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THE UNIVERSITY OF THE TWENTY-FIRST CENTURY
Reengineering the Teaching/Learning System

Andrew Gonzalez, FSC
De La Salle University

In discussing the university of the twenty-first century, one often speaks of paradigm shifts in the delivery of knowledge and service and the new types of research that will be necessary in the immediate future.

The discussion then often moves to the delivery system using modern audio-visual means, thanks to advances in the technology of the video recorder. One adds to this the myriad possibilities of not only e-mail but also the Internet and similar systems. One can talk of distance in multimedia not only within the country but worldwide. One then turns to a paradigm shift in the nature of the delivery of traditional learning and calls for flexibility in accreditation and in academic interchanges based on internal linkages. All these details and the logic that they entail are valid and will undoubtedly become realities sooner than we expect, for in some parts of the world they are already there.

For this forum, however, we would like to focus on something equally important but less technical, only because they involve little gadgetry and electronic reliance. In some ways, they are not especially expensive, but they are nonetheless revolutionary and call for the same radical change in mental models that a paradigm shift involves.

Re-thinking the Content and Arrangement of Higher Education

I am thinking of new realities that are already upon us which demand that we re-think the content and arrangement of higher education in this country. What I say will apply, in comparable parameters, to other countries; but for this session, let us stick to our own problems.

To begin with, I find the length of our certain higher education courses ridiculous. I am thinking especially of medicine and law. Law takes four years of pre-law and another four years of law

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proper, after which the bar examinations are taken. Then the new bar examinee must wait for the bar results (which take about 6 months to correct since they are essay questions and cannot be checked as easily as medicine which is computerized because the questions asked are objective questions). Medicine is the longest at present, with four years of pre-medicine, four years of medicine proper, one-year internship, after which the board examinations are taken (mercifully now given as objective questions which the machine can read and for which results are forthcoming in two weeks). Then there are the years of specialization known as residency from three to five years for the diplomate or the equivalent.

Biologically, human beings are ready to procreate and raise families at puberty; the best period for motherhood, I am told, is in one's twenties, during the third decade of life. At present, we enforce celibacy on our medical and law students or place them under psychosexual tensions which take unwholesome psychological and social solutions. Some do not have the patience or generosity to take these long courses and end up with shorter courses which place them at a professional advantage over their peers who have to study longer. This is a great disincentive for would-be doctors and lawyers who have no choice but to stay on as well as a cause of unhappiness in life for those who wished to have been doctors and lawyers but did not continue because of time demands.

Actually for our teaching and research needs we should likewise try to attract the best and the brightest to stay on and get their master's degrees and doctorates so that they can contribute to the intellectual uplift of our universities (PhD's) and our secondary schools (MA's).

Historically, college courses were increased in length because we did away with Grade 7 in 1940 and have never had the political will to restore it. As a country, we probably have the shortest pre-university preparation (ten years to the usual twelve) but the realities of the twenty-first century may take our resultless debates on prolonging pre-university training moot and academic.

The reality is that knowledge is accumulating so fast that no one individual, no matter how bright and how good a student he is, will be able to master it. Hence, we must cease trying to impart data but habits of mind which will ensure life-long continuing

education - not so much what to learn but how to learn - in other words, learning to learn.

In science, it is estimated that knowledge becomes obsolete every five years, especially for PhD's who must either continue reading to keep up or re-tool themselves every five years by returning to school for shorter periods. We have likewise found that work and study, as long as the work entails the application of what has been studied, is a far more powerful tool for real learning than concentrated periods of time learning something without seeing its applications.

Thus, we must restore the concept of apprenticeship and cooperative programs (between academe and industry) to ensure this rapid internalization. But perhaps the greatest weakness of the Philippine pre-university system at present is that our students are not being challenged enough to achieve because we do not have sufficient up-to-date and interesting content for them to learn. This is a function, however, of the quality of some of our high school teachers at present. These teachers cannot impart advanced learning in high school because they themselves are most likely not educated beyond Grade 6.This level is based on some of the national tests of achievement that we have given them and based on the intellectual level of students from which we have recruited many of our grade school and high school faculty the past twenty years.

Nemo dat quod non habet. One cannot give what one does not have. If our teachers themselves are so poorly educated and really non-achieving, how can we expect them to challenge the next generation and motivate our bright young people to form intellectual habits of mind (beyond memorization towards critical thinking and a liberal education) and to find the gaudium in veritate (joy in truth) that the Medieval Scholastics preached as the fruit of intellectual work which they called contemplation?

If one examines the present Learning Continuum prescribed by DECS and required of all textbook writers, one will find that there is much repetition and therefore disincentive for the bright student. Part of the need to repeat arises from the seemingly insoluble language problem that we have. If we did not have to begin our children in a strange language but had them learn content from the first day in a language they already understand, we can make learning much faster and more interesting even as we teach them English as a second language. Then we can make

the transition to a bilingual scheme once both languages have already been learned.

Moreover, if we had qualified teachers, we can do a much better job teaching arithmetic and mathematics instead of the endless repetition and frustation that our students experience at present. We can likewise move the students to more advanced science involving laboratory and field work as soon as possible even as we teach them advanced social studies in Filipino and world-standard science and mathematics in English under the bilingual scheme in the upper grades and in high school. This presupposes a well-educated faculty with critical thinking skills and the intellectual virtues of a liberal education. We need to recruit the best and the brightest for our teachers and pay them well and give them proper working conditions so that they will want to make a life-long career of teaching.

Throughout the grade school and high school years, learning must be so exciting and not so much drudgery that the students will look forward to going to school instead of being relieved when there is no school. This will mean not only memorization but the intellectual exercise of the critical skills and the search for application and practical work for internalization. The whole world must be made a laboratory and not merely our usual laboratories which have little equipment because of the costs of importing materials instead of building our own. Above all, we must teach our students to read extensive and advanced texts (in Filipino and in English) instead of spoonfeeding the students with outlines on the blackboard to memorize, as we are doing now.

Much of what we offer in the first two years of college under general education or even liberal education can be done in high school so that in effect the last two years of secondary school can be equivalent to a junior college experience. Thus, our students who go on to college will focus their college life on specialization and not on survey courses. They will get into the heart of the content and become specialists as soon as possible. I would then urge the best and the brightest to stay on for their master's degree and even doctorates since we have a shortage of graduate school students.

If high school science is done properly, the medicine of four years can be integrated into actual medical studies (which other countries of the world do except for the United States). The seven-year sequence at UP and DLSU-Dasmarinas will then

become the rule rather than the exception. Clinical practice must be introduced as early as the last two years, thus cutting short the internship. Hence, specialization can be taken side by side with medical practice together with a chance to earn a living and raise a family instead of the prolonged adolescence and mandatory celibacy we impose now.

Similarly, in law, if the high school is completely taught, an integrated five year program will be possibly followed by an apprenticeship in a law firm with preparation for the bar exams and with the apprenticeship continuing during the first three years of practice. We can even do as our predecessors did during the Spanish and Early American period. We can impose actual practice in a law firm as a requirement before we have people take the board exam, particularly for those who will become trial lawyers. In many countries, not all lawyers take the bar exam since not all intend to be trial lawyers. For corporation lawyers, another kind of examination can be demanded before actual practice.

In the technical fields, the German system of Dual Tech alternating industry and university experience can be made the rule rather than the exeption. As a result, we can have genuine practitioners work in industry. This arrangement will likewise be good for pure science majors. By working in the laboratories of these industries in preparation for a life-long research career in academia, they can likewise prepare for life-long consultancies with industry as what usually happens in highly industrialized countries like Japan and the United States.

One of the principles we have learned from learning foreign languages the past many decades is that the classroom is probably the least efficient place in which to teach foreign languages, UNLESS one uses these foreign languages as soon as possible. That is why the Berlitz type programs intended for people about to use a foreign language in another country for survival or those of the army when its men are to work as soldiers in a strange land, have been found to be effective because of the motivation and the immediate use. Hence, unless one is going to use the foreign language as a medium of instruction, then the earlier taught, the better. However, the principle of 'learning when one needs to know' indicates that it is best to learn a foreign language when one is about ready to use it. Otherwise, one forgets whatever it is one learned in a few months if not a few weeks.

I am advocating the use of a medium of instruction which is already known to the student so that he will learn new content immediately and enjoy school instead of spending the first few weeks or even months attempting to learn a strange language which unfortunately, he never learns to master. This does not preclude the immediate teaching of English as a second language with its partial use as a medium of instruction. School will be interesting for the child because he learns new things in his world as early as possible in a language he understands. Thus, Filipino will become a transitional language (for the content to be taught in English) and a continuing medium of instruction for the content to be taught in Filipino.

What needs to be engendered in the student is a mind capable of handling higher order cognitive activities of analysis, synthesis and evaluation leading to critical thinking and a broad liberal education that continues to wonder and to form hypotheses all its life. It needs to learn how to learn and to continue searching for new knowledge during a lifetime. The actual content of what is to be learned does not have to be learned at once but in modules and when and where needed. If as the sociologists of science tell us that the content in the science changes almost every five years because of the progress of knowledge, then we had better train our students to continue years more frequently retooling themselves in the discipline by to update themselves and then every five years or more frequently retooling and upgrading. Moreover, specialists are subject to even more rapid changes in the discoveries within their special disciplines. As needed, the retooling should be focused on cutting- edge knowledge in the subspecialization. The new knowledge can be presented and learned in different ways and means including the use of modules on week-ends, total immersion for a few days without the formalities of the traditional university model and opting instead for seminar and workshop structure of learning.

Implications

Under this model of self-learning and restructing the teaching activities of the university and its faculty, research becomes altogether even more important than ever. Research is vitally needed for the periodic re-tooling one assumes in a life-long education system. Indeed, students will return because they expect the university to be at the cutting edge of knowledge in the

discipline and since they expect to re-tool themselves for this new knowledge.

It will also mean that the university is flexible, is willing to accept all enrollees at their current level of competence to be of service to their immediate knowledge needs, and to accredit whatever previous work and experience in the discipline these returnees have to offer so as to make the certification as realistic as possible. Accreditation by the university has to go beyond counting credits, checking syllabi, and measurements of competence through difficult evaluation schemes. Moreover, the delivery system will have to be flexible, using not only telecommunications and electronic means of delivery but the more traditional ones of prescribed home readings and interaction with students at times and places convenient to them.

In summary, the university of the twenty-first century will physically look like the university of the twentieth century. But in addition to its classrooms, lecture halls, libraries, laboratories, it will have administrators and faculty members who will have undergone a paradigm shift in their thinking and who have imparted this change of orientation to the students of the twenty-first century who will naturally feel more comfortable with the new paradigm than their mentors.

The students will understand that their primary purpose in the university is to learn how to learn and to master and manage the tools of learning. Among these tools is a library which will now be composed not only of books (most of which will have antiquarian and archival interest) but also of electronic data storage devices such as CD-Roms and tapes and telecommunications devices where information can be accessed from all sources in the world of knowledge and where electronic means through telecommunnications can put the students in continual contact with their peers and mentors. Research will continue using a research manager model but now with immediate access to other specialists to compare notes and to learn from each other and with the use of consultants throughout the world who need not be physically present. Learning will be mostly self-tutoring, and reading through electronic means. Meetings will be structured more to exchange views and to personally process materials through discussions and comparisons more than through information-giving lecture. Lectures, except on the latest research findings, will really not serve much of a purpose since the world's knowledge is

available in written form for everybody through the internet and its surrogates, enriched not only with visual but also audial means. Instant communication not only through typewritten means but also through multimedia (visual and audial) with the new communications technology. Moreover, meetings will be held less in schools than in other places including homes and offices.

Under this new learning system, the traditional school structure (pre-school, six to eight years of primary school, four to six years of secondary school, three to nine or twelve years of tertiary school) will have to yield in favor of learning new content while training oneself in learning how to learn skills such as the language of literacy and the language of numeracy as well as continuing exercises in higher order cognitive work. As much content as is available can then be internalized and absorbed by the student with an apprenticeship in self-teaching, self-learning and self-discovery. There will be a maximum of flexibility in accrediting work already done and then prescribing only what is necessary to allow and facilitate continuing education. Testing will have to be flexible with the use non-traditional means of measurement and evaluation.

Conclusion

I have made a case for a re-engineering or restructuring of the learning and teaching paradigm presently used in higher education in our country. I have spoken not so much about the new means electronics and telecommunications offer to us for nontraditional delivery systems of self-learning and distance education but more about the need to re-think our current structures and to introduce into them an element of flexibility and willingness to change the current arrangements to fit new needs and to accelerate knowledge based on a paradigm shift of the expansion of knowledge; the need to know when some content is necessary to disseminate; and the need to deliver new knowledge as this become available through a modified system of life-long education and the implied cutting short of traditional full-time education before work to yield to a more practically oriented work/study scheme that is not only healthy for rapid internalization but demanded by the expansionary developments in knowledge.

Ultimately, we must unlock ourselves from our own self-imposed paradigms and shift paradigms according to the freedom of the children of God.

CHANGING PERSPECTIVES ON THE COGNITIVE COMPETENCE OF YOUNG CHILDREN

Allan B. I. Bernardo
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The paper reviews recent research on the development of cognitive abilities in young children. In particular, the paper described research studies on young children's knowledge about syntax, numerosity, and physical objects. These researches use new methodological paradigms to assess children's knowledge without requiring verbal responses from children. The methodologies are assumed to be more sensitive indicators of children's knowledge compared to traditional methodologies. The researches reviewed suggest that children possess rather specific but complex forms of knowledge very early in life (the researches involve new born infants and children up to 27 months old). The paper argues that the possession of such knowledge strongly suggests that children are born with neurobiological systems that are "programmed" to encode information from the environment to give rise to these complex forms of knowledge very early in life. These neurobiological systems endow children with specific forms of domain knowledge even with limited experience in the domains. The findings are discussed in relation to (1) the relationship between the development of so-called biologically primary and biologically secondary cognitive skills, and (2) the implications for child development and education practice.

The conventional wisdom about young children is that they do not know much at all. Indeed, many of us would not think that newborn infants and young children are actually endowed with advanced intelligence. Intelligence is something that children will have to learn. This is why we are often surprised when children demonstrate some forms of intelligent behavior like deductive and inductive inference, explanation, and other forms of thoughtful behavior. Our common notion is they will learn these abilities by undergoing a range of experiences; they will learn because we knowledgeable adults will teach them. In this paper, I will share with you recent psychological research on the cognitive competence of young children that will show that much of our conventional ideas about the intelligence of children is most likely mistaken.

The Traditional Constructivist View of the Mind

Most psychological theories on cognitive development that we read about in our textbooks assume that when children are born, the range of skills they possess is limited to reflexes, instinctive and basic behaviors, like motor skills, sensation, and perception. Other theories are a bit more generous to children, and assume that when children are born, they are endowed with some capacity to learn and acquire a wider range of behaviors and skills.

This view is best represented by the theories of the founding father of cognitive development research, Jean Piaget. According to Piaget, the human infant is born as a purely sensorimotor organism, with some reflexes and three rather ill-defined learning processes called assimilation, accommodation, and equilibration (Karmiloff-Smith, 1991). This sensorimotor infant will come to acquire more advanced forms of knowledge and skills by interacting with the environment. By implication, what the child learns will be largely shaped by the different experiences the child encounters as she is growing.

In his landmark experiments, Piaget observed children's performance in several tasks and inferred the presence or absence of some fundamental concepts. Piaget then showed how young children lacked a basic understanding of some fundamental concepts like object permanence, conservation of mass, solidity and continuity of physical objects, among others.

The Problem of Method

Recent criticisms of Piaget's constructivist theories centered on problems regarding method. Indeed, many of the tasks Piaget used were quite unusual, and there was simply no straightforward means of verifying whether the children understood the task, instructions, and questions, the way Piaget intended (Brown, Bransford, Ferrara, & Campione, 1983; Gelman & Baillargeon, 1983).

Indeed, the problem of method has severely limited the study of the cognitive capacities of very young children. Since young children's proficiency with spoken language is not as developed as most adults, children cannot simply tell us what they know. For obvious reasons, we cannot simply ask a child to explain to the psychologist how she understands the task being given. Neither

can we expect the child to verify in a straightforward manner whether she is understanding the instructions the way the psychologist intended. Even if the child talks and tries to answer our questions, there is no straightforward way to determine whether the way we understand the child's utterances corresponds to the child's intended meaning.

Recent breakthroughs in cognitive development research came about with the discovery of a new and efficient method for studying what was on the child's mind. In the following sections, I will describe research using these new methodological paradigms to study children's knowledge about syntax in their native language, numerical operations, and properties of physical objects. In some respect, these studies reveal much about what children know about language, math, and physical science at the earliest months of their lives. The studies I will describe shall show that children seem to know much more than we think they do.

Children's Early Knowledge of Syntax

Language is one of those cognitive skills that develop in great part as a result of processing input from one's language environment. The very fact that a Filipino child learns to speak Filipino, the Chinese child learns to speak Chinese, and the French child learns to speak French is clearly suggestive of the importance of the language spoken by people interacting with the child in determining what language the child learns. In the past two decades, researches on language acquisition strongly indicate that young children have acquired biologically defined cognitive structures for language very early in life.

For example, in one study (Katz, Baker, & MacNamara, 1974), the experimenters presented 18-month-old infants with nonsense words like *zup*. Some children were told, "This is a zup" while showing an unusual looking doll. Other children were told, "This is zup" while presenting the same doll. The difference between the two sentences lies in the presence or absence of the article "a". However, this difference also entails a fundamental syntactic difference. The syntax of the first sentence indicates that *zup* is a category of objects called *zups*; on the other hand, the syntax of the second sentence indicates that *zup* is a name of a single individual. Later on the children were presented other new unusual dolls. Those who were introduced to "a zup" accepted these new dolls as "zups". But those children who were introduced to "zup" refused to call any other doll "zup". It seems, therefore, that children

constructed a different meaning for the word *zup* depending on the syntactic features of the sentence in which the word *zup* was embedded. For purposes of our discussion, the more important implication is that at 18 months of age, children already have in their minds some understanding of syntactic elements of utterances, so much so that they can bootstrap the construction of meaning on this syntactic knowledge.

Similar implications can be drawn from recent studies by Naigles (1990, 1996) on syntactic bootstrapping for learning the meaning of verbs. In her studies, Naigles used a preferential-looking paradigm (developed by Golinkoff, Hirsch-Pasek, Cauley, & Gordon, 1987) to study how young children learn the meaning of verbs. The preferential-looking paradigm is a very sensitive language comprehension paradigm as it simply requires the child to look at one of two simultaneously presented videos. The videos contain different scenes to which an utterance may refer. If the child understands an utterance correctly, she would presumably focus on the video scene consistent with that utterance when instructed to do so. On the other hand, if the utterance is not understood, the child would presumably look randomly at either video scene.

In her studies, Naigles focused on verb learning among 23- to 27-month-old babies, using nonsense words such as *gorp* and *blick* to mean different actions. A child is shown a scene involving two characters (e.g., a duck and a bunny) representing two actions (e.g., the duck is forcing the rabbit into a bending position by pushing its head, and both characters are making arm gestures). This scene is presented alternately in two video screen. While this scene is playing, an audio will play an utterance several times. For some children this utterance has a transitive syntactic frame (e.g., Look! The duck is gorping the bunny!), while for the other children this utterance had an intransitive syntactic frame (e.g., Look! The duck is gorping!). After some time, the video scenes are changed so that each scene shows a different scene. In particular, one scene shows one of the two actions originally presented (e.g., the duck forcing the bunny to bend) and the other scene shows the other action (e.g., making arm gestures). The audio then call the child's attention to this change (e.g., Look! They're different now!). Then the child will be instructed to look at the scene that shown the action described in the utterance (e.g., Where's gorping now? Find gorping!).

The results show that when asked to look for the action described by the utterance, the children tend to look at the action that was consistent with the syntactic frame. That is, if the children when presented the nonsense verb in a transitive frame (i.e., The duck is gorping the bunny), they tended to spend more time looking at the scene were the action had a receiver (i.e., the duck is forcing the bunny to bend), consistent with what a transitive verb should be. On the other hand, if the children were presented the same verbs in an intransitive frame (i.e., The duck is gorping) they tended to focus on the scene were the action had no receiver (i.e., simply arm gestures). This result has been replicated in a series of experiments.

The results of Naigles' studies show that children use their knowledge of syntax to construct an understanding of new words they hear, a principle referred to as syntactic bootstrapping. Again, for purposes of discussion, the significant implication is that at the early age of 23 months, children already know and use these sophisticated rules of syntax that relate with the characteristics of verbs. This is at a time when children are generally considered to be telegraphic speakers whose average utterance contains two words; at this time children do not yet speak in sentences. Hence, their verbalization do not reflect the amount of syntactic knowledge they actually have.

The results of such studies show how the child learns the meaning of words by putting together information they get from utterances they hear and events they see. Such findings show the importance of experience in learning. Yet what is interesting is that children can engage in this type of learning given very limited samples of the language they are learning. Given the multitude of language now being spoken in this planet (well over 5,000 not including variations in dialects), it would be extremely difficult for young children to know which language they are learning (e.g., what syntactic rules they should be applying to comprehend utterances) with this limited samples. If the child is to learn inductively and solely from the utterances she hears, she will never learn any language at all, because the sample of utterances she can hear and abstract the syntactic rules from is severely limited (see e.g. Bloom, 1994). But researches like the ones I just described show that children have fairly sophisticated language acquisition capabilities quite early in life. In consideration of these findings and arguments, recently developmental psycholinguists have

proposed that what allows children to engage in this type of language acquisition is a biological predisposition to learn different specific types of languages. This biologically-defined cognitive structure specifies which language systems are in operation even with very limited input from actual utterances. It is this biologically-defined mechanisms all children with normal brains are born with that allows these children to have the basic cognitive structures that will facilitate the initial stages of language learning.

Children's Early Knowledge of Number, Addition, and Subtraction

In the area of numerical skills, recent studies have been pointing to a similar conclusion. The studies I will describe will show that very young children not only have an appreciation of numerosity, but also can do some form of addition and subtraction. Similar to language skills, numerical skills are widely assumed to be skills acquired through experience. The differences in number systems across cultures (see e.g., Saxe, 1981, 1983) is evidence to the importance of experience within an environment and cultural system for learning. However, recent studies seem to suggest that the child might not need to learn everything from experience; instead, these studies suggest that children may know a lot about numbers and number operations at a very early age and possibly as early as the day they are born.

Separate studies using a habituation paradigm found that very young children show some understanding of numerosity. Very young children including newborns to 10-month-olds (Antell & Keating, 1983; Starkey & Cooper, 1980; Strauss & Curtis, 1981; van Loosbroek & Smitsman, 1990) have been shown to discriminate between small numerosities; that is, they can tell *two* from *three*, and sometimes *three* from *four*.

These studies use a habituation paradigm which is premised on the assumption that a child will be interested in looking at a novel scene or event, but as the scene becomes more familiar the child will lose interest. The infants were first repeatedly presented with different pictures showing specific numbers of objects (this is the habituation procedure). These pictures were shown repeatedly until the child lost interest as indicated by a decline in the amount of time the child spends looking at the picture (as specified by a criterion). At this point, the infants were then shown a picture

either with the same number of objects or one with a different number. These studies consistently found that infants tended to look longer at the picture showing a new number of objects. This observation suggests that children consider the picture a new event, and hence, we can infer that they were discriminating between the two numerosities.

Related studies show that this ability to discriminate between small numerosities is not limited to visual representations of number. In one study (Starkey, Spelke, & Gelman, 1983, 1990) 6- to 9-month-old infants were presented an audio-tape recording of two knocks or three knocks, and then shown two pictures, one with two items and the other with three. The infants preferred to look at the picture showing the number of items corresponding to the number of knocks presented. It seems, therefore, that young infants ability to discriminate small numerosities is not tied to a specific perceptual modality, and is instead based on an abstract and conceptual representation of number.

Another series of studies (Baillargeon, 1994; Simon, Hespos, & Rochat, 1995; Wynn, 1992a & b, 1995) showed that 6- to 10-month-old infants seem to demonstrate some understanding of basic addition and subtraction facts. These studies use a variation on the habituation and preferred-looking paradigms. The young children are first shown a sequence of events depicting the addition or subtraction of one object to a set of objects. The actual addition and subtraction happens behind a screen. When the screen is dropped, the scene will reveal either the number of objects appropriate to the addition or subtraction, or an inconsistent number of objects. The series of studies all show that infants tended to look longer at the inconsistent event. It was as if the infants were expecting a certain number of objects in the scene, and so when the results were not as expected they tended to look at the scene longer as they would with a novel event.

The conclusion that researchers derived from these findings was that these young children understand some basic addition and subtraction operations (involving small numerosities). Moreover, these cognitive structures cannot possibly be acquired solely by learning from experience. It is most likely that all children with normal brains are born to be disposed to process certain types of information in their environment, that these neurobiological systems lead to the early development of these cognitive structures, and that these structures allow for the acquisition of more

advanced forms of knowledge related to quantities (Gelman & Brenneman, 1994).

Children's Early Knowledge about Physical Objects

The final set of studies I will describe relate to children's knowledge about physical laws. In particular, children's knowledge about permanence of objects, and their continuity, solidity, as well as of related physical laws regarding motion and support. In his landmark works on cognitive development, Piaget (1954) conceived of the young child as one who perceives a world of ephemeral appearances, not of stable and enduring bodies. But research on the perceptual capacities of infants during the past two decades seems to suggest that Piaget's proposal is probably not correct. In particular, young children perceive the world as consisting of stable-three dimensional objects that are governed by physical laws. I describe some of these studies in this section.

In a series of experiments (e.g., Baillargeon, 1991; Baillargeon & De Vos, 1991), infants as young as 3.5 months old have been found able to reason about the existence of occluded objects. They can reason about objects even if these objects are covered by other objects. In a typical experiment, the young children were habituated with a scene showing a short or a tall object moving behind a rectangular screen, then reappearing at the other end of the screen. This scene was shown repeatedly until the child habituated with the scene. For the test phase, the shape of the occluding screen was changed so that the rectangular screen now has a window. The children were then presented one of two scenes, one possible and one impossible event (e.g., the object is not seen moving across the window then reappears on the other end of the screen). The children consistently looked longer at the impossible event compared to the possible event, suggesting that the impossible event was unexpected and novel. These results suggest that the infants believed that objects continued to exist even after they were hidden behind the screen, and that objects cannot disappear at one end of the screen and reappear at the other end without traveling the distance behind the screen. Hence, they were surprised with the impossible events. These results that were observed among 3.5-month-old children is contrary to Piaget's assertion that children do not have object permanence until much later.

In another series of studies (e.g., Baillargeon, 1995; Needham & Baillargeon, 1993), the same experimental paradigms were used to study young children's knowledge about support among objects. In the typical experiments, infants would be habituated with scenes showing an object on top of a platform that was being pushed from the left to the right of the platform. After habituation, the platform was changed or shortened, and child was shown either possible events or impossible events (e.g., the object was pushed beyond the platform and does not fall). Similar to the previous results, children as young as 3 months old looked longer at the impossible event compared to the possible event. The results suggest that these infants have knowledge about physical support of objects, that the infants expected the objects to fall when pushed off the platform and were surprised when the object did not fall.

Yet another series of studies (Spelke, Breinlinger, Macomber, & Jacobson, 1992) focused on children's knowledge about the solidity of objects and the continuity of the objects' motion. In a typical experiment, infants were habituated with a scene of a ball being dropped to a specific location on the floor. After habituation, a second horizontal surface was placed a short distance away from the floor. Children were then shown either possible events (i.e., ball would stop at second surface when dropped) or impossible events (ball would pass through surface and stop at floor). As with the previous studies, children as young as 3 months old looked longer at the impossible events. These results suggest that these young infants had correct understanding of physical laws regarding solidity and motion of objects, that they expected the ball to stop once a surface is hit, and were surprised when it did not.

These results taken together suggest that young children seem to have a good understanding of some of the physical laws related to the properties of objects, their motion and support. The fact that some of these cognitive structures are present at a very early age suggests that something in the brain of the child allows her to learn these things quickly and efficiently (Spelke, 1991).

On the Presence of Innately-Specified Cognitive Structures

I just described several different lines of research involving very young children (from newborns to 27-month-olds) that strongly suggest that young children possess certain amounts of knowledge very early in life. The presence of these cognitive structures very early on, makes it rather unlikely that the

structures were acquired primarily through interactions and experiences within the external environment. It is more likely that infants' brains are set to encode and process specific types of information from the environment. This neurobiological mechanism leads to the initial acquisition of specific cognitive structures very early in life.

The researches described in this paper dealt with specific aspects of children's knowledge about syntax, numerosity, basic number operations, and properties of physical objects. However, many other studies point to similar conclusions about other properties of physical objects (Baillargeon, 1995), the phonological aspects of language (Gleitman, Gleitman, Landau, & Wanner, 1987), causality (Corrigan & Denton, 1996; Leslie, 1994), and some forms of reasoning (Cummins, 1996). (Unfortunately, it seems that no such studies have been done or are currently being done by Philippine psychologists; hence, all studies referred to are by foreign researchers.) All these researches point to the conclusion that the human infant is born with a neurobiological system that supports the processing of specific types of information. The products of these processes are the foundations upon which other knowledge can develop.

I should make it absolutely clear that while these researches take a nativist position on cognitive development at its earliest stages, the researches do not rule out a constructivist or empiricist approach to development at the later stages of cognitive growth. Indeed, in contemporary psychology discourse, no serious cognitive development researcher would even think of the human mind's development solely in terms of biological endowments or solely in terms of empiricist/experiential learning procedures. The issue confronting cognitive development researchers now is to determine which cognitive mechanisms and representation at what points in learning are most likely to be innate, which need to be learned, and how do the biological endowments interact with the child's experiences to determine learning.

Distinguishing Biologically Primary and Biologically Secondary Cognitive Functions

A related development concerns a new, useful taxonomy for different cognitive functions that children may learn or develop. Geary (1995) proposed a distinction between biologically primary and biologically secondary cognitive functions. Biologically

primary abilities are cognitive functions that are found universally (i.e., across different cultures), in all individuals regardless of educational background, social status, aptitude, motivation, inclination, or disposition. These cognitive functions also serve a plausible evolutionary function, hence, their presence in all members of our species with normal biological endowments. On the other hand, biologically secondary cognitive abilities are not found in all cultures; these are culturally taught skills. Hence, the extent to which children in different cultures develop such skills depends on the extent to which cultural institutions (formal or informal) emphasize the development of such activities.

Cognitive functions in a domain can have biologically primary and biologically secondary dimensions. Take for example language. Oral human language is found in all cultures, but the abilities to read and write are not. The processing of oral and written language seems to deal with similar information and outputs, yet their presence and development across cultures varies a lot. We can say that oral language is a biologically primary cognitive function while literacy (reading and writing) is a biologically secondary cognitive function.

Most of the cognitive structures I described in the earlier sections are presumably biologically primary; although there are still few cross-cultural comparisons involving the same research designs to show that they are present among all cultures, the presence of the cognitive structure very early in life suggests that the accompanying skills are not learned or acquired from one's culture. It is more likely that there are supporting structures in the brain that are specialized for processing specific types of information (e.g., small quantities, physical features of objects, etc.), and presumably such structures are found among all human beings.

An important proposition advanced by Geary regards the relationship between these biologically primary abilities and the biologically secondary abilities. The relationship between the two types of abilities lies in their development. First, the development of both types of abilities require experience. Second, the development of biologically secondary abilities seems to depend on the co-optation of the biologically primary abilities.

In relation to the first point, some people may think that since biologically primary skills are biological, learning and experience

have nothing to do with their development. Or since these skills are observed as early as a few months after birth, these must have been present from the time the child is born. The argument I articulated earlier is different from these two notions. The argument earlier was that the child has innate neurobiological mechanisms that support the encoding and processing of specific types of information, and this allows for the fast acquisition of certain cognitive structures. Hence, these neurobiological system still needs input or information from experience or the environment. (Other researches suggest that this information from experience needs to be inputted during a certain period in the child's development; these periods have been referred to as critical periods or window periods (see e.g., Newport, 1991). Without input from experience the neurobiological systems are unlikely to develop adequately.

As defined by Geary, biologically secondary abilities are essentially cultural abilities and are, therefore, developed through experiences within the culture that values the development of these abilities. Often the development of such abilities is slow, effortful, and occurs only with sustained and deliberate formal or informal instruction, whether externally-regulated or self-regulated. With biologically secondary abilities, therefore, the significance of experience on development is more apparent, but is neither more nor less essential compared to the development of biologically primary abilities.

Geary also proposed that the development of biologically secondary abilities involves the co-optation of biologically primary abilities. For example, he cites the example of reading, a biologically secondary skill. The acquisition of specific reading abilities (e.g., word decoding or word recognition) seems to involve the co-optation of biologically primary oral language abilities (e.g., phonological processing). Another example relates to the number abilities we described earlier. Numerosity, counting, and simple arithmetic are most likely biologically primary. Counting using a specific number system and the performance of other arithmetic operation (e.g., fractions, multicolumn addition, multiplication, etc.) are biologically secondary, yet they develop by drawing from and building on the biologically primary abilities.

Some Implications

Comparing theoretical perspectives. Psychologists, educators, and education researchers have long viewed learning and cognitive development using the perspectives of the icons of the field, namely Piaget and Vygotsky. What do these new findings have to say about these perspectives? Do the recent research findings contradict these theatrical approaches.

Let us first consider Vygotsky. The emphasis on the biological structures for early cognitive development seems to be incongruous with the Vygotskian emphasis on social activity as the source of all mental activity. However, if one looks at the types of cognitive functions Vygotsky traces to social activity, these are more complex levels of cognition compared to the rather basic levels of cognition studied in the researches cited. It is not unlikely that social activity provides the input for the basic neurobiological structures that give rise to the basic cognitive processes that develop. It is also most likely that such social activity would later shape the more complex forms of cognitive activity (i.e., the biologically-secondary cognitive functions). Therefore, the new theoretical perspective emerging from the recent studies do not necessarily contradict Vygotkian perspectives, and might actually even complement these.

If we consider Piaget's genetic theory of development, specific research data seem to contradict very specific aspects of Piaget's theory (e.g., the notion that sensorimotor children do not have object permanence). However, the notion that human beings are born with some predisposition to acquire specific cognitive is a theme that can be found in both Piagetian and more contemporary perspectives. The same could be said with the notion that cognitive structures (whether mental or neurobiological) develop as the child interacts with specific types of information in the external environment. Piaget also implied that knowledge is innate or has innate sources, a view that is partially supported by the findings of recent researches. Therefore, while contemporary researches seem to contradict very specific predictions and prescriptions of Piaget's theory, the general theoretical and epistemological orientation of Piaget is maintained in many of the contemporary researches.

Neurobiological development and cognitive development. Let us now consider the more practical implications of the recent research findings about the biological predisposition to acquire

basic cognitive abilities. Much of what we value in our culture and society are embodied in the biologically secondary abilities we develop in our various formal and informal learning institutions and systems. Hence, we can say that most educated systems are directed at developing the biologically secondary abilities. For those among us concerned about developing the cognitive competence of children, what is the significance of the recent researches showing biologically primary abilities in very young children?

First, we need to realize that some skills will develop even without formal instruction. For the biologically primary skills, like oral language and basic number abilities, children will develop these even before going to school and even if they do not go to school. As long as the pertinent forms of input are present, the neurobiological support structures can work on the information to create the basic cognitive structures underlying these abilities. For that matter, if such skills have not developed in a child even with the appropriate inputs from the environment, it could be a sign that the there is something wrong with the neurobiological system of the child.

It is also important to consider that the development of biologically secondary abilities depends on the development of the biologically primary abilities. So we should endeavor to ensure the adequate development of biologically primary abilities. This needs to happen even before the child enters the school, that means in the family and maybe even earlier even while the child is still in the womb.

In the early months and years of the child's life, in particular during the window periods or critical periods, parents and guardians of a child should ensure that the necessary input is there for the important neurobiological systems. For example, for the biologically primary oral language skills to develop, language input should be made available during the critical years for language development which is from 3 months to just before puberty. More intensive input during this period could accelerate the development of the neurobiological mechanisms for language acquisition. The development of such will lead to the acquisition of the basic cognitive structures upon which other language abilities can develop. For example, the use of *motherese* or *parentese* (i.e., high-pitch voice, exaggerated intonation, stresses, pauses, lengthened vowels, etc.) seems to help the child focus on the units

of language, and also therefore, to learn the language structures faster (Fernald, 1992). A child who acquires the basic syntactic structures earlier, will be able to use this knowledge to further advance her vocabulary and other linguistic skills earlier, as well. More intensive linguistic input during the window periods will not necessarily make the child a language genius. However, providing the appropriate informational input during the critical periods can work well in the long term towards the development of the biologically secondary abilities that co-opt the biologically primary abilities.

While the child is still developing in the womb, parents can already work to ensure that the child's brain develops properly. The parents need not undertake unusual efforts like reading or playing music to the womb. Parents can do simple things like ensuring that the mother carrying the child has good nutrition, avoids alcohol, smoking, secondary smoke inhalation, psychoactive substances or drugs, among others. Good nutrition is critical to ensure the proper development of the brain. On the other hand, taking substances like alcohol and nicotine during pregnancy have been shown to lead to various neurological and psychological dysfunctions in the child, clearly suggesting that they have harmful effects on brain development.

Ensuring the proper development of the brain should continue during the earliest months and years of a child's life. Parents should ensure that the minerals and nutrients contained in the child's diet are complete as the brain needs these substances to support the processes of myelinization and concurrent synaptogenesis that occurs early in a child's development (Fischer, 1987).

A constructivist perspective of learning. The most important implication of the findings that children possess such biologically primary abilities very early in life has to do with the way we think about and approach children's intelligence and learning. We need to be fully cognizant of the fact that while it is true that children probably know less than we adults do, it is not the case that children are born without knowing anything. Indeed, children seem to have the mechanisms for establishing a lot of knowledge on their own very early in life, with minimal intervention from the parents and other adults. In most cases, parents only need to go about their usual ways around their children, and children will pick up the necessary information and develop the appropriate biologically

primary abilities. Given the appropriate environment, children will construct the appropriate knowledge of biologically primary concepts and skills. These biologically primary skills will then provide the foundation upon which other (biologically secondary) skills can develop.

Recent theoretical perspectives that relate to this view have been called constructivist theories (see e.g., Marshall, 1996). These theories look at the process of learning, as involving constructing knowledge. The constructivist perspective characterizes learning as a more active and involved activity on the part of the learner, in which the learner arrives at new knowledge and understanding by engaging new information, relating it to old knowledge, and reflecting on the new meanings of this knowledge (see e.g., discussion of Bernardo, 1996). The constructivist perspective also emphasizes the goal-directed and self-regulated nature of effective learning activities. This view can be contrasted with views that characterize the learner as a passive recipient of information and learning as an activity that will lead to the absorbing or taking in more information. The recent findings that young children have brain structures that allow them to acquire basic forms of knowledge on their own, without systematic instruction, is most consistent with constructivist perspectives, broadly defined.

Implications for teaching and teaching training. With the constructivist perspective in mind, the way we look at the task of helping the child learn and develop cognitive abilities changes. Instead of thinking of teaching and instruction as giving something to someone who has nothing, it becomes helping someone develop something more from what he/she already has. Teaching can no longer be thought of as simply the transmission of knowledge. Instead, teaching becomes a more complex process which involves, among other things, creating the appropriate environments in which students can construct new knowledge by working with their prior or existing knowledge (Bernardo, 1996). Anderson, Blumenfeld, Pintrich, Clark, Marx, and Paterson (1995) characterized the functions of a teacher in light of the recent perspectives as follows:

"... a teacher... is able and disposed to consider how learners' knowledge, motivation, and development contribute to the meanings they make, the actions they take, and what and how they learn in classrooms...thinks about how social and instructional

contexts of the classroom affect and are affected by individual students' knowledge, motivation, and development (p.145)."

A constructivist perspective of learning will transform the teacher's function from being one of controlling the process of transmitting information to students, to one of making constant decisions regarding the use of particular strategies, activities and sources of knowledge, and one of constantly assessing the effectiveness of these elements in helping learners learn, given that these learners are most likely constructing knowledge and understanding in different ways. The constructivist perspective that learners actively construct their own knowledge, by no means implies that the teachers ought to be mere passive facilitators in the learning process. Instead, teachers are critical external agents that can structure the learning environments so that the learner can most effectively construct correct and effective knowledge.

Anderson, et al. (1995) argued that in this light, teacher education should be directed towards developing in teachers the knowledge and capabilities to become effective guides and facilitators of learning. Teachers should be trained and empowered to create learning environments that are suited to the particular characteristics of the child learners in their classrooms. The constructivist perspective being discussed implies that traditional didactic approaches will not be adequate for facilitating, learning for all kinds of students. Therefore, teacher education should go beyond training teachers with a range of teaching methodologies. Instead, teacher education should also develop in teachers the widest possible knowledge regarding how students can learn, the most varied set of learning activities that can be used to facilitate constructive learning, and most importantly, the highest levels of sensitivity and judiciousness required to make fast and constant decisions in the classroom. Ironically, it will truly require much more of teachers so that they can allow students to learn on their own.

Conclusion

In the beginning of the paper I described conventional views about children's cognitive competence. In particular, I described the assumption that children are not endowed with much cognitive abilities and that they need to learn all these through experience. Then, I described recent studies, using a range of newly developed methodologies, that seem to suggest that very young children have

some cognitive structures related to syntax in language, numerosity, number operations, and physical laws. These findings point to the possibility that children possess neurobiological systems that are set to process particular types of information from the environment to construct specific cognitive structures. Such cognitive structures were viewed as being examples of biologically primary abilities that all children acquire very early in their development. I then discussed the implications of the findings for how we view children's cognitive development and for how we think of the instructional process.

The cognitive competence of children involves the interaction between evolutionary-biological factors and sociocultural factors. For some reason, many psychologists and educators seem to neglect the possible significance of the innate endowments of children in determining cognitive growth. Others who acknowledge the importance of biological factors in learning conceive of this role as that of specifying abilities through genetic inheritance; these psychologists think of cognitive abilities as traits that vary in degrees of heritability. This perspective separates the possible role of biological factors in cognitive growth, from that of more social and cultural factors. The theoretical perspective emerging from these very recent research studies portrays these two sets of factors as being closely intertwined. The biological predisposition to acquire specific cognitive structures is triggered by experiences in the social milieu. As soon as these elements of experience input into the neurobiological structures the interaction between biology and environment begins. As the child grows the interaction between these two forces continues, and probably never ends.

It would seem that the biological endowments of children make them more knowledgeable than what most of us assume. If we accept this view, that is, if we recognize that children are not passive recipients of information, if we acknowledge that children can be active learners and constructors of their own understanding, the task of educating our young need not be as difficult as it seems. The task is made easier because we actually have an important partner in achieving this goal, a partner we have been neglecting in some ways. That partner is the child who has achieved some level of cognitive competence through her own development, and can achieve even higher levels of competence if we can set the environment for doing so.

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PORTFOLIO ASSESSMENT OF EARLY LITERACY

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Reading and writing are multifaceted and dynamic processes. Both are so complex that no single indicator of either one can capture the breadth and depth of behaviors that comprise these processes. An assessment of reading or writing which is stated in terms of a single score or even a series of single scores over time, i.e., a reading course grade and percentiles or standardized scores from the administration of normed tests, will, in most cases, fail to provide a precise picture of a student's real progress. The portfolio approach to reading and writing assessment is an alternative that comes close to the ideal of an evaluative measure that reflects more comprehensively and more accurately how well a student has learned to read and write.

A reading portfolio chronicles the development of literacy behaviors. The intent of a portfolio is to clearly demonstrate the student's progress based on information which usually includes work samples of the student's reading and writing performance and observational notes concerning the process by which the reading and writing products were arrived at. The actual contents of a portfolio are usually organized at two levels: (1) the raw data or actual evidence of performance - examples of these are standardized or normed tests, classroom tests, written reports about selections read, teacher's observational notes; and (2) a summary that will synthesize and meaningfully organize the information about the student's literacy development as this is gleaned from the raw data. Thus, the reading portfolio allows for the construction of a more accurate picture of what a student, at present can actually do in terms of reading and writing. Furthermore, it enables an interested visitor to the portfolio, such as the student himself/herself or a teacher or a parent, to learn about the extent as well as the nature of the changes in literacy behaviors that the student has experienced in the course of growing as a reader.

An example of a reading portfolio is presented in the following section. The portfolio was prepared for the case of Hannah, an 8-year-old student in Grade 2 from a public elementary school in Quezon City, Philippines. Hannah's teacher had recommended her

participation in a reading intervention program on the basis of her poor reading achievement. Diagnostic assessment of reading and writing status was conducted twice - prior to and after the intervention.

Pre-intervention assessment revealed that Hannah possessed fluent oral language in Filipino; oral language in English, on the other hand, was almost completely absent. The rest of the assessment was, therefore, conducted in Filipino. This first assessment also yielded the following results:

(1) Hannah knew only slightly more than half (29 of 54) of the letters in a letter identification measure. Of those that she knew, most were identified by their names.

(2) She already possessed the appropriate requisite directionality behaviors for reading.

(3) She appeared to have no concept of reading units beyond letter identification and she seemed to have no understanding of letter groupings as words nor the grouping of words as sentences. The functions of various punctuation marks were also not known.

(4) Hannah could neither point to words read to her nor read words in a word list. She was also unable to write words which were dictated to her. When she was requested to write any word she knows, she responded only with her name and grade level, both of which were neatly printed.

It was obvious that Hannah was in need of some form of remedial intervention before she fell even further behind in reading achievement and, consequently, in her academic performance. An intervention program was planned for her for the primary purpose of teaching her to read and write in Filipino. Although decoding skill and fluency of reading were the primary goals of the program, it was ensured that comprehension of materials read was also present. The stories used in the program were usually discussed and simple questions were asked by tutor.

Varied instructional materials were prepared such as flashcards and pictures to accompany new words. Stories originally in Filipino or translated from English were selected for inclusion in the program. As shown in the descriptions provided in Table 1, these stories were sequenced in terms of increasing difficulty in the decoding that they called for. The entire program consisted of a total of twenty-two (22) lessons over approximately a 2-month-period.

Table 1
Increasing Difficulty Levels of Stories

TITLE	DESCRIPTION
ANG PUSA SA KUMOT (41)	Short text, repeated patterns, pictorial cues
SAAN TAYO PUPUNTA? (128)	Longer text, repeated patterns across paragraphs, pictorial cues
ANG MGA BATANG MASISIPAG (37)	Short text, no repeated patterns, no pictorial cues, polysyllabic words
ANG PINAKAMALAKING KEYK SA MUNDO (155)	Longer, repeated patterns, longer sentences, polysllabic words, words beginning with CVC syllable, storyline/plot
HUWAG KUMAIN NG BULA (119)	Long repeated patterns, polysyllabic words, words beginning with CVC syllable, plot, dialogue
ANG MASKARA NI SAM (66)	Moderate length, few repeated patterns, more dialogue with varied expression

Note : Figures in parentheses refer to the total number of words in the stories.

Hannah's Reading Portfolio

In the course of conducting the lessons, Hannah's work samples in reading and writing and the tutor's observational notes were collected and placed in an expanding folder. Instructional materials which were used, including word flashcards, pictures, drawings, and stories, were also accumulated. From time to time, this growing collection was reviewed by the tutor and Hannah. Some of these visits to the portfolio resulted in the removal of some work samples which were given to her to take home. Hannah enjoyed reviewing the flashcards used in previous lessons and reading stories. What she seemed to get the most pleasure from, however, was the rereading of the stories and passages that she had written. During these visits to the portfolio, Hannah usually engaged the tutor in animated conversations about how well she was doing. She chattered about how easily she could now read the materials that were used in previous lessons. Hannah would also relate the instances in which she was asked to read by the teacher and how she correctly answered the teacher's questions about what

was read. This was confirmed by the tutor's observations of Hannah in class. She was quite spirited in joining the rest of her classmates in group reading. She readily volunteered to read in front of the class and eagerly raised her hand to respond to the teacher's questions. It was observed that she would even coach some of her classmates seated near her as they read or she sometimes softly read with them.

Hannah's interest in reading was already apparent even at the start of the program. When instructional materials were brought, she would be very attentive. At times, she asked permission to examine them. She enjoyed looking at the pictures of storybooks. As soon as her reading improved, she would request to bring home stories that had been used in previous lessons so that she could "practice" and read to the younger children at home. She would sometimes ask the tutor's permission to color the pictures.

Improvement in Hannah's reading and writing performance became noticeable during the 5th and 6th lessons. However, although reading had improved, at this point there seemed to be no clear indication of improved understanding of what was read. The interfacing of comprehension with increasing skill in decoding seemed to have occurred at about the 8th and 9th lessons. At the end of the 22 lessons, the second formal assessment was conducted. A comparative presentation of the pre- and post-intervention assessment results are found in Table 2. It was wonderful to take note of Hannah's tremendous improvement in reading and writing and the obvious way in which she delighted in her accomplishment.

Table 2
Results of Pre- and Post-Assessment of Diagnostic Survey

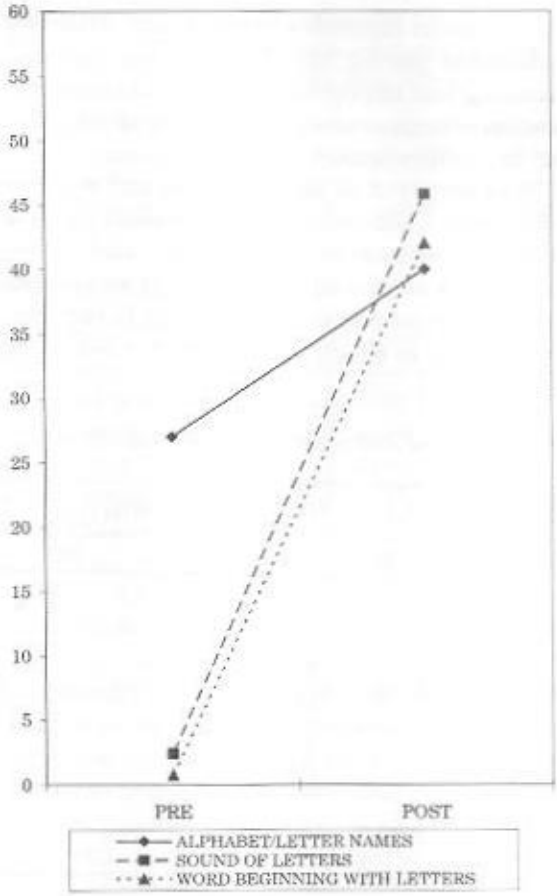
	L.I.		C.A.P.		WORD TEST		WRITING		DICTATION	
	54	St.	24	St.	15	St.		St.	37	St.
PRE	29	3	10	2	0	1	0	1	0	1
POST	51	5	18	5	Easy 12/12		24	3	54/57	
					Mod 12/12					
					Diff 7/12					

Post-Intervention Findings

Letter Identification (L.I.)

Table 2 shows that Hannah could now correctly identify about 95% (51 of 54) of the letters shown to her. She responded by using at least one mode of response, i.e., the name of the letter, or its sound or a word starting with the letter; for most of the letters, however, she correctly responded with the use of all three types/modes. Hannah's preferred mode of responding had, as expected, shifted from letter names to the sounds of letters. Likewise, the ability to identify words beginning with specific letters also improved. These findings are presented in Figure 1.

Figure 1. Pre- and Post-Intervention Changes in Modes of Response to Test of Letter Identification (L.I.)



Most of the letters that she still did not know comprised those that are not commonly used in Filipino such as *f, j, q,* and *v*. An interesting observation was that she sometimes confused the sounds of *o* and *u* as well as *e* and *i* because of her Visayan accent.

Concepts About Print (C.A.P.)

There was clear evidence as shown by scores found in Table 2 and summary of findings in Table 3 that Hannah had learned about the units of reading, at the level of words as well as sentences. She also demonstrated improvement in utilizing punctuation marks in reading passages and in her writing. Consistency in using the period was noted for both activities; use of other punctuation marks, i.e., the comma, question mark and exclamation point, was evident only in her reading.

Table 3
Results of Assessment of Print Concepts (C.A.P.)

PRE	POST
1. Possessed requisite directionality behaviors, knew that print tells story	(same)
2. Had no concepts of word or sentence units	Learned concepts of words and sentences
3. Did not know functions of different punctuation marks	Displayed some learning of functions of punctuation marks (paused at periods and commas in text, read sentences with expression appropriate to punctuation marks)

Oral Reading

Reading Word Lists: During the formal post-intervention assessment, Hannah's ability to read words and analyze sounds of letters was examined with the use of three word lists of varying difficulty levels which are shown in Table 4. These word lists were specifically constructed for Hannah and were largely based on what she was expected to know at this time, considering the content of her previous lessons.

Table 4
Word Tests of Varying Difficulty to Assess Oral Reading

EASY	MODERATE	DIFFICULT
mama	bakit (bakat)	arawan
sabi	bahay	tumulong
ay	pumunta (pupunta)	kumakaba
ang	alis	rosaryo
lola	kasama	pinitas
mga	mabait	harapan
bata	masarap	iniisip (inisip)
siya	beybi	orasan (orasa)
baka	pumasok	maglaro (magalaro)
laso	takbo	watawat
pusa	paano	tindahan (tidahan)
ako	kuneho (kuniho)	magtanim (magatanim)

Note : Words in parentheses show Hannah's errors in reading.

The easy list consisted of two-syllable words and simple sight words; the moderate list comprised two- and three-syllable words, most with CVC syllables; finally, the difficult items were words that Hannah had not encountered in previous lessons, were three- or four-syllables long and had CVC syllables. Hannah obtained 100% accuracy in her reading of the words in the easy list. She initially missed 3 of 12 words in the moderate list but exhibited self-correction for all three words. Finally, she erred in reading 5 of the 12 words in the difficult list. Clearly there was improvement in the ability to read single or isolated words.

Reading Stories/Passages - Running Records: Hannah showed remarkable progress in reading selected stories/passages. The running records for four stories shown in Table 5 and the summary of observed changes in reading behavior in Table 6 clearly display this improvement. As the lessons continued, her reading became more fluent. Accuracy of reading the words improved as she increasingly paid careful attention to the letters in a word before sounding out the entire word. Self-correction also increased as well as repetition of words/phrases read, primarily for the purpose of greater fluidity and better phrasing in reading sentences. Reading in monotone lessened and reading became more expressive (by voice as well as facial expression). There was

Table 5
Summary of Evaluation of Running Records of Four Selected Stories

	ANG BAHAY KO Story #1	SAAN TAYO PUPUNTA Story #2	PINAKAMALAKING KEYK Story #3	MASKARA NI SAM Story #4
ACCURACY	95%	94%	97%	97%
ERROR	5%	6%	3%	3%
SELF-CORRECTION	50% (3/6)	50% (7/14)	67% (10/15)	78% (7/9)
OBSERVATIONS	HA (DK) responses	No HA (DK)	More fluent reading better phrasing	More fluent reading better phrasing
	Many pauses--waited for prompts	More repetitions of: 1. words read--syllabic reading, 2. sentences for fluidity of reading	Pointed at difficult words--by syllable or letter (sounded out)	Finger glided across text, examined pictures between reading of text - to confirm accuracy of reading
	Used pictures as cues	Pointed at words which were difficult to read	Read with expression	Very expressive reading (questions and exclamatory sentences)
	No finger pointing at text; pointed at pictures	Read with expression		
	Read without expression			

Note : HA (DK) refers to responses of "Hindi ko alam"/("Don't Know")

Table 6
Summary of Observed Changes in Reading Behaviors and Strategies

START OF INTERVENTION	END OF INTERVENTION
1. Minimal skill in decoding	Greater accuracy of decoding
2. Inadequate attention given to letters before sounding out words	More careful attention to letters before sounding out words
3. Syllabic reading of words	Greater fluency in reading words
4. Word-by-word reading of sentences	Reduced word-by-word reading, appropriate phrasing of sentences
5. Minimal self-correction	Greater frequency of self-correction
	More repetition for fluency in reading words as well as sentences
6. Reading in monotone	Reading with expression
7. Pictures used as cues to reading of texts	Pictures examined after reading text
8. Word-byword reading by pointing at each word with index finger to assist in focusing	Pointer used to assist in focusing only for words posing difficulty
9. Minimal comprehension	Improved comprehension
	Appropriate spontaneous comments while reading story
	Relevance of questions asked
	More accurate story retelling
	Appropriate responses to questions asked
10. Frequent resort to response of "Hindi ko alam" (HA)	Minimal (HA) responses, more consistent self-initiated attempts to read difficult words
	Fewer solicitations for assistance

also a significant improvement in comprehension indicated by her spontaneous comments as the stories were read, the appropriateness of questions that she asked and her answers to questions from the tutor, and more accurate retelling of stories.

Other indicators of growth as a reader were: reduced tendency to use pictures as cues to decoding words; less finger pointing at text; when faced with difficult words, gradual decrease in the frequency of saying "Hindi ko alam" ("I don't know") and of active or implied solicitation of help from the tutor.

Writing Performance

Writing Vocabulary and Writing to Dictation: Hannah also displayed marked improvement in her writing activities. Table 2 shows that spontaneous writing and writing to dictation increased from pre- to post-intervention assessment. In addition, spontaneously written vocabulary demonstrated greater accuracy of spelling as well as more self-initiated attempts at organizing her thoughts. During the formal assessment, she refused to write a word list and, instead, wrote a list of sentences which is found in Table 7. A short passage that was dictated to her was written with ease, although a few errors were committed. The results are presented in Table 8. It was noted that, while she was engaged in this task, Hannah softly whispered letter sounds and words to herself as she was writing. She also spontaneously reread the passage after having written it. One self-correction was observed.

Table 7
Assessment of Writing Vocabulary

Post-Intervention:

Bo... bo (HA)

Post-Intervention:

Ang bata ay masipag.	(The child is industrious.)
Si mama ay mabait.	(Mother is good.)
Ang ate ay mataba.	(My older sister is fat.)
Ang oso ay matangkad	(The bear is tall.)
Ang pusa ay tumatae.	(The cat is defecating.)
Ang bulaklak ay maganda	(The flower is beautiful.)

Table 8
Assessment of Writing to Dictation

Post-Intervention:

Ako ay may malaki aso sa bahay. bokas ay puputa kaming asoko sa palaroa.	(I have a big dog at home. Tomorrow, my dog and I will go to the playground.)

Writing Stories/Passages: The last set of evidence for advancement in writing-reading performance consists of the qualitative changes in the stories/passages that Hannah wrote spontaneously as part of her lessons. It is worth noting that this was part that she enjoyed most.

An examination of earlier writing samples show that Hannah's sentences were similar to those usually written for drills in language lessons. This is evident from samples of her story writing shown in Table 9. These sentences repeatedly displayed a definite pattern in terms of structure. In addition, the content of her writing in set (A) was depersonalized and devoid of any relevance to personal experience. It should also be mentioned that some parts of her early writing was copied from the tutor. What Hannah could not write on her own, she would dictate to the tutor who wrote it down for her to copy.

Table 9
Story Writing

Early in the Intervention

(A)	
Ang bata ay mataba.	(The child is fat.)
Ang mama ay mataba.	(The man is fat.)
(B)	
AKO ay mataba.	(I am fat.)
AKO ay masipag.	(I am industrious.)
AKO ay matalino.	(I am intelligent.)

Figure 2. Hannah's Drawing which Accompanied Story Found in Table 10

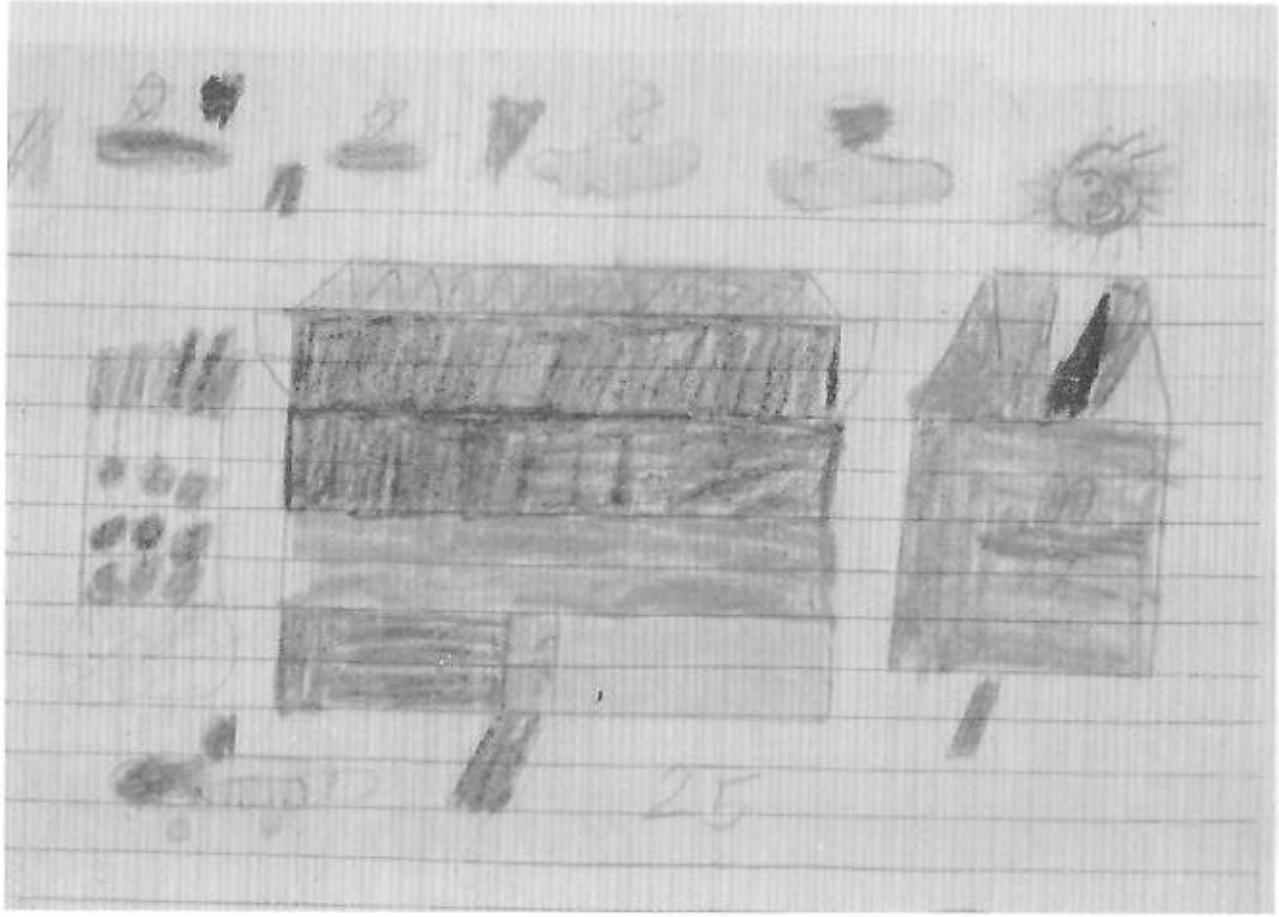


Table 10.
Story Writing

Midway in the Intervention Program:

Ito ang Bahay ni Hannah V. Lorenzo.	(This is the house of Hannah V. Lorenzo.)
mAY Bahay ng ibon sa TABi ng Bahay ni Hannah V. Lorenzo.	(There is a birdhouse beside the house of Hannah V. Lorenzo.)

A significant breakthrough in written self-expression was a story shown in Table 10 that Hannah wrote to accompany the drawing in Figure 2 that she had prepared for the tutor. This story was the first that she wrote entirely by herself; no part of this story was copied and neither did she ask for help in spelling. Clearly there are more details of a story line here. It is also worth noting that the content of this writing is derived from personal experience and elaborated by the inclusion of a drawing clearly appropriate for the story. This story also marked the demise of patterned sentences as far as Hannah's stories/passages were concerned. Later stories exhibited the same feature of being based on her personal experience at home and in school. An example of this is presented in Table 11. The story is about a classmate named Fernan.

It may be noted that Hannah's reading portfolio displays a wide sampling of her reading and writing performance. Included in her portfolio are the results of the pre-intervention and post-intervention diagnostic assessment, running records, writing samples including word lists and stories, and the tutor's observational comments during the conduct of the lessons as well as notes taken while Hannah was observed in the classroom.

Table 11.
Story Writing

Latter Part of the Intervention Program:

Si Fernan ay maingay.	(Fernan was noisy.
Siya ay pinatayo sa harapan	He was asked to stand in front of the class.
namin.	He was spanked twice.)
pinalo siya ng dalawang beses.	

In truth, a portfolio assessment demands that a variety of types of indicators be employed so that the breadth of the student's achievement in terms of literacy behaviors can be clearly demonstrated. The materials comprising a portfolio may include the results of standardized or normed tests, classroom tests, written book reports, reaction papers, reading logs, student's self-evaluation, teacher's observational notes, checklists, audio or videotapes - indeed the range of evidence which may be employed is practically unlimited. Although amount and variety of evidence are generally desirable features of a portfolio, some restraint must be exercised in collecting information. The key to a successful portfolio assessment is the appropriate selection of indicators to include. Decision-making regarding the choice of evidence to include, the management of its content and synthesis of the cumulated information into a meaningful summary is based on the following guiding principles which have been drawn from theory, research and practice. These are the principles that were implemented in preparing Hannah's reading portfolio.

The Guiding Principles of Portfolio Assessment

A list of the guiding priciples of portfolio assessment is found in Table 12.

Table 12
The Guiding Principles of Portfolio Assessment

1.	Continuity of Assessment Over Time
2.	Authenticity of Assessment Tasks
3.	Multidimensionality of Assessment
4.	Diversity of Assessment Methods
5.	Collaboration between Teacher a. d Student

Continuity of Assessment

Assessment is an on-going chronicling of a student's progress as a reader and writer. If this chronicle is to provide an accurate picture of the course of literacy development, information should be continuously collected, organized, and synthesized. Comprehensiveness of the portfolio is enhanced by including evidences of the products of developing literacy as well as descriptive indicators to the nature of the process of learning that has taken place over time. The longitudinal perspective embodied in the approach implies that the portfolio, itself, may be viewed as constantly evolving and growing. Changes in the portfolio may be a consequence of adding newly acquired information, removing material that was previously included and/or reorganizing and rearranging its contents, all of which may be resorted to in order to demonstrate more clearly the student's growth as a reader.

Authenticity of Assessment

Assessment should resemble the actual reading and writing tasks that a student performs in the classroom as well as in daily life. Students read and write for different reasons and their reading involves a variety of texts. Assessment procedures should, therefore, parallel this reality by presenting the student with the opportunity for reading for various purposes while using a wide array of texts of different types/genre.

Multidimensionality of Assessment

Since reading is a process that is complex and multifaceted, its assessment should mirror its multidimensionality. The employment of many indicators of literacy advancement, including those that pertain to products as well as process, represents a

recognition of the complexity of the learning that occurs. Engaging in reading and writing activities involves the operation of a wide range of cognitive processes, metacognitive strategies, affective and motivational responses and sensory and perceptual functions. Ideally, all of these various dimensions should be attended to during assessment.

Diversity of Methods of Data Collection

Data gathering for a portfolio aims to maximize the generation of information that may be useful in describing the student's development as a reader. To ensure utility of data obtained, a plan should be formulated for collecting a wide sampling of different types of performance data that are indicative of literacy development. This plan should be guided by the key instructional goals at that point. Needless to say, as the student progresses, instructional priorities will be modified. When this happens, the plan for assessment will, correspondingly, warrant revision. In the assessment process, various methods of data gathering may be utilized including standardized norm- referenced testing, informal assessments, classroom testing, student's self reports/self evaluation, observation and interviewing. The procedures may also include written, audio and/or videotaped data. The goal is to identify patterns of reading behavior that cut across different methods thus demonstrating the stability of literacy growth changes.

Collaborative Effort of Student and Assessor

Assessment must provide for continuing, active and collaborative analysis and reflection involving both the student and the assessor, who may be a teacher, tutor, counselor, school administrator, and the like. The portfolio is the property of the student. It belongs to the student since it consists primarily of his/her output and other data about him/her. It should be kept in a place that will allow the student ready access to it should he/she wish to visit. The assessor serves as a consultant who guides the student in the course of collecting,analyzing, interpreting, and synthesizing information so that student can begin to understand his/her development as a reader-writer. Thus, frequent visits to the portfolio for a review of its contents should be undertaken by the student and the assessor together. Moreover, the student and the assessor must continually dialogue to discuss and understand the accumulating information in the portfolio. Both have a lot to

gain from doing so. The assessor can be guided in planning future instructional goals and strategies and assessment procedures; students, on the other hand, can be updated with respect to their progress and be informed about their developing strengths and weaknesses. Hopefully, in time, the student will learn to analyze the data so that he/she can more directly participate in monitoring and evaluating his/her own progress over time. The long-term goals are to enable the student to become an assessor of his/her own literacy development and to take primary responsibility for his/her own learning.

The Reading Portfolio: Its Place in the Assessment of Reading

Reading assessment has aroused the interest of different users involved in one way or another with the process of educational assessment. Of course, these diverse audiences, shown in Table 13, need different kinds of information, the nature of information being determined by its purpose or usefulness for that particular audience.

Table 13
Target Users / Audiences of Reading Assessment Procedures

AUDIENCE	PURPOSE	FOCUS	NATURE OF INFORMATION
School Administrators	Evaluate curriculum, teachers, materials	Group of students	Related to broad goals: Norm and criterion based
Parents	Monitor progress of child	Individual student	Related to broad goals: Norm and Criterion based
Teachers	Monitor progress of student, plan and evaluate instruction strategies	Individual student, groups of students	Related to specific goals: Criterion based
Students	Monitor progress, identify strengths and weaknesses	Self	Related to specific goals: Criterion based

School administrators are particularly interested in evaluating the effectiveness of curricula, teaching personnel and instructional materials and methods. Although they are concerned about the individual student's progress, more often than not, their attention is focused on the assessment of group performance. The typical data of assessment that are utilized are generated by standardized norm-referenced and criterion-referenced testing. The kind of information that they seek is usually related to broad instructional goals and generation of this information is undertaken either annually or semi-annually or by term.

Parents, on the other hand, seek information that will allow them to monitor their children's progress in school. Their concern is, as expected, for the performance of their own child/children. Most parents want criterion-referenced reports in order to monitor their children's educational development. However, they are, in general, also interested in comparing their children's performance with those of their age group or grade level. Parents do not usually conduct the assessment themselves but they are quite active in soliciting information from various education professionals whom they expect to regularly undertake the evaluation of their children's growth and report this to them during periodic parent-teacher conferences.

A teacher's primary goal is to assist the students in learning. Teachers are, therefore, concerned with the performance of each individual student in their classes. Assessment and evaluation of performance are undertaken daily or as many times as possible. Frequent assessment is seen as imperative for monitoring each student's progress, planning instructional goals and activities, selecting teaching strategies and evaluating their effectiveness. Teachers have the unique opportunity, which is not usually readily available to the first two audiences, to witness the actual development of the student's literacy behaviors. In their daily teaching activities, they are already in effect, creating situations which could generate from the students the diversified array of data that could be collected and organized into a reading portfolio. All they need is a firm resolve to carefully observe the unfolding of each student's literacy and to record their observations of the process.

Finally, the students themselves actively seek information that will help them to understand the various ways by which they have progressed. They need to identify areas of strength to capitalize on and their weaknesses that require remediation. The

type of information that they would like to access, therefore is related to specific learning goals. Students need to reflect about the reading and the writing that they are doing if they are to improve their literacy behaviors. Once again, it is obvious that information provided by the reading portfolio meets the specific assessment purposes of students.

It may be observed from the discussion so far that, among varied group/audiences who need to access information concerning developing literacy, teachers and students constitute the groups who may readily engage in portfolio assessment. It may even be surmised that they are the audiences who might find such information most useful. It must be pointed out, however, that with increased awareness and knowledge about the purposes and features of portfolio assessment, even parents and administrators may seek the more detailed information about literacy development that is to be found in reading portfolios. Such information can clarify, elaborate and generally, make more meaningful the assessment of reading and writing performance that is typically indicated by the scores or grades generated by the more traditional and standardized assessment procedures.

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PROFESSIONAL LICENSURE TESTS AND THE ATTAINED CURRICULUM IN THE PHILIPPINE UNIVERSITIES

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Professional Regulation Commision

The increasing globalization and heightened competition among economies in the Asia Pacific basin have posed the challenge to collectivize our efforts and pursue innovative strategies that would accelerate the development of the human component in national development thrusts. In this respect, education has assumed greater strategic importance in total national development and its human resource component.

We in the professional regulation sector consider education as the foundation of professional status. We are, therefore too well aware that the development of our professionals is determined not only by the level of resource investment and the extent of efforts by educational institution in ensuring quality education. To my mind, these must be complemented by initiatives to develop their professional competencies through innovative and progressive professional regulation. In this regard, assessment and monitoring of competencies assume vital importance to professional regulation.

Background

There are close to 1500 colleges and universities in the Philippines which offer college programs. Of these, only 114 are state universities. The rest are private institutions financed mostly through tuition fees. A few are ran by religious orders and foundations. The oldest university in the country is the University of Sto. Tomas, a Catholic university founded in 1611

Until 1994, the National College Entrance Examination (NCEE) was the only test administered nationally for students seeking access to university education. However, the criterion cut-off score established to qualify for entrance to college (Percentile 50) was evidently not high enough. Hence, the more selective collegiate schools would set their own criterion cut-off (e.g. Percentile (90). In addition, each university would require applicants for admission to take and pass its own prescribed entrance test.

As a general rule, however, most schools do not prescribe adequately stringent entrance requirements. Thus, thousands of students were able to enroll in colleges and universities to earn degrees for the various professions. Since there is no additional post-schooling assessment at the tertiary level, it is not possible to determine the quality of college graduates which indicatively varies widely. On the other hand, the need to ascertain the adequacy of the quality and competence of graduates as a prerequisite for being allowed entry into the practice of a profession could not be over emphasized.

To fill in this perceived crucial gap, the Professional Regulation Commission (PRC) was created on June 22, 1973 pursuant to Presidential Decree No. 223, as the government agency to be responsible for regulating the practice of the various professions in the Philippines which is an exercise of the inherent power of the state to protect life and property, as well as the well-being of its citizens. To date, the PRC has 40 Regulatory and Specialty Boards within its administrative umbrella.

The Licensure Examination as a Measure of the Attained Curriculum

While the curricula of the degree programs leading to the practice of the professions are supervised by the Bureau of Higher Education, Department of Education, Culture and Sports (DECS), now the Commission on Higher Education (CHED), the supervision exercised may seem inadequate simply because of the sheer number of schools there are to supervise. Moreover, the state colleges and universities have their own charters which grant them virtual autonomy; hence, they are beyond the supervisory ambit of the Commission on Higher Education. However, since (CHED) has just recently assumed its new mandates, we can reasonably expect a positive results in the near future.

While the assessment of school curricula is not the primary aim, the results of licensure examinations provide information on the substantive sufficiency of the curriculum for a degree program for a particular profession that is carried out in a school. The test results provide a good gauge of the knowledge and competencies imbibed by the graduates of the program carried out in the school.

By definition, the attained curriculum consists of the milieu of courses of study constituting the degree program which has been determined on the basis of the outcomes of schooling - the concepts,

processes and attitudes which one imbibes from the program of study. The students' choice of what profession they would want to embrace is influenced not only by what has been determined to constitute the formal learning package but also by the quality and type of opportunities made available to them. Wide variations exist in the learning opportunities made available to students because of the wide range of differences obtaining in the quality of the various educational institutions.

Moreover, insofar as educational quality is concerned, the relative importance of and the interactive influences existing between the learning content, the institutional arrangements and the social context are not always distinct. Institutional quality, for example, varies inversely with the geographical distance of the school from the educational centers, especially from the national capital region or Greater Manila in the case of the Philippines.

By design, the licensure examinations are effectively meant to simply be achievement and readiness tests for determining one's adequacy before he can quality to practice a particular profession. These tests try to ascertain that the applicant for membership in the profession possesses at least the minimum "must know" and "can do" attributes before he can be accepted as a member. Moreover, this is necessary because of the primary concern of the State for the safety and well-being of its people.

THE LICENSURE EXAMINATION FORMAT

In 1992, the Professional Regulation Commission initiated the full computerization of the licensure examinations which, in effect, totally discarded the tedious and cumbersome manual operations. The following are its innovative features: (1) the maintenance of a test questions data bank; (2) extracting and printing of test questions by the computer; (3) reading of answer sheets by the Optical Mark Reader (OMR); and, (4) computer correction and processing.

The test banks, set up by the Chairperons and Members of each of the professional regulatory boards, consist of test questions prepared and deposited by them. The questions are designed to attain: (1) Examination Objective which is to obtain valid and reliable information as to whether the examinee possesses the technical competence required for admission to the profession; (2) Standard of Technical Competence which means that the

examination should test whether the examinee merits the minimum standard of technical competence expected of a newly-qualified member of the profession; and (3) Nature of Questions which should emphasize technical knowledge that is currently relevant to the profession concerned and adequately discussed in textbooks and other professional literature.

Moreover, the test questions are categorized according to the following: (1) topic or concept in the approved syllabus for the subject; (2) level of difficulty as to easy, moderate, and difficult; (3) cognitive level: memory, comprehension, interpretation, computation, application, analysis, problem-solving, and other high-order thinking skills or abilities; (4) knowledge and proficiency level; and (5) question type: objective, essay, problem-solving, design or drawing which shall have four items for the choice of one correct answer.

At least five hundred (500) test questions/problems are initially deposited in the Test Bank by each of the Chairpersons and Members of the professional regulatory boards for each of the subjects assigned to him. At each of the subsequent examinations, the Board Chairperson or Member deposits at least three hundred (300) additional questions in the Test Bank until it shall reach the ideal level of three thousand (3,000) test questions or problems.

Extraction of the test questions are also done electronically. The computer selects the test questions at random. Each test question is representative of each topic in the approved syllabus to ensure a comprehensive and balanced coverage. No single topic or area is to receive undue weight in the examination.

The randomized selection of test questions are prepared in two (2) sets, to minimize cheating in the examination room: Set A which is the set initially drawn at random; and Set B which is the random rearrangement of the same items found in Set A. Hence, while Sets A and B measure the same concepts and skills, they entail two independent answer keys. These two sets of differently arranged test questions are drawn and assembled in an encrypted disk before printing.

The encrypted disks containing the test questions are fed into the computer for stenciling by the Board Chairperson or Member concerned, with or without the assistance of the computer operator. After stenciling, the Board Chairperson or Member further proof-reads the stencil, and if found in order, authorizes the

Commission personnel incharge to print or mimeograph, assemble, pack, and seal the box containing the test question sets. The whole procedure is done inside a security room within reasonable hours before the start of the examination. Distribution of test questions to the testing centers are done by authorized Commission personnel.

Test questions used in the last examination, or those which have become irrelevant, are withdrawn from the Test Bank. Withdrawn questions, if still relevant, are re-deposited after modification. Test questions for replacement are abreast of the economic, technological, and scientific modernization and globalization of the profession. The proceedings of withdrawal and replacement take place under extremely strict confidential conditions.

After the answer sheets are read or scanned by the Optical Marck Reader (OMR) and checked, raw scores are obtained and adjusted through a transmutation table. Grades of all subjects are consolidated to arrive at a general average rating. The final stage shortly before the release of the examination results is the decoding and final reporting.

Linking with the Academe

By virtue of its statutory mandate, PRC is a governmental but independent agency. However, it maintains close linkages with the academe as a means of ensuring that it produces valid examinations.

Each Licensure Board of the PRC consists of 3 to 7 members who were appointed by the President of the Philippines upon the recommendation of the PRC, selected from among the nominees submitted by the accredited professional organizations. To qualify for appointment as board member, one must be an outstanding practitioner of the profession preferably with experience with the academe and must not be presently connected either as an administrator or faculty member of a college or university offering a program concerning the particular profession concerned.

The normal procedure followed-in the development of test questions is oriented towards assuring their validity. The board members prepare the syllabi or table of specification for the subjects specified in the law creating the Regulatory Board concerned. The syllabi are then shown to the academic faculty of

the institutions which have graduates applying for entrance to the practice of the profession. Their comments are taken into consideration in the subsequent revision of the syllabi. The revised syllabi are made the basis for the formulation of the corresponding test questions which are then stored in the computerized data bank.

New test items on concepts, principles and skills that are meant to measure the "must know" component are continually being formulated and put in the data bank to replace those already used. Extra care is taken to see to it that these new test items are couched in a different phraseology that would make them clearly distinguishable from the items intended to measure these concepts, principles or skills in a test which has just been administered.

The Licensure Exams vis-a-vis the Quality of Tertiary Education

Performance of graduates of a school in the licensure examinations is one gauge of the quality of education. The percentage of the graduates of an institution who pass the board examination is a good indicator of the quality of the attained curriculum as well as of the implemented curriculum. Many institutions understandably aspire to be included in the top ten performers in each board examination. This achievement is certainly given recognition by the PRC and is sure to provide good advertisement and promotional material for these institutions to attract and get more students. Moreover, examinees who top the examination are usually offered plum positions and high salaries, a circumstance which adds luster to the reputation of the schools from which they had graduated.

The PRC plays a key role in the country's renewed thrust for attaining quality education. It has authority to evaluate and inspect school and to recommend their closure if warranted. However, to effect the closure of a school is very difficult and time-consuming to carry out, the PRC has resorted to availing of some other effort which would in effect achieve this. It is now undertaking the ranking and rating of institutions based on the five-year performance records of the schools in licensure tests. Consistently low-performing schools are identified and after giving them reasonable time to make improvements in the performance of their graduates in the examination and still no such mark improvement exist, then the list of said schools may be published to dissuade students from enrolling in them.

However, even this approach may appear to be somewhat ineffective. The social and economic value given by Filipinos for getting a college degree is so great that financially poor parents would send their children even to any school just so their son or daughter could earn a college diploma. This compelling attitudinal concern for education has resulted in the continuing existence of colleges of mediocre quality. Such schools continue to get students in spite of their very poor batting average in the professional licensure examinations.

The low quality of education given in some institutions, and consequently of the poor quality of their graduates, is reflected in the low percentage of passing registered. Over the last five years, the rate of passing has been consistently low in accounting and high in medicine. The passing rate for engineering has also remained to be low.

The passing rates should not be viewed solely as a reflection of the institution's capability, to include its faculty and facilities, policies of admission, retention and similar aspects, but also of the quality of the students accepted to the program. However, as earlier pointed out, the examinees' combined performance is a reflection of the quality of the attained curriculum carried out in a particular school.

The licensure tests, although prepared by known specialists in their field, are simply pegged at an entry-into-the-profession level; hence, these tests are directed largely at assessing what the degree program has imparted to the graduate and how much "know how" he had acquired. In spite of this not-too-stringent orientation of the examinations, many still fail to meet the criterion cut-off scores set by the professional boards.

Each year, half a million students, more or less, graduate from colleges and universities. Large numbers take the licensure tests hopefully expecting to pass so that they would qualify to enter into the practice of their chosen professions. Some board examiners given examinations twice and even up to six times a year to accommodate the large number of applicants.

In the Philippines, the data and statistics drawn from the operational experience from 1983 t 1993 (see Table 1) to the table indicated below) indicate the trend in the number of examinees and the percentage rates of passing per year. It is clearly shown that the number of examinees which include repeaters had steadily

Table 1

YEAR	EXAMINEES TESTED	NEWLY REGISTERED PROFESSIONALS	PERCENTAGE OF PASSING
1983	78,208	38,586	50.00
1984	83,407	41,229	48.00
1985	84,723	37,648	45.00
1986	77,507	35,282	46.00
1987	82,264	36,169	37.00
1988	86,692	29,940	42.87
1989	92,756	34,064	41.78
1990	110,163	38,493	49.69
1991	116,077	46,457	46.00
1992	125,043	56,489	45.00
1993	128,143	69,587	41.00

increased through the years. From only 78,208 examinees in 1983, the number of those who took the licensure tests increased to a total of 125,043 in 1992 and to 128,143 in 1993.

With respect to passing rates, except in 1983, the number of successful examinees who were newly certified were less than 50 percent of the college and university graduates who took the tests. This indicates that, by and large and at best, only one out of every two examinees manifested evidence of having acquired the knowledge and skills considered adequate to meet the basic requisites for admission to membership in the professions applied for.

Without the licensure tests, there would remain to be very few indicators which we can rely on as a gauge of the quality of the academic skills the students acquire upon finishing their degree programs. By no means is the licensure test a perfect medium for measuring what one attains from going through the curriculum. However, in the absence of a national testing instrument for assessing achievement at the tertiary level, the licensure tests still provides the best alternative medium for measuring academic performance. This is because those tests generate useful information which provides a good basis for conducting such as assessment. The institutional passing rates, taken in conjunction

with the test item statistics, are the needed data thus generated which can be used for evaluation.

Epilogue

The full computerization of the licensure examinations of the Professional Regulation Commission has brought about far-reaching benefits that have gained for the Commission and the Philippines as whole a renewed confidence in the professional licensing system.

Full computerization resulted in quick scoring, hence, faster reporting of examination results within 2 to 21 days from the last day of the examinations. The Commission aims to shorten the waiting time some more. In addition, full computerization maintained consistency and removed subjectivity in scoring thereby lessened the burden on the examiners to explain scores or scoring procedures.

The program also made possible broader sampling and coverage of tests. At the same time it broadened the examiner's skill in test construction. Item banking was also greatly enhanced and high technology harnessed for wide-scale testing.

The full computerization program of the Commission has regained for the Commission its credibility and the general public now, here in the Philippines and abroad, is assured of our commitment and capability to fulfill the PRC mandate: that of providing the dynamic force through responsible and responsive regulation and supervision in the development of competent, virtuous and productive professionals, who share in the vision of national prosperity, international recognition and excellence.

HOW WELL ARE FILIPINO STUDENTS READING IN ENGLISH?

Lenore de la Llana-Decenteceo & Basilio R. Iledan
Center for Educational Measurement

This paper reports on the reading levels in English of students from Grade 3 to Grade 6 in selected private schools. These schools are located in Metro Manila and in the provinces. The reading levels are based on their performance on the CEM Reading Tests. These tests were administered for four consecutive years: from school years 1992-93 through 1995-96.

The Sample

In its first year of administration, a total of 2,039 students from seven private schools took the test. The following year it was administered to 6,788 students from 18 schools. Some of the schools had been tested the previous year. On the third and fourth years, almost 28,000 students from 96 schools took the test. Several hundred examinees took the same form of the test in two consecutive years: 1994-95 and 1995-96.

The Reading Test

The CEM Reading Test was designed to meet the need for a locally-developed standardized instrument for evaluating reading skills in English of Filipino students. It is based on the requirements of the New Elementary School Curriculum, or NESC, which is mandated by the Department of Education, Culture, and Sports for both public and privately-owned schools. The NESC specifies the minimum learning competencies for each grade level in elementary school.

The content specifications of the tests are based on the analysis of the English language as a component of the existing curricula and the reading materials being used by the teachers and students in their classrooms. The tests,however,are not curriculum-bound. Although the tests include the three basic content areas of vocabulary, comprehension, and study skills in English as specified in the Communication Arts curriculum, the test items are not the simple and straightforward type usually found in textbooks in English. Most of the items are contextual and deal with practical situations which necessarily elicit comprehension and reasoning abilities.

The test is a series of three forms derived from various combinations of the subtests shown in Table 1. These forms are referred to in this paper as RT1 (Reading Test Level 1), RT2 (Reading Test Level 2), and RT3 (Reading Test Level 3). They are administered at three different exit points: RT1 at Grade 4, RT2 at Grade 6, and RT3 at Fourth Year high school. The term "exit point" refers to the transition between the primary to the intermediate level, the intermediate to the secondary level, and the fourth year of high school. Based on the general performance scores of students on the reading tests, they are described as either reading ***below***, ***at***, or ***above*** grade level.

These forms, however, are also administered to Grade 3, Grade 5, and First Year through Third Year high school students,

Table 1
Brief Descriptions of the Content Areas in the CEM Reading Tests in English

Content Area	Description
Scanning	measures the ability to pick specific facts, or locate data from a given text without understanding what is being read.
Vocabulary	measures the range of word knowledge as well as mastery and control of rules that govern the language. It measures the ability to recognize the meaning of words that are familiar and unfamiliar by identifying affixes and root words. It also measures knowledge of synonyms of words in isolation as well as recognition of the exact meaning of new and unfamiliar words or phrases in context.
Points of View	assesses the ability to put together or connect with the aid of ideological clues groups of ideas which should belong together. It tests the ability to perceive the consistency of different opinions or ideas expressed.
Comprehension	measures the extent of understanding of a written text. It measures the ability to extract direct or explicit meaning, make inferences, evaluate and make judgments from a written text.
Study Aids	measures the extent of knowledge and use of reference materials in gathering and interpreting information.

respectively. When given to students at these grade levels, the results can be used to (1) gauge the upper and lower limits of competence in reading in the lower grades, and (2) guide the development of the necessary intervention programs at these levels.

Measures of Reading Competence

Performance on the CEM Reading Test is expressed both quantitatively and qualitatively. Quantitative scores are expressed in percent correct, stanine, standard score, and percentile rank. The qualitative scores are expressed in two ways: (1) a quality index which ranges from "Very Poor" to "Excellent" on a 9-point scale, and (2) the *Instructional Reading Level,* or ***IRL.*** The concept of the ***IRL*** is adopted from Prescott (1978). He defines it as *"the reading level at which a student can read without experiencing too many difficulties."* The ***IRL*** is a criterion-based measure that indicates how well a child is reading at a particular level. This index is the focus of this paper.

In the initial stages of the development of the test, there were no benchmark indicators for how well the Filipino student was reading in English. What was available was the reading test scores of the initial sample of students at Grades 3 and 4, and Grades 5 and 6 (CEM Technical Manual, 1996). The performance of these four groups was made the basis for developing the ***IRL.*** That is, in this study, the reading levels have as their reference the performance of these groups. The results are shown in Table 2.

Table 2
Percentage Distribution of Instructional Reading Levels (IRLs) of the Reference Groups per Grade Level

	Grade 3 (n=686)	Grade 4 (n=635)	Grade 5 (n=723)	Grade 6 (n=785)
BELOW Grade Level	60%	45%	59%	88%
AT Grade Level	40%	55%	41%	12%
ABOVE Grade Level	0%	0%	0%	0%

SOME FINDINGS

We now proceed to discuss some of the trends gleaned from the results of the reading test. In particular, we present the results for the following groups: (1) students at two exit points, (2) two cohort groups who took the same test in two successive years; and (3) a cross-section of students from School A.

In the figures that follow, percentages are used to indicate the number of students reading at a specific level. A student who reads ***at grade level*** answers correctly the adequate number of items which have been previously determined as appropriate for his or her particular school grade. These items were answered correctly by at least 50% of the reference group for that grade level.

Reading Levels at Exit Points

As defined earlier,Grade 4 and Grade 6 are "exit points". It is from these grades that students move from the primary to the intermediate, and from the intermediate to the secondary or high school level. Figures 1 and 2 present the reading levels attained by students at these two exit points for four successive school years.

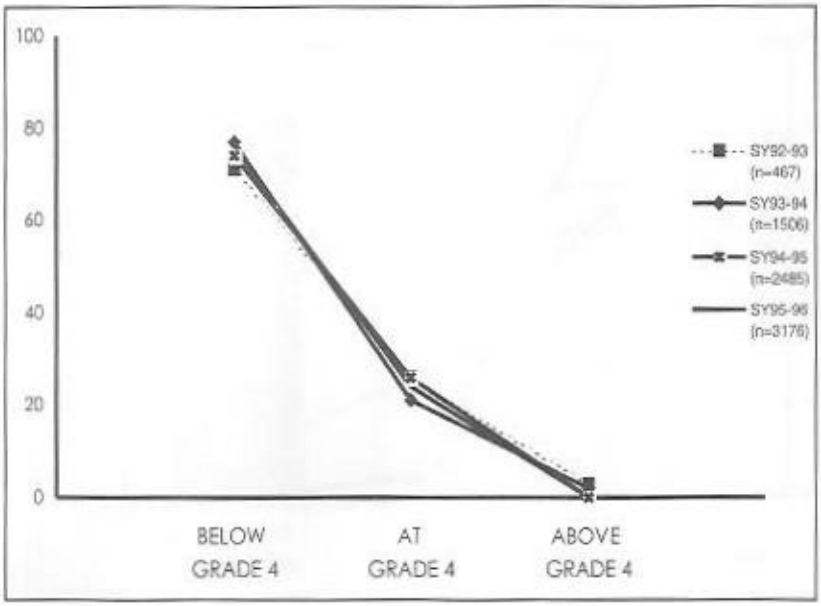
IRLs of Fourth-Grade Students

The number of fourth-grade students reading at grade level ranges from only 21% to 26%. (See Table 3 and Figure 1.) There are more students reading below grade level. At grade 3 level, the rate changes from 27% to 41%. At lower than grade 3 level, the rate changes from 30% to 49%. The combined rates for those reading below grade level ranges from 71% to 77%. Only 3% or less are reading above grade level.

Table 3
*Percentage Distribution of **IRLs** of Grade 4 Students Across Four Schoolyears*

	SY 1992-93 (n=467)	SY 1993-94 (n=1506)	SY 1994-95 (n=2485)	SY 1995-96 (n=3176)
GR3-	30	37	47	49
GR3	41	40	27	27
GR4	26	21	26	24
GR5	3	2	0	0

Figure 1. Reading Levels of Grade 4 Students Across Four Schoolyears



***IRL**s of Sixth-Grade Students*

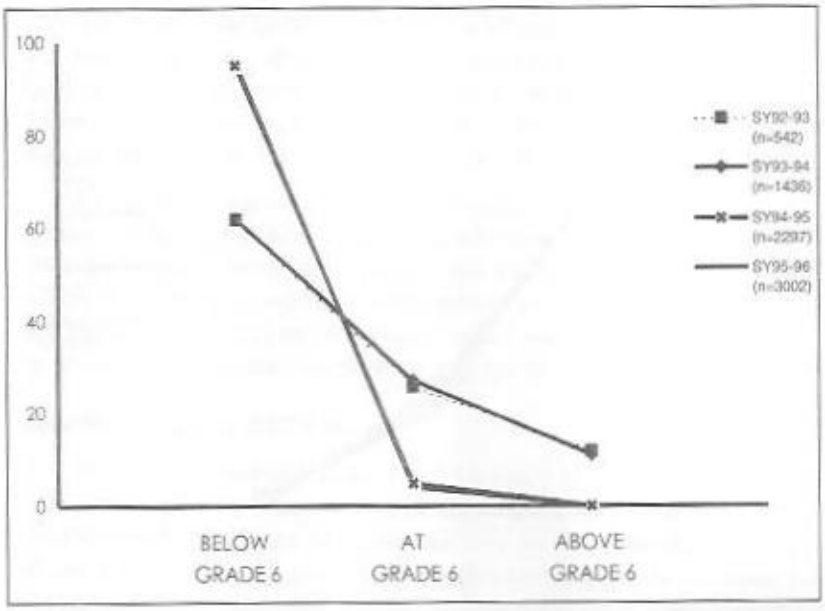
The number of sixth-grade students reading at grade level across the four years is less even. For the first two years, the range is from 26% to 27%. It is low for the third and fourth years: 5% and 4%. (See Table 4 and Figure 2)

Once again, there are more students reading below grade level. The Grade 6 students reading at grade 5 level range from 33% to

Table 4
*Percentage Distribution of **IRL**s of Grade 6 Students Across Four Schoolyears*

	SY 1992-93 (n=467)	SY 1993-94 (n=1506)	SY 1994-95 (n=2485)	SY 1995-96 (n=3176)
GR5-	27	29	60	63
GR5	35	33	35	33
GR6	26	27	5	4
YR1	12	11	0	0

Figure 2. Reading Levels of Grade 6 Students Across Four Schoolyears



35 %. Those reading below grade 5 level range from 27% to 63%. The combined totals of those reading below grade 6 level across the four years ranges from 62% to 96%. Only 11% to 12% are reading above grade 6 level.

Students from Metro Manila and non-Metro Manila schools. Although there are more non-Metro Manila than Metro Manila schools by a ratio of at least 3:1, the *differences between* ***IRLs*** of students from these schools are worth noting. The ***IRLs*** of sixth-grade students from both sectors within two successive school years show a small difference in percentage of students reading ***below grade level*** between the two groups: 98% in 1994-95 and 97% in 1995-96 for non-Metro Manila schools; 90% and 92%, respectively, for Metro Manila schools.

On the other hand, the profiles of fourth-grade students for the same school years also show a greater number of students reading ***below grade*** level: 83% and 56% for Metro Manila schools, and 96% and 80% for non-Metro Manila schools. In school year 1995-96, for the Metro Manila schools, it must be noted that there are more fourth graders reading ***at grade level*** than there are among the sixth-graders.

Figure 3. Reading levels of Grade 6 students for schoolyear 1994-95

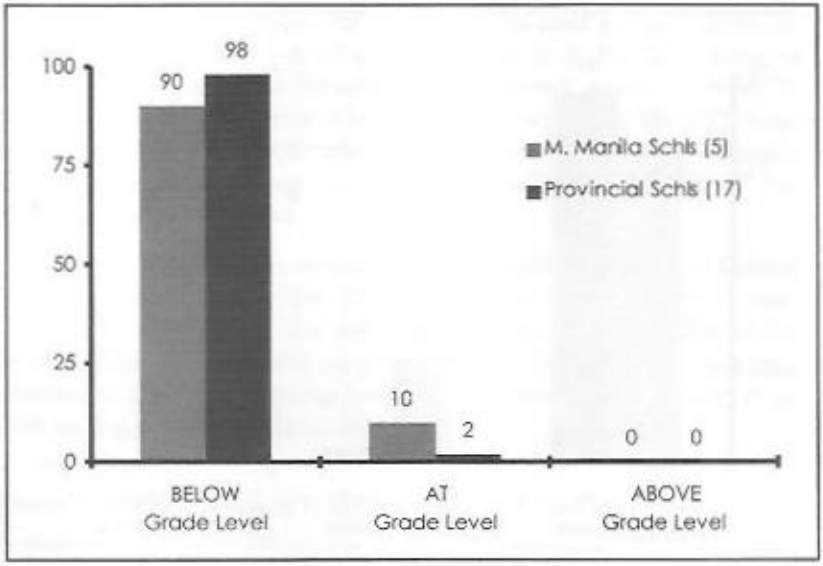


Figure 4. Reading levels of Grade 6 students for schoolyear 1995-96

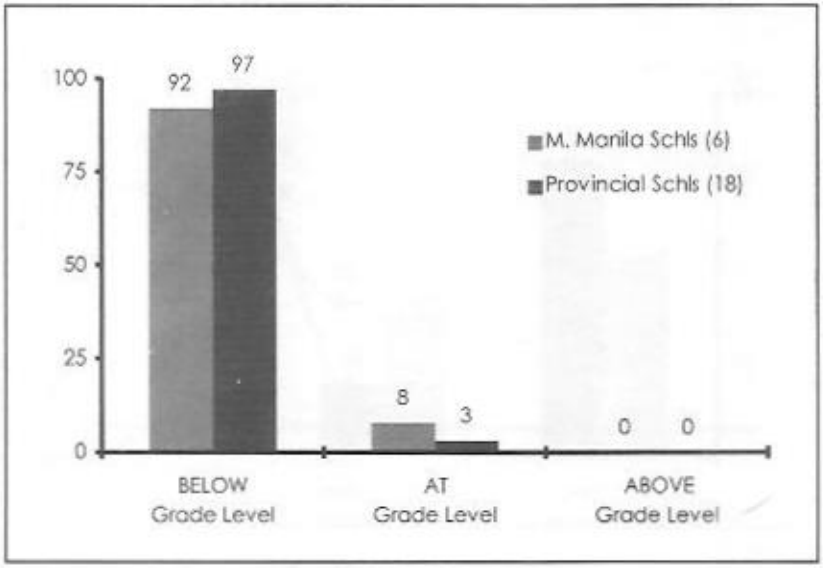


Figure 5. Reading Levels of Grade 4 Students for Schoolyear 1994-95

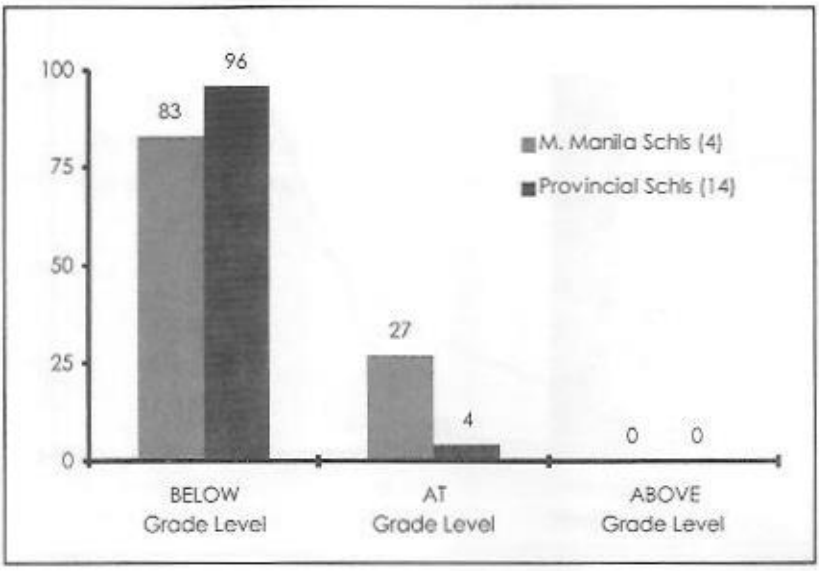
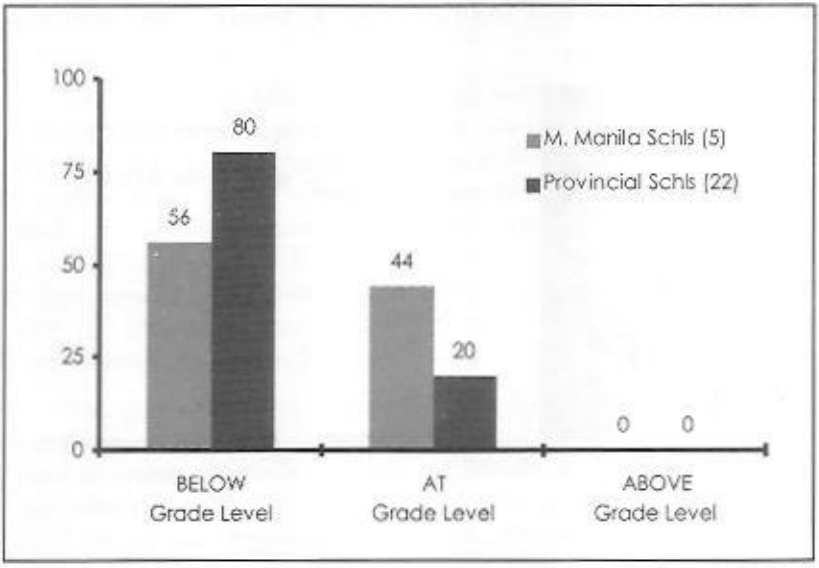


Figure 6. Reading Levels of Grade 4 Students for Schoolyear 1995-96

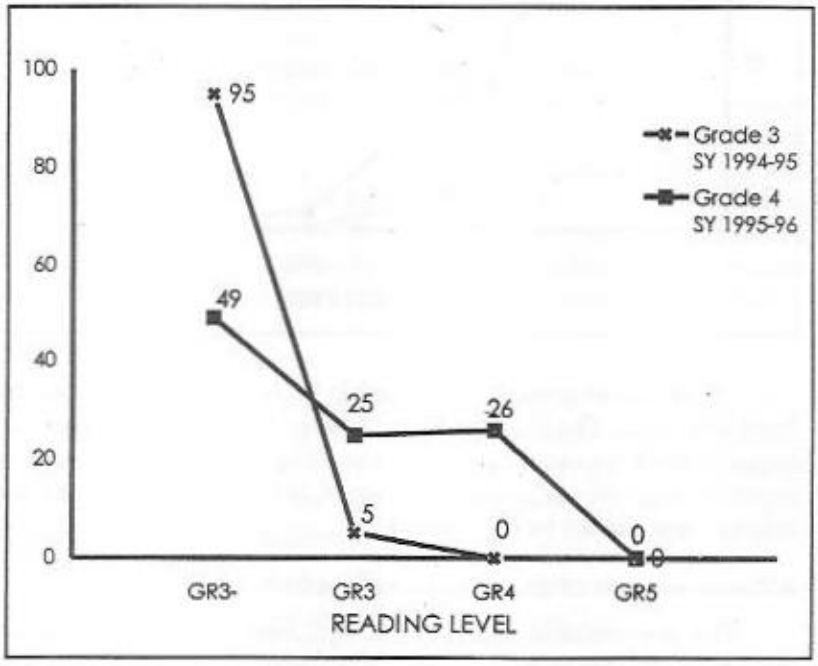


A Cohort Profile

Two groups which took the same test twice in succession with an interval of almost a year between tests were identified. These cohort groups came from four schools. The first group, Cohort A, consisted of primary school students who took the RT1 form at Grade 3 and again at Grade 4. The second group, Cohort B, consisted of intermediate school students who took the RT2 form at Grade 5 and again at Grade 6. These groups allow us to examine changes in performance on the same test as a result of one additional year of school.

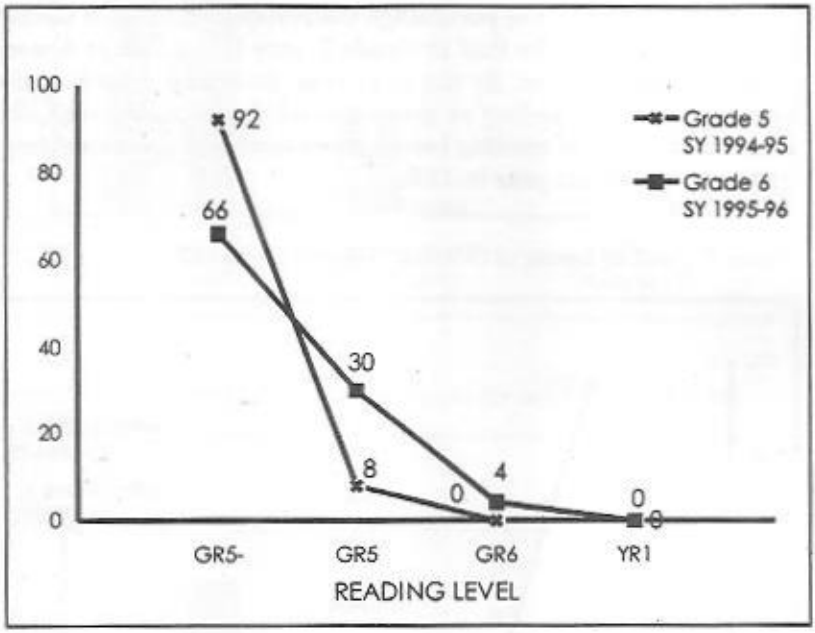
Figure 7 shows the percentage distribution of ***IRL***s of Cohort A. The results indicate that in Grade 3, only 5% of Cohort A were reading at grade level. By the next year, in Grade 4, 26% of the same group were reading at grade 4 level. In the same year, the number of students reading below grade level had *decreased* from 95% in the previous year to 74%.

Figure 7. Reading Levels of COHORT GROUP A (n=245)



As seen in Figure 8, for Cohort B, the number of students reading at grade level stayed low: 8% at Grade 5 and then 4% at Grade 6. The number of students reading below grade level *increased* from 92% to 96%. However, the number of students reading at grade 5 level increased from 8% in school year 1994-95 to 30% in school year 1995-96. Although the number of students reading below grade 5 level decreased during the same period, it has to be admitted that these students still lag behind.

Figure 8. Reading Levels of COHORT GROUP B (n=284)

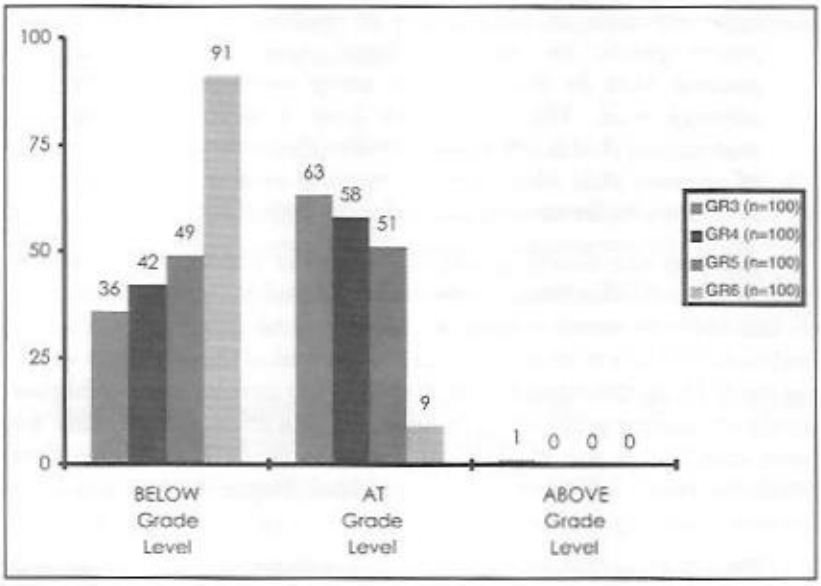


With cohort groups, it is possible to trace changes in reading level over time. The findings from these groups seem to suggest an inquiry into what causes changes in reading levels. Although school experience is more or less held constant, the effects of practice from taking tests cannot be discounted.

A Cross-section of Students from One School

The performance of Grades 3, 4, 5, and 6 students from one school for the same school year are shown in Figure 9. Recall, however, that Grades 3 and 4, and Grades 5 and 6, took different forms of the test.

Figure 9. A Cross-sectional Profile of Reading Levels of Students in One School, SY 1995-96.



The figure shows that the students reading *at* grade level is highest at Grade 3 (63%) followed by Grade 4 (58%) and Grade 5 (51%). The lowest is the Grade 6 batch with only 9% reading *at* grade level. It is also this batch which registered the highest percentage of students reading *below* grade level (91%). Since different forms of the test were involved, it is possible to refer only to the downward trend in performance. However, the large decline from 51% (in Grade 5) to 9% (in Grade 6) involves the same test.

CONCLUSION

It may be concluded, albeit tentatively, that the higher the Grade, the fewer the students reading ***at grade level.*** If reading levels are already low at the fourth grade, and are much lower at the sixth grade, one can raise the question of whether in fact students are reading to learn.

There is an urgent need to determine the reasons for this downward trend. Copperman (1986) points out that

> *"There is a rather neat aphorism which expresses the attitude of most school teachers and administrators toward reading instruction in the fourth grade: through*

third grade the child learns to read; after third grade he reads to learn. On the one hand... (schools)... require approximately an hour a day of reading instruction in fourth grade; on the other hand, most school people assume that by fourth grade every normal child can already read. The result? An hour a day of reading instruction that is often conducted without the seriousness of purpose that characterizes reading instruction in the primary grades (one through three)" (pp. 82-83).

Also, by the fourth grade, a student is expected to read for information. At this time, he/she is introduced to reading materials in the content areas - science, history, and geography. Hence, instruction tends to focus more on the content of these subject areas rather than on the other skills related to the development of higher levels of reading proficency. In addition, one must ask whether we have instilled in our students a desire to read. This means that students read not only to fulfill school requirements but also because they enjoy reading.

The *IRL* profiles we have presented illustrate in very general terms the state of reading of Filipino elementary students from the private schools tested. These profiles highlight a common observation by teachers, educators, parents, and other concerned individuals as well that our students are reading much lower than expected. Further, our evidence corroborate those of earlier surveys and assessments underscoring a continuing decline in the quality of education in Philippine classrooms in general (Report of the Congressional Commission on Education, 1991), and a decline in reading achievement scores among Grade 3 to Grade 6 students in particular (DECS, 1995). In fact, the lowest scores in reading were obtained by Grade 4 and Grade 6 students.

The instructional reading level of a student at any grade, however, is more meaningful within the context of his/her own development, that is, his/her *learning-to-read* and *reading-to-learn* experiences in school and in the home as well. Thus, a formative, classroom-based assessment of a student's competence in reading through the grades is absolutely essential. Portfolio assessments of the nature described by Carlota (1997) in this volume are in order. In line with the schools' desire to improve their students' reading performance, school administrators and classroom teachers may wish to utilize the results reported here in various ways, including: clarifying attainment targets in reading for each grade level,

developing reading programs or evaluating existing ones, reviewing instruction and assessment of reading in the classroom, identifying strengths and weaknesses of students, and designing classroom remediation strategies.

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