from 27 May 2020 hearing.
[244] Government-Academe-Industry Network (GAIN) Position Paper.
[245] Newsbytes.PH. (2019, January 15). *Taguig university picked as PH pilot site for IBM's tech education model.* https://newsbytes.ph/2019/01/15/taguig-university-picked-as-ph-pilot-site-for-ibms-tech-education-model-3/
[246] Dr. Anita Sykes-Kelleher, Founder and Director of Designer Futures, Position Paper/Presentation Notes and Recommendations.
[247] Philippine Business for Education. Presentation on 17 June Hearing; Ms. Lovelaine Basillote, Executive Director of the Philippine Business for Education. TSN from 17 June 2020 Hearing, pp. 121, 128.

Examples of similar efforts can be found in Malaysia (TalentCorp, a government agency that drives the national talent strategy),[248] Singapore (SkillsFutureSG, a national movement that promotes education and skills mastery that will drive the country's next phase of development towards an advanced economy and inclusive society),[249] and India (National Skill Development Corporation, a public-private partnership that promotes skill development by catalyzing creation of large, quality and for-profit vocational institutions).[250]

2. Legislation mandating Philippine colleges and universities to review and redesign curricula for teachers to capacitate them in implementing innovative teaching and learning approaches from early childhood education to the tertiary level, in order to prepare Filipino students for future jobs in line with the SDGs.[251]

3. Legislation expanding Republic Act 10929 or the "Free Internet Access in Public Places Act"[252] to include all areas such as homes, ensuring WIFI speed and stability, in order to allow online teaching and learning as well as online delivery of work services and goods during the time of the COVID-19 pandemic and future emergencies and catastrophes, especially in underserved and remote, geographically isolated areas.[253]

4. Legislation providing incentives for local biotechnology industries and company start-ups to foster research and innovation.[254]

5. Legislation creating a network of Biodiversity Research, Education, and Actions for Development (BREAD) Centers with the Institute of Biology, University of the Philippines-Diliman as lead institution to carry out Futures Thinking research, teaching and extension activities on the sustainable use of natural resources and the consequent emergent jobs in light of the COVID-19 pandemic and beyond.[255]

6. **Creation of a Congressional Oversight Committee on Education through the passage of Senate Bill No. 2485 or the "Second Congressional Commission on Education Act (EDCOM 2)"[256]** that will review and assess the education and human resource development agencies of the country, to determine gaps in the implementation of their mandates and recommendations previously made, and the impact of their performance on education and human resource development. This is especially important in the context of Industry 4.0, globalization

[248] Talent Corporation Malaysia Berhad (n.d). TalentCorp Malaysia. https://www.talentcorp.com.my/

[249] SkillsFuture (n.d.). *What is skillsfuture?* https://www.skillsfuture.gov.sg/AboutSkillsFuture

[250] National Skill Development Corporation. (n.d.). *About Us.* https://nsdcindia.org/about-us

[251] Dr. Ernelea Cao, Institute of Biology, College of Science, University of the Philippines Diliman, Position Paper.

[252] Sponsored in the 17th Congress by Senator Aquino IV as the Chairperson of the Committee on Science and Technology. Authored by Senators Francis N. Pangilinan,, Pacquiao, Recto, Aquino IV, Villanueva, and Villar.

[253] Dr. Ernelea Cao, Institute of Biology, College of Science, University of the Philippines Diliman, Position Paper.

[254] Dr. Ernelea Cao, Institute of Biology, College of Science, University of the Philippines Diliman, Position Paper.

[255] Dr. Ernelea Cao, Institute of Biology, College of Science, University of the Philippines Diliman, Position Paper.

[256] Sponsored in the 18th Congress by Senator Gatchalian as the Chairperson of the Committee on Basic Education, Arts and Culture. Co-sponsored by Senators Villanueva, Angara, Pangilinan, and Gordon; and authored by Senators Angara, Drilon, Gatchalian, Poe, Villanueva, Marcos, Binay, Zubiri, and Villar.

and competitiveness, poverty alleviation, sustainable development, and the overall human development goals of the country.[257]

7. **Passing legislation such as Senate Bill No. 62 or the "Educational Roadmap Act",[258]** which mandates the establishment of an Educational Roadmap that provides a common national policy on education to enhance global competitiveness. The Educational Roadmap incorporates skills and competencies that are needed by industries in order to produce graduates that will be part of a globally competitive workforce. It will focus on important components such as: global languages, teacher competencies, capacity building for centers of excellence, and school-to-work transition, to provide graduates with competencies that will help them have a decent life.

8. **Passage of Senate Bill No. 1834 or the "Philippine Digital Workforce Competitiveness Act",[259]** which seeks to ensure that all Filipino workers shall have access to and are provided with digital skills and competencies that are at par with global standards, and to encourage digital innovations and entrepreneurship. It also mandates the State to provide the infrastructure and, with other stakeholders, ensure the upskilling, re-skilling, and training of the Filipino workforce on digital technology and innovations for employability and competitiveness in the Fourth Industrial Revolution.

9. **Monitor the implementation and ensure funding for Republic Act No. 11650 or the "Instituting a Policy of Inclusion and Services for Learners with Disabilities in Support of Inclusive Education Act",** which seeks to establish a system of inclusive education that will provide learners with disabilities free and appropriate public early and basic education and support services, establish and maintain Inclusive Learning Resource Centers of Learners with Disabilities, ensure that learners with disabilities achieve their full potential, and empower family members, guardians, teachers, and even the community to participate in the development and education of learners with disabilities. At the time of this writing, this measure is awaiting the President's signature as the final step before being enacted into law.

10. **Monitor the implementation and ensure funding for Republic Act No. 11713 or the "Excellence in Teacher Education Act",** which seeks to improve the quality of teachers and school leaders by strengthening the link between pre-service and in-service teacher education programs, developing Teacher Education Centers of Excellence, and facilitating research for the continuous enhancement of teacher education, training and development.

11. **Ensure that funding for education is at 4 to 6% of the country's gross domestic product and/or 15 to 20% of total public expenditure, consistent with the United Nations' Education**

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[257] Congressional Oversight Committee on Education, Senate Joint Resolution No. 10, (December 10, 2019) (Phil.).

[258] Authored by the undersigned Chairperson.

[259] Sponsored in the 18th Congress by Senator Villanueva as the Chairperson of the Committee on Labor, Employment and Human Resources Development. Co-sponsored by Senators Angara and Revilla Jr.; and authored by Senators Angara, Villanueva, Revilla Jr., Pacquiao, Go, Marcos, Poe, Binay, Zubiri, Villar, and Gatchalian.

2030 Framework for Action.[260] In particular, sufficient budgetary support must be provided for the following projects, activities, and programs:

    (a) Early childhood education programs under the ECCDC
    (b) Basic Education Facilities Program
    (c) Last Mile Schools Program
    (d) Government Assistance and Subsidies
    (e) Special Education Program
    (f) Universal Access to Quality Tertiary Education
    (g) Student Financial Assistance Program
    (h) Scholarships for teacher education, including graduate and post-graduate degrees
    (i) Capacity building and research grant for SUCs in futures thinking

VI. Final Remarks

A. This Committee Report is intended to provide an assessment of the country's futures of education and its attainment of SDG 4 on Quality Education, as well as the impact of volatilities and uncertainties on our realization of the best possible future of education. Looking at the present situation brought us back to study the history of the country's education system and the reforms and problems encountered throughout the years, which were again brought to light by the pandemic, and now makes us reflect on the likelihood of many possible futures the past and the present can give if we act or do not act quickly on the issues.

B. While this Report is far from exhaustive, it is intended to be used as a resource for future legislation and policies. The Committee hopes that this will be helpful to educators both in the public and the private sectors, the DepEd and to all education stakeholders, in crafting strategies to achieve the ideal future of education. Finally, it is anticipated that with the mainstreaming of Futures Thinking in education, all education stakeholders will be guided moving forward through the use of strategic foresight.

C. Change has been rapid and uncertain. To repeat the statement made by Dr. Brillantes, it is important that we are able to cooperate, compete, and think globally and act locally to achieve our preferred future. Huge strides have been made and many landmark laws (some of which have been discussed in this Report) have been passed, with the goal of ensuring quality education for all.

D. However, as this Report shows, much work needs to be done. It is now more important than ever to provide the necessary budgetary support for these existing measures, ensure their proper implementation and monitoring, and to work on legislation that are responsive to the needs of the times, particularly those that have been recommended in Chapter V, Section F of this Report, as well as policies that will enable us to achieve the best possible future of education for the Philippines.

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[260] Global Education Cooperation Mechanism #Education2030. (2017, November). *Financing for SDG 4: Making Global Education a Reality.* https://www.sdg4education2030.org/financing-sdg4-making-global-education-reality-sdg-ed2030-sc-november-2017.

E. As discussed in Chapter IV, Section B (10)(a), in order to compete globally, we need to strengthen what has been and what can still be our competitive advantage — the English language.

F. Education reform must continue to improve and adapt, and our education system must progress in order to meet future needs.

RESOURCE PERSONS:

27 May 2020 Hearing
Hon. Nepomuceno A. Malaluan, Chief of Staff of the Secretary and Supervising Undersecretary, OSEC Education Futures Unit, Department of Education (DepEd)
Dr. Sheryl Lyn C. Monterola, Consultant, Education Futures Unit, DepEd
Mr. John Joshua Duldulao, DepEd
Dr. George P. Tizon, OIC-Principal, Senator Renato "Compañero" Cayetano Memorial Science and Technology
Dr. Alex Brillantes, Professor and Former Dean, National College of Public Administration and Governance, University of the Philippines-Diliman
Mr. Herisadel Flores, Professor, University of the Philippines
Dr. Lizan Perante-Calina, Dean, Graduate School of Public and Development Management Development Academy of thePhilippines
Ms. Felicia Atienza, Founder, President and Chief Executive Officer, Chinese International School Manila
Dr. Jennie V. Jocson, Vice-President for Academics, Philippine Normal University (PNU)
Dr. Rowena Raton-Hibanada, Director, Community Partnership and Extension Office, PNU
Dr. Tirso A. Ronquillo, President, Philippine Association of State Universities and Colleges
Ms. Christine Reyes, Director of Aptissimi Development Innovations Inc., Consultant at Southeast Asian Ministers of Education Organization (SEAMEO) for Online Courses Development for Southeast Asian School Head
Ms. Marissa G. Legaspi, Executive Director (Director IV) Planning Office, Technical Education and Skills Development Authority (TESDA)
Ms. Charlyn B. Justimbaste, Officer-in-Charge, Supervising TESDA Specialist, Project Development Division, TESDA
Mr. Ernani Fernandez, Jr., teacher, Palo National High School

08 June 2020 Hearing
Dr. Sheryl Lyn C. Monterola, Consultant, Education Futures Unit, Department of Education (DepEd)
Mr. John Joshua Duldulao, DepEd
Dr. Aldrin A. Darilag, Commissioner, Commission on HigherEducation (CHED)
Dr. Rowena Raton-Hibanada, Director, Community Partnership and Extension Office, Philippine Normal University (PNU)
Dr. Jennie V. Jocson, Vice-President for Academics, PNU
Dr. George P. Tizon, OIC-Principal, Senator Renato "Compañero" Cayetano Memorial Science and Technology
Dr. Napoleon Juanillo Jr., Founder and Convenor, Institutes for Research, Innovation and Scholarship (IRIS)
Ms. Winona Y. Diola, Education Technology Coordinator, De La Salle Santiago Zobel School
Ms. Mercelita Jandayan-Labial, Professor, Capitol University
Ms. Regina Del Rosario Cansino, Assistant Principal, Corpus Christi School
Mr. Rodel C. Sampang, Principal IV, Apolinario Mabini Elementary School
Mr. Rex Wallen Tan, Director, Government-Academe-Industry Network (GAIN)

17 June 2020 Hearing
Hon. Brenda L. Nazareth-Manzano, Undersecretary, Department of Science and Technology (DOST)
Dr. Peter Bishop, Founder and Executive Director, Teach the Future, Houston, Texas
Dr. Anita Sykes-Kelleher, Founder and Director, Designer Futures, Australia
Dr. Ethel Agnes Pascua-Valenzuela, Director, Southeast Asian Ministers of Education Organization Secretariat, Bangkok, Thailand
Dr. Ermelea P. Cao, Full Professor and Director, Institute of Biology, College of Science, University of the Philippines, Diliman; Head, Plant Genetics and Cyano-bacterial Biotechnology Laboratory
Dr. Eva Maria C. Cutiongco-Dela Paz, Professor and Executive Director, National Institutes of Health, University of the Philippines, Manila
Ma. Regaele A. Olarte, Education Program Supervisor, School Governance and Operations Division (SGOD), Division of City Schools, Muntinlupa
Ms. Lovelaine Basillote, Executive Director, Philippine Business for Education (PBEd)

BOOKS AND AUDIOBOOKS:

Arieli, H. (2021). *The future of education: How to evolve 'old schools' to exciting & innovative learning hubs.*

Hansen, U. J. (2021). *The future of smart: How our education system needs to change to help all young people thrive.* Capucia Publishing, LLC.

Harari, Y. N. (2016). Homo Deus: A brief history of tomorrow. Harper Collins Publisher.

Harari, Y. N. (2018). *Lessons for the 21st Century.* CELA.

Kim, J. &, Maloney, E. (2020). Learning innovation and the future of higher education. Johns Hopkins University Press.

Quiroga, R. Q. (2017, October 3). The forgetting machine: *Memory, perception, and the "Jennifer Aniston neuron".* (D. Woren, Narr.) [Audiobook]. Audible. (2017)

Whitman, G. &, Kelleher, I. (2016). *Neuroteach: Brain science and the future of education.* Rowman & Littlefield Publishers.

POSITION PAPERS:

Dr. Aldrin Darilag, Commission on Higher Education (CHED)

Dr. Anita Sykes-Kelleher, Founder and Director of Designer Futures, Australia

Dr. Bert J. Tuga, Philippine Normal University (PNU)

Ms. Christine Reyes, Aptissimi Development Innovations Inc.

Dr. Ernelea Cao, University of the Philippines Diliman (UPD)

Dr. Ethel Agnes Pascua-Valenzuela, Southeast Asian Ministers of Education Organization (SEAMEO)

Dr. Eva Cutiongco-Dela Paz, University of the Philippines Manila (UPM)

Dr. George Tizon, Senator Rene Cayetano High School

Dr. Iris Thiele Isip Tan, University of the Philippines College of Medicine (UP-CM)

Sec. Isidro Lapena, Technical Education and Skills Development Authority (TESDA)

Dr. Jennie Jocson, Philippine Normal University (PNU)

Dr. Mercelita Jandayan-Labial, Capitol University (CU)

USec. Nepomuceno Malaluan, Dr. Sheryl Monterola, and John Dykdulao, Department of Education (DepEd)

Dr. Peter Bishop, Founder and Executive Director, Teach the Future, Houston, Texas

Dr. Peter Laurel, Lyceum of the Philippines and GAIN

Ma. Regaele A. Olarte, Department of Education (DepEd) Muntinlupa

Ms. Regina Cansino, Corpus Christi School (CCS)

Mr. Rodel Sampang, Apolinario Mabini Elementary School

Dr. Rowena Raton-Hibanada, Philippine Normal University (PNU)

Dr. Tirso Ronquillo, Philippine Association of State Universities and Colleges (PASUC)

Ms. Winona Diola, De La Salle Santiago Zobel School (DLSZ)

Bicol University (BU)

Bukidnon State University (BUKSU)

Cebu Normal University (CNU)

Cordillera Advocates for Real Education (CARE)- University of the Philippines Manila (UPM)

Department of Labor and Employment (DOLE)

Department of Science and Technology (DOST)

Development Academy of the Philippines Graduate School of Public and Development Management

Leyte Normal University (LNU)

Mariano Marcos State University (MMSU)

Palawan State University (PSU)

Philippine Business for Education (PBEd)

Professional Regulation Commission (PRC)

Technical Education and Skills Development Authority (TESDA)

University of the Philippines Manila (UPM)

University of the Philippines Manila, National Institute of Health (UPM-NIH)

LAWS AND IMPLEMENTING RULES AND REGULATIONS:

An Act Strengthening the Governance and Defining the Scope of the Philippine Science High School (PSHS) System, Amending for the Purpose Republic Act No. 8496, Republic Act No. 9036, (March 12, 2001). (Phil.).

Early Years Act, Republic Act No. 10410, (March 26, 2013) (Phil.)

Enhanced Basic Education Act, Republic Act No. 10533, (May 15, 2013). (Phil.)

Excellence in Teacher Education Act, Republic Act No. 11713. (April 27, 2022). (Phil.)

Free Internet Access in Public Places Act, Republic Act 10929 (August 2, 2017). (Phil)

GMRC and Values Education Act, Republic Act No. 11476, (June 25, 2020) (Phil.)

Higher Education Act of 1994, Republic Act No. 7722, (May 18, 1994) (Phil.).

Kindergarten Education Act, Republic Act No. 10157, (January 20, 2012). (Phil.)

Ladderized Education Act, Republic Act No. 10647, (November 21, 2014). (Phil.)

Open Distance Learning Act, Republic Act No. 10650, (December 9, 2014) (Phil.)

Open High School System Act, Republic Act No. 10665, (July 9, 2015) (Phil.)

Technical Education and Skills Development Act of 1994, Republic Act No. 7796, (August 25, 1994) (Phil.).

Unified Student Financial Assistance System for Tertiary Education Act (UniFAST), Republic Act No. 10687. (October 15, 2015). (Phil.)

Implementing Rules and Regulations of the Mental Health Act, Republic Act No. 11036. (n.d.. (Phil.)

SENATE BILLS:

Educational Roadmap Act, Senate Bill No. 62, (July 22, 2019). (Phil.)

Instituting Services and Programs for Learners with Disabilities in Support of Inclusive Education Act, Senate Bill No. 1907, (November 9, 2020) (Phil.).

Philippine Digital Workforce Competitiveness Act, Senate Bill No. 1834, (September 15, 2020). (Phil.)

Second Congressional Commission on Education Act (EDCOM 2), Senate Bill No. 2485, (January 24, 2022). (Phil.)

Teacher Education Excellence Act, Senate Bill No. 2152, (May 3, 2021) (Phil.).

SENATE RESOLUTIONS:

Urging the Committee on Sustainable Development Goals, Innovation, and Futures Thinking to conduct a hearing, in aid of legislation, on the effects of the COVID-19 pandemic on the future of the education system of the country and its impact on SDG 4 concerning quality education, in light of the new normal and mapping new and responsive ways and systems of learning in the current pandemic and for future health emergencies, P.S. Reso. No. 413, (May 21, 2020) (Phil.)

Congressional Oversight Committee on Education, Senate Joint Resolution No. 10, (December 10, 2019) (Phil.).

OTHER SENATE HEARINGS:

Senator Sherwin Gatchalian. TSN from 05 July 2021 Hearing on the Second Congressional Commission on Education, p. 141.

Senator Sherwin Gatchalian. TSN from 15 July 2021 Hearing on the Second Congressional Commission on Education, p. 166.

SUBMISSION TO OTHER SENATE COMMITTEES:

Department of Education submission to the Committee on Finance (Sub-Committee 'D') for the FY 2021 General Appropriations Act.

Early Childhood Care and Development Council presentation to the Committee on Finance (Sub-Committee 'D') for the FY 2022 General Appropriations Act.

REPORTS AND OTHER ONLINE MATERIALS:

Abude, A. J.. (2021); The Effectiveness of Modular Distance Learning Modality to the Academic Performance of Students: A Literature Review. *Hmlyan Jr Edu Lte*, 2(6) 44-46.

ABS-CBN News. (2016, June 1). *Incoming educ chief to boost alternative learning system.* https://news.abs-cbn.com/nation/06/01/16/incoming-educ-chief-to-boost-alternative-learning-system.

Agoncillo, J. A. (2020, August 18). Vico Sotto grants reprieve to financially struggling Pasig private schools. *Philippine Daily Inquirer.* https://newsinfo.inquirer.net/1323113/vico-grants-reprieve-to-financially-struggling-pasig-private-schools.

American Univeristy. (2019, April 7). 5 Ways Policy Makers Can Improve the Quality of Education. *School of Education.* https://soeonline.american.edu/blog/5-ways-policy-makers-can-improve-the-quality-of-education

Armstrong, M. (2019, December 3). *PISA 2018: The Top Rated Countries.* https://www.statista.com/chart/7104/pisa-top-rated-countries-regions-2016/.

Asian Development Bank. (2020). *Futures thinking in Asia and the Pacific: Why foresight matters for policy makers.* https://www.adb.org/sites/default/files/publication/579491/futures-thinking-asia-pacific-policy-makers.pdf.

Bernardo, J. (2022, April 19). Aug. 22 opening, 'more face-to-face classes' eyed for SY 2022-2023. *ABS-CBN News*. https://news.abs-cbn.com/news/04/19/22/deped-eyes-aug-22-opening-for-next-school-year.

Bernardo, J. (2022, February 2). DepEd program offers digital literacy training to raise SHS students' employability. *ABS-CBN News*. https://news.abs-cbn.com/news/02/02/22/deped-offers-digital-literacy-training-for-shs-students#:~:text=Jaehwa%20Bernardo%2C%20ABS%2DCBN%20News&text=MANILA%20%E2%80%94%20The%20Department%20of%20Education,bid%20to%20raise%20their%20employability.

Best Countries for Education. (n.d.). *U.S. News & World Report*. https://www.usnews.com/news/best-countries/best-countries-for-education.

Boudreau, E. (2020, December 11). *What the future of education looks like from here*. Harvard Graduate School of Education. https://www.gse.harvard.edu/news/20/12/what-future-education-looks-here.

City of Taguig. (n.d.). *Scholarship Programs*. https://www.taguig.gov.ph/programs/scholarship-programs/.

CNN Philippines. (2020, May 22). Taguig City pilots virtual graduation rites through student-made robots. https://www.cnnphilippines.com/news/2020/5/22/Taguig-City-pilot-cyber-graduation-rites.html

Connor, T. (2021, June 8). *A Future Planning Exercise — The Futures Wheel*. Medium. https://medium.com/10x-curiosity/a-future-planning-exercise-the-futures-wheel-794b5d012096.

Congressional Commission on Education. (1991). *Making education work, an agenda for reform*. http://hdl.voced.edu.au/10707/24194.

Daheim, C, &., Wintermann, O. (2016, March) 2050: The future of work. Findings of an international Delphi-Study of The Millennium Project. Bertelsmann Stiftung.

De Guzman, M. (2022, January 7). Tax relief for private schools signed into law. *Business World*. https://www.bworldonline.com/top-stories/2022/01/07/422166/tax-relief-for-private-schools-signed-into-law/.

Deiparine, C. (2021, September 8). Only Philippines, Venezuela yet to allow return to classroom learning. *Philippine Star*. https://www.philstar.com/headlines/2021/09/08/2125759/only-philippines-venezuela-yet-allow-return-classroom-learning.

Department of Education. (2004, December 13). *Department Order No. 62, s. 2004 – adoption of double shift policy in public school to address classroom shortage*. https://www.deped.gov.ph/2004/12/13/do-62-s-2004-adoption-of-double-shift-policy-in-public-school-to-address-classroom-shortage/.

Department of Education. (2021, July 9). *DepEd TV Awards launched to recognize outstanding teacher-broadcasters, production teams*. https://www.deped.gov.ph/2021/07/09/deped-tv-awards-launched-to-recognize-outstanding-teacher-broadcasters-production-teams/.

Department of Education. (2021, November 8). *DepEd launches mental health helpline system for learners, teachers*. https://www.deped.gov.ph/2021/11/08/deped-launches-mental-health-helpline-system-for-learners-teachers/.

Department of Education (2021, November 4). DepEd, Microsoft PH collaborate to promote digital literacy in Project B.T.S. 2.0. https://www.deped.gov.ph/2021/11/04/deped-microsoft-ph-collaborate-to-promote-digital-literacy-in-project-b-t-s-2-0/.

Department of Education. (n.d.). *ALS – Frequently Asked Questions*. https://www.deped.gov.ph/als-frequently-asked-questions/.

Department of Education. (n.d.) *History*. https://www.deped.gov.ph/about-deped/history/.

Department of Education. (n.d.). *Learning Opportunities Shall Be Available: The Basic Education Learning Continuity Plan in the Time of COVID-19*. https://www.deped.gov.ph/wp-content/uploads/2020/07/DepEd_LCP_July3.pdf.

Department of Education. (2021, October 28). *Outstanding learners, teachers, and administrators recognized in Gawad Siklab 2021 Awards*. https://www.deped.gov.ph/2021/10/28/outstanding-learners-teachers-and-administrators-recognized-in-gawad-siklab-2021-awards/.

Department of Education (2019, March). *Report of the Task Force on NEAP Transformation: Proposed Detailed Design*. https://www.deped.gov.ph/wp-content/uploads/2019/05/DO_s2019_011.pdf.

Department of Education (2021, May 7). *Briones stresses the need for futures thinking in education at SEAMEO Congress 2021*. https://www.deped.gov.ph/2021/05/07/briones-stresses-the-need-for-futures-thinking-in-education-at-seameo-congress-2021/.

Department of Education. (n.d.). *Secretary Leonor Magtolis Briones*. https://www.deped.gov.ph/secretaryscorner/about.html.

Department of Education. (2019, December 4). *Statement on the Philippines' ranking in the 2018 PISA results*.

https://www.deped.gov.ph/2019/12/04/statement-on-the-philippines-ranking-in-the-2018-pisa-result
s/.

Department of Education. (2019, December 3). *Sulong Edukalidad: DepEd's battlecry moving forward.* https://www.deped.gov.ph/2019/12/03/sulong-edukalidad-depeds-battlecry-moving-forward/.

Department of Science and Technology Science Education Institute. (2021, March 9). *Public school teachers from Region X, NCR hailed 2020 Brightest STARs by DOST-SEI.* https://www.sei.dost.gov.ph/index.php/news-archive/336-public-school-teachers-from-region-x-ncr-hailed-2020-brightest-stars-by-dost-sei.

Department of Science and Technology National Research Council of the Philippines. (2021, July 19). *Education Department, Local Government Need to Put More Science High Schools.* https://nrcp.dost.gov.ph/latest-news/751-education-department-local-government-need-to-put-more-science-high-schools.

Department of Tourism. (2019, October 22). *DOT, TIBFI redefine future of tourism jobs.* http://tourism.gov.ph/news_features/TIBFI.aspx.

Early Childhood Care and Development Council. (n.d.). *About Us.* https://eccdcouncil.gov.ph/?page_id=1369.

Early Childhood Care and Development. (n.d.). *Kwentuhang Bulilit.* https://eccdcouncil.gov.ph/?page_id=1713

Edgar, J. (2017, March 28). *Working in the future: How humans need to adapt. Euronews.* https://www.euronews.com/next/2017/03/28/working-in-the-future-how-humans-need-to-adapt.

Finland Toolbox. (n.d.). *Teachers in Finland – Trusted and Respected Professionals.* https://toolbox.finland.fi/life-society/teachers-in-finland/.

Futures Platform. (n.d.). *Instructions: What can radars be used for?.* https://info.futuresplatform.com/hub/what-can-radars-be-used-for.

Galvez, D. (2019, December 10). After low PISA result, DepEd eyes English as medium of instruction in primary years. *Philippine Daily Inquirer.* https://newsinfo.inquirer.net/1200113/deped-looking-into-english-as-medium-of-instruction-in-primary-years-after-low-pisa-result.

Gelberg, D. (1998, September 30). The 'business' of reforming American schools. *Education Week.* https://www.edweek.org/education/opinion-the-business-of-reforming-american-schools/1998/09.

GetSmarter. (2020, January 23). *Which jobs will be in demand in the next 10 years?* https://www.getsmarter.com/blog/career-advice/job-demand-10-years/.

Global Education Cooperation Mechanism #Education2030. (2017, November). *Financing for SDG 4: Making Global Education a Reality.* https://www.sdg4education2030.org/financing-sdg4-making-global-education-reality-sdg-ed2030-sc-november-2017.

Hennessy, J. (2002). *Embracing the need to 'learn and relearn'.* Stanford Magazine. https://stanfordmag.org/contents/embracing-the-need-to-learn-and-relearn.

Henny, C. (2016, June 1). *9 things that will shape the future of education: What learning will look like in 20 years?* eLearning Industry. https://elearningindustry.com/9-things-shape-future-of-education-learning-20-years/.

Hernando-Malipot, M. (2021. August 14). Back as one? Education executives weigh in on the issue of trifocalization. *Manila Bulletin.* https://mb.com.ph/2021/08/14/back-as-one-education-executives-weigh-in-on-the-issue-of-trifocalization/

Hernando-Malipot, M. (2022, March 25). Briones underscores the need to prepare Filipino learners for the future. *Manila Bulletin.* https://mb.com.ph/2022/03/25/briones-underscores-the-need-to-prepare-filipino-learners-for-the-future/.

Hernando-Malipot, M. (2022, January 5). DepEd readies report on the pilot study of limited face-to-face classes. *Manila Bulletin.* https://mb.com.ph/2022/01/05/deped-readies-report-on-the-pilot-study-of-limited-face-to-face-classes/.

Hoff, M. (2021, December 9). Looking for a new career? here are 30 high-paying, fast growing jobs that are set to boom over the next decade. *Business Insider.* https://www.businessinsider.com/best-jobs-future-growth-high-paying-careers-2021-9#30-electricians-1.

Holmes, J. (n.d.). 9 effects of modern gadgets on children development. *Playground Equipment.* https://www.playgroundequipment.com/effects-modern-gadgets-children-development/.

INDUSTRY.GOV.PH. (n.d.). *IT-BPM.* https://industry.gov.ph/industry/it-bpm/.

International Commission of the Futures of Education. (2021). *Reimagining our futures together: A new social contract for education.* United Nations Educational, Scientific and Cultural Organization. https://unesdoc.unesco.org/ark:/48223/pf0000379707.locale=en.

James, N. (2022, March 10). Taguig extends educational assistance. *Metro News Central*. http://metronewscentral.net/taguig/metro-gen/metro-cities/taguig-extends-educational-assistance.

JCI Manila's Ten Outstanding Guro Awards. (2021, July 1). *Business World*, Spotlight. https://www.bworldonline.com/spotlight/2021/07/01/379448/jci-manilas-ten-outstanding-guro-awards/.

Karthik Krishnan. (n.d.). *About* [LinkedIn Page]. LinkedIn. Retrieved May 6, 2022, from https://www.linkedin.com/in/karthikkrishnan1/.

Krishnan, K. (2020). *Our education system is losing relevance. Here's how to update it.* World Economic Forum. https://www.weforum.org/agenda/2020/04/our-education-system-is-losing-relevance-heres-how-to-update-it/.

Magsambol, B. (2020, November 26). Philippines eyes better ranking in 2022 international student assessment program. *Rappler*. https://www.rappler.com/nation/philippines-to-join-programme-international-student-assessment-2022.

Mancao, C. (2021, July 21). *Family experiences: Early learning program during the pandemic.* https://eccdcouncil.gov.ph/?p=4644;

Maraviles, N. (2018, December 4). #BeCyberSafe project aims to shield children from online abuse. *ABS-CBN News*. https://news.abs-cbn.com/news/12/04/18/becybersafe-project-aims-to-shield-children-from-online-abuse/.

Marcial, D. E., & de la Rama, P. A. (2015). ICT Competency Level of Teacher Education Professionals in the Central Visayas Region, Philippines. *Asia Pacific Journal of Multidisciplinary Research, 3*(5), 28-38. http://www.apjmr.com/wp-content/uploads/2015/12/APJMR-2015-3.5.1.04.pdf.

Metrobank Foundation. (n.d.). *About the Metrobank Foundation Outstanding Filipinos.* https://www.mbfoundation.org.ph/outstanding-filipinos/about-the-program/.

Metrobank Foundation. (n.d.). *Roster of Awardees: Award for Teachers.* https://www.mbfoundation.org.ph/wp-content/uploads/2021/08/MBFI-roster-of-awardees-for-teachers_1985-2021.pdf.

National Center on Education and the Economy. (n.d). *Canada.* https://ncee.org/country/canada/.

National Center on Education and the Economy. (n.d). *Finland.* https://ncee.org/country/finland/.

National Center on Education and the Economy. (n.d.). *Top performing countries.* https://ncee.org/top-performing-countries/.

National Center on Education and the Economy. (n.d). *Japan.* https://ncee.org/country/japan/.

National Center on Education and the Economy. (n.d). *Singapore.* https://ncee.org/country/singapore/.

National Economic and Development Authority. (2021, December 16). *Innovation in basic sectors to serve as country's engine for growth — NEDA.* https://neda.gov.ph/innovation-in-basic-sectors-to-serve-as-countrys-engine-for-growth-neda/.

National Economic and Development Authority. (2017). *Philippine Development Plan 2017-2022.* https://pdp.neda.gov.ph/wp-content/uploads/2017/01/PDP-2017-2022-07-20-2017.pdf.

National Economic and Development Authority. (2017). *Philippine Development Plan 2017-2022. Chapter 10: Accelerating Human Capital Development.* https://pdp.neda.gov.ph/wp-content/uploads/2017/01/Chapter-10.pdf

National Economic and Development Authority. (n.d.). *Updated Philippine Development Plan 2017-2022. Chapter 1: Introduction. (p.5).* https://pdp.neda.gov.ph/updated-pdp-2017-2022/

National Skill Development Corporation. (n.d.). *About Us.* https://nsdcindia.org/about-us

Nazario, D., & Damicog, J., & Panaligan, R. G. (2019, une 4). Classroom shortage pushes 7 schools to have triple shifts. *Manila Bulletin*. https://mb.com.ph/2019/06/04/classroom-shortage-pushes-7-schools-to-have-triple-shifts/.

NAL%20PDF.pdf

Newsbytes.PH. (2019, January 15). *Taguig university picked as PH pilot site for IBM's tech education model.* https://newsbytes.ph/2019/01/15/taguig-university-picked-as-ph-pilot-site-for-ibms-tech-education-model-3/.

Organisation for Economic Co-operation and Development Better Life Index. (n.d.). *Education.* https://www.oecdbetterlifeindex.org/topics/education/.

Organisation for Economic Co-operation and Development. (n.d.). OECD Tourism Trends and Policies 2020. *OECD iLibrary.* https://www.oecd-ilibrary.org/

Organisation for Economic Co-operation and Development. (2019). *PISA 2018: Insights and interpretations.* https://www.oecd.org/pisa/PISA%202018%20Insights%20and%20Interpretations%20FI.

Organisation for Economic Co-operation and Development. (n.d.). *Strategic foresight - organisation for economic co-operation and development.* http://www.oecd.org/strategic-foresight/

Philippine Trade and Investment Center - Berlin. (2021, October 12). *2021/22 Philippines IT & BPO industry performance and outlook.* https://outsourcing-journal.org/philippines-it-bpo-industry-performance-and-outlook/

Philippine Science High School. (n.d.). *Frequently Asked Questions.* https://nce.pshs.edu.ph/faq.

Philippine Science High School System. (n.d.). *About the PSHS System.* http://www.pshs.edu.ph/transparency-seal/about-us/the-pshs-system.

Philippine Star. (2019, 27 September). National literacy month: UN Ranks Filipinos as most literate in Southeast Asia. *Philippine Star.* www.philstar.com/lifestyle/on-the-radar/2019/09/27/1955462/national-literacy-month-un-ranks-filipinos-most-literate-southeast-asia.

Ramos, C. M. (2020, May 14). 2M students to leave private schools amid COVID-19 says COCOPEA. *Philippine Daily Inquirer.* https://newsinfo.inquirer.net/1274904/2m-students-to-leave-private-schools-amid-covid-19-says-cocopea.

Rainie, L., & Anderson, J. (2017, May 3). The Future of Jobs and Jobs Training. *Pew Research Center.* https://www.pewresearch.org/internet/2017/05/03/the-future-of-jobs-and-jobs-training/.

Reysio-Cruz, M. (2019, December 5). Worst PH ranking in math, science, reading prompts DepEd review. *Philippine Daily Inquirer.* https://newsinfo.inquirer.net/1198208/worst-ph-ranking-in-math-science-reading-prompts-deped-review#ixzz67fNfFnOL.

Rita, J. (2022, February 3). DepEd exec: Many distance learning features to be maintained when we go back to normal. *GMA News.* https://www.gmanetwork.com/news/topstories/nation/820550/deped-exec-many-distance-learning-features-to-be-maintained-when-we-go-back-to-normal/story/?top_picks&order=1.

Quismundo, T. (2012, March 28). DepEd: Many public schools lack space for more classrooms. *Philippine Daily Inquirer.* https://newsinfo.inquirer.net/168505/deped-many-public-schools-lack-space-for-more-classrooms

Schnabel, C. (2018). Freelancing taking root in the Philippines – study. *Rappler.* https://www.rappler.com/business/199334-freelancer-market-growing-philippines-paypal/.

Sirimanne, S. (2022, April 28). *What is 'Industry 4.0' and what will it mean for developing countries?* World Economic Forum. https://www.weforum.org/agenda/2022/04/what-is-industry-4-0-and-could-developing-countries-get-left-behind/.

SkillsFuture (n.d.). *What is skillsfuture?* https://www.skillsfuture.gov.sg/AboutSkillsFuture

Talent Corporation Malaysia Berhad (n.d). TalentCorp Malaysia. https://www.talentcorp.com.my/

The 4Cs: Creativity, Critical Thinking, Communication and Collaboration in Schools. (n.d.). *Teacher Academy.* https://www.teacheracademy.eu/course/the-four-cs.

The Ramon Magsaysay Award Foundation. (n.d.). Honoring greatness of spirit and transformative leadership in Asia: Bernido, Christopher. Retrieved on May 12, 2022 from https://www.rmaward.asia/awardee/bernido-christopher;

The Ramon Magsaysay Award Foundation. (n.d.). Honoring greatness of spirit and transformative leadership in Asia: Carpio, Ma. Victoria. Retrieved on May 12, 2022 from https://www.rmaward.asia/awardee/bernido-ma-victoria-carpio%20https.

The Ramon Magsaysay Award Foundation. (n.d.). Honoring greatness of spirit and transformative leadership in Asia: Halasan, Randy. Retrieved on May 12, 2022 from https://www.rmaward.asia/awardee/halasan-randy.

The Ramon Magsaysay Award Foundation. (n.d.). The Ramon Magsaysay Award. Retrieved on May 12, 2022 from https://www.rmaward.asia/awards.

Tran, M., & Burman, P. (2016, November 21). Rating the English Proficiency of Countries and Industries Around the World. *Harvard Business Review.* https://hbr.org/2016/11/research-companies-and-industries-lack-english-skills.

UNESCO, UNICEF, World Bank, World Food Programme, & UNHCR. (2020, June). *Framework for reopening schools.* https://www.unicef.org/media/105286/file/Framework%20for%20Reopening%20Schools.pdf.

United States Centers for Disease Control and Prevention. (n.d.). *CDC Healthy Schools.* https://www.cdc.gov/healthyschools/physicalactivity/facts.htm.

University of Southern California. (2020, October 1). *What will education look like in 20 years?* USC Rossier. https://rossieronline.usc.edu/blog/education-20-years/.

van Eerd, R., & Guo, J. (2020, January 17). Jobs will be very different in 10 years. here's how to prepare. *World Economic Forum.* https://www.weforum.org/agenda/2020/01/future-of-work/

World Health Organization. (2022, March 2). *COVID-19 pandemic triggers 25% increase in prevalence of anxiety and depression worldwide.* https://www.who.int/news/item/02-03-2022-covid-19-pandemic-triggers-25-increase-in-prevalence-o

f-anxiety-and-depression-worldwide#:~:text=In%20the%20first%20year%20of,Health%20Organizat
ion%20(WHO)%20today.

World Health Organization. (2020, September 18). *Coronavirus disease (COVID-19): Schools.*
https://www.who.int/news-room/questions-and-answers/item/coronavirus-disease-covid-19-schools.

VIDEOS AND OTHER MULTIMEDIA MATERIALS:

EduSkills OECD. (2019, October 22). *OECD future of education and skills 2030: The new "normal" in
education.* [Video]. YouTube. https://youtu.be/9YNDnkph_Ko.

Senate of the Philippines. (2022, January 25). *Senate Session No. 25 (January 25, 2022).* [Video].
YouTube. https://youtu.be/-72_P4VgsPI.

TEDx Talks. (2017, November 29). *The future of smart | Ulcca Joshi Hansen |
TEDxCrestmoorParkWomen.* [Video]. YouTube. https://youtu.be/MxAwul1P6xQ.

UNESCO. (2022, January 19). *Key recommendations from UNESCO's Futures of Education report.*
[Video]/ YouTube. https://youtu.be/quGaJEfehV0