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Unifying God And Science: An Educator's Perspective

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With the advent of the third millennium, it behooves upon mankind to take a close stock of itself, reappraise its most revered beliefs, and see if these will withstand the test of a new world that to this day remains enmeshed with grave social problems, historical discontinuities, economic inequalities, ideological wranglings and political disputes cultural and ethnic differences and even religious wars and conflicts.

Science, meant to probe matter and unlock the forces of nature for beneficent ends, has also opened Pandora's box and the plagues it contained, albeit in their more modern and sinister form: materialism, atheism, the invention of lethal weapons of mass destruction, genetic manipulation and experimentation. Science that is supposed to tame nature has also paradoxically contributed to ecological degradation and environmental destruction.

God, to whom mankind is supposed to worship and adore and to look up to as source of wisdom, love, harmony and inspiration, has been extrapolated by religious leaders and cultists to conform to their mandane beliefs, each claiming to be superior to the others and each claiming to be the only road to salvation. Compounding the problem are the claims of the rationalists, existentialists, nihilists, communists and radical socialists that "God is dead." As a result mankind has been left without a rudder to steer it in the troubled waters of disbelief. With the alleged death of God also went with it the death of spiritual and moral values, the desecration of morality and ethics, the increase in crimes, the desecration of the rule of law, the degradation and destruction of God's handiwork which is mother

nature.

As we enter the third millennium, there is an urgent need now for the highest moral and spiritual recrudescence based on a return to God, as well as redirecting science and technology to serve the ends of man and the international human family in their capacity as God's own beloved children.

From the viewpoint of an educator, we can and we must reconcile God and science, faith and reason. We must see to it that the great ideals of education must spring from the fountain of God's true ideals. If God is the true perfection, then education must help human beings reflect such perfection. If God is the father of mankind and the international human family, then we must subsume education to a sense of social devotion, as the child loves and obeys his parents; as the child loves and honors his family. If God is the creator of all things knowable and unknowable, then education must also enable the children of God to exercise dominion over society and nature in keeping obedience to God's mastery over everything. If God is the Creator and Master and the Ruler of the material world, then education must draw inspiration from Him to He, too, can make use of material world and be the Master of science as God ordains.

I . Curriculum Planning and Development

From the viewpoint of an educator, we can best arrive at a true marriage of faith and reason. God and science, through curriculum planning and development. Developed constructively, organized curriculum, considered the greatest social "invention" of all time, can build a civilization of responsible people willing to solve life's problems for the well-being of all.

Let us examine thoroughly the world of curriculum development in order to succeed in our long-range goal to bridge science and God as a unified concept.

II . Curriculum Concepts

① In terms of experiences: Curriculum is the sum total of all student activities and experiences which the University direct, wherever and whenever they may be found.

② In terms of courses: Curriculum consists of the courses leading

to certain goals.

③ In terms of the program of the university: Curriculum is the ordinary program in terms of subjects offered in the school.

III . Principles of Curriculum and Instruction

① Students must be given the opportunity to practice the kind of behavior implied by the learning-teaching objective. In the case of simple memorization of terminology, students should be called on rather often to repeat that terminology precisely and accurately. In the case of the learning objective of application, students must be given opportunity to make several applications and to return from time to time to other applications to reinforce the learning desired. In all of its first principle, we stress the importance of the activity of the students. Unless they are actively involved in learning, they will not learn except in the most superficial way.

② The learning experience must give students the opportunity to deal with the content implied by the objectives. If the objective is to develop the skill of inductive scientific reasoning, then the learning experience must place students in a genuinely scientific setting where they encounter scientific data that can be analyzed by means of appropriate scientific instruments.

③ The desired learnings or level of performance must be within the range of possibility for the students involved. This principle calls for an awareness on the part of both instructors and educational managers of the development stages and levels of cognitive, moral and psychological growth. This principle holds for appropriate expectations of students' performance? appropriate to their level of development.

④ There are many particular experiences that can be used to attain the same objectives. Frequently teachers settle on only one or two examples or one or two ways to look at the problem or concept. This principle encourages more concern for diversity of student learning styles, or cultural backgrounds. It also encourages the teacher and educational manager constantly to enlarge their repertory of teaching aids and resources, in order to provide the student with a new approach to a learning task when another one has failed to bring about the desired results.

⑤ The same learning experience will usually bring about several outcomes. Not infrequently a student's response to a question will take the teacher completely by surprise. Instead of dismissing the

answer, the instructor should ask the student to clarify how he or she came up with that response. Frequently, the students come to quite legitimate learning or insights that the instructor had not foreseen as flowing from the assignment. This principle also alludes to the hidden or indirect curriculum. Sometimes the teacher unwittingly communicates as value, an attitude, or a reward system that is quite contrary to the objectives of the instructional activity. Educational managers can be especially helpful in pointing this out to the teachers.

⑥ Student learnings will be strengthened, deepened, and broadened if a skill, a concept, relationships, principles, etc., are encountered and used repeatedly in several disciplines or discrete frameworks of learning. This principle points to the importance of a teacher's knowing what other teachers are teaching and have taught to their students. In that way the teacher can draw many comparisons, contrasts, and examples from the student's own experience. Consistent repetition in the use of learning and expressive skills will not only lead to their habitual use but to their refinement and broader scope as well.

IV. Characteristics of Curriculum

- ① Continuously changing with time as the needs and nature of society change.
- ② Flexible and adaptable to suit community demands.
- ③ Consistent with the general aim of education in a particular country.
- ④ A cooperative enterprise of students, educators and laymen.
- ⑤ Comprehensive and inclusive.

V. Groups of Activities in the Curriculum

- ① Instructional fields: Activities designed to give instruction on the universal elements of culture in the form of subjects.
- ② Co-curricular or extra-curricular fields: Besides the regular subjects of instruction, supplementary activities are provided. Among these are assemblies, clubs, athletics, student councils, glee club and school paper.
- ③ Community activities: Activities of the learners are not limited to the university alone. Participation in movements promoted by

government, civic, social and commercial agencies are encouraged.

1. The Philippine Experience

To emphasize how curriculum development can lead to a nation's overall development, we turn to the Philippine experience. Teacher education in the Philippines started with the royal decree of December 20, 1863 issued by the Madrid government which ordered the opening of the Normal School for Male Teachers the main purpose of which was "to serve as a source of supply for religious, moral and educated teachers to take charge of the native schools of primary instruction throughout the Archipelago." This first teacher education institution was managed by the Jesuits fathers. The counterpart for the female, the Normal School for School Mistresses, was opened in 1871 in Nueva Caceras under the sisters of Charity. Later, another Normal School for Women was opened in Manila under the Assumption Sisters.

The first teacher education course covered three years by candidates who were at least 16 years old, of good moral character, and conversant in spoken and written Spanish. The 3-year curriculum consisted of 80% general education subjects and 20% Elements of Pedagogy, and Observation and Participation in the training primary schools which were taken up during the last 6 months of the course. The general education subjects included:

Religion, Morals and Sacred History — Theory and Practice of Reading

The students were carefully evaluated and, at the end of the course, classified into three categories in accordance with their teaching responsibilities:

- ① To teach the advanced students — Those who graduated with excellent grades
- ② To teach the Beginners — Those who graduated with good and fair ratings
- ③ To act as Assistant Teachers — Those who graduated with rating of "approved"

When the Americans colonized the country, the Philippine Normal School was opened in 1901 and later the Zamboanga Normal School, Iloilo Normal School, Leyte Normal School, Albay Normal School, Cebu Normal School,

Pangasinan Normal School and Ilocos Norte Normal School. Private

Schools run by Christian missionaries, religious orders and by private individuals opened also normal courses such as the Siliman University, National University and Centro Escolar University, among others.

Until the late 1920's most teacher education courses were at the secondary level and the aim was to teach the content and methods of teachings in the shortest period of time possible in order to meet the demand for teachers for an expanding public elementary system. Content patterns, practices, philosophy and textbooks were all patterned after the teacher education colleges in the United States, the Filipino teacher's expected role in the building of the Filipino nation was prominently mentioned in Theohald's *The Filipino Teacher's Manual*:

When these pupils have become strong, healthy individuals, understanding the true meaning of citizenship, and knowing their duties as well as their rights and privileges, the teachers will look with joy upon the new nation that he has helped to create.

After World War II, teacher education started considering the results of experiments in Philippine Schools and emerged from a mere copycat of the American system to one which was distinctly Filipino.

When Dr. Onofre D. Corpuz was Minister of the Ministry of Education, Culture and Sports (MECS) in the early 1980s, he caused the review of elementary education and made the thrust of elementary education what we now recall as the "back to the basics". He ordered the review of the teacher education curriculum. What followed was what will be remembered as the most democratic and cooperative process of developing a teacher education curriculum.

In summary, it can be said that the present teacher education curriculum evolved from the sustained and cooperative effort to develop teachers who would be able to assume the following roles:

- ① an effective conveyor of organized knowledge which has developed from human experience
- ② an efficient promoter and facilitator of learning that will enable the learners to develop to the fullest their potentials for a continuing pursuit of self-education; and
- ③ a humanist who possesses a clear understanding and appreciation of human values that elevate the human spirit.

Among the salient features of the present teacher education curri-

culum are:

- ① provision for the mastery of the subjects in the basic education continuum;
- ② inclusion of new relevant courses such as Social Philosophy, Values Education, Non-formal Education; Educational Research, Community Immersion, and Educational Technology which includes Computer-Aided Instruction;
- ③ integration of theory and practice in each professional subject;
- ④ total immersion in practice teaching in the last semester, which includes participation in relevant community activities.

Over 13 decades, the teacher education curriculum has changed in response to changing needs. As we are in the twenty-first century, new challenges have emerged which should be addressed: the need for global education, accelerated technological inventions which continually widen the gap between the "rich" and the "poor", dwindling natural resources, to name a few.

2. The Perfect Teacher

The search for her perfect teacher will continue. There will be changes and transformations until the ideal teacher education curriculum is evolved. The important lesson we learned, however, is that the best curriculum is as good only as the people who implement them and those who undertake them. Reduced to the minimum essentials, therefore, the two most important components of the teacher education curriculum are: the student who desires to be a teacher, and the teacher educator who assists him in achieving his goal. What takes place between the two is the ideal teacher education curriculum.

VI. The Elementary and High School Curriculum

Educators, policy makers and ordinary people acknowledge the role of the curriculum in the child's acquisition of knowledge. A child's early impressions do not merely enter his mind. He forms them. The child absorbs impressions from his experiences, which is the curriculum offered by the school. He constructs his mind, step by step, until he is able to think, and this is the total scenario in his elementary grades and during the first two years in secondary level. As he adds more and more links or connections to associated concepts, he gradually develops his own experiences based hierarchy of related concepts in a cognitive structure. The cardinal rule in the theory of

curriculum development implies that the teacher should know the learners prior knowledge, which he the teacher, will use as starting point in helping the learner develop the concept in his mind.

Thus, in the elementary curriculum development there are some considerations to be observed:

① The stress in the teaching of the skill subject, including the use of repetition, drills and exercises, such as in math, science; use of coaching, more time allotted to the teaching of skill subject. Number of sessions should be more in high school. English is 3 X a week while PEHM is 2 X. In the elementary ? English has 80 minutes, Math, 60, and others have 40 to 30 minutes.

② The stress is in the use of the external senses in Grade 1-IV and the use of the internal senses especially the imagination and the memory in Grade V and VI; while sensitivity activities are more in the secondary level to reinforce the human dignity of a person. Necessary are:

- skills exercises are observing, classifying, making, conclusion; and simple analysis;

- making the children get in touch with the "market place" the reality;

- bringing real objects to class;
- making pupils talk to people.

③ The knowledge subjects are additional venues for teaching the fundamental skills. Subject matter in Science, Social Studies can be used to practice skills learned in the skills subjects.

④ Do not compartmentalize learning. The name of the game is Integration; learning one subject could be reinforced in another subject.

⑤ Teachers should be generalist and not a specialist especially in the primary school; elementary teacher can be able to teach all content subjects (Science, Math, English...) as well as the skills subject like Music, Art, and others except Home Economics, Livelihood areas.

⑥ The teacher is the curriculum in every school. It means that, the needs of the students, the content to be explored, and the stage of development of the pupils should be considered by the teacher when determining what strategy to use. What is important is that teachers recognized what is best to use ? A combination of strategies, rather than rely on a single method. The key is to employ a range of strategies over a period of time, rather than one/two constantly.

VII. Some Basic Guiding Principles in Elementary Curriculum Development

① Schools is mainly about instruction. The focus of every school is on academic instruction. The attention is focused on teaching and learning. The heart of the school is the curriculum.

② Curriculum improvement is a long multi-stage process involving: Awareness? the needs of students, changes, new trends/technologies Planning? The child should be the center of every planning; the outcome behavior of the child Implementation as much as possible, a try - out in a certain district of a decision should be done before a full implementation of the new curriculum to avoid waste of time, resources and others. Reflection evaluation of the curriculum should be done to know the effectiveness and efficiency of such curriculum.

③ Share expertise is the drive of instructional change. The greatest enemy of teachers and school administrators is Isolation. Sharing of expertise inside and outside the school / district.

④ Good ideas come from talented people working together. Effective and efficient Curriculum + Continuous learning opportunities for teacher = high level of classroom performance.

1. Towards a True Unification

There is no finer investment in human progress than in education. It is education that unlocks the human potential for growth and development. Education is both science and religion. Education can meet the needs of science and the needs for man for greater understanding of God as the creator of all things and the father of true science.

Without God there can be no science. From an educator's viewpoint. I feel that it is through curriculum development that we can best achieve the union of God and Science. If I have expounded rather elaborately on the finer points of curriculum development including the Philippine experience, I feel it is because we can apply the same methodologies, the same curricular practices, to the level of God-Science unification.

For at the center of all our educational efforts are the teacher and the students. The former plays a critical role in initiating and adopting reforms, inspiring and energizing students to excel and mobilizing the community to achieve sustainable human development. Meeting the needs of society requires new and better ways of delivery learning if

education is to fulfill its envisaged function in society.

This challenge urges education institutions to reexamine the content of teacher training and to come up with creative strategies in restructuring curriculum and methodologies of formal training in the great ideals of education where purpose is to help human beings achieve resemblance to God's perfection. Therefore, the most prominent curricular reforms that must be initiated to re-tool the teacher for the 21st century are the following:

2. Focusing on the Great Ideals of Education

The overall purpose is to help human beings achieve affirmation of God's perfection, of God's nature of multiplication and to God's nature of dominion. From the affirmation of God's perfection, the perfection of individuality must be established as the ideal of education. The affirmation of God's multiplication means the education of people as individuals and as families with children who are expected to live in harmony with each other, and later also expected to exist in harmony with the other families and with the larger and bigger human communities and societies. The affirmation of God's dominion over nature and over all the creation calls for the provision of the ideals of God as the same ideals that will make individuals and families assume control over nature and society.

3. Focusing on Science Education

The very curricula must prepare students to deal with increasingly sophisticated technologies. The most prominent curricula reforms, therefore, that must be initiated to re-tool the teacher for the 21st century are the following: Focusing on Science and Technology Education, schools must prepare students to deal with increasingly sophisticated technologies. Towards on-line classrooms. Computers installed in different classrooms are hooked with other departments / units in the universities. Entrepreneurial orientation. Emphasis must be given on inculcating independence, creativity, innovativeness, risktaking and sense of urgency – qualities that make a successful entrepreneur.

These developments also bring us to the need of considering the place and role of God-given VALUES in the education of human person? lifelong learning or learning throughout life. This is considered as the "heartbeat of society" which enable an individual to learn how to learn, founded on four pillars of learning: learning to know, learning to do, learning to be and learning to live together.

Quality education then is expensive and therefore it behooves every member of the educational community to contribute his share in the total task of educating the youth. This vision, however, requires political will, relevant and directed efforts, and committed goal-driven workforce in order to bring it down to reality.

A good poem from an oriental poet would summarize what we need to do to meet the challenges in the next millennium:

Come, fill the cup
And in the fire of spring
Your winter garment of repentance fling
The bird of time has but a little wing to flutter
And the bird is on the wing.