Key Issues in Instruction, Teacher Professional Development, and ICT in Basic Education

DINA OCAMPO
KATHRINA LORRAINE M. LUCASAN

Editors

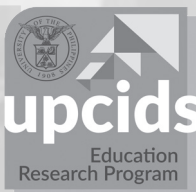upcids
Education
Research Program

UNIVERSITY OF THE PHILIPPINES
CENTER FOR INTEGRATIVE AND DEVELOPMENT STUDIES
PUBLIC POLICY MONOGRAPHS

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Introduction

The relationship between research and policy development may be represented in different ways, depending on the porousness of the boundaries separating the communities which formulate the policies and those which create the knowledge that can potentially be relevant to this process.[1] One view stipulates that research may inform policy or policy may lead to research. This view of this research-policy relationship, however, appears to be too simplistic and uncharacteristic of the complex process of policy formulation. An alternative description of this relationship depicts two distinct and oftentimes separate processes which may or may not intersect. Finally, another view illustrates a more collaborative process wherein both communities participate in the research and policy processes.

The University of the Philippines Center for Integrative and Development Studies' (UP CIDS) Education Research Program (ERP) has opted to enable the collaborative process. The emphasis is on shaping a research agenda which could potentially inform basic education policy formulation. By inviting key discussants to identify policy gaps and policy implementation issues in basic education, the UP CIDS ERP aims to craft a five-year research agenda—spanning from 2018 until 2023—that will be responsive to prevailing issues arising from reforms in the educational system, specifically in the following areas:

(1) Basic education governance, finance, school improvement, and their information and communications technology (ICT) applications;

(2) Basic education curriculum, assessment, and their ICT applications; and

(3) Basic education instruction, teacher professional development, and their ICT applications.

The round table discussions on these topics included academics, researchers, teachers, education leaders, policymakers, school leaders, civil society members and other stakeholders. Their perspectives and suggestions about research and policy gaps that need to be prioritized were articulated and documented during a workshop following the presentation of the key discussants.

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[1] Boswell, Christina, and Katherine Smith. "Rethinking Policy 'Impact': Four Models of Research-Policy Relations." *Palgrave Communications* 3, no. 1 (December 2017). https://doi.org/10.1057/s41599-017-0042-z.

Decentralization and Teacher Professional Development in a Large Education System

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Introduction

The Organization for Economic Cooperation and Development (OECD) has pointed out that the education system cannot exceed the quality of its teachers. This emphasizes the importance of ensuring that teachers possess the competencies that will enable them to effectively deliver to the learners not just the content of the curriculum, but also the skills and attitudes necessary for them to thrive and prosper in the world characterized by rapid change and a myriad of challenges.

While it is true that making learners learn is a confluence of several factors such as education input, learning environment, family, and other social factors, as well as the learner's individual characteristics, many agree that teachers play an important role in the educative process. The Education and Training Policy Division of the OECD (2005) identifies teachers and teaching as the most important influences on student learning and among those variables that are potentially open to public influence. It says that "teacher quality is the single most important school variable influencing student achievement" (ibid., 2). This is echoed in the policy brief of the National Comprehensive Center for Teacher Quality titled *High-Quality Professional Development for All Teachers: Effectively Allocating Resources* (Archibald et al. 2011).

Aside from adopting other policies that promote altogether the well-being of teachers, ensuring that teachers receive continuing professional development is a significant step towards improving learning outcomes. Continuing professional development, defined by Darling-Hammond et al. (2017) as structured professional learning that results in changes in teacher practices and improvements in student learning, should therefore be part of the organizational policy to ensure that teachers' professional practice continues to improve in the midst of education challenges in the 21st century. Archibald et al. (2011, 1) assert that "teachers must have access to technical skills, complex knowledge, sophisticated tools, and research-based techniques to ensure that they are—and continue to be—successful with all students."

In some contexts, this is rather straightforward. Organizations, such as schools, provide systematic professional development interventions that are needs- and competency-based on a more regular basis. More advanced economies and systems (for instance, in Singapore) have mechanisms that even allow teachers to determine what they need to improve their satisfaction and engagement both on the professional and personal levels. They are also allowed to find opportunities outside of the school system,

which are even paid for by the government, so teachers get to attend programs and activities that range from those entirely related to teaching to those that are of personal interest such as sailing and yachting, among others.

However, this topic is not easy to discuss in the context of the Philippines. While it is true that teachers in the Philippines undergo training and other professional development activities, the size of the Department of Education (DepEd), particularly the staggering number of its teachers, poses an overwhelming challenge in carrying out these programs and activities.

The DepEd context: A large system

As of May 2017, the Department of Education has around 861,329 authorized plantilla positions, comprised of teaching, related teaching, and non-teaching positions (BHROD, DepEd n.d.). Out of this number, 93.14%—or around 802,230—are teachers. The Magna Carta for Public School Teachers (Republic Act (R.A.) No. 4670) defines teachers as those who are actually teaching and those occupying supervisory and managerial positions. They are deployed in more than 46,000 schools, scattered in 2,529 school districts in 220 school divisions across the 17 regions and are teaching around 25 million learners from Kindergarten to Senior High School. The number of teaching positions has increased in 2018 with the creation of new teacher items to answer to growing learner population due to the implementation of the Senior High School component of the K to 12 Program.

Most of professional development interventions for teachers come in the form of formal trainings. These training programs include the Teacher Induction Program (TIP) and in-service training programs that are provided during summer and semestral breaks by either the schools or the school districts or divisions. There are also program-specific training activities that mostly emanate from the DepEd Central Office (CO) and are provided on a cascaded basis. This means that the CO identifies and trains regional and division trainers who, in turn, will train the teachers either at the level of the Regional Offices (ROs) or the Schools Division Offices (SDOs).

When the K to 12 Program was formally installed in 2012, teachers were trained using the cascade method. This was because the curriculum was new and had to be disseminated with a certain level of consistency across the country. The training aimed to ensure that curriculum and pedagogical standards, as well as education assessments, are clearly understood by all teachers and education leaders.

The cascade method is a very attractive mode of training the teachers in many ways. For instance, the identification of learning facilitators is easily identified by the Regional Offices through the SDOs. However, because this type of training is supply- and centrally-driven, it does not take into account the level of competence of participating teachers. It assumes that all teachers come from the same starting point in terms of learning needs, and this assumption is reflected in the single design provided for all regions, with only little space for contextualization. However, the latter rarely happens given the 'memo-cracy' culture within the education bureaucracy.

Stories of people waiting for memoranda to act on certain issues at the school or division level are common and create what is called the 'memo-cracy' mentality. This tendency to wait for specific instructions coming from higher authorities has limited the capacity of people and offices to initiate, much less innovate, on their own responses to their local issues and concerns.

Some of the feedback regarding this method concerns ensuring the quality of cascading knowledge and content. As noted in several studies, the cascade method can result in the watered-down quality of content and treatment of materials. The variability in learning facilitation and skills can also be a big factor affecting the cascaded training. Many of the trainers and/or facilitators were trained for one

week on content and pedagogy and on familiarizing themselves with the design of the training program. However, this may not be enough time to fully equip them as credible trainers.

Because the cascade method is actually meant for mass training, the number of participants in a mass training can be too large for effective learning to happen. The dominant methodology, in the form of the lecture-discussion, is expert-driven and does not provide opportunity for more teachers to demonstrate newly learned skills. Only those that are identified to do the demonstration teaching will have the benefit of receiving feedback.

As what may generally happen in mass trainings, logistical arrangements can also be problematic. Some reports indicate that teachers are billeted in cramped hotel rooms, with five to six occupants in a room that is good for only three people. In some cases, teachers are billeted in classrooms and training venues.

The learning action cell as a major strategy for the professional development of teachers

Definitely, mass trainings using the cascade method cannot guarantee continuing professional development. Recognizing this limitation, the DepEd released DepEd Order No. 35, s. 2016, which institutionalizes the learning action cell (LAC) as a major strategy in providing professional development for teachers. The order defines learning action cell as "a group of teachers who engage in collaborative learning sessions to solve shared challenges in the school facilitated by the school head or a designated LAC leader" (DepEd 2016, 3). This policy aims to do the following:

(1)   Improve the teaching-learning process that will lead to improved learning among the students;

(2)   Nurture successful teachers;

(3)   Enable teachers to support each other to continuously improve their content and pedagogical knowledge, practice, skills, and attitudes; and

(4)   Foster a professional collaborative spirit among school heads, teachers, and the community as a whole (ibid.).

The theoretical framework below shows the theory of change of the learning action cell:

Figure 1.1   Learning action cell (LAC) theoretical framework

Community of practice with collaborative planning, problem-solving, and action-implementation → Improved teacher's content knowledge, pedagogical skills, assessment strategies, and professional ethics → Student learning and holistic development

Source: DepEd 2016, 4

The strength of the LAC lies in the fact that the teachers themselves come together as a professional learning community, determine what they want to learn and improve, and identify the solutions for their specific concerns within their context. This reinforces the concept of teacher agency, and the empowerment of schools in general. While at the same time cost-efficient, this strategy is also seen as

a complementary mechanism to support supply-driven interventions provided by higher offices such as the Central Office, the Regional Offices, and the Schools Division Offices.
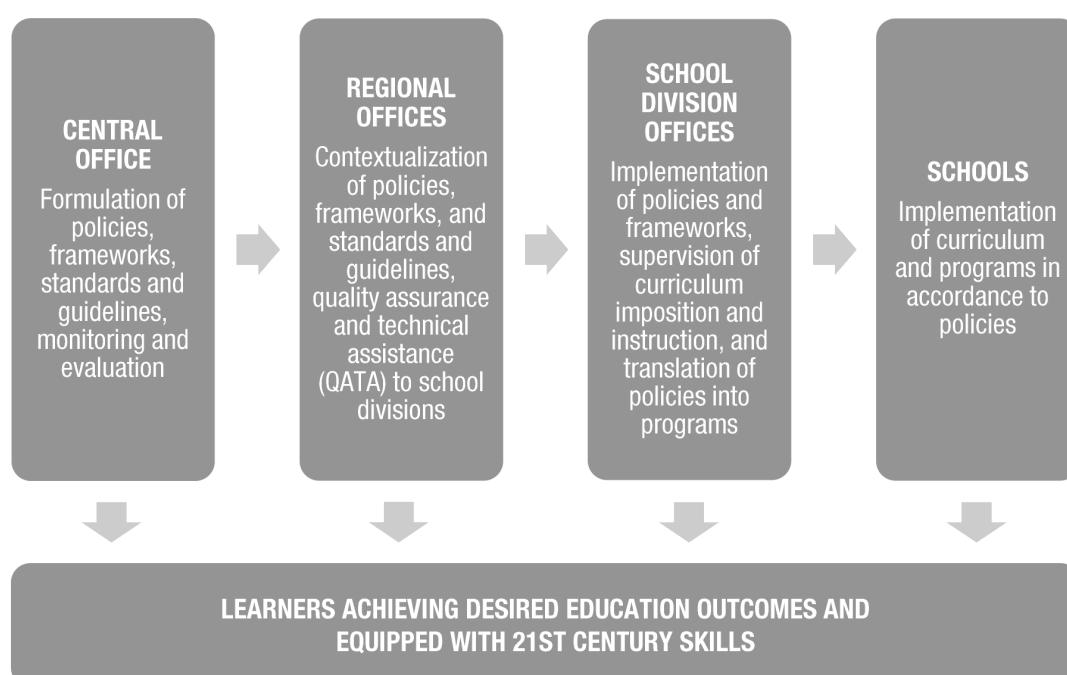
The adoption of the DepEd order is a revival of the LAC practice that was introduced in the early 1980s as an offshoot of the Project for the Decentralization of Education (PRODED). The project saw the value of school-based professional learning communities coming together to discuss and aim at solving school-level challenges, particularly with respect to student learning. This learning and development approach, considered innovative at the time, was even cited in the Letter of Instruction 1487 signed by then President Ferdinand Marcos in 1985.

This practice, however, lost steam for various reasons. One reason is that the education system was overrun by changes in leadership and priorities at various governance levels. Another reason is the waning interest of those on the ground, as implementation is seen as burdensome or sometimes pointless.

The promise of decentralization

The LAC is one of the vestiges of the several attempts to decentralize education. The concept of decentralization, however, was given more impetus with the passage of Republic Act No. 9155 or the Governance of Basic Education Act of 2001. This law enshrined the concept of shared governance, which means that every level of governance in the education bureaucracy—from the schools up to the Central Office—has its own authority, responsibility, and accountability (*see* Figure 1.2 below). The Central Office has the responsibility of formulating policies, guidelines, and standards and of monitoring and evaluating the implementation of these policies. The Regional Offices contextualizes these policies, guidelines, and standards and provides technical assistance to the Schools Division Offices which, in turn, are expected to translate the policies into actual programs and interventions that support the implementation of curriculum and instruction in schools. Under the supervision and guidance of the SDOs, the schools implement curriculum and instruction and other supporting programs.

Figure 1.2   Governance framework of basic education

CENTRAL OFFICE
Formulation of policies, frameworks, standards and guidelines, monitoring and evaluation

REGIONAL OFFICES
Contextualization of policies, frameworks, and standards and guidelines, quality assurance and technical assistance (QATA) to school divisions

SCHOOL DIVISION OFFICES
Implementation of policies and frameworks, supervision of curriculum imposition and instruction, and translation of policies into programs

SCHOOLS
Implementation of curriculum and programs in accordance to policies

LEARNERS ACHIEVING DESIRED EDUCATION OUTCOMES AND EQUIPPED WITH 21ST CENTURY SKILLS

Source: Adapted from Republic Act No. 9155 (Governance of Basic Education Act of 2001)

More important than the concept of decentralization is the principle of empowerment. This principle presupposes that the best solutions for local problems are local solutions. Hence, the people nearest the problem—the people on the ground—are critical in addressing local education issues.

Part of the responsibility of the schools division according to R.A. 9155 is to provide for the professional development of its personnel, especially teachers. This mandate is supported by the provision of In-Service Training (INSET) funds that are released directly to the schools divisions by the Department of Budget and Management (DBM). It must be noted that this is charged against the Human Resource Development Fund for Personnel in Schools and Learning Centers, which is a line item in the General Appropriations Act (GAA). The INSET fund is equivalent to 5% of the total maintenance and other operating expenses (MOOE) of the schools divisions. Not included in the computation of the schools division MOOE are the financially independent secondary schools known as operating units, as they maintain their own MOOE. In effect, the division INSET funds are based only on the number of teachers who are considered in the computation of the division MOOE, although the guidelines do not preclude the SDO from including teachers from operating units in the division INSET. In other words, the division INSET funds may not be enough to cover all of the teachers in the division, because not all teachers may be considered in the computation of the division MOOE.

Anecdotal reports gathered from the field indicate that INSET funds may not be necessarily maximized for various reasons. One reason is that INSET funds are used as a catch-all fund for trainings or activities of some semblance that the division may conduct regardless of whether these benefit the teachers or not. In many cases, schools divisions do not have a system of identifying the professional development needs of teachers and tend to rely only on centrally-identified programs or on the gut feeling of officials. Muijs, Day, Harris, and Lindsay (in Badri et al. 2017) note that for professional development to be effective, it needs to address specific needs of participating teachers. Dillon (in Badri et al. 2017) argued that if such needs are not met, the experiences (on Professional Development) could frustrate participating teachers. Day and Sachs, and No, Cha, Kung, and Schamann (in Badri et al. 2017) also point out that teacher development programs developed without considering teacher needs might not have an effect on teaching qualities. Badri et al. (2017) recommends decentralized training programs based on school needs and expertise and to be participated not just by the new teachers, but the entire teaching population.

R.A. 9155 paved the way for the planning system to be embedded in the operations of the schools and schools divisions, which resulted to the preparation of the three-year development plans called the School Improvement Plan and the Division Education Development Plan for the schools and the SDOs, respectively. But the plans themselves are often the subject of a lot of questions because the plans indicated in the documents do not necessarily correspond to the programs that are funded under the General Appropriations Act. This is also true with the Professional Development Plan component of the organizational development plans. Consequently, the plans remained as plans. Some divisions strive to stay true to their plans and find a way to find funding to support these.

The learning and development (L&D) system

The learning and development (L&D) system is a set of distinct but interrelated processes and mechanisms that allows an organization to address the professional development needs of their people that are anchored on their organizational mandate, strategic direction, goals, and objectives. The L&D system is composed of the following sequential yet iterative processes:

(1)   Assessment System;

(2)   Planning System;

(3)   Designing and Resource Package Development System;

(4)   Delivery System; and

(5)   Monitoring and Evaluation System.

Integrated in each of the systems is the process of quality assurance and technical assistance.

The success of the L&D system will greatly depend on the clarity, efficiency, and effectiveness of the governance and other enabling mechanisms. These include policy, structure, funding arrangements, audit system, and leadership.

The implementation of the L&D system at all governance levels is a critical component of the Professional Development (PD) initiative for teachers. Through the L&D, the offices concerned should be able to systematically determine, prioritize, manage, and ensure the quality of their PD programs for teachers.

Delineation and scope of PD for teachers

With the adoption of the Philippine Professional Standards for Teachers (PPST), the direction of PD is to assist teachers in moving up in the different career stages, namely Beginning, Proficient, Highly Proficient, and Distinguished. Hence, any PD initiative should be directed towards the improvement of the teachers' knowledge, skills, and attitudes (KSAs) based on their career stage and considering the seven competency domains (i.e., content and pedagogy, diversity of learners, learning environment, curriculum planning, assessment and reporting, professional engagement, and personal and professional growth and development), as well as key stages (i.e., K to 3, Grades 4 to 6, Junior High School, and Senior High School) and learning areas. Indeed, several permutations can occur for the different teachers in any school or context.

To avoid duplication of efforts, the proposal is for each level of governance to take care of the professional development needs of teachers based on their career stage classification, as follows:

- Beginning to Proficient: schools, schools districts, and schools divisions

- Highly Proficient (for coaching, mentoring, and instructional leadership roles): regional offices

- Distinguished (for knowledge generation, educational innovation, and research): DepEd Central Office and the National Educators' Academy of the Philippines (NEAP), in coordination with CO bureaus, teacher education institutions (TEIs), and partners

Under this arrangement, meaningful conversations need to happen, especially between schools, districts, and divisions, regarding the capacity of each level to provide the PD interventions to teachers. Hence, there should be an honest-to-goodness assessment of both the internal and external capacity of the organizations to provide PD programs and activities. Such questions as below will have to be asked in the process of this analysis:

- What is my capacity in terms of expertise, time, and resources?

- What external capacity can I tap to augment internal capacity?

- Considering both internal and external capacity, what can I provide in terms of L&D modalities (LAC, coaching/mentoring, blended learning, formal training, etc.)?

- Who can I cover?

When the organization cannot possibly provide the necessary interventions due to its own limitation (or limitations), a decision has to be made whether some teacher development needs may be elevated to a higher level of governance.

At each level, after the determination of its capacity, the interventions have to be translated into professional development plans and will be integrated into their respective organizational planning documents, which are usually medium-term plans that covers a period of three to five years. For schools, this is a three-year development plan, while for the divisions, it can cover up to a five-year period. Hence, it is essential that professional development planning is synchronised with office development planning.

Figure 1.3 Learning and development (L&D) system framework
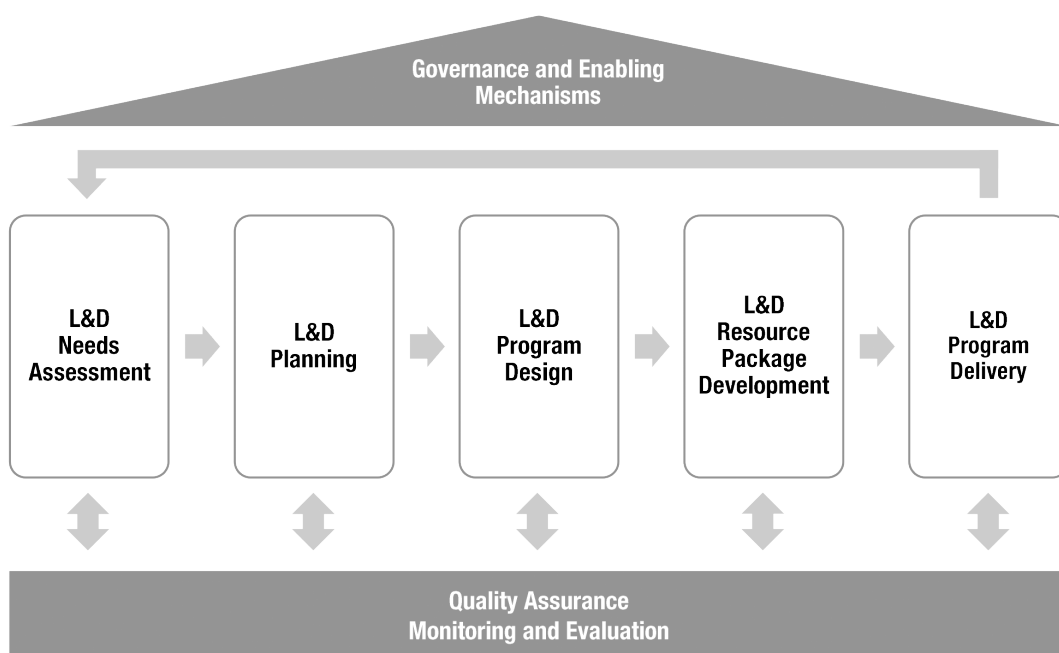
Important in this system is building the capacity of the schools divisions and schools to carry out their plans for the professional development of teachers. The Regional Offices will play an important role in providing support in terms of developing the division pool of instructional leaders, coaches, mentors, learning facilitators, learning area, and/or education specialists, as well as providing technical assistance to ensure that the L&D processes and standards are observed in the provision of professional development interventions for teachers.

In cases where the Department of Education—be it the school, schools district, schools division, regional offices, or the Central Office—might not be able to provide the professional development needs of teachers, there must be an alternative response. External providers may be tapped as potential partners, but it must be ensured that these are reputable institutions that have established their credibility in the field of learning and development.

Challenges to decentralization:
Implications on teacher professional development

A large system by itself poses a great challenge to the planning, design, and implementation of various programs. Inherent in a typical public organization is a vertical and highly hierarchical structure that emphasizes formal authority. In many cases, such organizations turn to memoranda and other written directives in implementing policies and programs, which can be open to various interpretations. This arrangement has worked in the Department of Education and has been entrenched in its organizational culture.

Luz's (2008/2009) discussion paper lamented that while the policy and intent of R.A. 9155 is to democratize the education system by moving towards school-based management and principal empowerment, the law retained the same organizational structure. The Implementing Rules and Regulations (IRR) of the law attempted to shift the education outcomes to schools divisions, where a critical mass could be assembled and supported.

The size and the complexity of the organization of the DepEd may remain a challenge to the provision of learning and development initiatives for teachers. The variability in the maturity of practice of different offices across governance levels, as well as leadership and managerial skills of personnel could spell big differences.

Also, the PPST is an incomplete document. It has to undergo further elaboration in terms of indicators that are key stage- and learning area-specific because different developmental stages and learning or subject areas require different competencies.

Conclusion

Teacher professional development within the Department of Education is a key component of the entire effort to realize the department's vision of producing holistically-developed Filipinos with 21st century skills. It ensures that teachers are ready to take on the challenge of teaching children who are entirely different from previous generations of learners. The new generation has to contend with emotional, social, and economic challenges to survive and thrive in this era characterized by volatility, uncertainty, complexity, and ambiguity (VUCA world). They have to master the skill of learning how to learn in order to manage the VUCA world they are in. This presupposes an education system that provides for the developing of skills for 21st century learners. Definitely, teachers, who play a critical role in the education process, should possess the necessary competencies and abilities that will enable them to teach, mold, influence, and inspire these learners. But first, they have to overcome the education system that shaped their thinking and their way of doing things, especially teaching. Coolahan (2002, 9) asserts that if the teaching profession "is to retain the confidence of society, it must adapt and act in a constructive manner within a fast-changing society."

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Education Instruction, Teacher Professional Development, and Technology in Basic Education: A View from Pre-Service Teacher Education

PURITA BILBAO

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A. Introduction

The teaching profession in the Philippines has endured a long historical journey and is anchored on an educational system that was shaped by colonial and post-war history. During the 18th century, the Spaniards introduced Catholicism through education, while in the 19th century, the Americans brought to the country the Thomasites, who organized teacher training institutions to promote democracy. In January 21, 1901, Act No. 74 of the Philippine Commission established the Department of Public Instruction and the Philippine Normal School, the first institution to prepare future school teachers, and was followed by the opening of tributary normal schools in strategic provinces of the country. In 1908, the University of the Philippines started to train teachers for secondary-level teaching. From the time the Philippines became an independent nation, its educational system evolved from being led by a single agency to being a trifocal system. The Department of Education (DepEd), the Commission on Higher Education (CHED), and the Technical Education Skills Development Authority (TESDA) oversee the education system in the Philippines, each having their specific functions and governance mechanisms.

B. Retrospective

Because of the need to provide teachers for the country's classrooms and schools, the Philippine Normal School and its tributary schools, as well as the University of the Philippines, were tasked to produce teachers to teach in the elementary and secondary levels. However, because of their limited capacity to train enough number of teachers for the whole country, other teacher training institutions started to proliferate.

From 1996 to 1998, the number of teacher education institutions (TEIs) all over the country increased from 750 to 815, around 70 percent of which are privately operated. Of the 815 TEIs, only 27 percent comply with the minimum standards of CHED for teacher education (Nebres 1998). Given this state of the country's TEIs, there is a question on the quality of graduates that they produce. There were around

301,148 pre-service education students enrolled at that time. CHED (1997) records show that teacher education is one of the oversubscribed degree programs in higher education institutions. This is mainly because teaching degrees are an accessible and affordable option for students.

Despite being an attractive degree program, it has been observed that there is poor quality among students who enter teacher education programs. Who among high school graduates that enroll in teacher education programs are really interested to become teachers? In 1997, only 25% of graduating high school students who took the National Secondary Achievement Test (NSAT) opted for teaching as a career path. However, there was no data as to whether they belong to the upper percentile of their graduating classes. Faculty and staff qualifications were also notably low in terms of preparation (only 7% are Ph.D. holders) and half of them have no teaching experience.

Hence, in 1996, only 28% of education graduates passed the Licensure Examination for Teachers (LET) (Teacher Education Council 1998). These results can perhaps be attributed to the previously identified factors, such as the low quality of TEIs, low quality of entering high school graduates, and low quality of college faculty members who teach courses in the teacher education curriculum.

A World Bank Report for the period 1995–1999 (Acedo 1999) identified some significant observations regarding the pre-service teacher preparation. The report states that:

(1)   Future teachers are challenged in the areas of subject matter content, pedagogy, assessment, and classroom management. There was a strong perception that those who prepare to teach in the elementary level are of lesser quality than those who prepare to teach in the secondary level.

(2)   Exposure of student teachers to actual classroom situations is very limited, thus they lack the skills in translating theory to good teaching practices.

(3)   Ineffective teaching practices included dependence on guides and manuals, heavy emphasis on recall and repetition, learning environments that elicit passive student behavior, lack of focus on developing problem-solving skills among learners, lack of attention to individual learner needs, and teaching methods that encourage individualism and competition rather than cooperation and collaboration.

These major observations imply that pre-service teacher training is inadequate to provide quality teaching in-service.

C.   Issues on CMO 30, s. 2004 (2004–2017)

Thus, a response of the Commission on Higher Education was to revise CHED Memorandum Order (CMO) 11, s. 1999 (Revised Policies and Standards for Teacher Education) and eventually replace it with CMO 30, s. 2004 or the Revised Policies and Standards for Undergraduate Teacher Education Curriculum.

Were there changes that took place to upgrade the quality of preparation of teachers in the process of revising the standards and policies?

Like the previous curriculum in CMO 11, s. 1999, the Bachelor of Elementary Education (BEEd) degree program is composed of two major clusters of subjects: (1) general education courses and (2) professional education subjects, which will enable them to teach in the elementary level. On the other hand, the curriculum for high school-level teaching (Bachelor of Secondary Education, BSEd) includes (1) general education subjects, (2) professional education courses, and (3) specialization or content courses.

Later, the BEEd curriculum was enhanced by the addition of content subjects in English, Mathematics, and Science.

The enhanced feature of the 2004 curriculum was the introduction of the field study courses (Field Study (FS) 1 to 6), which are one-unit courses anchored on a specific professional education subject. This cluster of subjects was labelled as Experiential Learning courses. It was also during this time that reflective teaching, use of portfolios, cooperative and collaborative strategies, and other innovative pedagogies were introduced. Research as a course or as a requirement for the completion of the degree was also required by some teacher training institutions.

However, despite the enhanced curriculum provided by CMO 30, s. 2004, multiple issues were raised in the past years, notwithstanding all the efforts and initiatives taken by different collaborating education agencies and stakeholders. Concerns were raised on the following:

(1)   Poor quality of pre-service education provided by the TEIs;

(2)   Teacher education programs do not attract "smart" high school graduates;

(3)   Low performance rate of TEIs in the LET;

(4)   Inadequacy of new graduates to handle classes as beginning teachers and their unpreparedness to address learner needs;

(5)   Inability to cope with the demands of 21st-century classrooms;

(6)   Unclear personal identity and disposition of teacher education graduates; and

(7)   A curriculum that is unresponsive to the needs of the learners and the employers.

Were these gaps narrowed? How were these addressed? From the CHED's previous count of 815 TEIs in 1998, current data shows that there are now around 1,576 higher education institutions (HEIs) that offer education degrees all over the country. Out of this number, 575 are publicly-run colleges and universities (i.e., state universities and colleges (SUCs) and local universities and colleges (LUCs)), while the remaining 1,001 are private institutions. Within the last twenty years, the number of TEIs increased by more than fifty percent. The teacher education program has remained an oversubscribed one, despite the moratorium imposed by the CHED on the offering of BEEd and BSEd programs.

Three years ago, the number of students who enrolled to become teachers reached almost half a million. Now that the senior high school (SHS) level has been added to basic education, many non-education graduates are taking education courses to qualify them to take the LET and eventually become teachers. Table 2.1 below shows the increase of enrollment year after year:

Table 2.1   Student enrollment in teacher education programs, 2011–2016

Academic year	Enrollment
2011–2012	374,448
2012–2013	383,849
2013–2014	392,008
2014–2015	394,768
2015–2016	401,280

Source: Commission on Higher Education (CHED)

If the number of students enrolled in teacher education programs keeps on increasing, is the quality

of graduates also improving based on the result of the licensure examination? Table 2.2 below provides the trends in five examinations from 2013 to 2015. The August or September examination results show a better performance than the January or March examination results, because those who take the LET in August or September are fresh graduates (mostly during March or April), while those who take the exam in March or January are mostly repeaters.

Table 2.2   Performance in the Licensure Examination for Teachers (LET), 2013–2015

|	Mar 2013	Sep 2013	Jan 2014	Aug 2014	Mar 2015
ELEMENTARY LEVEL					
Number of examinees	37,117	62,160	35,377	70,766	44,344
Passing rate	27.12%	31.58%	29.38%	35.34%	27.42%
SECONDARY LEVEL					
Number of examinees	38,433	64,732	42,353	77,333	55,548
Passing rate	35.61%	39.18%	28.41%	44.40%	31.63%

Source: Professional Regulation Commission (PRC)

D. In transition to the future: 2018–onwards

After almost five years of development, a new teacher education curriculum has evolved. The work started in 2013, when the Enhanced Basic Education Curriculum was enacted into law. The Enhanced Basic Education Curriculum is the major foundation and anchor of the Teacher Education Curriculum of 2017. Started by Dr. Dina Ocampo, who served as Chair of the CHED Technical Panel for Teacher Education, the new curriculum assures a seamless connection between what will be learned in college and what will be taught in basic education schools.

Aside from the K to 12 curriculum, the new teacher curriculum is also informed by new General Education courses (CMO 20, s. 2013), the Philippine Qualifications Framework (PQF, Republic Act No. 10968), the Philippine Professional Standards for Teachers (PPST) of the Department of Education (DepEd Order 42, s. 2017), the Master Plan for Teacher Education 2015–2025, the CHED–UNESCO–KFIT ICT Competency Standards, and Outcomes-Based Education (OBE).

Figure 2.1   Bases of the new teacher education curriculum
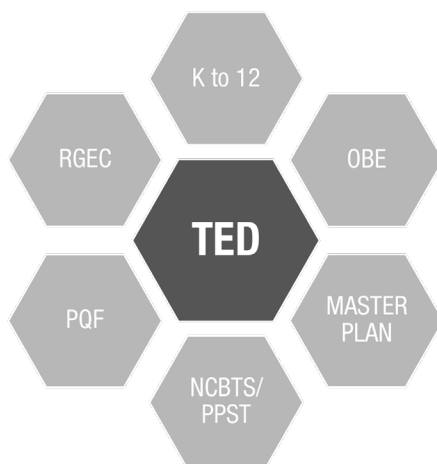
With all the fundamental documents, policies, and issuances perused, the curriculum is likewise framed by relevant philosophies, theories, practices, and support mechanisms that will enable the successful implementation of the teacher education program from 2018 onwards.

Figure 2.2   21st-Century Philippine Teacher Education Framework
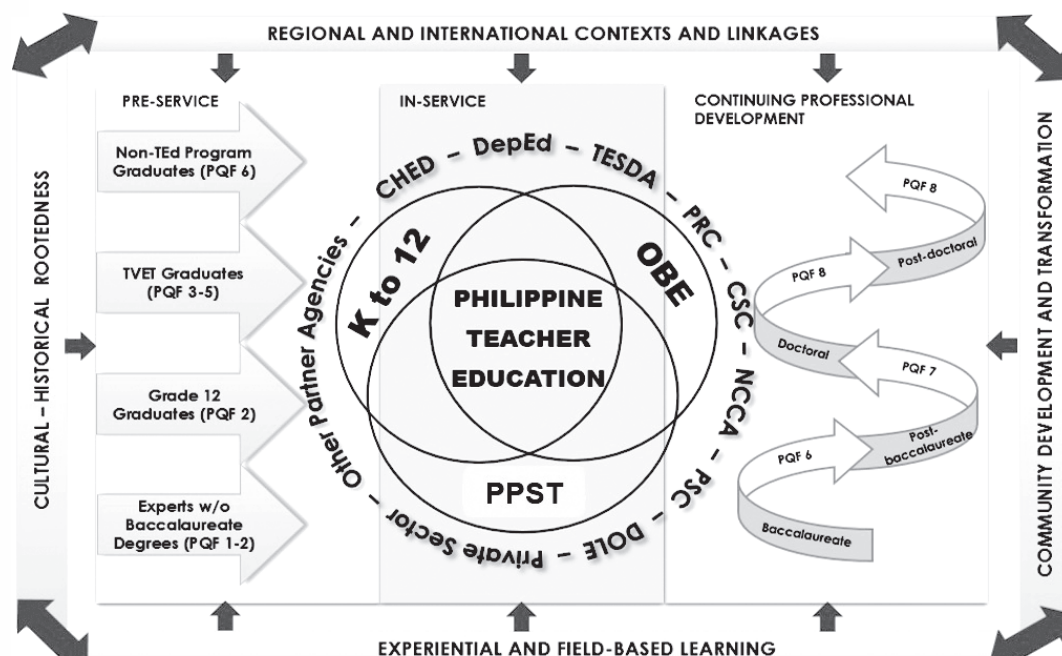
Source: Master Plan for Teacher Education 2015–2025

The following are features of the new teacher education curriculum:

(1)   Each degree program is covered by its own CMO. There are nine teacher education degrees, namely (a) Bachelor of Elementary Education (BEEd); (b) Bachelor of Secondary Education (BSEd; with major discipline); (c) Bachelor of Special Needs Education (BSNEd); (d) Bachelor of Early Childhood Education (BECEd); (e) Bachelor of Technology and Livelihood Education (BTLE); (f) Bachelor of Technical-Vocational Teacher Education (BTVLEd); (g) Bachelor of Physical Education (BPEd); (h) Bachelor of Culture and Arts Education (BCAEd); and (i) Post-Baccalaureate Diploma in Alternative Learning Systems (PB-DALS). By having a CMO for each degree, there will be clarity in the outcomes that future teachers will pursue. The subject offerings for each degree program are enriched with required specific subjects for each one.

(2)   General Education (GE) subjects are covered by CMO 20, s. 2013. There is a list of common subjects for all degrees and the total number of units has been reduced. The previous GE course contents were brought down to the senior high school level.

(3)   Professional Education subjects have been reduced to 42 units. The different subjects are clustered into three groups.

Cluster 1: Foundation/Concepts/Theories

- The Child and Adolescent Learners and Learning Principles
- The Teaching Profession
- The Teacher and the Community, School Culture, and Organizational Leadership
- Foundations of Special and Inclusive Education

Cluster 2: Pedagogical Content Knowledge

- Facilitating Learner-Centered Teaching
- Assessment in Learning 1
- Assessment in Learning 2
- Technology for Teaching and Learning
- The Teacher and the School Curriculum
- Building and Enhancing New Literacies Across the Curriculum

Cluster 3: Experiential Learning Courses

- Field Study 1: Observations of Teaching-Learning in Actual School Environment
- Field Study 2: Participation and Teaching Assistantship
- Practicum: Teaching Internship

(4)   The new subjects in the Professional Education include: Building and Enhancing New Literacies Across the Curriculum, Technology for Teaching and Learning, Facilitating-Learner Centered Teaching, and The Teacher and the Community, School Culture and Organizational Leadership.

(5)   All TEIs are encouraged to use the Technology, Pedagogy, and Content Knowledge (TPACK) as a pedagogical approach and should be translated into practice in all the subjects. Action research is also embedded in all subject areas.

(6)   The CHED Outcomes-Based Education (OBE) framework shall be used to guide in achieving program outcomes, degree outcomes, and subject outcomes.

(7)   The Philippine Professional Standard for Teachers (PPST), as mandated by DepEd Order 42, s. 2017, specifically the Beginning Teachers Competencies, shall form a part of teacher education preparation. Other teachers' standards which supports ASEAN integration and globalization such as the PQF, AQRF (ASEAN Qualification Reference Framework), and CFT–SEA (Competency Framework for Teachers in Southeast Asia) shall likewise be embedded in the curriculum.

Teacher education issues of the past, the present, and the future related to instruction, professional development, and technology in basic education

The fact remains that teacher education embraces both basic education and tertiary education. Graduates of basic education move over to higher education to prepare for their profession as teachers. In turn, the professionals honed and developed in tertiary education eventually return to basic education, this time as elementary or high school teachers. As this cycle goes on and on, it creates some issues and concerns along the way, thus providing a rich ground for research. To find applicable solutions to these concerns, research also becomes a never-ending process of looking for empirical evidence, unearthing previous findings, and providing practical solutions to the problems at hand.

Very recently, the Basic Education Sector Transformation (BEST) Program—which is supported by the Australian Government—embarked on a project to develop a National Research Agenda for Teacher Education (NRATE) in cooperation with the Commission on Higher Education. Through a series of workshops and writeshops which was participated by representatives from the Centers of Excellence (COE) and Centers of Development (COD) for Teacher Education and some members of the Technical Panel for Teacher Education, this document will soon be endorsed to the CHED Commission en banc for its approval and issuance of a policy.

I am taking this opportunity to provide you a sneak peek of the document, which I consider relevant to this roundtable discussion, while it is being finalized for transmittal to higher authorities.

The National Research Agenda for Teacher Education (NRATE)

There are three major areas of concern in the NRATE. All of these were given consideration in the compendium of probable topics for the research agenda; the broad strokes of which I will be infusing in this paper.

These are the three main topics for discussion:

- Basic Education Instruction;
- Teacher Professional Development; and
- Technology and ICT Integration.

Issues on basic education instruction

While the topics center on basic education instruction, I feel that this has great implications to teacher preparation at the pre-service stage. Instruction includes several elements of teaching and learning that will be included in this section as an overarching theme for specific issues.

(1) *Facilitating learning.* This is one of the most important issues in basic education teaching, as the fundamental role of a teacher is to facilitate learning. One cannot facilitate learning if teachers lack knowledge of content, pedagogy, and technology. Learners of the 21st century students need teachers who have 21st-century skills and competencies. Likewise, teachers should have a full grasp of the teaching-learning process. Since teaching requires a teacher to communicate with learners, an issue that arises is on how adept are our teachers in using the languages of learning, namely the mother tongue, Filipino, and English. Can their level of fluency in these languages make them effective facilitators of learning?

(2) *Diversity of learners.* Everyone is unique and everyone can learn. But does a teacher see the uniqueness of every child in the classroom? Understanding the needs, strengths, and aspirations of each learner should be every teacher's concern. The interaction of a learner's culture, language, socio-economic status, religion, and other factors has influence on the teaching-learning process. The need for inclusivity in today's classrooms is a challenge.

(3) *Learning environment.* Where does learning occur in formal education? What kind of learning environment and learning spaces are there in public schools? How about in private schools? Would the difference really matter in instruction? How do we define a conducive learning environment? Learners have preferences of conditions, structures, and climate for learning. Do classroom structures promote learners' well-being, active engagement, and self-regulated learning for learning performance?

(4) *Curriculum (planning, implementation, and evaluation) and innovation.* The curricular alignment of teacher preparation with beginning teacher standards, licensure examinations, and local and international standards such as the PQF and the AQRF is expected to trigger a lot of issues. Challenges in the use of interdisciplinary designs and other innovations in the curriculum in pursuit of globalization, contextualization, and indigenization are apparent. Furthermore, there will be issues on teacher's preparation in handling cases of bullying, child abuse, drug addiction, and teenage pregnancy. There are also issues on the evaluation of the

K to 12 curriculum and of other curricular innovations. How do teachers implement the recommended curriculum? Are the learning outcomes achieved as intended?

(5) *Assessment in learning*. How do learners perform vis-à-vis the curriculum? Is the assessment process utilized by the teacher for the purposes that were intended? Assessment for learning, of learning, and as learning are three purposes of assessment in learning that can help teachers in determining which decisions and actions to take. Are learning outcomes appropriately assessed and reported? Are there better ways of assessing learning outcomes? Big data needs to be analyzed and utilized by schools and teachers.

All the five themes mentioned above are elements of instruction in basic education. These also have direct implications to teacher training in higher education. Issues and concerns that will evolve are rich areas for research.

Issues on teacher professional development

The second research area in the agenda is on the professional development of teachers. It is a continuous process that is connected to the initial preparation of teachers. Once qualified professional teachers are recruited and employed, they should continuously grow within the profession.

(1) *Professional growth and development*. What opportunities do teachers have in enhancing their skills, values, and attitudes while they are teaching? Key issues that revolve around professional growth and development include, but not limited to, teachers' mindset and disposition, learner-centered philosophy, career pathways, professionalism, and accountability. Other issues include the influence of the professional learning community, resilience in teaching profession, school-based professional development strategies, financial literacy, and the dignity and well-being of teachers. Also included in this major theme are the impacts of professional development strategies such as the learning action cell (LAC), online delivery, reflective and reflexive teaching, teacher induction, and professional development strategies that reduce the frequency of teachers being pulled out from classrooms.

(2) *Community linkages, integration, and internationalization*. One of the enablers of professional development is making linkages and connections. What benefits are derived from linkages, integration, and internationalization? How are these done? Support for lifelong learning, multicultural classroom learners, competencies of ALS (Alternative Learning System) teachers, home-based schooling, poverty reduction measures, disaster readiness and resilience, green technology practices, volunteerism, and the effectiveness of extension programs are some of the topics where issues and concerns can evolve from.

Issues on the use of technology and interdisciplinary concerns

Technology, whether conventional or non-conventional, has a vital role to play in teaching. The development, selection, and use of instructional support materials bring about valid issues which are of research interest. In the 21st century, teaching requires technology that may be unimaginable. The use of information and communications technology (ICT) tools to enhance teaching, learning, and research, the use of artificial intelligence, big data analysis, and other emerging technology developments become challenging issues in the teaching and learning process.

The cross-disciplinary nature of teaching and learning requires the integration of other disciplines to gain wider insights and perspectives. Disciplines such as anthropology, sociology, business, economics,

and neuroscience, among others, have an impact on education and can provide an enormous range of research ideas.

In summary, our educational landscape—either in basic or tertiary education—provides a lot of possibilities of clustering themes that will generate researchable topics. The NRATE suggests many probabilities which the academe, practicing researchers, students, and professors can embark on as individual researchers or members of various research teams.

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On Leveraging ICT Tools in the Filipino K to 12 Classroom

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In 2015, the Organization for Economic Cooperation and Development (OECD) released a report entitled *Students, Computers, and Learning: Making the Connection*, which has been heavily cited because of the findings that came with it. The international comparative analysis of learner digital skills and learning experiences (among students in OECD countries) reported that "the reality in our schools lags considerably behind the promise of technology" (OECD 2015, 3). More specifically, the analysis showed that computer use in the classroom has mixed results in terms of impact on student performance. Most discussions and education critics heavily highlighted the same report's findings that "[s]tudents who used computers very frequently at school did a lot worse in most learning outcomes, even after accounting for social background and student demographics" (ibid., 3). Because of this rather powerful statement, the use of information and communications technology (ICT) tools in the classroom has been put under heavy scrutiny. This is understandable since using ICT in the classroom requires much funding, from purchasing the devices and needed applications, investing on teacher professional development, to laying down the technical infrastructure.

In spite of these "failures," I still believe in the necessity of integrating ICT in learning and teaching. Technology tools should be in the hands of students and not locked away for administrative or clerical work in school offices. My personal belief and conviction stems from an understanding of the realities and disruptive changes that are fundamentally influencing the world where we are living right now. If integrated in teaching and learning well, technology tools can open the door to endless possibilities that can empower students and teachers. So where is the disconnect between classroom experience, the OECD research report, and the promise of technology?

In tackling this important question, let us first revisit two important things: the context that drives the essence of ICT in education, and the basic definition of ICT/technology integration.

The Fourth Industrial Revolution agenda

In 2016, Professor Klaus Schwab, founder and executive chairman of the World Economic Forum (WEF), published a groundbreaking book where he argues that the world is at the beginning of a revolution that is fundamentally changing the way we live, work, learn, and relate with each other. In his book *The Fourth Industrial Revolution*, Schwab outlined the roller coaster ride of how technological tools helped in shaping the world and fundamentally altered humankind throughout history. He started

with the First Industrial Revolution and how the discovery and use of steam power liberated humankind from depending on animal power. Work and communication became relatively faster. The discovery of electricity and its extensive and enduring application in the production industry, transportation, and communication paved the way for the Second Industrial Revolution. Mass production due to better assembly lines sped up manual labor but produced more in a smaller span of time. For most developing and underdeveloped countries, the Second Industrial Revolution remains the reality of life—a testament to its lasting legacy, but also a challenge to these nations to step in the train of global progress.

Computerization opened the door to the digital world and to automation. Machines started to do manual jobs in a more coordinated and calculated fashion, relieving humankind from doing impossible and dangerous works. Smart machines began to take over clerical jobs. Information and communication reached an unimaginable rate of efficiency. Now everyone, given that each has access to a digital device, can easily know what's happening around the world and even access information remotely. Schwab finally argued that the beginning of the second machine age, the Fourth Industrial Revolution, has begun. Newer technologies take a bigger leap, integrating the physical, digital, and biological worlds. The rise of artificial intelligence, internet of things devices, and digital biomedical tools and procedures are only a few of the tangible and virtual manifestations of the Fourth Industrial Revolution.

After this quick historical review, a more important inquiry is needed to explore the effect of the Fourth Industrial Revolution on the educational system. Schwab claimed that because of the fundamental shifts that we experience in our personal and professional lives, there is a great need to bridge the disconnect between many of today's education systems and the expected and needed competencies to help each person thrive and fully realize their potential, most especially as part of the global workforce. The World Economic Forum founder and chairman breathed hope as he recognized that a number of educational systems, organizations, and institutions had started to re-imagine teaching and learning under the vantage point of 'Education 4.0.' One of the key ideas that he mentioned is that technology or ICT plays an integral and essential role in preparing our students to thrive in the complexities of the Fourth Industrial Revolution. Our students in the basic education sector belong to a generation born with technology around them, save of course those who are still not reached by digital modernization. As they grow up, technology continues and will never stop to deeply embed itself in all aspects of human life. I believe then that we are not doing a great job at education when we mindfully choose not to teach our students the necessary 21st-century skills, including computing and digital skills, that they need in order to thrive in a future deeply driven by technology. While this is easier said than done, I hope that we continue to push ourselves, our school communities, and the government to prioritize this so that our students today, who are the future members of the Filipino workforce, are equipped well to thrive and reach their potential.

Back to the basics of ICT/technology integration

Throughout the decades, education technology has undergone major changes in terms of its definition. In the earlier days when technology in education meant big overhead projectors, TV sets in the classroom, VHS tapes, or even their earlier versions, technology integration was about the teacher using these tools for instruction. Then schools began to bring in computers to laboratories, usually under the goal to provide quicker access to information, hence often putting them in libraries. As computers became smaller and more personalized, technology integration witnessed a shift of usage—from the teacher to the students. Various models of computer-assisted learning also took shape. The introduction of the World Wide Web allowed for greater access to and exchange of information among learners, teachers, and experts. Mobility in technology came a decade or two ago, which allowed students to bring their laptops, and later on, their tablets and cellphones. Ubiquitous, connected, and global learning using

these devices opened the doors for various models and opportunities for e-learning. From this short and non-exhaustive historical overview, we can observe that the development and focus of technology or ICT integration in the classroom shifted as access to computing and ICT tools changed.

Our current understanding of technology integration is influenced by the understanding that education technology involves using technology tools and educational theories to facilitate learning and improve student performance. It is then safe to say that ICT integration should focus on students using these tools to drive their learning, engage in critical analysis to solve real-life problems, and share them to a real audience in order to create an impact to the bigger community. Therefore, ICT tools are not learned for ICT's sake. Students today do not learn word processing for the sake of knowing how to create and encode texts in documents. Instead, students use their word processing skills to create learning artifacts that demonstrate their learning in another subject or discipline.

This leads me to one side point that I would like to make. Schools should rethink how they approach computer education and see that computing and digital competencies are best learned in context. In the Philippines, for example, computer education is part of the Technology and Home Economics subject, while in most OECD countries, computer education—often referred to as Computer Science—is an essential component of the Science, Technology, Engineering, and Mathematics (STEM) interdisciplinary track (or the more recent one, the Science, Technology, Engineering, Arts, and Mathematics (STEAM) track), with coding and robotics as core offerings. In the end, the ideal approach should be about empowering students to learn computing or digital skills that they can apply in other subjects to solve real-life problems. The College of Education of the University of South Florida clearly reflects this desired idea that the locus of technology used in learning and teaching should shift from teachers to students, as seen in the institution's Technology Integration Matrix (TIM) which, more importantly, builds on the goal of fostering technology integration and innovation vis-à-vis the characteristics of a 21st-century learning environment (Florida Center for Instructional Technology 2019).

Challenges and opportunities in ICT Integration in the K to 12

Aside from being a teacher and department chair in the grade school unit of Xavier School, I also take charge of the professional learning of teachers with regards to technology integration. As the technology integration program of Xavier School matured, the professional learning program began to diversify according to the needs and profile of the faculty. New technology tools and software, as well as new teachers, kept coming in. Professional development has to keep up with these changes. Outside Xavier School, I am also a digital learning consultant and I spend time with school leaders and teachers as they begin or further ramp up their technology or digital learning programs. Schools will have varying technology integration programs, access to funding and support, and level of enthusiasm among teachers. In the same way, schools will have different sets of challenges. A personal reflection and evaluation of the sets of challenges show that these encompass the design, execution, evaluation, and sustainability of school technology integration programs. Another way to look at these challenges is to view them under four general areas that often come out in various technology frameworks of educational organizations or companies (e.g., UNESCO, OECD, P21, ISTE, Apple Education, and Microsoft Education): 21st-century teaching and learning, professional development, technology leadership, and learning environment and infrastructure. The big idea behind these areas or components is that if one is missing or neglected, the ICT program of a school or a district suffers and leads to suboptimal results. A systematic—or what I like to call whole-school—approach is important in pushing for innovative ICT integration. However, each area also encounters challenges that need to be answered in order to fully achieve the potential of ICT/technology integration.

Going back to the 2015 OECD analysis, the report neither negated nor advised the removal of ICT tools in the classroom. Instead, Andreas Schleicher, Director of the OECD Directorate for Education and Skills, offered to see the results in light of what were not done right and what needs to be done right in order to reap what ICT promises. He outlined some important reasons why the impact of ICT is suboptimal:

- Teacher-student interactions are required to build deeper understanding and higher-order thinking skills.

- 21st-century technologies and 20th century pedagogy may not go with each other, especially in terms of leveraging impact on student outcomes.

- Policy design and implementation strategies need to keep up with the changes that ICT integration brings in the whole school community.

- Educational software and courseware may still be in low quality.

These reasons are deeply associated with the challenges encountered in each of the four areas I mentioned earlier. At this point, let us go through the challenges and issues.

In the area of curriculum and pedagogy, technology tools are often underused and not maximized because school adopters simply use ICT tools as substitute for printed materials used in school. In one of my engagements with a big school in the Philippines, I was able to uncover why their technology program was not delivering innovative results. It was because teacher and student use of tablets was very much limited to accessing the digital versions of their books and worksheets. There were no fundamental changes in how teachers taught and how students learned because of two reasons: first, pedagogy and curriculum were teacher-centered and clearly reflected a traditional approach to learning, and second, there is a failure to see the bigger potential of using their devices as tools that can provide more opportunities for students to create authentic learning artifacts. More often, they saw the students' devices as an excuse to dump assignments online, upload digital handouts, and send messages to them.

A noticeable part of the the 2015 OECD report is a summary outlining how students made use of ICT in and outside school. On top of the list were browsing the Internet for schoolwork; communicating and working with groupmates online; doing individual homework; sending emails; downloading, uploading, or browsing materials from school website; chatting online; practicing with drills; posting work on school's website; and playing simulations in school. Almost all of the listed activities were more of logistical or organizational works and not about promoting deeper learning. Hence, it is not surprising that there was no observed impact on student outcomes despite the increased use of ICT tools in and outside of the school.

Twenty-first-century technological tools do not work with 20th-century pedagogy. The challenge is for schools to uncover teaching and learning strategies that develop 21st-century skills while leveraging the use of technology tools in the process. If laptops and tablets are simply used for rote learning, then we should not expect a bigger impact on students, but rather, criticisms on how the investments were wasted. Teachers who innovatively integrate technology tools focus on supporting differentiation, real-time personalized feedback, agency through giving students a choice and voice in their learning path, and access to virtual or remote sources of knowledge that are not accessible without technology. Innovative use of technology in the classroom allows students to create new knowledge and break geographical and cultural barriers through connecting with a global audience outside the four walls of their classrooms. The impact is not simply seen on traditional pen-and-paper tests, but on the level of student engagement, collaboration, and creativity that lead to the development of problem-solving and critical thinking skills.

Closely related to the issue on pedagogy is the issue of teacher readiness in terms of integrating ICT across the curriculum. Studies investigating the success of technology integration have shown that teacher readiness is one of the key catalysts towards innovation with ICT in the classroom. It is not about the technology tools themselves. It is how teachers make use of these tools to drive 21st-century learning among their students. No technology can replace a teacher, but the technology tool is just as good or bad as the teacher. More importantly, even the most advanced ICT tool can never make bad teaching good. However, it is clear that ICT integration demands teachers to learn more about how ICT can be used in student-centered learning activities, the design of authentic assessments, the development of metacognitive skills, and even in classroom management. Furthermore, school leaders have to make sure that teachers—or at least some of the teachers—develop a learning mindset which will drive them to continue learning in order to create bigger impact on students.

Another thing that I also want to highlight here is how teacher education institutions (TEIs) can also help prepare future teachers in terms of integrating ICT in the classroom. Most of the newer teachers being hired in schools belong to the millennial generation, which is often associated with much use of gadgets. However, this does not equate to the idea that they know how to teach with technology tools. In fact, teachers who innovate with ICT in the classroom are those who have a great sense of content, pedagogical, and technological knowledge. Therefore, one strong suggestion that I have is to rethink what it means to form and educate future teachers in this time of Fourth Industrial Revolution. In a much clearer message, it's time to ask what kind of teachers will flourish in the Fourth Industrial Revolution.

School capacity-building is not only about teacher readiness, but also about school leaders knowing how to lead teachers and the whole school towards meaningful technology integration. If school leaders do not pave the way, teachers often find themselves lost in the process. School leaders are tasked to align policies, structures, and practices to their school's technology integration vision. For example, designing unit plans and learning about technology integration can take up plenty of a teacher's time and therefore could possibly affect teaching load and expectations. School leaders must be ready to check and review existing policies in order to balance teacher wellness and achievement of the ICT integration vision. Moreover, technology leadership should also involve change management. One barrier to ICT integration among teachers is resistance to change that is often associated with negative attitudes, often related to the idea of learning something new but not being supported by school leaders. School leadership support is crucial in developing confidence and sustaining a culture of innovation and risk-taking in schools. If teachers see school leaders modelling the vision of ICT integration, teachers often gain confidence in trying out something new, even if it would mean learning new teaching competencies.

Despite having teachers who are ready to integrate ICT and who have adopted a 21st-century pedagogy, technology integration can still suffer if technical infrastructure and support are not reliable and at their optimal form. There is a need to equip each classroom with the needed ICT tools and technical support. For a developing country like the Philippines, ICT infrastructure demands a huge amount of investment and funding. It is not simply about device deployment and management in schools, but also about wiring up and connecting each school to the World Wide Web or the Internet. In reality, if schools are disconnected from the Internet, teachers and students miss the biggest potential of ICT—access to global knowledge that is actively created, curated, and recreated.

Another issue often highlighted under this area is equitable access to ICT tools. The OECD sees ICT as means of bridging the knowledge gap created by inequitable access to knowledge (Guillermo 2000, 21). However, due to issues related with funding of national and local ICT initiatives, the digital divide and knowledge gap continue to grow wider, an ironic consequence that developing and underdeveloped countries witness. In the Philippines, while we see pockets of innovation in a few schools, ICT in teaching practice has not been widely implemented due to the uneven access to ICT facilities and infrastructure.

There are now existing projects by various government offices and private organizations that respond to this challenge and ensure that both school governance and teaching practice leverage ICT tools.

Conclusion

In order for us to critically prepare our students for the many disruptions of the present and future world, ICT integration must be done holistically and must be placed in a context that weaves together essential components such as the development of 21st-century skills, socio-emotional intelligence, global citizenship, lifelong learning, and a sense of justice. It is important that schools, as one community and in partnership with other stakeholders or organizations, face the issues surrounding the different areas of ICT integration in basic education. In the end, if there is one thing that guides my personal conviction in harnessing the potential of technology integration in the classroom, it is the hope and vision that these tools can empower learners and teachers in order to thrive in a technology-driven world where disruptive changes are the new normal in human life.

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Summary of Workshop Output

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To have a more in-depth interaction on the issues raised by the discussants, workshops were conducted. Two groups were formed for the workshop based on relevant topics: (1) instruction and ICT integration, and (2) teacher professional development and ICT integration. Each group collaborated and discussed to come up with a response to this question: What research should the University of the Philippines Center for Integrative and Development Studies (UP CIDS) Education Research Program (ERP) conduct in the next five years to help develop basic education policy formulation? The groups categorized policy needs according to urgency. Policies which need to be released within three years are categorized as "very urgent," while policies which need to be released within five years are categorized as "urgent."

Instruction and ICT integration

The bulk of the discussion revolved around the support needed to ensure ICT integration. All research identified were considered very urgent. These are the following:

(1) Increasing competence of teachers towards effective ICT integration;

(2) Support from administrators to teachers as to ICT integration;

(3) Establishing infrastructure for ICT integration for basic education instruction;

(4) Guidelines for teachers in choosing ICT tools or in establishing evaluation tools in choosing ICT; and

(5) Program for parent and guardian support to children in ICT integration.

Teacher professional development and ICT integration

The group on teacher professional development and ICT integration discussed varied topics of different degrees of urgency. The most urgent research that the group identified was on policy that will cater to the needs of special students and develop teachers who will be able to address the needs of students at risk of dropping out.

In addition, researches considered very urgent are the following:

(1) Framework for competency standards for researchers, teachers, and school heads (with an emphasis on the inventory of action research to inform this research);

(2)   Policy on establishing partnership mechanisms between teacher education institutions and DepEd schools in relation to experiential learning courses; and

(3)   Policy to establish how to determine baseline careers of teachers based on the Philippine Professional Standards for Teachers (PPST).

Those considered urgent are the following:

(1)   Policy that will allow non-DepEed training institutions to provide professional development;

(2)   Basic policy in ICT integration; and

(3)   Policy on accreditation and licensing of teachers.

Participants

Basic Education Instruction and ICT Integration

From left to right: Merlene Alon, Belinda Loyola, Elain Malones, Ramon Sampang, Benigno Beltran, SVD, Eladio Escolano, Feejay Dimaculangan, Francis Jim Tuscano, and Abdel Jamal Disangcopan

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7	Elain Malones	Master Teacher, Cavite National Science High School
8	Ramon Sampang	ICT Consultant
9	Francis Jim Tuscano	Head Education Technology Coach, Xavier School

Basic Education Teacher Professional Development and ICT Integration

Standing, from left to right: Anne Sheila Tan Choi, Regina Punzalan, Nemah Hermosa; *seated, from left to right:* Gina Obierna, Purita Bilbao, John Arnold Siena, Ruby Javier, Victoria Mayo, Marian Christine Patriarca

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