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An efficient, sustainable and affordable Global Basic Education System

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Introduction

Global education is experiencing a giant breakdown with serious, critical and increasing problems related to learning, enrolment, quality, equity, relevance and financing, which for the past three years has been presented and verified by the UNESCO Global Education Monitoring Report (2015), the World Education Conference (2015), The International Commission on Financing Global Education Opportunity (2016) and the World Development Report 2018.

At the same time a great breakthrough as developed with new ways to efficiently and sustainably provide top quality learning and education for everyone, everywhere and at anytime.

Global education development is still basically led, monitored and controlled by the politically extremely powerful Teachers' Trade Unions and Teacher Training Institutions, which forcefully oppose any suggestions that modern technology can replace most of the teachers' jobs, despite overwhelming, apparent and convincing evidence to the contrary.

This document, therefore, presents both the primary problems/issues of today's traditional global education and the extraordinary possibilities/opportunities that today exists for solving them, which the global, traditional education establishment has totally ignored and missed. The document's final proposal is to establish an “**International Commission on Learning in the Digital Age**”, which in the spirit of two previous UNESCO international commissions work will present a much needed and wanted resetting, reconstruction and revitalization of global education development.

The primary and fundamental education problem is the teaching

The traditional education system was established more than 150 years ago and after the second World War, with the establishment of UNESCO, it was gradually “modernized” to its present form. The Swedish Basic Education System - introduced in 1962 - will be used in this presentation to represent a global average traditional modern education delivery system. It is easy to convert and choose data from your country.

A teacher teaches classes of 25 – 30 students about 20 hours per week during about 35 weeks per year, which means totally about 700 hours per year. That has become both teachers' “teaching-capacity” and students' official contact hours with a teacher. The education content is limited to what can be accommodated during that time. The cost of this education is in the order of 8 USD per hour and student or 200 USD per class.

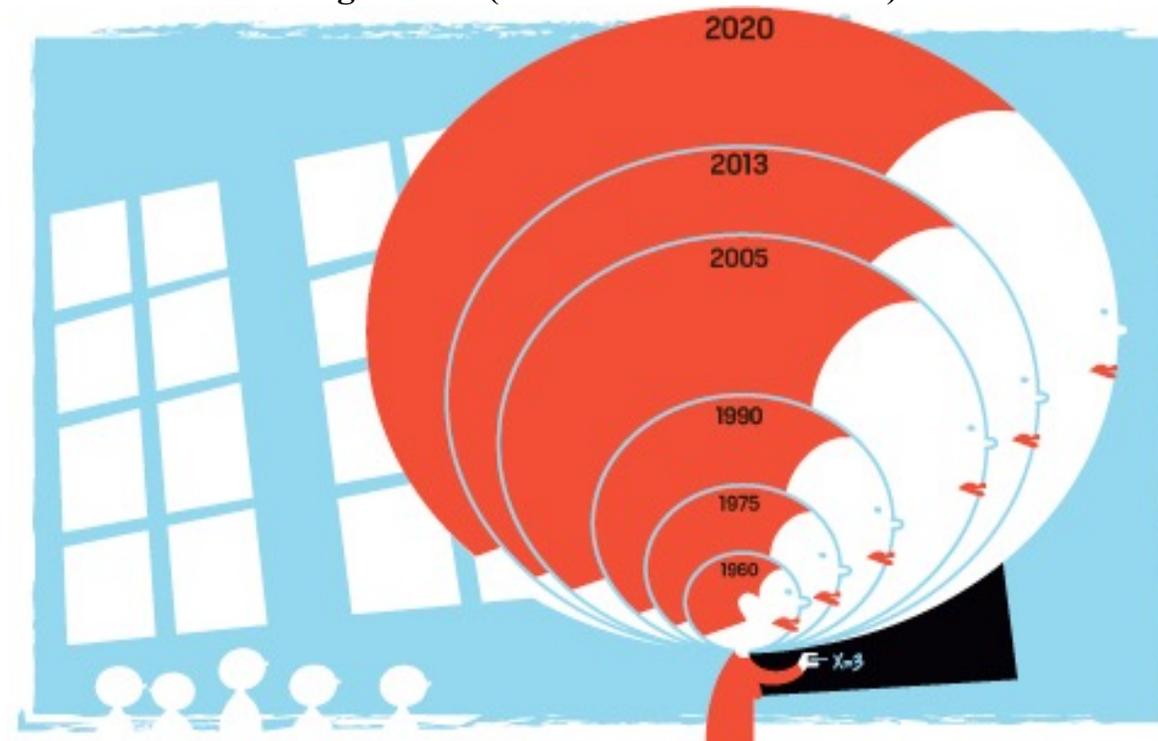
In 1960s it seemed to work out fairly well. The schools had largely homogeneous classes; teachers and textbooks were the main source of knowledge; schools were a central point in students' life; and functioned at the forefront of the technical, economic and social development. Teachers could still be masters of their subjects, and their work was appreciated and rewarding.

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There were no computers or cell phones and TV only in the evenings. There were good opportunities to get work and practice in the labor market.

But the technical-, social- and economic-development changed all that quickly, dramatically and permanently, as is shown in the picture below.

Knowledge-Boom (or the Education Bubble)



Graphics: Anna Spång, Dagens Samhälle, Sweden

For the past 60 years, the amount of knowledge in the world has doubled every 7 to 8 years. If the head volume of the teacher represents the amount of knowledge with 1960 as a base unit, the volume has in 2013 increased about 130 times, in 2020 increased about 260 times and in 2030 it will be about 600 times bigger.

The knowledge-boom has made both students' and teachers' situation today totally different and practically unmanageable. With the same teaching capacity, methods, tools and time, but with a body of knowledge to deal with about 200 times larger, the teachers' job has become practically impossible to perform at satisfactory level. However competent, well educated and well paid, a teacher can today not do the teaching job in the amount and quality needed for providing, an often diversified group of 25 -30 students during 700 contact hours, the individualized, high quality and comprehensive learning they need, want and could demand.

To increase teachers' teaching-capacity to required level, by e.g. better and more training or higher salaries has shown impossible, and schools, therefore, now deliver an education with continuously decreasing academic standard and lacking much of what a comprehensive education today should contain according UNESCO investigations and proposals. Schools are no longer the main source of knowledge; students can get more and up-to-date information instantly on their iPhones, and iPads. Teachers' authority and status can be easily questioned and students often find schools and teachers lacking in up-to-date knowledge and experience. The school environment is increasingly perceived as boring, hostile and even dangerous.

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The probably most serious problem is that students only have 700 hours/year of official support time from the schools, when the "Normal Operation Time" in the labor market is about 40 hours x 45 weeks= 1800 hours per year. This means that students can spend about 1100 hours of unsupervised "extra free time" - in addition to "ordinary" free time - in an environment packed with unproductive and misleading attractions and enticements. Students have rare opportunities for getting job practice, part-time jobs or internships. This may be the main cause of today's extensive problems – alienation, gang building, criminality, unemployment etc. that the youth, their parents and communities-at-large now often struggle with. These problems can only be solved with an extension of the guided education time.

The fundamental and crucial education problems, which today's official education research and development programs never deal with or even want to discuss are:

- 1) Teachers' teaching-capacity and student/teacher contact time has become utterly inadequate;
- 2) The content of basic education programs have, therefore, become inadequate and outdated in relation to the demands of modern business, trade, industry and society.
- 3) Students are left without support and guidance more than half of the society's official "Normal Working Time".

The sustainable solution to the education problem.

The teaching problem can today be solved by digitalizing and individualizing knowledge-learning and replace the knowledge-teaching part of a teacher's job with a special computer - call it an iKnow or iLearn –, which with 24/7 capacity the year around can give every student, everywhere, a personalized, high quality learning assistance by the very best teachers in every subject on all levels. This technology is today already available, developed and tested and used today by about 100 million students in 190 countries. For further information see www.khanacademy.org and www.youtube.com; search "Salman Khan education". There you find many presentations as information and for inspiration like; "*Let's teach for mastery -- not test scores*"; "*Microsoft CEO Summit Innovation in Education*" with Bill Gates and "*Education Reimagined*". Furthermore with TEDtalks ; www.ted.com; "*Bring on the learning revolution!*" and "*Do schools kill creativity?*"

The Khan Academy presented in its yearly report for 2018 that they had 71 million registered students in 190 countries and delivered about 130 million teaching hours of "*free, high-quality, world class education for anyone, anywhere in the world*" at a total program cost (production and delivery) of USD 43,640.59 million. That makes the cost USD 0.34 per hour of individual teaching, which is only about 4 % of the cost of traditional teaching.

The content and students' support problems can now be solved by restructuring, reorganizing and expanding the old education system according to the recommendations of two international UNESCO Commissions - *the Faure Commission* and *the Delores Commission*. This is all combined in a

Model and Preliminary Design of a Global Basic Education System

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The content of comprehensive basic education. UNESCO's "*International Commission on Education for the Twenty-first Century*" - the Delores Commission - and its report in 1996: "*Learning: The treasure within*" are used for the design of the total content and organization of the comprehensive basic education system:

"If it is to succeed in its task, education must be organized around four fundamental types of learning, which, throughout a person's life, will in a way be the pillars of knowledge; Learning to Know, Learning to Do, Learning to Live Together, and Learning to Be".

"Learning to Be" is designed to "enable each individual to discover, unearth and enrich his or her creative potential. This means going beyond an instrumental view of education, as a process to achieve specific aims in terms of skills, capacities, competence, etc., to one that emphasizes the development of a complete person."

The system of knowledge learning. The "*International Commission on the Development of Education*" – the Faure Commission - comprehensively studied "*the world of education today and tomorrow*" and found that the teaching job required can only be done by using modern technology:

"The commission accordingly underlined the fact that despite doubts and differing orientations, and whatever the progress or saving might be obtained from changes in the traditional educational system, the very heavy demand for education can only be met if instruments derived from modern technology are put to use.."

The technology they required was at that time not available, but today it is readily available everywhere, fully developed and tested by the Khan academy – see website.

The solution to the teaching problem is to digitalize and individualize all knowledge learning and replace the teacher with a knowledge computer – call it "iLearn" or "iKnow". It can, with 24/7 capacities the year around, give every student an individual, equal and comprehensive knowledge-learning of highest quality by the best teachers.

The four pillars - or modules - of comprehensive basic education:

Learning to Know, Learning to Do, Learning to Be and Learning to Live Together.

Learning to Know: Interactive and individual learning in Learning Centers. At the beginning students will be psychologically tested and assessed to determine what type of learning program they best respond to and what type of assistance they need in their studies. The learning programs can be adjusted to fit the student's learning and intelligence type. Students will be responsible for their own learning and learn individually and interactively, with the assistance of specially outfitted and programmed computers – call them iKnow or iLearn. Students' learning is continuously assessed and continues until the student master the subject.

Students will spend half the time on individual learning and half the time on group projects in direct relation to the learning program. Knowledge learning will take place in groups of 10 students for individual learning and 20 students in group-sessions. There will be one

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teacher per group in all sessions. During individual learning, each student will get learning support from a student that recently has completed the same course.

The role of teachers will evolve from dispensers of information and knowledge to facilitators and enablers of learning. The teacher will be a learning specialist who can assess the student's learning type, select suitable programs, supervise the learning assistants and monitor the learning progress. Students will be automatically assessed through the learning process.

Learning to Do: Facilitating and preparing the transition from school to work and employment. Students will spend one quarter of the academic year doing practical work. They should practice – and be exposed to - as many different areas of the job market as possible, in order to realize employment opportunities that can fit their personal interests and aptitudes. Students must learn to follow rules and regulations of work places as regards to time keeping, safety rules, teamwork, environmental and trade union issues and considerations, etc. The program will be adjusted to the student's age, grade, gender and personal considerations.

Private, state, and community employers in the area will organize the “Learning to Do” activities and all of them will take place outside the Learning Center environment.

Learning to Be: Preparation for Free Time Activities and non-knowledge-based learning. This module aims at developing the personality of the students and contributing to their development into independent, well rounded, and physically/mentally healthy individuals. It includes all creative and non-knowledge-based learning. It incorporates all cultural (art, theater, music, song, etc.), social (clubs, hobbies, etc.), spiritual/religious and free-time (sports, athletics, etc.) activities that are available in the community where the student lives.

The students will be presented with, can try out and learn about all these different areas of free-time activities and then select one or several that they want to be engaged in according to their interests and aptitudes. These activities will be organized by private and public organizations within the community and located outside the Learning Center.

Learning to Live Together: Introduction to social living and citizenship. The UNESCO formulation “Learning to Live Together” has been in our model shortened to SUPPORT. The students will learn and experience what it means to live in a community or society and what responsibilities they have in supporting common programs and maintain common properties. Students will learn to work together and give service and support to the common programs of the community, e.g., health, old age, retirement and education programs.

The most important support work will be as a learning assistant. A student, who recently has taken the Learning to Know module and now follows the SUPPORT module, will support another student that takes the Learning to Know module for the first time. Students will thus attend the Learning to Know course twice; first as a student, and then as a learning assistant supporting a first-time student, which will greatly contribute to both students' learning. This part of the SUPPORT module will be organized by the Learning Centers.

The SUPPORT module program will initially enroll most of the students as learning assistants, but in higher grades students will also work and support the community's different welfare, maintenance and development programs.

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A new organization and yearly plan

The education program will be restructured to fit all needs, at the same time as the effectiveness of education is greatly increased and the cost is reduced. The four modules, Learning to Know = KNOW, Learning to Do = DO, Learning to Be = BE, and Learning to Live Together = SUPPORT will be allocated one quarter per year in time and organized as a rolling scheme during the year. Students in the same grade are divided into four groups. Every student group takes one learning module in a rotating schedule from grade to grade. Each of the nine grades of basic education will look like this:

LEARNING TO:

STUDENT GROUP	YEARLY QUARTERS			
	I	II	III	IV
1	KNOW	DO	SUPPORT	BE
2	BE	KNOW	DO	SUPPORT
3	SUPPORT	BE	KNOW	DO
4	DO	SUPPORT	BE	KNOW

Cost of a Global Learning System vs. Traditional Education.

A direct cost comparison between the costs of traditional schools and estimated costs of a new Global Learning System in the Swedish school system is presented in Attachment 1. This can be made in the same manner for any country or community, which has collected statistical enrollment and cost data. The basic education cost will approximately be cut in half.

Benefits of a Global Learning System.

The quality of education:

- 1 The students will be in charge and responsible for their learning. All learning will be individual and attuned to each student's personal background, knowledge and experience. The students will get learning support 100% of the society's "Normal Operation Time"
2. All students learn until they fully master the portion of the subject or course they are studying. No grading is needed as achievements are continuously and automatically tested and recorded.
3. The throughput in the system will be 100% and dropouts will be 0%.
4. Every school can have the same top-quality comprehensive education program, irrespective of where they are located - in a city or in the countryside, from the North to

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the South Pole. A remote village with 5 students can have the same top standard as an Ivory League facility.

5. The school efficiency as regards to quality, content, depth and speed of learning, and cost can be estimated to be about twenty times higher than in the traditional schools.

6. Developing countries will get a shortcut in education development and an opportunity for a speedier catch up with the more developed and industrialized countries.

Teacher related issues:

1. All the present teacher-related problems will disappear. The role of teachers will evolve from dispensers of information and knowledge to facilitators and enablers of learning. The teachers will become professional learning specialists whose tasks will be to determine the students' learning type, select suitable programs, supervise the learning assistants and generally supervise the students' development.

2. Teacher training programs completely revised and very much shortened. Ultimately, all teachers will be recruited from persons with subject knowledge, commitment and 5 – 10 years work experience.

Economy:

1. Estimates show that the recurrent cost per student in the new Learning system can be halved - -50% - as compared the traditional education system. See Attachment 1.

2. New investments in buildings will not be needed. See attachment 1.

Financing and development aid transfer to needing countries.

1. Viable, attractive and well-designed projects of technical nature can be presented for financing from both the private market and the development aid donors. This new type of project will bring back old and bring in new investors into the education sector.

UNESCO Research and New Technology can start the development of a new Global Learning System in 2020

We have now reached a point in education development history, when we can sustainably solve one of the biggest, remaining, global, social, economic and financial problems – Education. With the use of modern technology, a new Global Learning System can be made to be ten times more effective than the traditional one at the same time as education cost can be halved. UNESCO has for the past 50 years laid the foundation for this development.

In foreword to the UNESCO document “Re-Thinking Education” (2015), the then Director-General, Irina Bokova wrote: “In the spirit of two landmark UNESCO publications, *Learning to Be: The world of education today and tomorrow* (1972), the ‘Faure Report’ and *Learning: The treasure within* (1996), the ‘Delors Report,’ I am convinced we need to think big again today about education.”

The new global education development can start immediately and I invite UNESCO to take the initiative to establish a third “**International Commission on Learning in the Digital Age**” to investigate and make recommendations for replacing the present traditional education

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system with a new Global Basic Education System, including proposals for “policy, legislation and advocacy”.

We can create the greatest breakthrough in education history and start the biggest development project in human history in 2020.

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P.S. I shall be pleased to explain, justify and clarify all figures and statement in this document and assist in adjusting the figures to comply with any country's special needs and requirements.

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Attachment 1

Cost of a New Learning System vs. Traditional Education.

For this comparison, statistics from the Swedish Basic Education “Grundskolan” is chosen. The cost comparison can be made in the same manner for any country or community and the actual figures can easily be substituted and adjusted for appropriate estimates.

As a rough estimate, Sweden has a population of about 10 000 000 people and the Swedish Basic Education has 9 grades, with about 1 000 000 students and about 90 000 teachers. The number of students in basic education is 10% of the population and the number of students per teacher is then about 10:1. There is an average of 25 students per class.

Comparison of education resources and capacities in a Swedish community with a population of 10,000 people

Total number of students in 9 grades of Traditional Education (10%) = 1000
 Total number in the new Global Learning System (the same) = 1000
 No. of students in the KNOW module at the Learning Centers = $1000/4 = 250$

Traditional Education has 25 students per classroom and 1 teacher per 10 students. The Learning Centers have 10 students per media room and 20 students per group room with one teacher in each.

Facilities and teachers required:

	<u>Traditional Education</u>	<u>Learning Centers</u>
Classroom needs	$1000/25 = 40$	
Media room needs		$250/10/2 = 13$
Group room needs		$250/20/2 = 7$
Old type of teachers needed	$1000/10 = 100$	
New type of teacher needs (+20% for vacation, etc.)		$(13+7)*1.20 = 24$

The total cost for traditional education is about US\$ 10,000 per student and the cost distribution is approximately as follows:

Teacher salaries and expenditure	= 50%
Buildings, inventories	= 20%
Student learning, Library	= 5%
Administration, incl. student meals, welfare, transportation and misc.	= 25%

This distribution is made for the Swedish school system and figures may vary in other education systems. The cost for students’ welfare and meals will be reduced as to about half as there are only in the Learning Centers about half of the

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time. The cost for learning materials is calculated under the assumption that each student will have access to a new learning computer and that interactive learning programs will be produced and distributed in all knowledge-based subjects. The computer equipment cost is estimated at a high total of \$1000 per unit, including standard software. Today the cost of an appropriate "super-computer" for schools is about \$300; ultimately expected to decrease to \$100 in global mass production.

Cost comparison between a Traditional Education system and a new Global Learning System for a community with a population of 10,000 people.

The basic cost per student and year at present is set to US\$ 10,000. The Global Learning System cost is US\$ 4,900 as shown in Figure 3.

<u>COST CATEGORY</u>	<u>Traditional Education System</u>	<u>New Learning System</u>
Teacher costs 50%	\$ 5,000	$\$5,000/100*24 = \$1,200$
Administration+ Misc. + Students' meals + School Transportation+ Welfare, etc., 25%	\$ 2,500	$50\% \text{ of } \$ 2,500 = \$1,250$
Buildings and Inventory, 20%	\$ 2,000	$20/40*2000 = \$1,250$
Library 5%	\$ 500	Estimated @ = \$1,000
Learning computers for Learning Centers replaced every year + extra media equipment and basic software		$20*10*\$1000/1000 = \$ 200$
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Cost per student and year	\$ 10,000	\$ 4,900

These approximate cost estimates will vary very much from country to country and from continent to continent. In general, they indicate that a new media-based Global Learning System can reduce the recurrent cost of basic education considerably. The cost per student for computer equipment is negligible in comparison with other costs, despite the fact that we have made a high estimate of equipment cost. The cost for teacher training will be dramatically reduced.