

Accelerated Education for an Accelerating Economy

It is a great honor for me to have been chosen to deliver the Wei Lun Lecture. I have been blessed not only by continuing connections with The Chinese University of Hong Kong and my colleagues here, but by the good luck of having four outstanding students from Hong Kong over a period of almost thirty years who worked closely with me at Stanford University. Professors Liu Pak Wai and Chung Yue Ping returned to The Chinese University and have distinguished themselves in both scholarship and leadership, the former as the Pro-Vice Chancellor and the latter as Dean of the Faculty of Education. Professor Mun Tsang is a leading Professor in the U.S. in the economics of education, and Dr. Louis Woo is a leading specialist in new information technologies in Singapore. Although all call me their teacher, I have learned considerably from them as well.

I am an economist who has specialized in the economics of education. This means that I have two intellectual vineyards to till, both very large ones, economics and education. For this reason, I will begin by discussing briefly certain aspects of the Hong Kong economy and its educational system. I realize that I am handicapped by being an outside observer rather than a

native, so I hope that my generalizations are a good picture of reality. I will begin with a call of congratulations for both sectors. However, I will end this section with a paradox and a future challenge.

I will follow with a potential answer to the future challenge, a new conception of education for Hong Kong, but one that is perfectly compatible with ancient Confucian thought, a changing economy, and new policy calls for educational change. I will try to be mindful that with its integration into the People's Republic of China, the future cannot be foreseen completely, but the future can never be predicted precisely under any circumstance. Fortunately, the directions that I suggest will be compatible with other scenarios because it is built on malleability and flexibility. Finally, I will suggest some ways of moving forward towards the new world of education that I will propose. I will draw extensively on what we have learned from the Accelerated Schools Project, a project that has grown over 12 years to extend to more than 1,000 schools in the U.S.

Congratulations and Paradox

By many measures Hong Kong has been among the most productive entities in the world in both education and the

economy. As everyone in this audience knows, along with South Korea, Singapore, and Taiwan, Hong Kong is a member of a distinguished economic club, the newly industrialized economies (NIEs) of Asia. Since 1960 Hong Kong has had an average annual rate of growth in its gross domestic product (GDP) of more than 8 percent. In 1960 the GDP per capita of the United States was seven times that of Hong Kong. By 1995 the U.S. advantage was only about 15 percent.

The conventional view is that a key factor that made this possible was the tremendous expansion of human resources and an educational system at the elementary and secondary levels that is among the strongest in the world. That is, as capital investment increased, it was matched by an increasingly skilled and highly disciplined labor force that made large gains in productivity possible. The average number of school years per working age person rose from a bit more than 5 years in 1960 to about 8 years by 1990, an average gain of approximately 50 percent in a relatively short time period. Even this does not reflect the recent and rapid increase in tertiary education in Hong Kong. At the same time, Hong Kong has finished historically among the top nations of the world in mathematics in international comparisons of educational achievement. For example, in the Third International Mathematics and Science Study (TIMSS) of 36 countries in 1995, Hong Kong scored fourth, and considerably

above the average for all countries. In science Hong Kong scored lower, although still above the average for all of the countries tested.¹

Paradox

Hong Kong has clearly shown extraordinary successes in both economic and educational development. So, why should there be worries about either education or the economy? The paradox is that there is a deep concern generated by recent observers. In order to understand this concern it is important to examine research on economic growth accounting. Perhaps the most important work in this area has been done by one of Hong Kong's sons who is now a distinguished Professor at Stanford University, Lawrence Lau.² Lau and his partners have studied the determinants of economic growth with special reference to the four Asian NIE's. Following the growth accounting methodology, they have divided the sources of economic growth into three main components: tangible capital, labor, and intangible capital. It is important to define each.

Tangible capital refers to the utilized capital — the total non-residential stock of productive capital adjusted for its rate of capacity utilization. Labor is measured in terms of the number of person-hours worked. These represent the two

classic factors of production or inputs into the economy. Intangible capital refers to those factors of production which are not included in tangible capital and labor. Its most important components are human capital, R & D capital, organizational restructure and innovation, software development and implementation, and information system development and implementation. And human capital includes education, training, and on-the-job learning.

Lau and his colleagues found that virtually none of the extraordinary economic growth of the NIEs, including that of Hong Kong, is attributable to the intangible capital category which includes education. Virtually all of it is due to increases in tangible capital and labor inputs. In the case of Hong Kong, increases in tangible capital accounted for about three-quarters of the increase in GDP, while an increase in labor hours accounted for the other quarter. In comparison, among the five non-Asian members of the G-7 (U.S., U.K., France, Germany, and Italy), only 36 percent of economic growth was due to increases in tangible capital, 6 percent was due to an increase in labor, and almost **60 percent** was due to intangible capital or what is referred to broadly as technical progress. In Japan, tangible capital accounted for about 56 percent of economic growth, labor for 5 percent, and technical progress or intangible growth for 39 percent.

These findings have two very important implications. First, they raise questions about whether Hong Kong's impressive growth rates can be sustained because they appear to depend strictly upon increases in inputs, especially that of tangible capital.³ Between 1966 and 1990, the capital stock of Hong Kong increased at an average annual rate of about 9 percent. Not only would this rate of investment have to be maintained into the future, but also the productivity of capital would have to remain high. In general, as economies develop, the returns to capital fall, both reducing the contribution of each additional unit of capital to economic growth and making the economy less attractive for investment, inducing capital to seek higher returns in other venues. A second implication is that, despite an increase in human capital (years of schooling in the employed labor force) of 2.3 percent a year and a highly productive school system when measured by mathematics examination scores, the contribution of increases in human capital to economic growth appears to be nil.

This finding is so counter-intuitive that it is important to clarify its meaning. My own interpretation is that the basic educational requirements for Hong Kong's educational expansion are a disciplined workforce with basic educational skills. It could be argued that this was a necessary condition for growth that was essentially in place by the sixties. Thus, we should not dismiss education as an important requirement for

economic growth. What the statistical models show is that the improvements in education through further human capital investment have not shown themselves to account for economic growth independently of increases in tangible capital and labor hours.

This is the paradox faced by Hong Kong. Economic growth has been high, but heavily dependent upon high savings rates and inflows of capital that might not be sustained over the long run. At the same time, the high returns to tangible capital are unlikely to be sustained as the economy moves to higher levels of development. Yet, Hong Kong's economic growth does not seem to be benefiting from its investments in human capital, except to the degree that human capital is complementary to tangible capital and its return might be subsumed statistically by growth in that input. Thus, one question is: how can education be more integral to economic growth, particularly in the long run as it becomes more difficult to sustain the marginal returns to and high rates of investment in tangible capital?

To add to this dilemma, there are worries expressed that the quality of education has diminished over time as the system has expanded. Consider that higher education alone has expanded from about a 4 percent participation of the appropriate age cohort to about 18 percent. And, university

expansion must be fed by an expansion in qualified candidates. I have been told repeatedly that parents, teachers, and policy-makers perceive a decline of educational standards.⁴ This concern has become serious enough that it is the subject of an important recent report by the Education Commission on improving educational quality.⁵ But, there is an even deeper concern about education. Is it the right kind of education for the inevitable changes that will be necessary to maintain Hong Kong's rate of economic progress?

The latter concern is best expressed in the recent study by a team of researchers from the Massachusetts Institute of Technology who were asked to examine the future of Hong Kong industry and projected a substantial departure from the present situation.⁶ After a year of exploration including over 500 visits to some 350 Hong Kong companies and organizations, their central conclusion was:

We see a future for Hong Kong as a world-class industrial power. To realize such an ambition, Hong Kong needs to strike out in a new direction, as a leader in the production of new generations of products. The high-value-added goods of the twenty-first century will be service-enhanced products. Such products bring together manufacturing and services in ways that defy our conventional statistical categories. They bundle together in

desirable combination the capabilities of advanced manufacturing systems and new possibilities in design, customization, rapid delivery, quality and product novelty and uniqueness — all enabled by information technologies.⁷

This shift to high-value-added products and services is inevitable in the Hong Kong case because emerging economies are increasingly capable of producing, with lower labor and other costs, many of the existing goods and services produced by Hong Kong. Rapid transfer of new technologies in both production processes and in products to countries with lower labor costs, lower health and safety standards in the workplace, and government subsidies as inducements mean that entities like Hong Kong must hold their economic position through being unique, not only as a major financial and transport center, but in the creation of ideas and their application to the production of innovative goods and services. Thus, it is not surprising that among the six recommendations that grow out of the MIT report, the first two are: “First, the capacity to create new products and processes in Hong Kong must be strengthened;” and “Second, the capabilities of Hong Kong’s industrial workforce must be upgraded.”⁸

Educational Implications

Upgrading the labor force of Hong Kong is not just a matter of gaining higher achievement scores. As a major study of the Hong Kong economy has concluded: “Hong Kong’s ability to educate and train the ‘knowledge’ workers of the present and the future depends on whether the education and training systems, designed to meet different requirements in the past, can adjust to meet the requirements and imperatives of the territory’s new economic structure.”⁹ It is a matter of creating a new kind of educational system over the long run that turns out a new kind of worker. Indeed, it is necessary to chart a course for education that will complement the changes in the economy, one that can provide generous returns to human capital investment in the face of past failure to demonstrate that intangible capital augmentation had a strong payoff in explaining previous economic growth.

But, what are the competencies required of workers in high-value-added industries and occupations? In a study undertaken in the United States, we attempted to answer that question by investigating a range of enterprises and occupations that we believed characterized high productivity workplaces. We identified a number of competencies that we saw as central to such workplaces, competencies that we believed were not being developed in schools.¹⁰

1. *Initiative*. The drive and creative ability to think and perform independently. This qualification suggests greater school focus on independent endeavors for students in comparison with the present emphasis on school and teacher-directed activity.
2. *Cooperation*. Constructive, goal-directed interaction with other, the ability to engage in collaborative work. This qualification argues for increased emphasis in schools on cooperative learning and collaborative endeavors where rewards are provided for the cooperative process as well as for the outcomes of that process.
3. *Working in Groups*. Interaction in work-groups directed towards both short-term goals of efficient task or activity accomplishment and the long-term goal of group maintenance. This dimension can best be achieved by schools that organize learning tasks into group endeavors at both classroom and school levels rather than the extreme emphasis on individualism and individual competition that characterizes existing schools.
4. *Peer Training*. Informal and formal coaching, advising and training peers. The requirement for raising the capacity to participate in this process in the workplace seems to be experience in peer tutoring in the schools.

5. *Evaluation.* Appraisal, assessment and certification of the quality of a product or service. This qualification suggests that students be given far more experience in developing and applying evaluative criteria and in grading and evaluating their own work and that of student colleagues.
6. *Reasoning.* Evaluation and generation of logical arguments including both inductive and deductive approaches. This requirement contrasts with the heavy emphasis on memorization and rote learning in existing schools and requires the development, application, and sharpening of reasoning skills.
7. *Problem-Solving.* Identification of problems, hypothesis testing on causes, generation of alternative solutions and their consequences, selection of an alternative, and implementation of a solution. The inculcation of this qualification requires experience in solving problems that are situated in realistic situations as contrasted with the contrived conditions often found in textbooks.
8. *Decision-Making.* Employing the elements of problem-solving on an on-going basis in the workplace. This dimension requires continued practice in problem-solving for choosing among alternatives.

9. *Obtaining and Using Information.* Deciding which information is relevant, knowing where to find it, obtaining it, and putting it to use. This qualification requires experience in seeking and selecting the types of information that are needed for problem-solving and decision-making, obtaining it, and using it properly.
10. *Planning.* Establishing goals as well as scheduling and prioritizing work activities. This dimension has clear school counterparts in choosing activities and objectives and in setting out activities to meet those goals over a specific time horizon.
11. *Learning Skills.* Developing cognitive and affective skills that facilitate the acquisition of new knowledge as needed. These qualifications require an orientation on how to embrace new learning situations as well as the inculcation of styles of learning that work effectively for mastering new skills and knowledge.
12. *Multicultural Skills.* Understanding how to work with persons from other cultures in terms of language, communication styles, and different values. In the globalization of products and services and the increasing trend towards multinational immigrants in the labor force, it is important for schools to emphasize the study of foreign languages and cultures as well as experiences in human relations activities among different groups.

This list is neither complete nor does it obviate the need to acquire many of the standard cognitive competencies that the schools have stressed traditionally. What it does suggest is that there exist competencies that the schools need to address to create a workforce qualified for high-value-added workplaces, and that are not addressed by a traditional classroom that is examination-driven and where students are expected to memorize large amounts of facts and subject-matter to the exclusion of other activities. It is also important to note that workplace skills are not the only competencies that schools should strive for, important as they may be. Healthy human and societal development requires the incorporation of the five dimensions of education stressed by Confucius almost three millennia ago, namely the moral, intellectual, aesthetic, communal, and physical. Thus, the question arises as to how Hong Kong can begin to address all of these competencies.

Accelerated Schools

The Accelerated Schools Project was launched in the United States eleven years ago as a way of increasing competencies of all children by redirecting schools from concentrating on memorization and drill to treating all children as gifted and talented students capable of generating

ideas and acquiring new knowledge and skills from enrichment activities and projects.¹¹ It is based upon three principles: (1) Accelerated Schools require that the school community forge a unity of purpose around the goals of a high quality education for all students and a culture of working together to fulfill this vision; (2) Accelerated Schools must be provided with the discretion and capacity to apply their unity of purpose to making key decisions on curriculum, instructional strategies and school organization and taking responsibility for the consequences of those decisions; and (3) Accelerated Schools must employ powerful learning experiences that identify and build on the strengths of students, parents, and school personnel rather than decrying their weaknesses.

Accelerated Schools experience a radical transformation of their organizations and the roles of students, parents, and other school staff. Their focus on powerful learning strategies employs many of the changes in school practice that were recommended for developing each of the workplace competencies that were set out above. The school transformation process follows a deliberate pattern of steps in which all members of the school community must participate and work towards creating powerful learning environments. Powerful learning establishes conditions in which the young construct their own understanding of the world and are able to

apply that understanding rather than limiting education to memorization of facts.¹² The emphasis on understanding has been found to also improve student performance on examinations.

From just two pilot schools in 1986, the Accelerated Schools Project (ASP) has grown to about 1,100 schools in 41 states with 10 regional satellite centers. It has also begun to spread internationally with developments in Australia, Austria, Spain, Brazil, and, most recently, in Hong Kong. The Faculty of Education of The Chinese University of Hong Kong has begun to work with three pilot schools in its quest to learn how to apply the principles of Accelerated Schools transformation to Hong Kong. The ASP is not a cookie-cutter approach where all schools are identical, but is a process that must build on the strengths and cultures of its communities in order to effect change. It is based upon the “internal transformation of culture,” meaning that the participants must have a major role in making informed decisions. School communities are provided with a trained coach who assists the school in developing the process of change.

In the U.S. we have seen remarkable transformation of schools in which many of the characteristics of workers for high-productivity workplaces have been developed through new school practices. Change is never easy, for few educators

believe that they need to change. They typically believe that the same school methods that they experienced and that were reinforced in their training are the most appropriate. Moreover, they often believe that change is something that someone else must do. I am reminded of the cartoon character, Dilbert, who states: “Change is good! You go first!” We are proud that what we have committed ourselves to in the U.S. has now spread to Hong Kong and will be tested here to see how it can be adapted to local conditions. I am pleased that a key ASP leader from its very beginning, Pilar Soler, will be working with The Chinese University team on this initiative.

Changing Education in Hong Kong

The Accelerated Schools Project can provide a process for school communities to work together for change that will improve quality and attend to new competencies that will be important in Hong Kong’s economy. Hong Kong can be a laboratory for such change to demonstrate the potential that it may have for China’s educational system more generally. An exciting opportunity has arisen as Hong Kong moves from half-day to full-day schooling at the primary level.¹³ One alternative is to simply use the additional student time to provide more time for drill and memorization and preparation for examinations. As I have argued above, this is likely to be

short-sighted and an inefficient use of school resources. In fact, research has shown that increasing the length of the school day to improve performance on examinations is the least cost-effective approach among four alternatives: computer-assisted instruction, peer tutoring, smaller class size, and increased school days.¹⁴

A different approach that could capitalize on the sudden availability of longer days and that could integrate the five components of Confucian education (intellectual, physical, aesthetic, communal, and moral) and the establishment of the new workplace competencies would be to create in all schools Discovery Centers that would be the focus of integrative work in the afternoons. The idea behind such centers would be to prepare all students by engaging them in research and applied projects from their earliest days in school and extending these activities through high school completion.

The Discovery Center would have a capacity for students in the fine and performing arts, community projects, sports and physical activities, and the application of intellectual activities through research projects. Even in the earliest grades a provision would be made for students to generate questions that they wish to answer. The research component of the Discovery Center would provide a place to formulate answers

by preparing students and guiding them in research. The center facility would comprise books, documents and access to the Internet and the World Wide Web. Staff would also compile an electronic file of both local experts, organized according to subject, as well as web addresses of more remote experts and sites that could be contacted. Both regular classroom teachers and Discovery Center experts would collaborate to apply the skills taught in classrooms to creative, analytic, and physical activities that students pursued in the Discovery Center. Students would learn through interactive means rather than just memorization.¹⁵

Students would be provided with age-appropriate basic skills in research and creativity such as how to transform curiosity into researchable questions; how to design a method to answer such questions and identify the information that is needed; how to acquire that information and use it; how to engage in problem-solving; and how to make oral and written presentations of their research and problem-solving activities. In some cases students will identify their own areas of interest, and in other cases they will be assigned questions or problems that they will need to explore. Some of the activities will incorporate research on community issues and require active community involvement such as addressing the housing challenge in Hong Kong. In this case, students might be able to

work on aesthetic and design matters as well as analyzing the high costs of housing and searching for solutions. Among the types of competencies that could be built into such projects would be the five dimensions of education stressed by Confucius as well as the multiple intelligences identified by Howard Gardner.¹⁶ In addition, many of the workplace competencies identified above could be embedded in each activity (e.g. developing initiative, cooperation, groupwork, peer training, evaluation, communication, reasoning, problem-solving, decision-making information, planning, learning skills, and multicultural skills). And students could generate authentic ideas, products, artistic performances, and problem solutions that could be evaluated directly for quality rather than assuming that examination scores will be adequate assessment instruments.

Even at the earliest grades, students could be introduced to the Discovery Center and asked to formulate questions based upon their natural curiosity. Teachers will be trained to assist students in learning how to answer those questions. In subsequent grades they can be provided with a variety of analytic, problem-solving, research, and artistic skills that they will develop and apply to real issues to learn how to do research. Obviously, as the students mature in the educational system, their sophistication will increase and the expectations

of accomplishment will increase. The Discovery Center approach also provides an opportunity for closer university-school relations as students at the university can team with the older students in doing research on particular problems and issues.

The Discovery Center approach is illustrative of the possibilities for transforming Hong Kong education using the Accelerated Schools process to design strategies and implement ideas. The availability of longer school days at the lower level and the possibility of retraining many teachers who will be required to obtain the B.Ed. Degree under the new reforms will be an opportunity to begin such changes with a limited number of schools. Such schools will provide the hands-on experience to improve the process of change and to expand it to other schools through evaluation and reformulation. Each school that adopts the ASP process will be able to adapt the approach to its unique reality and fine-tune the details.

These are exciting times in Hong Kong for both the economy and for education and for the integration of Hong Kong into one of the great nations of the world. There are major challenges, but also major opportunities. We should remember that there are no limits to what we can accomplish, if we are willing to extend our imagination and work together.

Notes

1. For details on Hong Kong's achievements in Science and Mathematics in the TIMSS study, see Nancy Law (Ed.), *Science and Mathematics Achievements at the Mid-Primary Level in Hong Kong* (Hong Kong: TIMSS Hong Kong Study Centre, University of Hong Kong, 1997) and Nancy Law (Ed.), *Science and Mathematics Achievement at the Junior Secondary Level in Hong Kong* (Hong Kong: TIMSS Hong Kong Study Centre, University of Hong Kong, 1996). It is also of interest to note that the four top countries in mathematics were Korea, Japan, Singapore, and Hong Kong with the first three countries changing order depending upon which grade level was tested. Taiwan was not included in the study.
2. The paper that I will be referring to is: Lawrence J. Lau, "The Sources of East Asian Economic Growth: Implications for Building the Future of Hong Kong," Paper presented to the 37th Annual Conference of Rotary International District 3450 (Hong Kong & Macau), Hong Kong (April 11–13, 1997) and available from the author by writing to him at the Department of Economics, Stanford University, Stanford, CA 94305-6072, USA. This paper has been written for a non-technical audience.

However, much of the research underlying this paper can be found in articles that have been published by Kim and Lau in economics journals. For example, see J. I. Kim and L. J. Lau, “The Sources of Economic Growth in the East Asian Newly Industrialized Countries,” *Journal of the Japanese and International Economies*, 8(1994), pp. 235–271; and J. I. Kim and L. J. Lau, “The Sources of Asian Pacific Economic Growth,” *Canadian Journal of Economics*, 29(Special Issue), pp. S448–S454. Using different methods, the same conclusions have been reached by others. For example, see A. Young, “The Tyranny of Numbers: Confronting the Statistical Realities of the East Asian Growth Experience,” *Quarterly Journal of Economics*, 110, pp. 641–680.

3. This point was raised in the well-known and provocative article by Paul Krugman, “The Myth of Asia’s Miracle,” *Foreign Affairs*, 73, pp. 62–78.
4. I have heard this from many sources, including parents, teachers, and policy-makers, although it is difficult to get a precise definition or evidence on what they mean. Mostly, they refer to a “fall in standards.” For example, in an interview by journalist C. K. Lau with Mr. Antony Leung Kam-chung, chairman of the University Grants Committee, Lau states that Mr. Leung is concerned with

“... the question of standards and their impact on Hong Kong’s ability to maintain its lead over the mainland and its position in the world.”

5. Education Commission of Hong Kong, *Quality School Education, Consultation Document*, Education Commission Report No. 7 (Hong Kong: Education Commission, November 1996).
6. Suzanne Berger and Richard K. Lester, *Made By Hong Kong* (Hong Kong: Oxford University Press, 1997).
7. *Ibid.*, p. xiii. A similar perspective on the shift to more high-value-added activities, but less of a call for government intervention, is found in a very recent study of the Hong Kong economy: Michael J. Enright, Edith E. Scott, and David Dodwell, *The Hong Kong Advantage* (Hong Kong: Oxford University Press, 1997).
8. Berger and Lester, *Made By Hong Kong*, pp. xiv–xv. Interestingly, this report does not address elementary and secondary education nor suggest any changes below the university level. Apparently, the elementary and secondary sectors were not even considered for evaluation by the authors.

9. Enright, Scott, and Dodwell, *The Hong Kong Advantage*, pp. 204–205.
10. Henry M. Levin and Russell W. Rumberger, “Education, Work, and Employment in Developed Countries: Situation and Future Challenges,” *Prospects*, XIX(1989), pp. 205–224.
11. An overview of the Accelerated Schools Project can be found in its sourcebook, Wendy Hopfenberg, Henry M. Levin, Ilse Brunner, Christopher Chase, Georgia Christensen, Beth Keller, Pilar Soler, and Gloria Rodriguez, *The Accelerated Schools Resource Guide* (San Francisco: Jossey-Bass Publishers, 1993). Also see Christine Finnan, Jane McCarthy, Ed St. John, and Simeon Slovacek (Eds.), *Accelerated Schools in Action: Lessons from the Field* (Thousand Oaks, CA: Corwin Press, 1995). An analysis of how ASP raises school efficiency is found in Henry M. Levin, “Raising School Productivity: An X-Efficiency Approach,” *Economics of Education Review*, 16(1997), pp. 303–311. An extensive set of information is found on the website for ASP: <http://www-leland.stanford.edu/group/ASP> [The present website for ASP is: <http://www.acceleratedschools.net/>].

12. “Constructivism and the Accelerated Schools Model” (1994) *Accelerated Schools: A Publication of the Accelerated Schools Project*, 3(2), 10–15. See, *The Accelerated Schools Resource Guide*, Chaps. 5–8 for details on powerful learning.
13. I am indebted to Chien Lee for calling this to my attention as an opportunity for innovation.
14. “Cost-Effectiveness Analysis of Computer-Assisted Instruction,” with G. Glass and G. Meister, *Evaluation Review*, Vol. 11, No. 1 (February 1987), pp. 50–72.
15. This approach has constructivist origins. See, for example, Jacqueline Brooks and Martin Brooks, *The Case for Constructivist Classrooms* (Alexandria, VA: Association for Supervision and Curriculum Development, 1993). The ideas are also highly compatible with those of John Dewey. Dewey’s ideas are not new to China. He had a great interest in China, and his student, Tao Xingzhi, once had a great influence on Chinese education. See Zhixin Su, “Teaching, Learning, and Reflective Acting: A Dewey Experiment in Chinese Teacher Education,” *Teachers College Record*, Vol. 98, No. 1 (Fall 1996), pp. 126–152. Note that educational psychologists and learning specialists advocate more active learning

approaches, irrespective of whether they have workplace consequences.

16. Howard Gardner, *Frames of Mind* (New York: Basic Books, 1983).