



Policy Brief

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The country's basic education sector is in an alarming state. Performance indicators have worsened in recent years while the quality, as manifested by the appalling performance of Filipino students in international assessment tests, continue to deteriorate. Given the government's budget constraint, the question that then begs to be answered is: what is the best strategy to address these problems? The Cyber Education Project (CEP) of the Department of Education (DepEd) promises to improve the quality of education in the country's public schools by way of upgrading learning standards, but with its cost and all its uncertainties, is it really worth pursuing?



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Revisiting the Cyber Education Project

I. Overview

- 1.1 The Cyber Education Project (CEP) envisions the use of state-of-the-art technology to deliver educational services and resources to even the remotest and most underserved public elementary and secondary schools in the country. With funding from the Chinese government, the CEP will provide universal connectivity and content for the nation's public schools.
- 1.2 This ICT-based education strategy is included in an economic cooperation agreement between the Philippines and China signed in June 2006. The CEP is supposed to be carried out with technical assistance from Tsinghua University, China's premier technology university and one of the world's pioneers in distance education.
- 1.3 The DepEd set the school year 2008-2009 as the target date for the launch of the pilot schools and the remaining schools for the first phase of the CEP. However, allegations that the CEP is another anomalous transaction similar to the controversial \$329-million national broadband network (NBN) project prompted the President to put on hold its implementation. Currently, the Ateneo IT Group and the Presidential Task Force on Education are studying further its economic viability.
- 1.4 The CEP aims to achieve standard high quality of education and bring about substantial improvements in students performance through technology. From 2001 to 2006, both the quantity and quality of education have miserably deteriorated. Key performance indicators such as the participation, cohort survival and completion rates for both elementary and secondary levels significantly declined during the aforementioned period. (See Table 1.) For instance, in elementary: participation rate declined by 5.69 percentage points from 90.1% in 2001 to 84.41% in 2006; cohort survival rate also declined by 10.69 percentage points from 69.05% in 2001 to 58.36% in 2006; completion rate likewise dropped by about 10 percentage points during the same period. Meanwhile, dropout rate soared by 4.06 percentage points from 6.51% in 2001 to 10.57% in 2006. The indicators are worse in the secondary level. (See Table 1.)

**Table 1. Philippine Basic Education Indicators
(In percent)**

INDICATOR	SY 01-02	SY 02-03	SY 03-04	SY 04-05	SY 05-06
Participation Rate					
Elementary	90.1	90.42	88.74	87.08	84.41
Secondary	57.55	59.19	60.15	59.97	58.2
Cohort Survival Rate					
Elementary	69.05	69.97	60.67	60.89	58.36
Secondary	71.49	66	68.46	69.89	59.1
Completion Rate					
Elementary	-	66.95	59.32	59.07	56.76
Secondary	69.97	59.9	63.14	64.77	54.14
Drop Out Rate					
Elementary	6.51	7.3	9.93	9.82	10.57
Secondary	8.53	13.03	11.96	11.3	15.81

Source: Department of Education (Factsheet as of February 20, 2007)

**Table 2. Cross-country Comparison Trends in
International Math and Science Study, 2003 Results**

Country	Mathematics		Science	
	Rank	Average Score	Rank	Average Score
Singapore	1	605	1	578
Korea, Republic of	2	589	3	558
Hong Kong SAR	3	586	4	556
Chinese Taipei	4	585	2	571
Japan	5	570	6	552
Malaysia	10	508	20	510
Indonesia	34	411	36	420
Philippines	41	378	42	377
Ghana	44	276	44	255
South Africa	45	264	45	244

Source: Institute of Education Sciences, US Department of Education

1.5 In addition, Filipino students showed disappointing performance in the latest Trends in International Mathematics and Science Study (TIMSS), where the Philippines ranked 41st in Math and 42nd in Science among 45 countries, trailing behind Malaysia (10th in Math and 20th in Science) and Indonesia (34th in Math and 36th in Science). (See Table 2.)

1.6 The low survival rates, low completion rates and high dropout rates are caused by numerous factors. Children drop out for health and economic reasons; three quarters of dropouts are from poor households. While tuition fees may be free in public schools, families still had to put up with additional expenses such as transportation costs or “baon”. Studies also show that children lose interest in going to school because of lack of access to early childhood education which enhances school readiness .

1.7 The deteriorating quality of education, as seen from the assessment tests, are caused by the lack of teachers and lack of learning inputs like classrooms, chairs, and textbooks. According to the 2005 Education For All Global Monitoring Report , smaller classes are associated with better student achievement. In the Philippines, the national pupil-instructional room ratios may appear to be adequate at about 37 pupils to a room for the elementary level and 56 students in the secondary level. However, large discrepancies abound when it is disaggregated by region. For instance, in the National Capital Region, the ratios go as high as 79 students in an elementary class and about 82 students to a high school classroom. Student-teacher ratios are not impressive either, mainly due to the lack of teachers as well as their poor deployment . Meanwhile, in the rural areas, around five students, sometimes more share one textbook, which are also criticized for having erroneous entries.

Table 3. Pupil Input Ratios: SY 2006-2007

Region	ELEMETARY		SECONDARY	
	Pupil-Teacher Ratio	Pupil-Instructional Room Ratio	Pupil-Teacher Ratio	Pupil-Instructional Room Ratio
Region I	28.83	27.77	34.46	45.21
Region II	29.79	28.63	37.03	42.26
Region III	36.59	35.53	42.59	56.08
Region IV-A	41.64	43.31	47.02	65.48
Region IV-B	35.92	36.03	37.59	50.84
Region V	34.40	35.83	36.67	51.38
Region VI	30.42	30.97	35.29	47.89
Region VII	36.25	37.41	43.78	57.95
Region VIII	31.08	31.84	39.54	51.10
Region IX	32.97	34.77	37.56	53.15
Region X	34.41	35.52	38.39	53.11
Region XI	35.62	37.71	37.35	54.89
Region XII	38.62	40.58	39.40	56.33
CARAGA	31.65	33.81	38.63	52.90
ARMM	42.29	48.13	48.34	62.97
CAR	27.63	26.37	32.69	42.91
NCR	40.74	78.85	36.89	81.94
Total	35.17	37.43	39.17	55.68

Source: Department of Education. Basic Education Information System [BEIS] SY 2006-2007

1.8 Moreover, numerous studies point out that while teachers are the most important factor in attaining good quality of education, many teachers in the country’s public schools are ill

trained and do not have the minimum qualifications for teaching. There is a shortage of trained math and science teachers. Recent data shows that a significant number of teachers handle subject areas that they did not major in. For instance, in its budget presentation last September 2007, the DepEd reported that about 60% of high school general science teachers and 57% of high school physics teachers are non-science majors.

1.9 The lack of teachers and teaching inputs could have been addressed through the budget. However, at the sectoral level, while social services has the highest share of the budget in 2008, its share to the GDP of 5.1 percent is still far from what it has been getting a decade ago. In 1998, the ratio of social services spending to the GDP was 6.6 percent, with the education sector receiving 4 percent of the GDP. In 2008, education spending is only 2.5 percent of the GDP. This decline is exacerbated by the budgetary inflexibilities within the sectors. For instance, DepEd has limited room for maneuver given the high ratio of personnel costs to the total recurrent budget, averaging 82% from 2006 to 2008. In contrast, the average ratio of personnel costs to total recurrent expenditure in education for lower middle-income countries is 64.1%.

II. The Cyber Education Project

2.1 It is feared that without a systemwide educational quality intervention, the Philippines will further lose its competitive edge in terms of education. The CEP, the government claims, will allow the country to catch-up with its foreign counterparts, by increasing the use of the Internet in pedagogy.

2.2 Under the CEP, a total of 37,794 schools will be linked to a nationwide network that provides 12 video channels (one channel for each grade/year level and a channel for teacher training), wireless wide area networking, local area networking and wireless internet connectivity

that is expected to be completely finished in three years. The network will enable collaboration among teachers and will introduce school children to more interactive and interesting learning methodologies.

2.3 Aside from inter-connecting the schools, the network will also connect all DepEd administrative units in the country including the central office, 17 regional offices and 187 division offices.

2.4 The CEP will make use of satellite technology since satellite communications do not demand extensive wire infrastructure in order to broadcast information. Classrooms will be equipped with a television set hooked to a satellite disc. At the start of a subject period, the teacher opens the TV to receive a live satellite feed from DepEd studios in Manila. A “master teacher” gives a live lecture simultaneously to tens of thousands of students all over the country. DepEd is planning to get the “best” teachers including Metrobank awardees to act as speakers or trainers for the live broadcast. The teacher and students will watch the live lecture, and then spend the rest of the subject period discussing and doing school work.

2.5 To implement the aforementioned strategy, the DepEd will install the necessary equipment, which will include TVs and computers, in about 34 schools per day for three years, starting with schools in 3rd class cities and municipalities. Also, the DepEd will put up its own studio and broadcasting center to produce the daily live shows on 12 channels covering five subjects.

2.6 The installation of equipment is supposed to be finished by 2010 but the project itself would continue even after this date. During this period, the CEP will cover and operate in 26,618 schools outside the 1st and 2nd class cities, 11,176 schools under the clustering scheme wherein they would share equipment and facilities, 665 Alternative Learning System (ALS) learning centers (for out-of-school youth and adults) and 4,282 elementary and high schools in 1st and

2nd class cities. The DepEd will do this by enlisting the services of 40 installation teams that will set up the equipment in about 1,000 schools per month. At this rate of installation, only 27 months is needed complete it.

- 2.7 With CEP, DepEd projects an annual increase of 10% in the mean percentage score of students in the National Achievement Test for every recipient school just like the experience with the Knowledge Channel. The said score improvement will enhance the competitiveness and chances of Philippine students against those from other countries.
- 2.8 Other countries which utilize satellite-based distance learning programs include the United States, Canada, Chile, Mexico, El Salvador, Panama, Guatemala, Honduras, Thailand, Indonesia, India and China. The CEP project is patterned after the successful China Education and Research Network (CERNET), which serves 320 million school children, and the E-Education Project, which provides about the same Cyber Ed package to almost 500,000 schools and universities in China.

Table 3. Philippine Contracts entered into with China

\$329-million loan facility for the broadband project through China Eximbank.
\$460 million dollar contract for the Cyber Education Project.
\$4.64-million contract to export mango pulp to China.
\$30-million deal to ship tapioca to China for five years.
\$56.18-million loan for the upgrade and repair of the Angat Dam.

Source: http://newsinfo.inquirer.net/breakingnews/nation/view_article.php?article_id=92399

Funding

- 2.9 The CEP is the largest among five contracts entered into by the Philippine government with China costing a total of US\$ 465.5 million or P26.48 billion. The project was sealed by a Memorandum of Agreement (MOA) signed by the GOP thru the Department of Trade and Industry (DTI) Secretary Peter Favila and Dr. Jung of Tsinghua Tongfang Nuctech Co. of China.

2.10 Eighty-six percent (86%) of the total project cost will be funded via a loan from the Chinese government while the remaining fourteen percent (14%) will come from the GOP national treasury.

2.10 Bulk of the project cost (68.7%) will be used for the purchase of equipment while the remainder will be distributed as follows: 12.66% for operating costs, 10% for taxes and duties, 3.30% for inflation, 2.3% for equipment backbone, and 2.2 % for courseware training and quality assurance.

Potential Benefits of CEP

2.11 DepEd points out that the main benefit of the project is the improvement of teaching and learning process through the standardization of high quality content of education to be delivered to public schools even in the remotest areas of the country.

2.12 The 15- to 20-minute daily live broadcast of lectures delivered by excellent master teachers is expected to improve the academic performance of students particularly in science and math. Courseware and supplementary materials will also be provided to classroom teachers for them to further enrich the lessons.

2.13 Aside from giving students from far-flung areas access to the best teachers and best resource materials, the CEP will narrow the disparity between schools which perform well and those that do not, the DepEd claims.

2.14 By exposing students to a more interesting and activity-based learning with the help of technology, the project also expects to improve students' cohort survival rates.

2.15 The project also hopes to reach nine million illiterate youth and adults, who according to DepEd, are impossible to reach without the aid of multimedia technology.

2.16 Finally, the DepEd expects to generate savings resulting from the efficiency in communications, teacher training expenses, and the management of the schools' curriculum system by as much as P60.3 billion which could then be spent on other priority programs of the department.

III. Issues

Cost

3.1 In their analysis of the NBN and the CEP, UP professors Raul Fabella and Emmanuel De Dios described how in some inexplicable twist, the CEP was scaled up to entail a government-operated backbone which consequently amplified its cost to P26.48 billion from its original no-separate backbone project estimate of P5.2 billion.

3.2 The same study criticized the project's lack of an economic rationale. If the CEP backbone were to be considered as a "public good," the justification for government provision of such good is when there is market failure. But, in this case, there is none as there are already two existing privately-owned and -run backbones: the PLDT's loop-type fiber optic backbone and the Telephil fishbone-type fiber optic backbone. Local area networks of large government agencies are in fact currently connected to either of these backbones for national and global connectivity. And all the advertised broadband services of the CEP are "conduitable" and are on offer by the telecom companies (telcos) via these backbones. Private telcos could even provide the "last mile" WiMAX services envisioned by the CEP. Thus, there is really no need for a separate government-operated backbone because increasing these backbones to three (3) would overload the entire industry with excess capacity that would entirely be the government's making. In this sense, the CEP is unreasonably expensive as it could blow up the per unit cost that the government may incur.

3.2 To emphasize the magnitude of cost of the project, the P26.48 billion pesos could build 48,145 classrooms at P550,000.00¹ per classroom. The number of classrooms could even increase significantly if the Filipino-Chinese Chamber of Commerce's (FCCC) cost estimate of P275,000.00 per classroom is used. The estimated classroom shortage for 2008 is 11,862 with a budgetary requirement of around P6.52 billion.

3.3 Moreover, the World Bank and UNESCO have expressed that the widespread use of ICT for primary education in developing countries is too expensive or unrealistic. Additionally, the total cost of ownership is generally underestimated, and the declared cost estimate is just 10% to 25% of the total cost. The undeclared substantive costs include acquisition and creation of content materials, orientation and training of staff, testing and monitoring and evaluation activities. Thus, the total cost of the CEP, already expensive as it is, could balloon up to 4 to 10 times of the declared estimated cost of P26.48 billion.

Financing Sources

3.5 During the Cabinet meeting of 21 November 2006, President Arroyo reportedly took an adamant position against government spending for any backbone. She strongly expressed her preference for a market-mediated build-operate-and-transfer (BOT) plan. However, in April 2007, the President stood witness to the signing of the Memoranda of Agreement of the CEP and NBN projects via ODA loan at 3% interest, payable in 20 years. The official copy of the CEP agreement was reportedly lost, together with the original ZTE contract.

3.6 The official loan from China offered "concessionary" terms, which at the onset seem favorable to the Philippines as the country can avail of the loan at low interest rate and a longer repayment period. Further probing would show though that China also stands to gain,

¹ Cost estimate was derived from DepEd Budget presentation last September 7, 2007.

apparently, even more as it is able to unload some of its idle foreign reserves at a sovereign-guaranteed, and thus, risk-free three percent interest rate, even higher than what some of their reserves are fetching. Moreover, the agreement explicitly ties procurement and contracting to China's own suppliers and contractors.

- 3.7 A build-operate-transfer (BOT) scheme would have been more apt as it would allow competitive bidding from suppliers and contractors, and would relieve the government of the trouble of putting up and operating the project. It must be clarified though that a BOT scheme is not without attendant risks. Winning bidders could be given guarantees like guarantees to repay the loan in case of bankruptcy, guarantees against foreign exchange fluctuations, among others, as an incentive for them to undertake the project.

Infrastructure

- 3.8 The installation of computers and televisions including network connectivity in 26,618 public schools within three (3) years by some 40 teams or around one (1) school per team per day leaves little room for error. However, logistics itself would already prove to be troublesome given the actual locations of schools all over the country. Considering that the installation of equipment will take three years to complete, will that not further widen the digital divide between schools that would receive the equipment on the first year and those that would receive theirs on the third year?
- 3.9 CEP also boasts of providing teaching-learning materials on demand which the classroom teacher can use to enrich the lessons as well as a dedicated platform hosting a wide variety of multimedia educational content for students. Given the number of teachers and students, will everyone be able to use the computers to download lessons and learning materials? The World Bank also says that it is unclear where to place the computers to make sure they are used most efficiently.

Courseware

- 3.10 The courseware to be used is an equally important component in the project which must be developed using the Philippines' own curriculum in a particular subject area. However, previous experience on teacher-skills-upgrading telecourses aired over NBN Channel 4 from 1996 to 2001 showed the difficulty in courseware production. The development and production of each episode required close coordination between curriculum experts, subject area specialists, and production staff. Every episode had to undergo formative evaluation and pre-testing with teachers. If the requirements of this telecourse of a limited audience is applied to the daily broadcasts of CEP, which has a broader audience, the task becomes gargantuan.
- 3.11 The DepEd claims that the CEP will narrow the disparity between schools which perform well and those that do not. But how will the program address the current situation where students from different regions have different proficiency levels in Science and Math?
- 3.12 Further, it is claimed that by exposing students to a more interesting and activity-based learning with the help of technology, the project will improve students' cohort survival rates. Cohort survival rate, however, as earlier mentioned, is not just a function of students' learning curve. Studies show that it has become also a function of poverty. Students drop out of school mainly because of the high cost of education, or they work instead to augment the family income. Some are also discouraged because of the lack of access to transportation and had to walk several miles before reaching their classrooms. The poor condition of schools also does not help as students had to gather in cramped classrooms, with only a few textbooks to share in.

Training

3.13 As the CEP will use computers to provide real time interaction, it is necessary that training be conducted to the teachers and students who will be using the software and the hardware. Deped claims that out of 343,628 nationally funded elementary public teachers and 128,376 nationally funded secondary public teachers, 75,000 have already received ICT training under Intel while 18,000 received training from Microsoft. Introducing ICT, however, takes a lot of time and effort for it to be successful. Experience from developed countries shows that one-time workshops are not enough to make teachers adept with ICT, let alone integrating it in their teaching methodology. In fact, in developed countries, students are oftentimes more technologically sophisticated than their teachers. Extensive and on-going professional development and training is critical. The undergraduate teacher education must be reinforced with the necessary ICT skills training along with providing continuous in-service training, evaluation and support.

IV. Conclusion and Recommendations

4.1 The real issues in the education sector stare us in the face: performance indicators have been worsening in alarming rates. The quality of education in the country, as manifested by the appalling performance of Filipino students in international assessment tests continue to deteriorate. Needless to say, these concerns should be addressed without delay. But the question is: given a budget constraint, what is the best strategy that would address the aforementioned issues? Surely, there is no “be all” solution to all these issues, not even the CEP. The CEP might help in improving the quality of education in the country’s public schools to the extent of upgrading learning standards, but with its cost and with all its uncertainties, is it really worth pursuing? It is clear from the discussion above that the government does not

need a separate government-operated backbone to provide last mile connectivity as there are already two (2) existing privately-operated backbones. The cost to undertake the CEP will be significantly lower if it were to utilize any of the two privately-operated backbones.

4.2 Moreover, there is a seeming disconnect between the claims of CEP and the realities of Philippine education. In the event that the CEP is implemented, DepEd projects an increase of 10% in the mean percentage scores of students in the National Achievement Test. This is highly debatable. Numerous studies find that the positive impact of ICT use in education has not been proven, specifically regarding its impact on student achievement. Even the most advanced schools in Organization Economic Cooperation and Development (OECD) countries do not consider ICT as central to their teaching and learning process.

4.3 In fact, the Deped already has the Basic Education Sector Reform Agenda (BESRA)² which outlines the important policy reforms needed to turn the educational system around. These reforms aim to attain the country’s Education for All (EFA) objectives which include: universal functional literacy; universal school participation and elimination of drop-outs and repetition in first three grades; universal completion of the full cycle of basic education schooling with satisfactory achievement levels by all at every grade or year; and total community commitment to attain basic education competencies for all. The BESRA was collaborated on and thoroughly studied by numerous experts within and outside the education sector. Why then the sudden shift to CEP?

² The Basic Education Sector Reform Agenda (BESRA) is a package of policy reforms within 5 key reform thrusts geared towards attaining Education for All objectives by the year 2015. Specific policies include adopting competency-based standards for hiring and deployment of teachers, further developing the basic education curriculum linked to desired learning outcomes, a multi-year budget format for basic education, school-based management wherein every school would come up with their specific school improvement plans with the active involvement of local stakeholders, among others.

- 4.4 Further, why the government decided to undertake the CEP under an ODA-loan financing scheme, rather than thru BOT remains to be explained. The President herself has earlier expressed her preference for a market-mediated build-operate-and-transfer (BOT) plan. Why the change of heart? Was CEP conceptualized to merely take advantage of a loan from China?
- 4.5 Of the P11.263 billion BESRA Budget in 2008, the government has allotted only about 29.86% or P3.36 billion for programs related to functional literacy and basic education competencies; the remaining 62% or P6.93 billion of its 2008 budget is allotted to construction and rehabilitation of school buildings. As a supplement, a total of P3.35 billion is allotted to basic education reforms such as improvement of quality of primary education under the foreign assisted programs. In addition, in line with the DepEd's thrust to integrate education and ICT, it has allotted under its BESRA 2008 budget P235 million for its Computerization Program as well as other initiatives jointly implemented with the private and non-government organizations such as the ABS-CBN's Knowledge Channel, Intel's Teach to the Future and Microsoft's Partners in Learning Program.
- 4.6 The budget for programs on basic education reforms clearly shows how small it is compared to the P26.48 billion budget for the Cyber-education project. According to DepEd, a total of about P8.43 billion, or just one third of the CEP cost, is needed to close the backlog on classrooms (P760 million), chairs (P420 million), textbooks (P2.78 billion) and teachers including principals (P4.47 billion) in 2008.
- 4.7 Furthermore, the UNESCO's tool kit on ICTs for education underscores the importance of piloting and evaluation of ICT projects. It stresses that no matter how well an ICT project is designed and planned for, many aspects need to be observed on a small scale first. Given its huge cost, it is a wonder why the CEP, did not go thru small scale testing. If the CyberEd pilot is a failure, then the government would be able to save billions of pesos that can be used in building more schools, training teachers, institutionalizing preschools, school feeding, dental and health programs, as well as subsidizing the education of children who cannot afford to go to school. If the gains of the pilot far outweigh the costs, and if indeed the performance of the students improved substantially, only then should the government explore its full-scale implementation.
- 4.8 It is therefore recommended that the government prioritize in its budget allocation funding for the programs and projects under the BESRA. It must be ensured that the challenge of attaining the BESRA objectives are pursued before venturing into a project which offers no clear measurable objectives and with little hope for success.
- 4.9 Education is a long term play with no quick fixes. ICT is only a tool and cannot fix bad educational philosophy or compensate for bad practice. It is about the way we structure learning and how we manage schooling. It is about managing quality outcomes first and foremost.

³ Data Provided by the Department of Education.

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