

## Education in the information age: the science and the art in making up a mind

The process of producing and disseminating knowledge has been evolving through generations. But at no point in recent history since the invention of printing press, has our method been tested as fundamentally as today. So it seems students and teachers alike have to step back and rethink this process. Education ideally includes both social and occupational spheres of human life. While the latter is focused on maximizing ones' productive skills and knowledge, the former enables the individual to actually enjoy the rewards of these efforts. Though I limit myself to a few thoughts on occupational/technical education here, some of these ideas may be applicable universally. The information age, as I call our times now, is dominated by an easy access to information that is facilitated by a commitment of large resources to its instant sharing around the globe. In fact, today most of our computing resources are used in communicating information rather than computing local outputs. Now, in such abundance of consumable information, one would like to think that constant learning and making informed decisions is both necessary and easy to do. On the contrary, finding a good quality of information and handling this ever learning process has its challenges for everyone. Here are a few ideas that I think can help a teacher or a student in being effective.

### ***The Art of saying 'I don't know'*** - the ever growing list of unknowns:

Both students and teachers should no longer be subject to the standards set decades ago. Teachers in higher education are looked upon to 'inspire' students and not just to 'teach' students. Information being readily available means the teacher is not just a repository of facts (inputs), but a model (algorithm) in using this information and providing a wider context to the subject matter. Saying 'I don't know what the answer is, but this is how you check if an answer is right...' has become an important facet of being a teacher. A teacher is required to be more of a mentor than the primary source of knowledge. Students should know that employers try to judge prospective employees based on their problem solving skills and not on rote knowledge that is easily accessible from anywhere. Saying "I don't know the best answer, but this is how I will try to find it..." is becoming important for a student. Today, people have to be judged not only by their CV with its list of 'knowns', but equally by their list of 'unknowns'. Longer the list of their *known unknowns* better is their ability to contextualize their knowledge, continue learning and be productive in this information age. One still has to understand the fundamental principles

credibly and develop an ability to recall from memory. Don't forget that the complexity achieved in our thought process is limited by the number of relevant variables available in our minds!

*Science in consuming coconuts* - multiple sources and learning habits:

A good metaphor for the learning process has been the peeling of an onion; that is an incremental improvement in the approximation of the subject and its essence by *deductive* reasoning. Alternately, this information age has enabled us to employ *inductive* reasoning more frequently; using analogies, visual demonstrations, and computer simulations and not depending solely on analytical derivations. Such methods are extremely useful in introducing a subject to the beginner and making it accessible to the casual learner. The quality and quantity of information sought has to be appropriately matched with the sources and their methods. The process of picking and cleaving coconuts has quiet a few analogies with the task of choosing and assimilating knowledge from diverse sources. Beware of very tender coconuts (unauthenticated sources) that may have accessible water that is bitter (frivolous), and neither are they a source of the nutritious coconut meat (deep insights). The coconuts that cater only their delicious water (an easier first approximation) are older but yet tender, making them easy to cleave. Others that provide some coconut meat in addition to its refreshing water need skillful cleaving of a larger tender coconut (by an editorial/academic process) before they are consumed. The old coconuts (meticulously reviewed by experts on its facts and methods) are especially hard nuts to cleave and crack; but once cracked they are an essential ingredient (elemental knowledge) in preparation of other seemingly unrelated food later. We should pay attention to veracity, convenience, and precision in the diversity of available sources, lest we use information that is not comprehensive and even misleading.

To conclude, we have now moved on from large storage of paper documents and microfilms in the last two decades; processes that may require days for a single piece of information to be sorted and retrieved. A wide variety of instant sources of knowledge have broken down barriers that constrained education to a moribund formal system. So can this globalized information market help reduce the stark inequality of opportunities among us? One should be mindful of inaccurate and unusable information readily available in large quantities, thereby reducing the signal-to-noise ratio of the information we consume. Visual media can add more power to distraction than to constructive persuasion. So will this deluge of information result in "the wise becoming wiser" at the cost of many who may not cope up with the challenge of managing information on their own? Remember, one wise man reminded us long back that going fast

doesn't help if we are going in the wrong direction! Let us put some thought in how we use this power of information we have today.