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Quotations

Teachers open the door. You enter by yourself. Chinese Proverb.

Music codes the inner life of human nature. Yo-Yo Ma, world renowned cellist. From an interview on Symphony Hall, SiriusXM Satellite Radio, October 2015.

Music is a higher revelation than all wisdom and philosophy. Ludwig van Beethoven.

Music in the soul can be heard by the universe. Lao Tzu.

The secret to your success as a musician is your ability to communicate to that audience, and that doesn't necessarily mean talking. Wynton Marsalis, 1961- (jazz and classical musician, director of the Jazz at Lincoln Center Program). From interview in **JazzTimes: 1998/99 Jazz Education Guide**.

I look at music the same as I look at my bloodstream, my respiratory system, my lungs. It's something I have to have. I was born with music inside me. Ray Charles, 1930-2004 (soulful pop singer, composer, pianist).

"Democracy" in music doesn't work. The concept of majority rule is basically anti-creative, by definition anti-individualistic. Bach, Beethoven, Brahms, or Stravinsky did not create by common consent or committee vote. Neither did Caruso or Casals or Furtwängler or Mitropoulos or Michelangelo. . . Gunther Schuller, 1925-2015 (American composer, conductor and musician). From a lecture, 1980. **Maurice D. Fisher, Publisher**



“School Won’t Change – Until We are Brave Enough to Change the Way We Teach Teachers”

Harry T. Roman
Teacher, Author, Inventor & Retired Engineer

My Inspirational High School Science Teacher

These words were said to me in the very last conversation I had with my life-long teacher, friend and mentor – my inspirational high school science teacher....a man who started integrating the curriculum back in 1964. His remarkable way of demonstrating how the world of work related to science and our other subjects totally rocked my young world, forever changing the way I solved problems.

From that time forward, I yearned to see the connections between subject matter. That two-year-long, double period course, known then as integrated science, super-charged my desire to be an engineer.....and a teacher; and for the last 50 years has been my splendid dual passion. Along the way, I also honed my gifts for writing and invention. I have never stopped learning since Morris Lerner lit my flame, helping me to fashion a steering wheel and some strategic maps to go along with my finely-tuned, high horsepower engine.

His many assigned ten-page papers (with formal references and footnotes) made us examine the technical, economic, social, and cultural impacts of the scientific topics we were writing about. His classroom pedagogy and commentaries later resulted in my “360-degree problem solving philosophy,” a paradigm I often use in conducting professional development courses for teachers, write about in this newsletter, and discuss in my Gifted Education Press teacher resource books (which GEP has published over the last eight years). He was as hard on our writing as our English teachers. Often he gave us two grades on our papers – one for technical content and one for spelling/grammar! What would your gifted students think of this?

We also applied what we learned with a laboratory activity every single week, and technical electives that had us using head and hands to build and test something practical; two full years of this regimen without let-up. Not one of thirty students who took this course ever quit or dropped out.

Morris also taught me something else that is very important. It is the teacher who controls the learning in a classroom – not standards, guidelines or hierarchy. It is up to the teacher to make it all make sense. How effectively a student learns is all about how teachers were: trained/educated; motivated to tie things together; and their commitment to excellence throughout their career. Teachers first and foremost are the catalyst for learning.

A New Teaching Legacy Grounded in Critical Skills

Before we can ask that teachers be trained and educated differently, we need to understand the world the students of tomorrow will experience. The work-a-day world is a multi-dimensional environment that expects its workers to solve problems cooperatively, through inter-disciplinary, team-based project activities – assessing, evaluating, and making tradeoffs as necessary. Here are the critical skills globally competitive employers will look for. Please notice also how all these skills depend very much on a solid bedrock foundation of good communication skills.

1) Analyze Information

In an information-rich company, people with good planning, organization and analysis skills will be in key positions to manage, process and interpret the huge flow of internal and external data and information. With solid logical and analytical skills, employees should be able to understand the significance of the information and recommend action.

2) Convert Information Into Knowledge

All innovative companies strive to convert raw data and corporate-gathered information into saleable products and services. Executives use this knowledge to help them gain competitive and strategic advantage over other companies. Significant value is placed on individuals who can convert data and information into knowledge, and do it quickly, efficiently and consistently.

3) Sell New Ideas to Management

The ability to implement new ideas and concepts is the real measure of success. To bring ideas to fruition, one must be proficient in selling ideas to the executive who can grant access to the necessary corporate resources. Remember — no one will give poorly packaged and presented ideas the time of day, regardless of how promising they may appear.

4) Communicate Concepts Clearly and Succinctly

This skill is a 'biggie.' Careers have been – and continue to be – severely jeopardized because of poor communication skills. In fact, without them, one’s career could be permanently stunted. Employees *must* be articulate. Today's managers often judge employees by how well they express themselves, both orally and in writing. Communication skills are the absolute foundation for all the others.

5) Plan for Timely Commercialization

Getting new products to market is the way companies sustain their cash flow and generate new sources of it. Timely implementation begins with people who know how to plan, organize and execute the commercialization process. Knowing how to plan well allows an employee to handle a variety of different projects, and sends a clear signal that one knows how to use precious corporate resources efficiently and effectively.

6) Be a Team Player

Team-work and collaboration among corporate departments has become a mainstay of industry problem solving. Team members must possess excellent communication skills, present new ideas effectively, and resolve to act together to address corporate problems and needs. Articulate leaders connect their team members and their assigned tasks to the big corporate picture. Selecting the right mix of team members is as important as formulating the problems the team must address.

7) Do Multi-Dimensional, Integrated Problem Solving

Making sound business decisions require more than just the technical and economic aspects of a problem. The environmental, safety, social, political, and regulatory considerations of a new product are also important. Employees need a balanced education so they can make tough choices from a multi-dimensional selection of options. Employees who can think and reason about problems on multiple levels simultaneously are essential in today's complex decision-making environments.

8) Seek Learning Opportunities

Learning must be constant. Continually improving or rejuvenating one's skills to meet new corporate challenges is absolutely essential. Employees must develop and maintain a life-long discipline of learning, honing skills, building new knowledge, and setting new goals. The global economy is a very unforgiving place.

Knowing what will be expected of school graduates, let's ponder how the training/education of teachers might be changed to make the school-to-work transition as effective as possible.

Teaching Relevance

I do love the tradition of student teaching, and wish my profession of engineering had a long-standing component like this in its undergraduate education pedagogy. With the subject of relevance uppermost in many discussions about making students more receptive to their education, I would be a huge proponent of student teachers working in or apprenticed to companies in which their students might eventually wind up working in. For example, if science and math teachers worked for a summer in a high tech company, actually doing meaningful work, don't you think they could show relevance to their students about how algebra, general science, physics, chemistry and geometry are used in problem solving on the job? I would also like to see veteran teachers periodically working in industry and business to keep their relevant skills sharp and focused.

Teaching Teamwork

The currency of the business world today is team-based, head and hands, problem solving....so teach teachers to do this while in school, study the dynamics of team-building and operation, and the leadership of student teams. This is where giving student teachers a big dose of STEM/STEAM concepts will go a long way. Using invention notebooks and being able to seriously work with students on written and oral communication will produce big dividends in college and on-the-job. Demanding and grading good communication skills should be the job of all teachers.

Co-Teaching

Teacher teams that experience the co-teaching of subject matter is vitally important, as business prides itself on inter-disciplinary, multi-faceted problem analysis. For example, when attempting to install large scale applications for a solar power station – something on the order of several hundred acres...have a team of student teachers (in the disciplines of science, math, environment,

history, and geography) assemble to discuss the analysis and explore how these disciplines are connected. Develop solutions that take into account all subject concerns, a mediated solution if you will.

Paying Extra Attention to Grades K-4

Whenever I visit a school, I always ask K-4 teachers why they became teachers, invariably learning they love children....and that is a good thing. I also learn that most of them shoot for these grades because they are not good in math or science...a big problem. Turning children off to math/science in the early grades makes it very difficult to get them back, especially when 70% of the annual economic growth of our country comes from high tech; and critical jobs that need to be filled in areas that support such growth are going unfulfilled. Target K-4 teacher education for major overhaul, teaching teachers to pay lots of attention to math and science! It is vital to our national economy and the rounded education all students deserve. Build the math especially into the lower grades. Show how it works.

Subject integration is an important issue here as well. Students in the formative grades need to think in an integrated manner, seeing problem solving as an iterative process. Coupling this with good communications skills is a powerful approach that will demand new teaching paradigms for collegiate schools of education.

Asking Questions is Very Important

Teachers need to encourage students to become question-askers, seeking to know as much as possible about things being discussed in the class, or where trying to complete a team-based design challenge. It has often been said that smart students know the answers to questions, but gifted students are the ones who ask the key questions, cutting to the heart of the problem.

Oral/Written Communication Skills

Teachers must have great oral/written communication skills – the enablers for all the other skills; and they must be able to work these skills into everything they do in the classroom – exercises, design challenges, general written work, etc.

No More Zero-Sum Outcomes

I see this all the time when the new teaching process *du jour* comes to town. It gets treated like a new course to teach....and since most of the academic day is already assigned to subject matter, the new approach becomes something like an elective, a special class, and after-school activity, or even something else. I see this in the current STEM/STEAM model, and it frosts my “you-know-what.” Integrate the damn curricula and move toward a two-tiered kind of educational model. Start with selected dissertation delivered topics in the morning with the cherished class bells; and by afternoon, the students work in studio formats applying what they are learning.....and no class bells. Eventually, no bells at all. In the world of business, there are no bells and the employees are learning all day from each other.

Look for the connections between subjects and how clusters of subjects can be taught together such as math, music, science, and art; or maybe social studies, civics, geography. Turn the pizza-pie slice model of education on its head as it should be. In the 1970s, industry abandoned the piece-meal model of the assembly line on its head and started concentrating on the total quality of the whole product, using employee teams as their central focus for continuing education on the job.

Remember the Ford mantra....“Quality is Job 1.” That was 45 years ago. So isn’t it time for schools to catch-up? Total product management is just an analogy for on-the-job integrated learning and problem solving. Business employees are constantly applying what they just learned. Why can’t students do so every day in their schools?

In retrospect we not only need a radical new way to teach teachers.....but the collegiate professors as well, the delivery system for making new teachers.....needs to change as well.

Epilog

As I look back on that life-changing two years in high school, I think it really was a high school G&T course, an urban oasis, with many incredible innovations. About half of the students who took Morris Lerner’s integrated science class placed in the top 30 students out of a graduating class of 635. The school’s three co-valedictorians came from that group. It was the best educational experience of my life; and I was incredibly fortunate to have met and befriended such an incredible science teacher, who incidentally was

president of the National Science Teachers Association (NSTA) in the 1970s. Morris later went on to found Newark's nationally recognized Science High School, still vibrant and challenging as he had originally conceived it. I owe this man more than I can ever repay. Before he passed in 2008, he gifted me with his personal technical library, books I treasure beyond description. I miss him terribly; but know full well my responsibility to influence others to make school better than it is today.....to pass the torch and keep the light glowing bright.

Additional Readings

For more about my thoughts on gifted education and what tomorrow's school might look like, check out my previous writings listed below.

Teach STEM Right – Change the Academic Day! *Gifted Education News-Page*. Volume 23, No. 2, Dec. 2013/Jan. 2014.

Solving Real World Problems in the Classroom – A Realistic Application of STEM/STEAM Principles. *The Journal of the Illinois Association for Gifted Children* (IAGC). March 2014.

Changing Education-Thoughts about Creating and Inventing Tomorrow's School. *The Journal of the Illinois Association for Gifted Children* (IAGC). March 2015.

Defining What Characterizes a Great School for the Gifted. *Gifted Education Press Quarterly*. Volume 29, No. 2/Spring 2015.

See information on Harry Roman's Latest Book, Just Published by Gifted Education Press:

How an Engineer Uses Math – Real World Practical Examples for the Gifted Classroom in Environmental, Power, and Energy Areas – Middle and High School (2015) by Harry T. Roman. Excellent introduction to real world math, science and engineering problems.
<http://amzn.to/1GEklCn>

Does the Gifted Student Need a Gifted Teacher?

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Introduction

Regarding teachers of the gifted:

1. Is it recommended, or is it better for gifted students, that their teachers should be gifted individuals?
2. Should teachers of gifted students be especially talented regarding all aspects of teaching but not taking their intellectual abilities into consideration?

The second question, namely, the required characteristics of a gifted and talented teacher, has been widely discussed. The characteristics that are considered most important for being good teachers – whether in the regular system or for gifted students, have not changed since this question has been first discussed. This article will offer a summary of the characteristics of the good, ideal, or recommended teacher according to studies published around the world.

The first question, whether teachers of the gifted should be gifted, will also be answered – to the best of my knowledge for the first time in the literature dealing with this issue.

Why is student/teacher adequacy of special importance in gifted education?

One of the most common complaints of both gifted students and their parents, as well as in websites of gifted families is: "the teacher hates my child," or in a more moderate version: "In order not to make my daughter feel bad, the teacher never mentions her giftedness." Many parents whom I have met both during public lectures for parents of the gifted and in private consultations