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WORKING FOR AN INNOVATION DEAL USA IN THE 21ST CENTURY
TRABAJANDO POR UN TRATO DE INOVACIÓN EEUU EN EL SIGLO XXI
为实现 21 世纪美国创新之政而奋斗

PLANNING & PROGRESS REPORT

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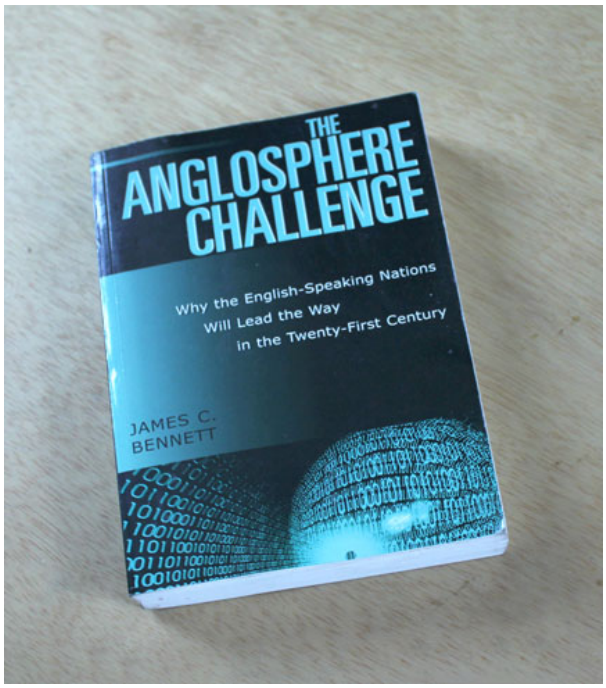

The Anglosphere Challenge Why English-Speaking Nations Will Lead the Way in the Twenty-First Century, written by James C. Bennett and published by Rowman & Littlefield Publishers, Inc., 2004 (ISBN-13: 978-0-7425-3333-2)

ABOUT JAMES C. BENNETT ...

James Charles Bennett (born 1948), one among the most unique thinkers on the issues of political-economics, technological development and inter-ethnic and international relations of our time, is an American businessman, and founder or co-founder of several technology companies and consultancy especially in the field of space launch and Internet transactions. He is an extraordinary writer on technology and international affairs from a moderately conservative and traditionalist, but in my personal opinion, certainly not a reactionary or even typical right-wing, point of view. Actually, I would like to recommend his book titled *The Anglosphere Challenge Why English-Speaking Nations Will Lead the Way in the Twenty-First Century* to every serious scholar, especially those on the Left or Liberal spectrum in American academia. This book explores some unique cultural characteristics of the English-speaking nations, including the United States, Great Britain, Canada, Australia, New Zealand, Singapore, Ireland and others. Although criticized as "misleading and arrogant right-wing propaganda" by some critics on the Left, a great portion of ideas discussed or advocated in the book are based on facts and ethical values and worth consideration even by fundamentalist liberals.

THE LINUS MODEL FOR THE DEVELOPMENT OF INNOVATIVE TECHNOLOGY

With regard to the Linux Model for the development of new technology, James Charles Bennett wrote in his book titled *The Anglosphere Challenge Why English-Speaking Nations Will Lead the Way in the Twenty-First Century*:49-50): "Consider Linux, the most famous open-source product. Software code is produced and distributed without direct financial compensation by a wide collection of individuals, voluntarily coordinating themselves over the Internet. Consensus is the primary decision-making process. Expertise and reputation are then used for marketing individuals' services as employees or as members of entrepreneurial teams. [...] The Linux world runs what amounts to a parallel economy paying in reputation, rather than cash, linked loosely to the cash economy. It is a one-way linkage; reputation can be turned into cash, but cash cannot be turned into reputation. it is remarkably free from regulation and confiscation; no government agency can take a reputation for good work

away from one participant and give it to another. The closest analogy to the Linux model of production may be that of the live theater industry. There, would-be actors perform for free or for minuscule reward to demonstrate their talents. Eventually they are accepted in a profit-making enterprise or band together with other would be entrants to form a new company. [...] The process of producing Linux seems like Marx's ultimate communism, after the supposed withering away of the socialist state - 'from each according to his ability' would be a fair way of describing the production side. But the distribution side is a little different. The product is given away not 'to each according to his need,' at least not directly, but automatically and universally. People then take what they need. The only thing the producers get is reputation, and that is awarded on an utterly ruthless basis of merit. Meanwhile, within the larger Linux universe, a subuniverse of pure laissez-faire market relations plays out with entrepreneurial companies acting in accordance with pure market theory." (pages 49-50). This statement by James Bennett is very inspiring. Here, in the virtual and real worlds of Linux, there is no place for Robin Hood, Cold War, ideological rivalry between Adam Smith economics and Marxism, McCarthyism, class warfare, racial conflict, or even competition or envy. The interests of the community at large and the interests of the individuals simply merged into one. For thousands of years since Christianity became the guiding spiritual force for morals and ethics in the Western World with the conversion of Constantine the Great, great philosophers have been talking about utopia. If the utopia can come to reality, then the Linux Model is a viable instrument for its realization.

THE SERVANT LEADERSHIP MODEL FOR PROJECT MANAGEMENT

According to Wikipedia, the Free Encyclopedia, "Servant Leadership is both a leadership philosophy and set of leadership practices. Traditional leadership generally involves the accumulation and exercise of power by one at the “top of the pyramid.” By comparison, the servant-leader shares power, puts the needs of others first and helps people develop and perform as highly as possible." In the ancient time, the Christian scripture the Gospel of Mark describes servant leadership as follows: "Jesus called them together and said, You know that those who are regarded as rulers of the Gentiles lord it over them, and their high officials exercise authority over them. Not so with you. Instead, whoever wants to become great among you must be your servant, and whoever wants to be first must be servant of all. For even the Son of Man did not come to be served, but to serve, and to give his life as a ransom for many” (Mark 10:42-45). In the modern time, the phrase “servant

leadership" was coined by Robert K. Greenleaf in "The Servant as Leader: "The servant-leader is servant first… It begins with the natural feeling that one wants to serve, to serve first. Then conscious choice brings one to aspire to lead. That person is sharply different from one who is leader first, perhaps because of the need to assuage an unusual power drive or to acquire material possessions…The leader-first and the servant-first are two extreme types. Between them there are shadings and blends that are part of the infinite variety of human nature." The Wikipedia source lists the following as the ten most important characteristics of the Servant Leadership model:

(1) **Listening**: A servant leader puts the emphasis upon listening effectively to others.

(2) **Empathy**: A servant leader needs to understand others' feelings and perspectives.

(3) **Healing**: A servant leader helps foster each person's emotional and spiritual health and wholeness.

(4) **Awareness**: A servant leader understands his or her own values and feelings, strengths and weaknesses.

(5) **Persuasion**: A servant leader influences others through their persuasiveness.

(6) **Conceptualization**: A servant leader needs to integrate present realities and future possibilities.

(7) **Foresight**: A servant leader needs to have a well developed sense of intuition about how the past, present, and future are connected.

(8) **Stewardship**: A servant leader is a steward who holds an organization's resources in trust for the greater good.

(9) **Commitment to the growth of people**: A servant leader is responsible for serving the need of others.

(10) **Building community**: A servant leader is to help create a sense of community among people.

In the gradual implementation of the SCHOLAR STEAM K12 Plus Project, the

Servant Leadership Model practically means that its advocates and supporters need to work for the project, regardless of personal financial gains, with or without grants from government institutions or private foundations. They also need to be open-minded and constantly learn from K12 STEAM education professionals and practicing professionals as well as stakeholders from the society at large, including the "masses" and the "elites." They need to put personal bias, prejudices, partisanships and cultural inclinations aside, and look at the whole picture from the perspective of the Mankind, "au-dessus-de-la-mêlée" ("above the conflict of interests"). Of course, as part of the human nature, everyone has his or her own perspective, and the unique perspectives of the individuals do constitute the collective well-being of the whole. In our modern post-industrial society, with increasingly more complicated systems of social management, the Good Old Days of "rugged individualism" or "lone soldier" is over; we no longer need lone soldiers but well-organized teams working collaboratively towards well established goals, ready to fight on two major theaters of operation, i.e., to integrate both sides of human intelligence, STEAM with Humanities. In addition to the above, it is very important to understand that the mission of this website is NOT to impose a new model of K12 Engineering and Technology Curriculum, but to provide a urgently needed instrument for all existing and emerging models for the cohesive and well organized incorporation of engineering topics into the curriculum of their own design, in any way of permutation and combination, although the Vision Paper does advocate an idealistic but also realistic future model. The United States has a generally decentralized system of educational management, which allows different models to be tried. Thus, **let one hundred flowers of pedagogy blossom, let one hundred models of K12 engineering and technology curriculum compete!**

A PRACTICAL PLAN OF IMPLEMENTATION AND PROGRESS REPORT

The gradual implementation of the SCHOLAR STEAM K12 Plus Project will include the following stages:

(1) **Initial Research**: Determination and selection of K12 age-possible, pre-calculus level topics from college engineering textbooks.

(2) **Pedagogic Experiment**: Teaching of K12 age-possible engineering topics from various subjects to K12 students and comparison of the learning outcomes with those of college engineering students, using some textbooks,

and initial determination of K12 age-appropriateness of engineering topics tried in the pedagogic experiment.

(3) **Curriculum Development**: Organization of K12 age-appropriate engineering topics into a well-connected structure which is linked to college undergraduate engineering curriculum, based on the comparative analysis from stage (2).

(4) **Curriculum Improvement**: Development of better pedagogy through further experiments, and better organized program structure, teaching plans, and others.

(5) **Development of K12 Age-Appropriate FREE Online Engineering Instructional and Learning Materials**: This could include (a) PDF textbooks structured as Learning Modules, (b) PowerPoint classroom presentation files, (c) videos, (d) test banks with solution manuals, (e) online graphical user interface for engineering computations, (f) information sheets for hands-on engineering activities for K12 students in mathematics and science classrooms, and (g) "capstone" engineering design projects. Many FREE online instructional materials, as well as published textbooks, are already available; they will be identified first and some will be recommended (**do NOT re-invent the wheel!**). For the engineering topics for which no instructional materials are available, new materials will be developed and published online for FREE use, on a separate website, to be temporarily called K12EngineeringDeal.com. Before the development of the proposed K12EngineeringDeal.com website, a thorough and comprehensive comparative study of relevant existing K12 engineering and technology curriculum as well as preK-12 mathematics, science (notably physics and chemistry) and technology textbooks will be conducted, so as to understand their comparative strengths in terms of useful formats and features for delivery of knowledge content, and to design one that is more streamlined, cohesive, optimized, and student- and teacher-friendly.

(6) **Development of State or National K12 Engineering Curriculum Standards**: Establishment of clear guidelines for the incorporation of engineering topics into K12 curriculum, to be used flexibly as viable sources of reference on a voluntary basis. The incorporation of engineering topics into K12 curriculum could take several forms, including (1) the Vision Paper Model (with well sequenced standalone courses under specialized pathways); (2) high school elective courses incorporating topics from a variety of subjects (as advocated by East Los Angeles College Engineering and Technology

Department Chair Jose Ramirez; in my opinion, this is the easiest way to get things started, and should be considered as a more realistic stepping-stone for reaching a more ambitious goal advocated in the Vision Paper); and (3) STEM-Integrative Model (also advocated by many other scholars and explored in the Vision Paper; this could be done through "Engineering Corners" word problems in the regular mathematics courses as examples of real-world applications of mathematics skills).

So far, we are at the stage (1) of **Initial Research**. Detailed information of the progress in this research is as follows.

ANALYSIS & RESEARCH CONCLUSIONS

The document below indicates the progress in the Stage (1) of Initial Research. The Research Completion Chart indicates the status of completion of the research tasks on each subject, and the Additional Research Planning Chart indicates the tasks to be completed and their relative urgency (primary and secondary).

(1) For 13 out of 22 subjects of engineering, at least the first college-level engineering textbook has been carefully and thoroughly examined to initially determine and select K12 age-possible topics, which are ready for pedagogic experiment. The names of the subjects are on colored backgrounds.

(2) For 5 out of 22 subjects (color-coded **violet**), the research has been fully completed. No more study is necessary. K12 pedagogic experiment may start at the designated grade level.

(3) For 5 out of 22 subjects (color-coded **red**), the research on the first and second textbooks (“primary source of reference” and “secondary source of reference”) has been completed; a combined list of K12 age-possible topics needs to be compiled; and the earliest possible grade for the inclusion of all age-possible topics in the K12 curriculum needs to be determined. K12 pedagogic experiment may start at high school level. These subject are (a) Engineering Materials for K12, (b) Probability & Statistics for K12, (c) Engineering Economics for K12, (d) Manufacturing Processes for K12, and (e) Introduction to Global Positioning System & Land Surveying for K12. This task will take up to 5 working days to complete; it is of secondary urgency but will be completed first due to the relatively small amount of time needed.

(4) For 3 out of 22 subjects (color-coded **orange**), the research on the first textbook (“primary source of reference”) and the partial list of age-possible

topics has been completed; research on the second textbook (“secondary source of reference”) and supplemental list needs to start. K12 pedagogic experiment may start at the designated high school grade level. These subjects are (a) Statics for K12, (b) Fluid Mechanics for K12, and (c) Introduction to Electrical & Electronics Devices for K12. This task could take up to 2 months to complete, and it is of secondary urgency.

(5) For the subject of Mechanical Design for K12 (color-coded **blue**), the research on possible substitute textbooks for temporary use has been completed; more vigorous textbooks need to be examined. K12 pedagogic experiment may start at the designated high school grade level. This task could take up to 3 months to complete (up to 5 weeks for the first selected textbook or the "primary source of data" which is of primary urgency; and up to 2 months for additional textbooks which is of secondary urgency).

(6) For 4 out of 22 subjects (color-coded **green**), the research has been planned with the selection of the first textbook (“primary source of reference”), or both the first and second textbooks. These subjects are (a) Dynamics for K12, (b) Strength of Materials for K12, (c) Aerodynamics for K12, and (d) Introduction to Circuit Analysis & Simulation for K12. This task could take up to 6 months to complete (up to 4 months for first selected textbooks or "primary sources of data," which is of primary urgency; and up to 2 months for the second textbooks or "secondary sources of data," which is of secondary urgency).

(7) For 4 out of 22 subjects (color-coded **black**), the research has been planned; but textbooks need to be selected and studied. These subjects are (a) Heat Transfer for K12, (b) Thermodynamics for K12, (c) Introduction to Computerized Civil Engineering Design for K12, and (d) Introduction to Structural Design for K12. This task could take up to 6 months to complete (up to 4 months for first selected textbooks or "primary sources of data," which is of primary urgency; and up to 2 months for the second textbooks or "secondary sources of data," which is of secondary urgency).

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INCORPORATION OF THE PROJECT-BASED LEARNING PEDAGOGY

For the proposed single-subject K12 engineering courses: As much as possible, single-subject engineering design projects for 9th through 10th Graders will be implemented as Final Projects for all relevant high school engineering courses.

For the proposed Capstone Engineering Design and Research course: The proposed Capstone Engineering Design for K12 course is suitable for the 12th Grade after students have completed all high school engineering and technology courses and thus, have enough academic and hands-on abilities to entertain meaningful engineering design projects. The multidisciplinary engineering "capstone" design projects for 12th Graders would use various models of engineering design process, including (a) "**creative, conceptual and light analytical**," (b) "**engineering and technology experiment**," (c) "**analytic reduction**" for "well-structured design problems," and (d) "**system thinking**" for "ill-structured" and "capstone" projects.

Freedom and opportunities! You will have the right to a high quality K12 science, technology, engineering, arts and mathematics (STEAM) education!

¡Libertad y oportunitades! ¡Usted va a tener el derecho a una K12 educación de alta calidad en ciencia, tecnología, ingenería, artes y matematica (CTIAM)!

自由和机会！你们将拥有接受高质量的、贯穿幼儿园到中小学阶段的科学、技术、工程、艺术和数学教育的权利！