Should Teachers be Replaced by Computers ?

Predrag Pale

IT is penetrating education with high velocity. It creates pressure to educators who are not adequately supported to embrace and leverage the It in education. a fear that machinery my make many teachers redundant is present in many minds. Traditional role of teachers was to provide information, to interpret it, to control the process of learning and to evaluate acquired knowledge and skills.

The environment is changing in that organizations are opening, project oriented work becomes predominant and networking within and between organizations, their parts and individuals is predominant way of executing tasks. In order to fulfill their roles in networked, distributed, multicultural teams, individuals need to learn on the daily basis and throughout the life. The content they need to learn changes dail and there is permanent deficit of teachers available to help them I nthe time frame available.

Therefore people turn to technology which today provides unlimited, immediate access to information, peers and alternative educators. IT enables to individually experiment in remote or virtual laboratories and to self-evaluate acquired knowledge and kills and to compare learning progress with other learners globally.

This is positive, since educators can be freed from using their time to provide information and evaluate individual learning and can concentrate on understanding human learning and individual needs. Educators will specialize in the future for assisting individual learners as consultants, mentors and coaches, as authors of a variety of educational material and as agents who will encourage an motivate learning and research.

Introduction

IT is penetrating all aspects of our lives with unprecedented speed. Our ability to comprehend what is going on is strongly challenged and our ability to leverage IT is far from adequate.

Education is no exemption. IT's potential, its true boundaries and consequences of use in education currently cannot be judged. Educators and educational authorities are daily facing "technological" pressure, from students, SW and HW vendors, media and all other stakeholders in IT and education. In the same time the support they need in order to embrace and use IT, to (re)define education in the information age and knowledge society is often insignificant or completely absent.

Simultaneously, educational enthusiasts, technologists and technologists-turned-educators, parents and children, educational industry are creating new and alternative educational products, methods and services, thus creating additional pressure and confusion in educational community.

It is no wonder then that many teachers are asking themselves and some are even afraid of the question: "Are teachers going to be replaced by computers?"

Traditional role of teachers

Role of teachers as we know it has been defined to the most part in the early days of organized education. It has changed very little over the centuries.

First, teachers (mostly priests) were reading to people who couldn't read. Even today in majority of schools from primary schools to universities it is common practice that teacher is teaching by reading a textbook or merely transferring information from other source (majorily publications).

Until only a couple of decades ago, teacher indeed was almost the only source of information in most of the cases, worldwide. In many places only five years ago this was still the case.

Teacher did not only give facts to young minds. His role was to interpret the facts and interpret them in only one, socially acceptable, way.

Teacher is the one who is organizing and controlling the process of learning. He or she decides what, when and how will be learned.

Finally, it is teacher who gives the verdict on knowledge and skills acquired by a student.

Simultaneously, schools and the process of teaching are organized, "prescribed" in a specific way: around subject, in (same) age groups and in seasons.

Where the world is heading

The traditional role did not much change for centuries. This was possible because the world did not change fast. However, today we are facing completely different situation.

Globalization

Globalization means that organizations are extending their presence without regard to geographical or political landscape. It means that "foreigners" start operating in our backyards and need to employ "locals". This provides alternative employment opportunities for the workforce and both ability and pressure to accommodate to different work environment and culture and to quickly integrate. This requires a lot of learning, quick acquisition of practical knowledge and skills.

Globalization also means that local organizations start their operations worldwide and need to train "remote" workers to quickly integrate in the organization but also to quickly bring their specific, local knowledge to as many individuals within organization as possible.

Globalization also relies on tight cooperation of individuals belonging to different cultures. Cultures being not only national culture but also specifics of different cultures or organizations. Multiculturalism within an organization means knowing, understanding and respecting other cultures while clearly communicating basic values and principles of own culture to the others.

Speed-up

Ordinary life is speeding up, on daily, weekly, monthly base but also on the life long scale.

For most of the work force it is no longer possible to remain in one profession through entire professional life cycle, at least not without significantly changing models, methods, even principles of professional activity.

For vast number of people it is certain they will pursue several professional careers throughout their life.

New trend is also that healthy, wealthy professionals from developed countries are no longer getting retired, they actively seek and pursue (different types of) activities even after regular retirement age.

Interactions between individuals that used to take weeks and months, now have to happen within day, hours and minutes. The consequence is that time available to gather and process information, to learn what is necessary before next circle of interaction is measured in minutes, hours at most.

Networking

Monolith, kingdom-like organizations are no longer possible. Their structure is continuously changing and parts of them operate in a mesh-like fashion. They also have to open up to other organizations in order to be able to cooperate and execute projects. Parts of different organizations build networks and form temporarily “organizations” during the life time of a project.

The very same thing happens on the individual basis. People within an organization and between different organizations build networks that continuously modify, change, appear and disappear.

Consequences

The consequences of these rapid and inevitable changes are deep and omnipresent. In education they foster fundamental changes.

Learning is no longer associated with one part of life or occasional educational “excursions” later in professional life. It is now clear that new way of living requires continuous, daily learning, throughout the life.

Employability of every person is the key to that person’s prosperity. Employability directly depends on knowledge and skills the person possesses. This being the case it becomes evident that primary responsibility for one’s learning is within that very person. However, the personal responsibility for learning can be exercised only if the person was taught how to learn in the first place and if that person has access to knowledge to be acquired.

On the other hand, despite personal responsibility for learning, others have their vested interest, too.

The society, for one, has interest to have skilled workforce, because it means economy with higher growth, revenues, profits and taxes, leading to wealthier society.

Private sector, industry, also has interest in learning of their workforce because it makes them more competitive and leads to higher profits in the end.

Thus basically everybody has interest in fast, efficient learning.

Hurdles

However, there are some significant hurdles to such learning, some old but now more important and some new.

The first problem is that knowledge has to be acquired now, immediately, daily. Scheduled courses are no longer the solution.

In addition, the content that needs to be learned, processed and internalized is changing on the daily basis. Existing teaching materials rapidly become obsolete. Teachers have limited or no time window to learn and prepare to teach newly needed content.

Actually, the lack of teachers increasingly becomes the problem No. 1. The overall lack of teachers becomes apparent, and is especially dominant when specific content needs to be learned immediately.

The Power of Technology

This being the case, many thoughts are turning to technology. The modern IT brings undreamed possibilities.

We no longer need a teacher, librarian or anyone to provide s with information we need. It is readily available literally at our fingertips and it is available immediately.

Actually, we have multitude of information available. And the power to compare, analyze, process all that wealth of information, better than anyone ever had been able in the history, is again at our fingertips.

In education and research team work is very important. IT extends out peer group to the whole planet. No person should be felling un-understood and alone, anymore. Everybody should be able to find partner to learn, explore or pursue ideas.

A learner today needs not teachers who will convey information. He or she actually needs a counsel, a coach, a mentor to assist the process of learning. Thanks for the technology such educational professionals of new type can be found worldwide and they could provide their services to anyone in the world.

Every laboratory is now accessible to just anyone, virtually without any cost. even more, it is possible for every learner to perform experiences of any kind in any extent without cost, without danger in virtual laboratories.

Finally, every learner can evaluate the level of knowledge acquired or progress made by himself. It can be done in an objective way and the result can be compared to other learners worldwide.

Should Teachers be Replaced by Computers ?

Having all this in mind, we can better understand the future of learning, teaching and teachers. Somebody once said “Every teacher that could be replaced by a computer – should!” And this is true indeed the same way it is true for any other profession. If a machine can do something, people should not be doing it. Every task that can be automated or programmed to a machine should be.

This needs to be done in order to free human’s time so they can do things only humans can do: understand other humans, their needs, their problems, the way they understand or misunderstand and help them find ways to learn.

Technology should be used to provide information to learner as well as direct communication to people and systems. It should be used for exploration and to self-evaluate knowledge and skills.

In this way educators will be able to pursue their mission: improving the learning of humans and assisting individuals to reach their maximum.

In the future, new specialized professions in the field of education will start to appear. It will be in three main directions.

A group of educators will be focused on needs of a specific individual learner. They will counsel the learner on content, ways and means that need to be used in order to achieve the object and gain competence required for future role of the learner. Some of them will also act as coaches taking care that the required competence is gained in given time, others will act as long term mentors taking care of optimal development of the learner.

Another group of educators will specialize as authors of educational materials: textbooks, self-evaluations, virtual laboratories, documentaries and completely new means and devices for learning.

The third group’s role will be to “open windows” to introduce areas of human knowledge, to provoke thinking, to pose problems, to engage and motivate learners. They will act as performs, agents, activists and by any mean to instill interest and sustain it in learners and researchers.

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