PROLOG

The numerology character resulting from the date you first contacted me is: 9

You are a humanitarian deeply concerned about the state of the world! You are an idealist, a dreamer and a healer with great compassion. Your path will lead you to understand the interconnectedness of all things. Your healing may take the form of writing, composing, painting or even teaching. You are an educator, always acting for the benefit of others and looking for solutions from the inspirational, intuitive and creative worlds. One of the major lessons of this number is to learn to give of oneself as much as possible, without thought of reward or return. As you can well imagine, this is a difficult lesson to put into practice. Much of your effort may be spent in learning to balance others' needs and ambitions, however large or small, against your inborn desire to contribute to those in need.

Certainly I'am unable to understand how an astrologer could deduce the information seen at left, about me; all seems to be to the point.
As a consequence I will write with my soul, and I will understand the desires of my readers' flesh.

We cannot continue teaching with the methods of the 19th century and hope to prepare our children for the 21st century.

As Dr. Feynman has pointed out in in in 1956 the old problem of the relation of science and religion is still with us as difficult a dilemma as ever [1]. Without resolving this dilemma we will never know to which extent we are the Lord/ruler of the affairs on Earth; we will never know if we will soon be able to overcome difficulties of the day; we will never know if an afterlife is on the carpet; and we will never know what is expected from us.

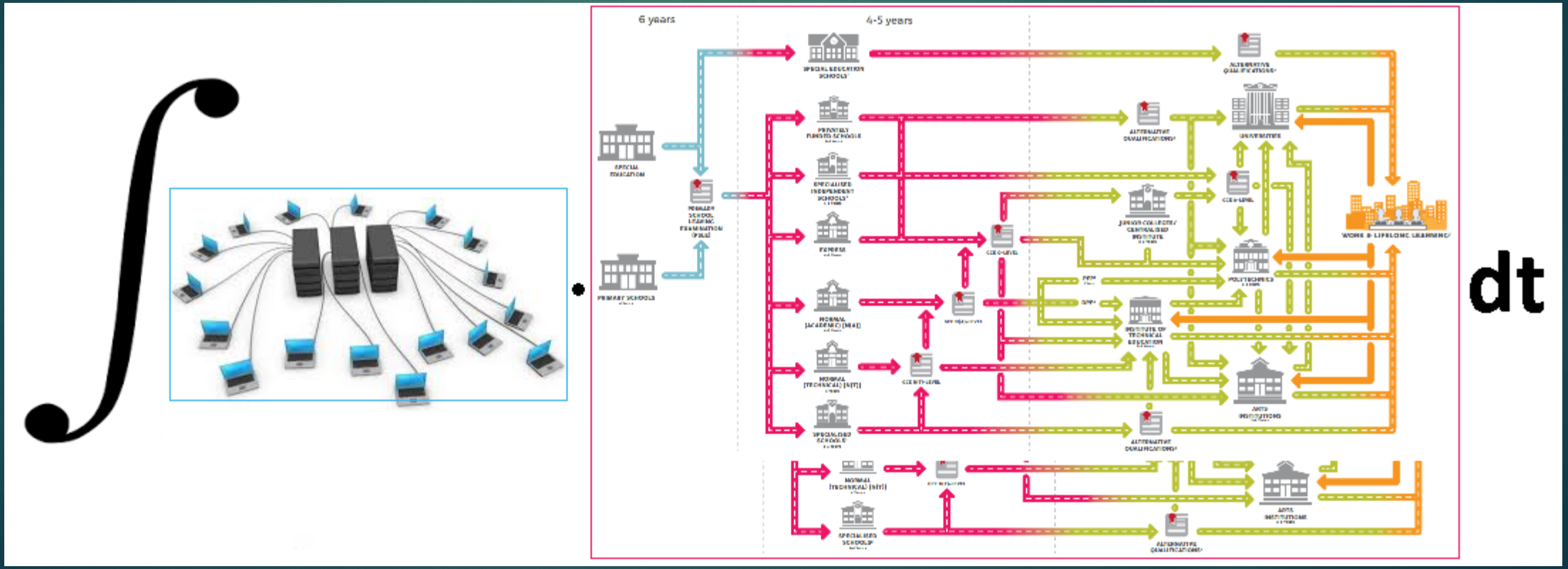
A Proposal for a Semi-Automated, Computer-Aided Education System

İsmail German
PhD
(Retired) Research Fellow/MAM/TÜBİTAK

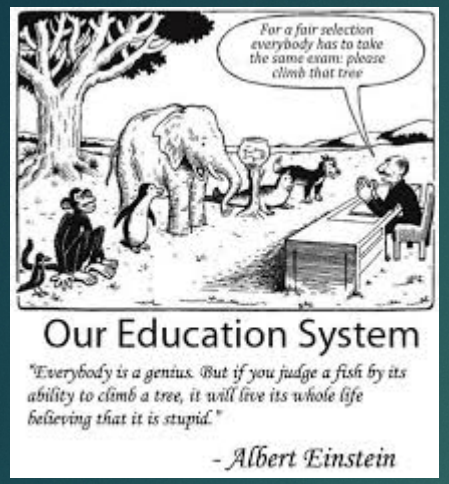
Its Spirit:

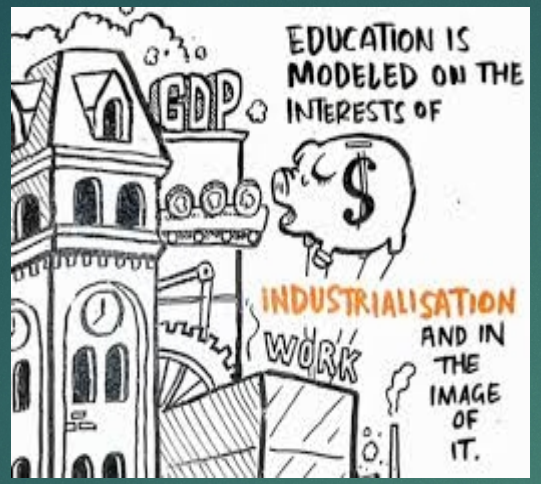
The spirit of the Project is to establish a computer aided, semi automated education system that

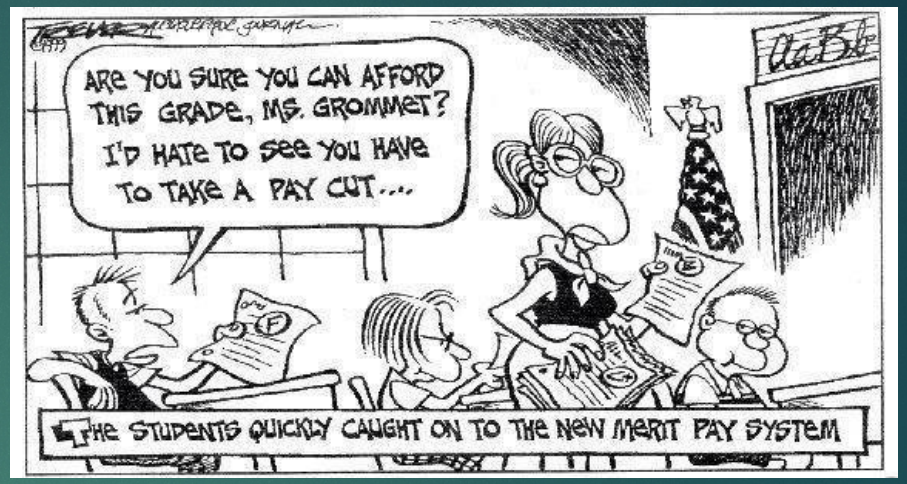
- trains each child to the best position that will very probably be available for her/him when she/he is ready for work.
- informs him well about codes of living happily in the human societies and the possibilty of an afterlife based on experiences of ancient societies and scientific evidences.

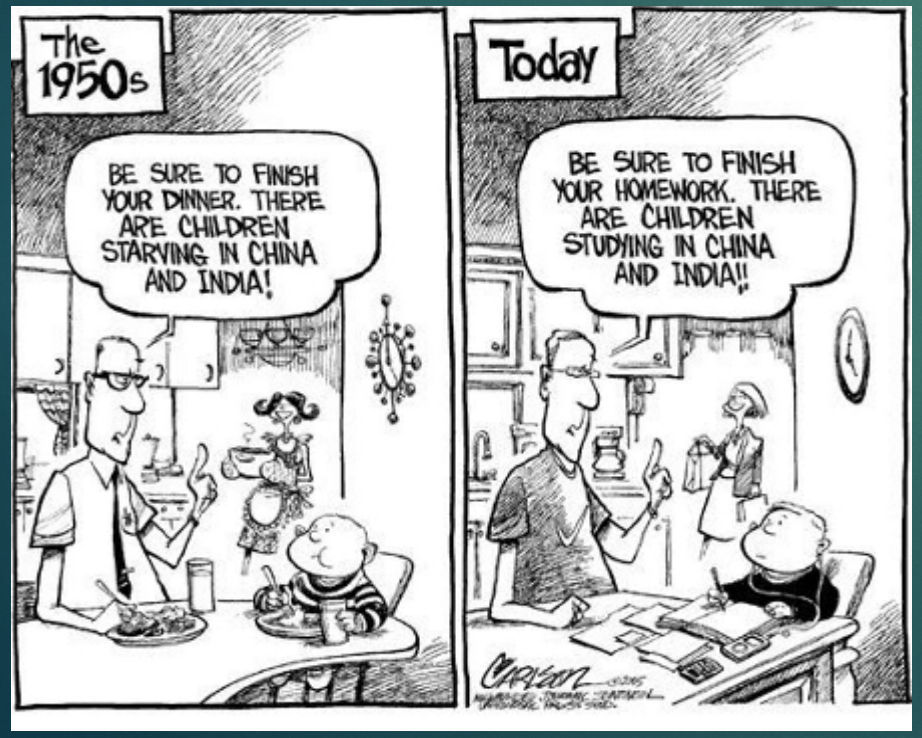


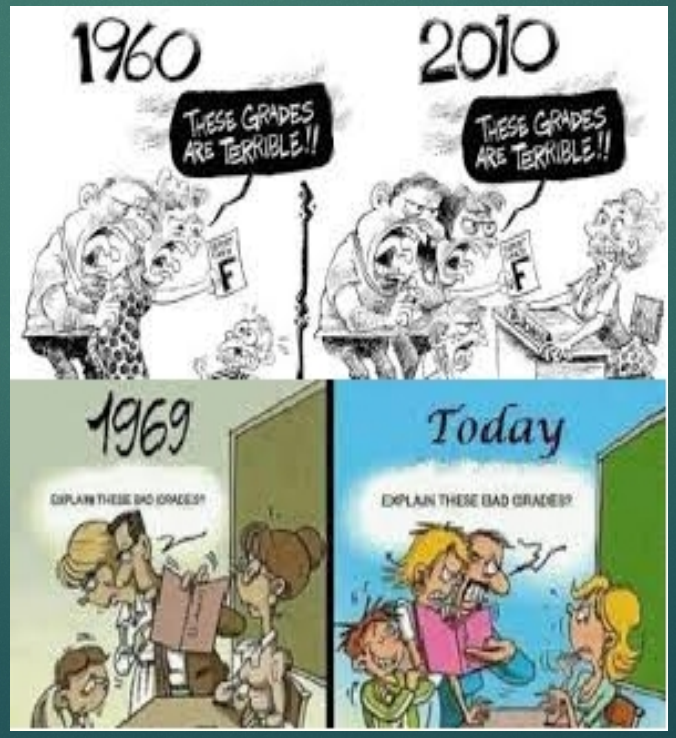
Justification:

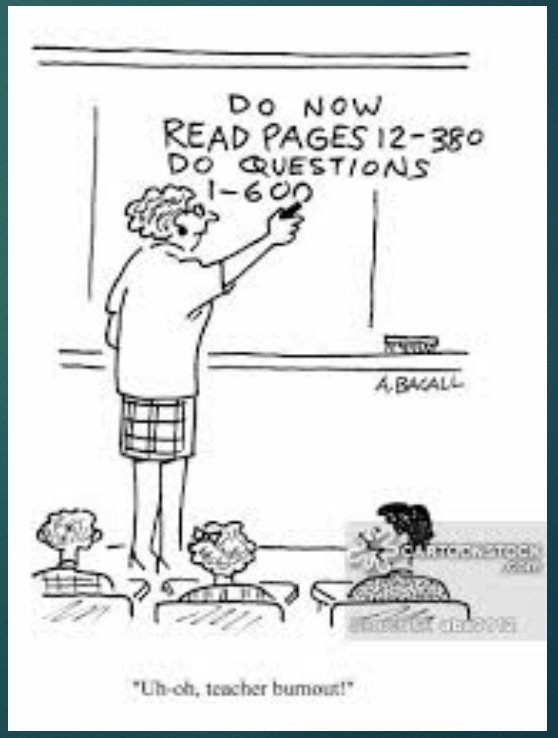




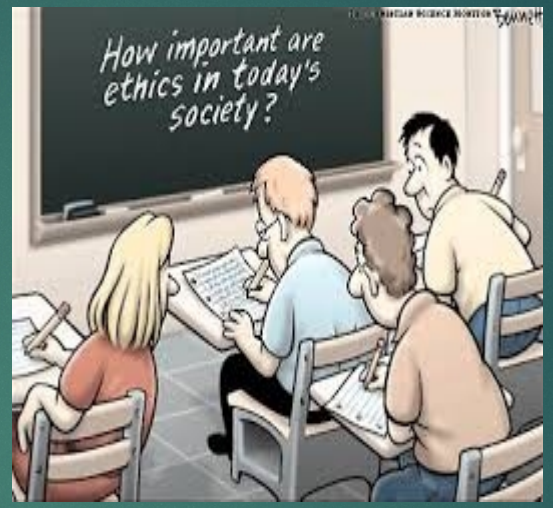


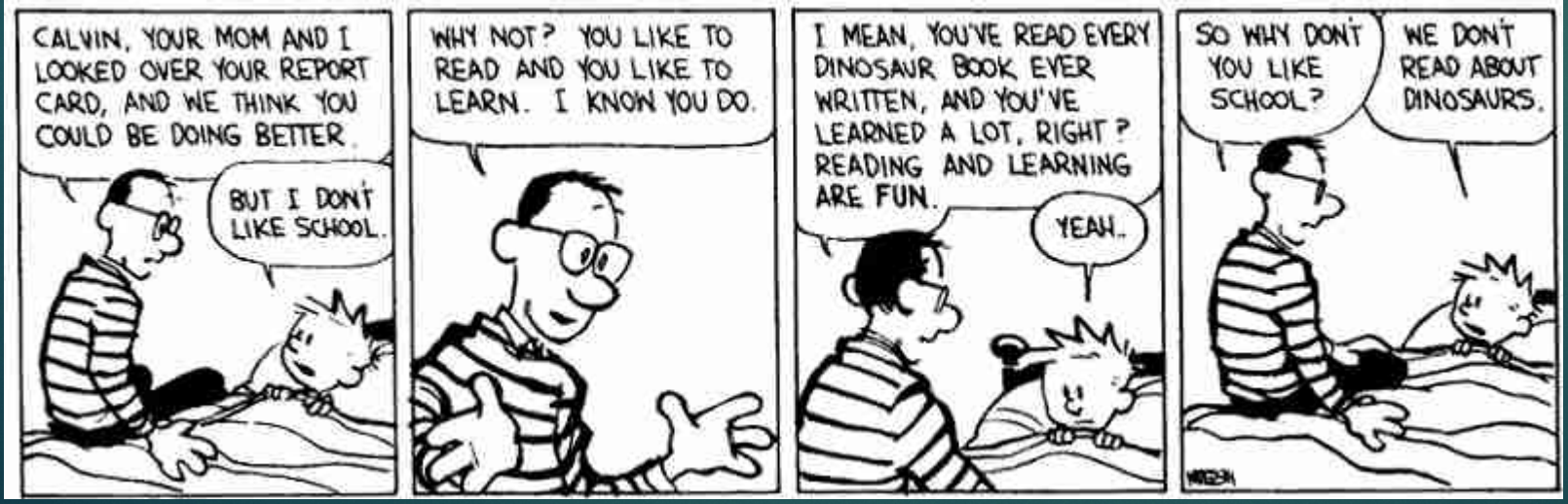




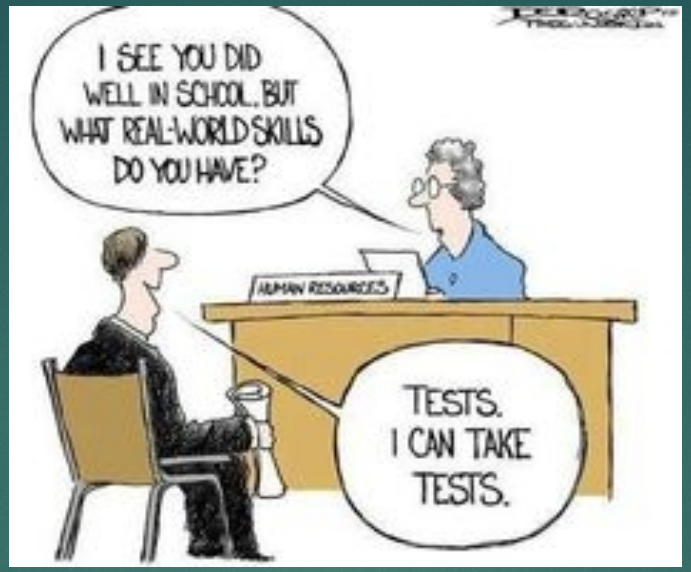


Justification

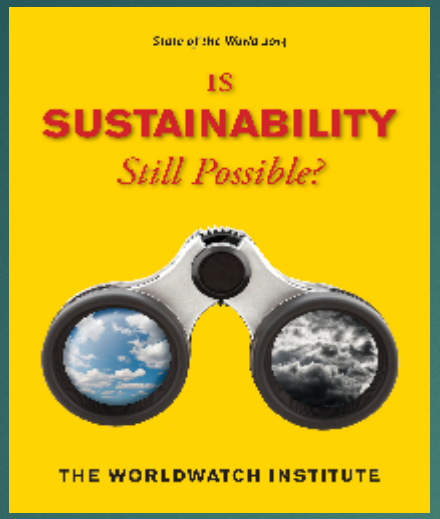


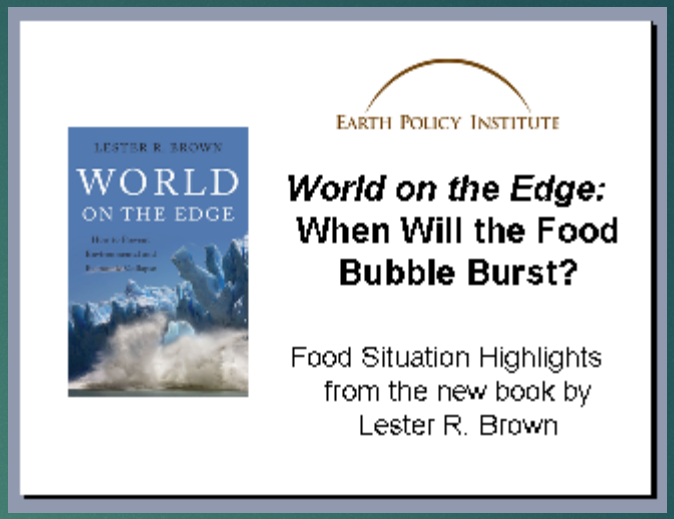


Justification

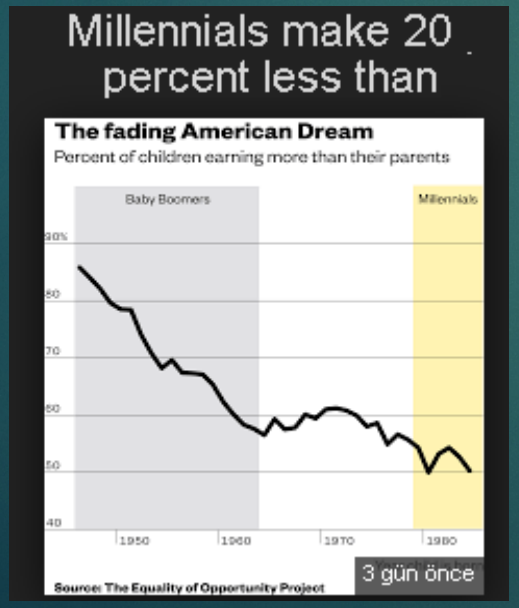


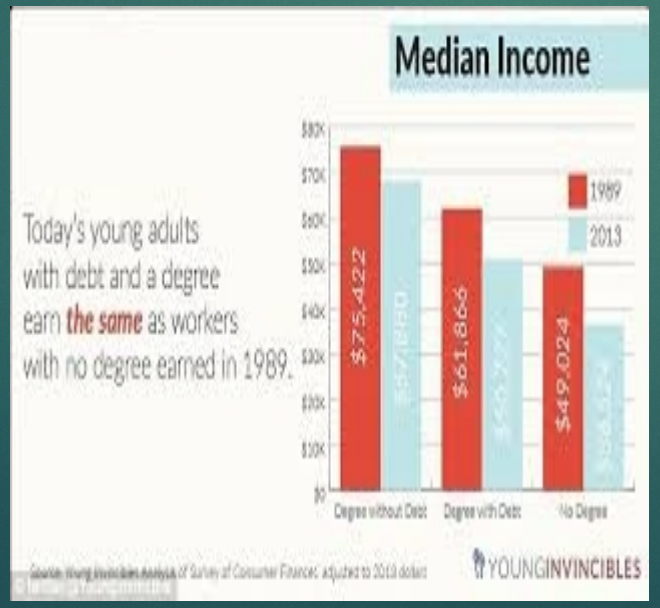
Serious justification

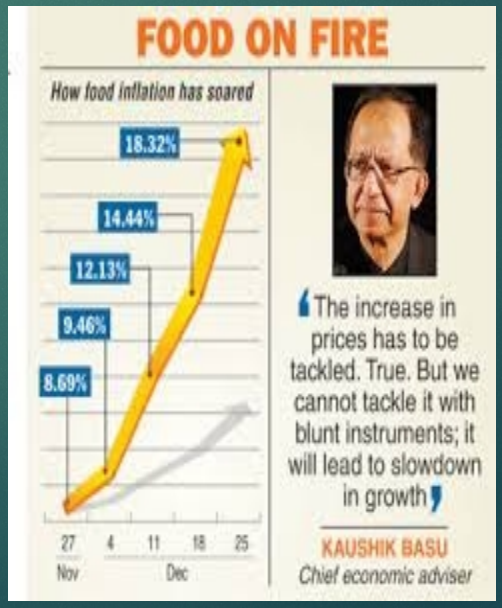


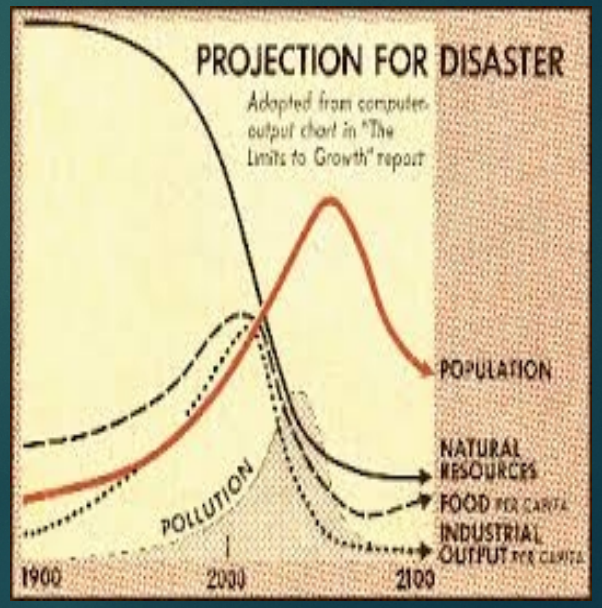


The World's past may not be better, but today the danger is global.



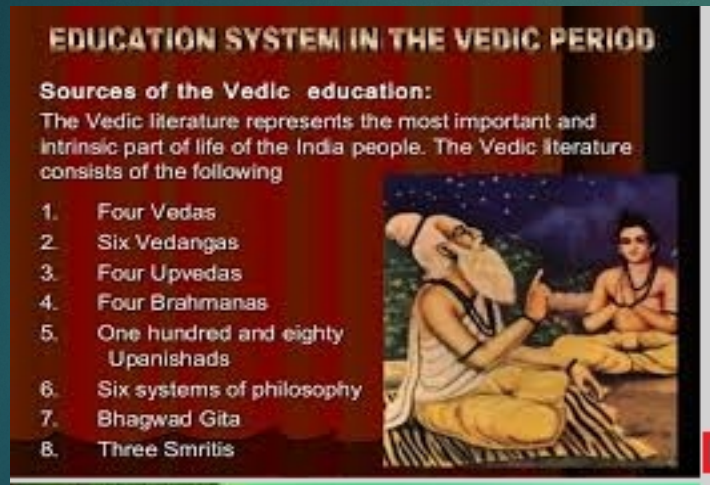


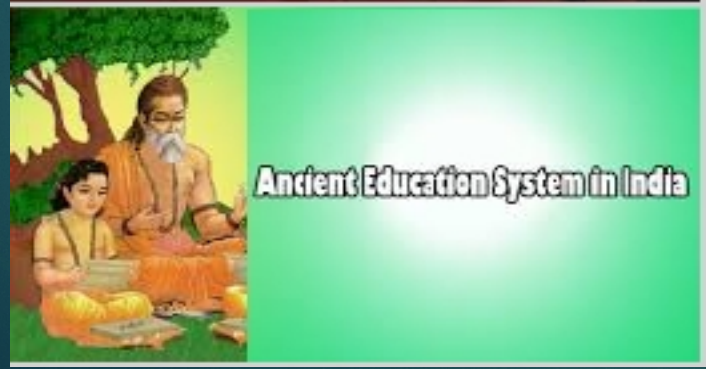




Classical semi-missteps on the way

Mass education oriented to local problems.



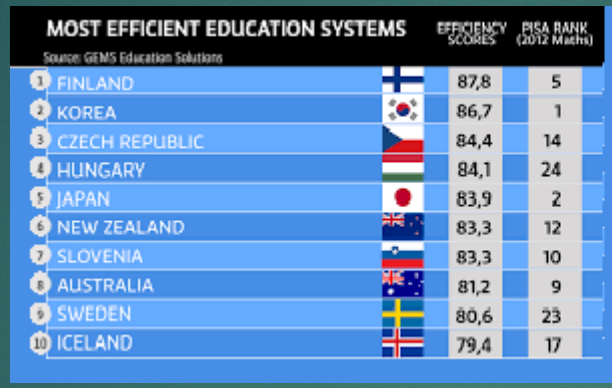


Modern semi-missteps on the way

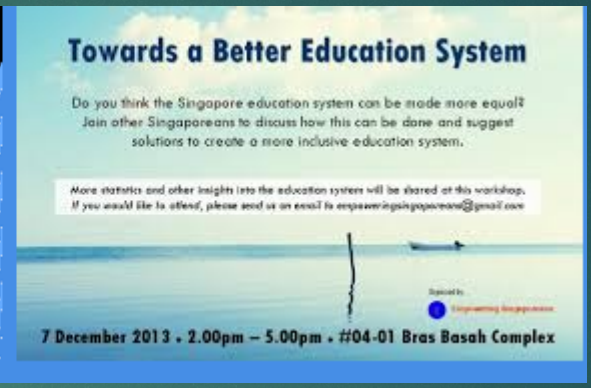
Men have changed environement drastically without being able to change self shortcomings. Many people have had thoughts in that direction but no one could do or even dare to.

The new technology enables parents to make choices about their children just as they might with Ritalin or cleft palate surgery to "improve" behavior or appearance.

Status Quo



MOST EFFICIENT EDUCATION SYSTEMS Source: GEMS Education Solutions	EFFICIENCY SCORES	PISA RANK (2012 Maths)
1 FINLAND	87,8	5
2 KOREA	86,7	1
3 CZECH REPUBLIC	84,4	14
4 HUNGARY	84,1	24
5 JAPAN	83,9	2
6 NEW ZEALAND	83,3	12
7 SLOVENIA	83,3	10
8 AUSTRALIA	81,2	9
9 SWEDEN	80,6	23
10 ICELAND	79,4	17



- The most efficient education systems are ordered according to PISA.
- Top countries are usually the same, generally having high GDP.
- They all try to attain even better systems via multichannel feedback.
- The interests of different groups involved in the systems are diverse.
- No system is yet automated, and the poors have no chance of success without automation, due to the costs involved.

Problem Definition

Economic war is somewhat like military war, sides do try to conquer hills of importance to keep the upper position.

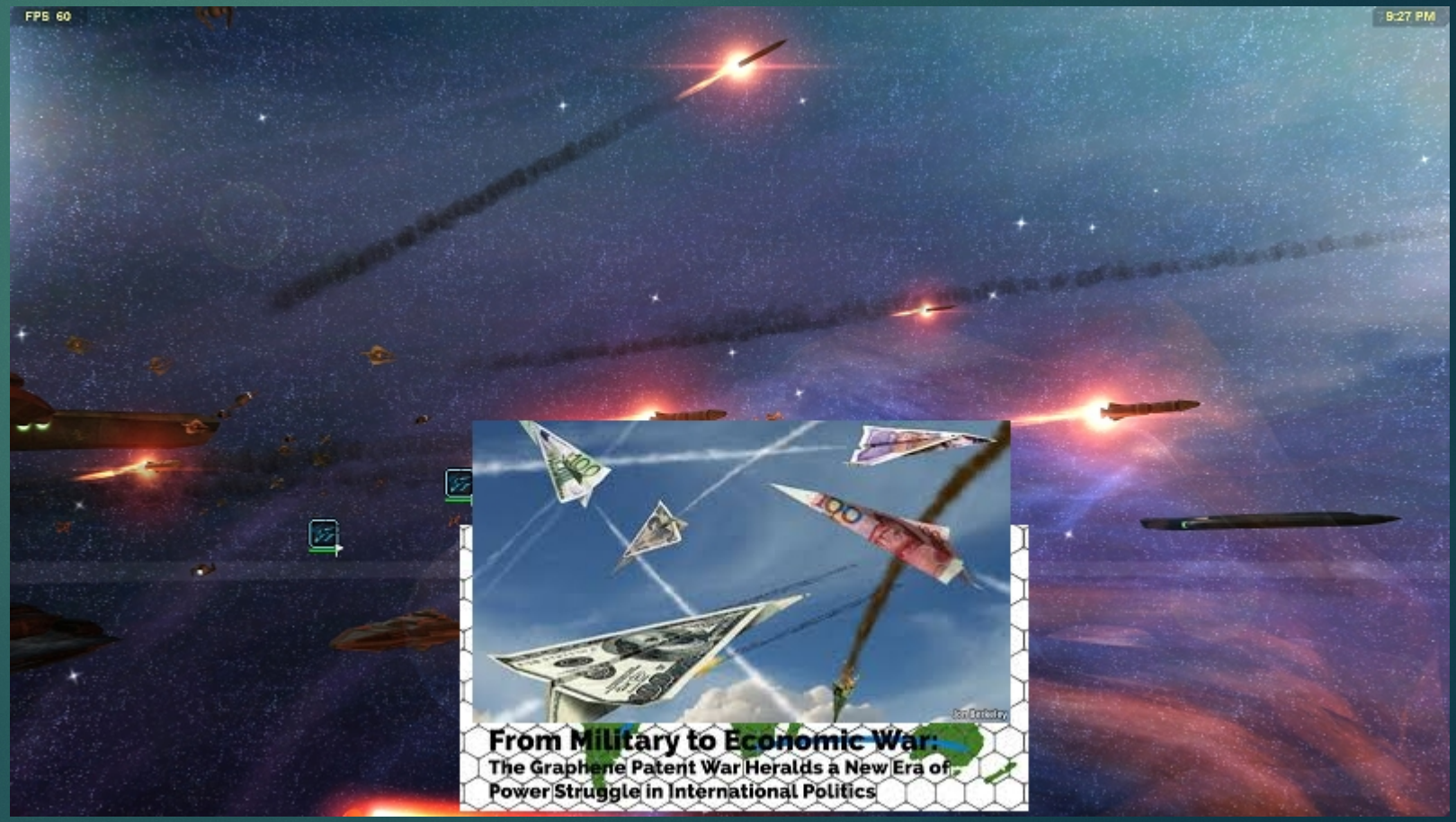
Important is to make best use of resources in hand, and human resources are the one of extreme importance. In some cases it is the only one in hand.

Education is the mean to make best use of human resources and nowadays it tends to be lifelong.

It is still open loop control that is being used in education. Each child tries to home a proper target he thinks right for himself.

In a sense just liken a hunting animal with the exception that families do interfere much more.

Groups that manage to bring a plausible automated closed control into action are to be congratula-ted.



Responsible children are must

Especially children from prosperous societies are not very likely to feel responsibilty due to the fact they find almost everything ready in front. Special care of the families may avoid this, but better if they feel self.
There is a certain conflict between science and religion and without resolution it will be pretty hard to pesuade them about their redponsibility. The author tried his best for a resolution, but care of the mass was not to attain.
It is to be emphasized that responsibility, even without being assured, is the surer way; neither religion nor science is complete. They both do not have claim of completeness.

search.chadpearce.com/Home/BOOKS/8773894-Meaning-of-It-All-by-Feynman-Nobel-Laureate.pdf

Throughout all the ages, men have been trying to fathom the meaning of life. They realize that if some direction or some meaning could be given to the whole thing, to our actions, then great human forces would be unleashed. So, very many answers have been given to the question of the meaning of it all. But they have all been of different sorts. And the proponents of one idea have looked with horror at the actions of the believers of another—horror because from a disagreeing point of view all the great potentialities of the race were being channeled into a false and confining blind alley. In fact, it is from the history of the enormous monstrosities that have been created by false belief that philosophers have come to realize the fantastic potentialities and wondrous capacities of human beings.

The dream is to find the open channel. What, then, is the meaning of it all? What can we say today to dispel the mystery of existence? If we take everything into account, not only what the ancients knew, but also all those things that we have found out up to today that they didn't know, then I think that we must frankly admit that we do not know. But I think that in admitting this we have probably found the open channel.

So I have developed in a previous talk, and I want to maintain here, that it is in the admission of ignorance and the admission of uncertainty that there is a hope for the continuous motion of human beings in some direction that doesn't get confined, permanently blocked, as it has so many times before in various periods in the history of man. I say that we do not know what is the meaning of life and what are the right moral values, that we have no way to choose them and so on. No discussion can be made of moral values, of the meaning of life and so on, without coming to the great source of systems of morality and descriptions of meaning, which is in the field of religion.

A young man of a religious family goes to the university, say, and studies science. As a consequence of his study of science, he begins, naturally, to doubt as it is necessary in his studies. So first he begins to doubt, and then he begins to disbelieve, perhaps, in his father's God. By "God" I mean the kind of personal God, to which one prays, who has something to do with creation, as one prays for moral values, perhaps. This phenomenon happens often. It is not an isolated or an imaginary case. In fact, I believe, although I have no direct statistics, that more than half of the scientists do not believe in their father's God, or in God in a conventional sense. Most scientists do not believe in it. Why? What happens? By answering this question I think that we will point up most clearly the problems of the relation of religion and science.

Responsibility is of utmost importance.
Not only the children but also adults do seem to be not responsible enough.
We all may be failing the test, if …

The first one has to do with whether a man knows what he is talking about, whether what he says has some basis or not. And my trick that I use is very easy. If you ask him intelligent questions—that is, penetrating, interested, honest, frank, direct questions on the subject, and no trick questions—then he quickly gets stuck. It is like a child asking naive questions. If you ask naive but relevant questions, then almost immediately the person doesn't know the answer, if he is an honest man. It is important to appreciate that. And I think that I can illustrate one unscientific aspect of the world which would be probably very much better if it were more scientific. It has to do with politics. Suppose two politicians are running for president, and one goes through the farm section and is asked, "What are you going to do about the farm question?" And he knows right away—bang, bang, bang. Now he goes to the next campaigner who comes through. "What are you going to do about the farm problem?" "Well, I don't know. I used to be a general, and I don't know anything about farming. But it seems to me it must be a very difficult problem, because for twelve, fifteen, twenty years people have been struggling with it, and people say that they know how to solve the farm problem. And it must be a hard problem. So the way that I intend to solve the farm problem is to gather around me a lot of people who know something about it, to look at all the experience that we have had with this problem before, to take a certain amount of time at it, and then to come to some conclusion in a reasonable way about it. Now, I can't tell you ahead of time what conclusion, but I can give you some of the principles I'll try to use—not to make things difficult for individual farmers, if there are any special problems we will have to have some way to take care of them," etc., etc., etc.

Now such a man would never get anywhere in this country, I think.

will never get anywhere in any country!

THE QURAN 2:102

And they followed what the devils pursued during Solomon's reign [1] —and Solomon did not turn faithless, but it was the devils who were faithless— teaching the people magic, and what was sent down to the two angels at Babylon, Hārūt and Mārūt, and they would not teach anyone without telling [him], 'We are only a test, [2] so do not be faithless.' But they would learn from those two that with which they would cause a split between man and his wife —though they could not harm anyone with it except with Allah's leave. And they would learn that which would harm them and bring them no benefit; though they certainly knew that anyone who buys it has no share in the Hereafter. Surely, evil is that for which they sold their souls; had they known!

1. Or 'they followed what the devils recited during Solomon's reign.' Or 'they followed the lies the devils uttered against Solomon's reign.'
2. Or 'temptation.'

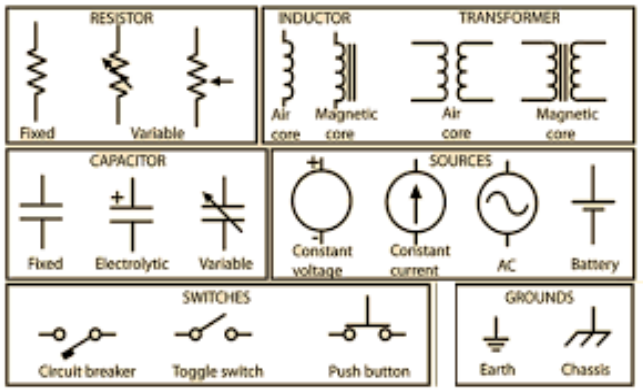
The Aim and Problem Simplification

The ultimate aim of the Project is to guide each and every child to an occupational position suited best for him, educating him through the optimal way with the help of closed loop control theory.
This is an extremely complicated problem, we need: Divide and conquer.
Let us first concentrate on a classroom which mainly has a teacher and 14 to probably 60 students.
Each student has his own way of understanding the stuff to be taught and to be properly taught his specific according to his time dependent environemental conditions and genetic, up to the specific time of teaching established, impedance.
Transfer of knowledge is somewhat like transfer of waves.
A teacher can not cope with the situation even if he is an ideal (voltage) source with zero output impedance. Voltage needed for each student differs.
He normally speaks to the average.
Followings are obviously needed:

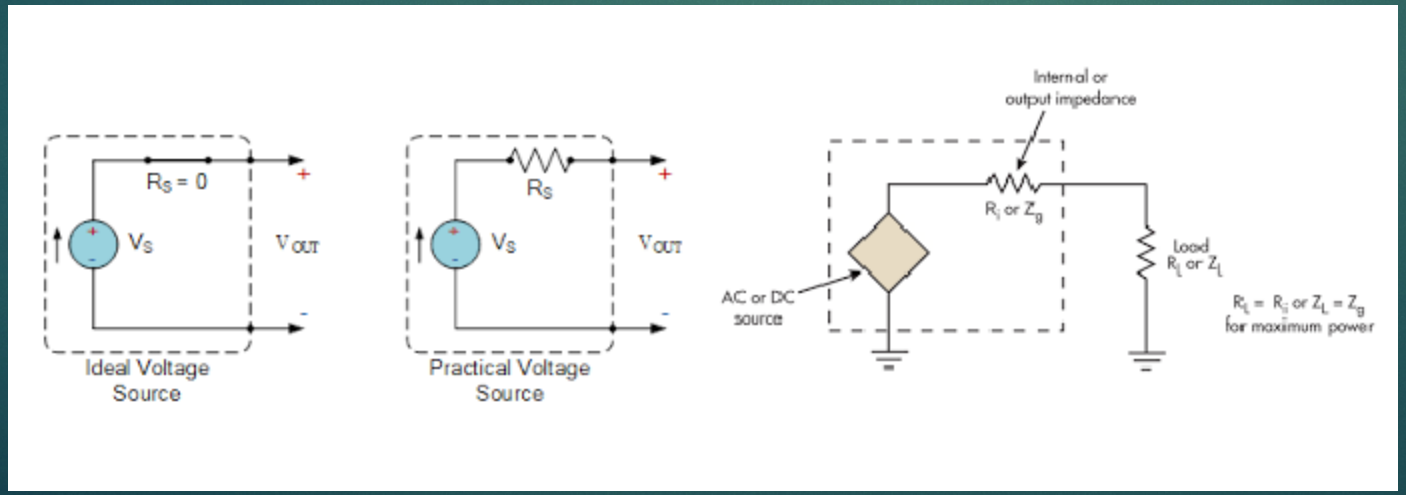
- A specific computer to aid each specific student.
- A method of modeling each and every student in order to be able to make quantitative calculations.

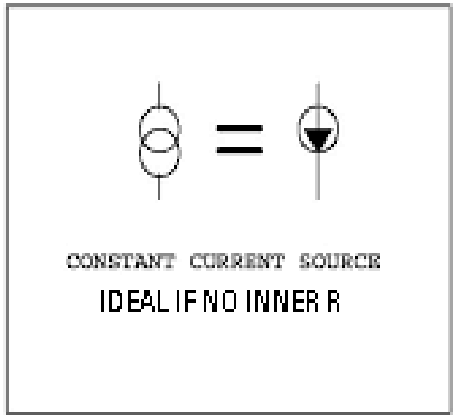
Objects

Passsive and active network elements, both, will be used. Only the passives are given below. Others may be modeled as combinations of passives; they will be given as blocks. Sources may be regarded as exceptions.



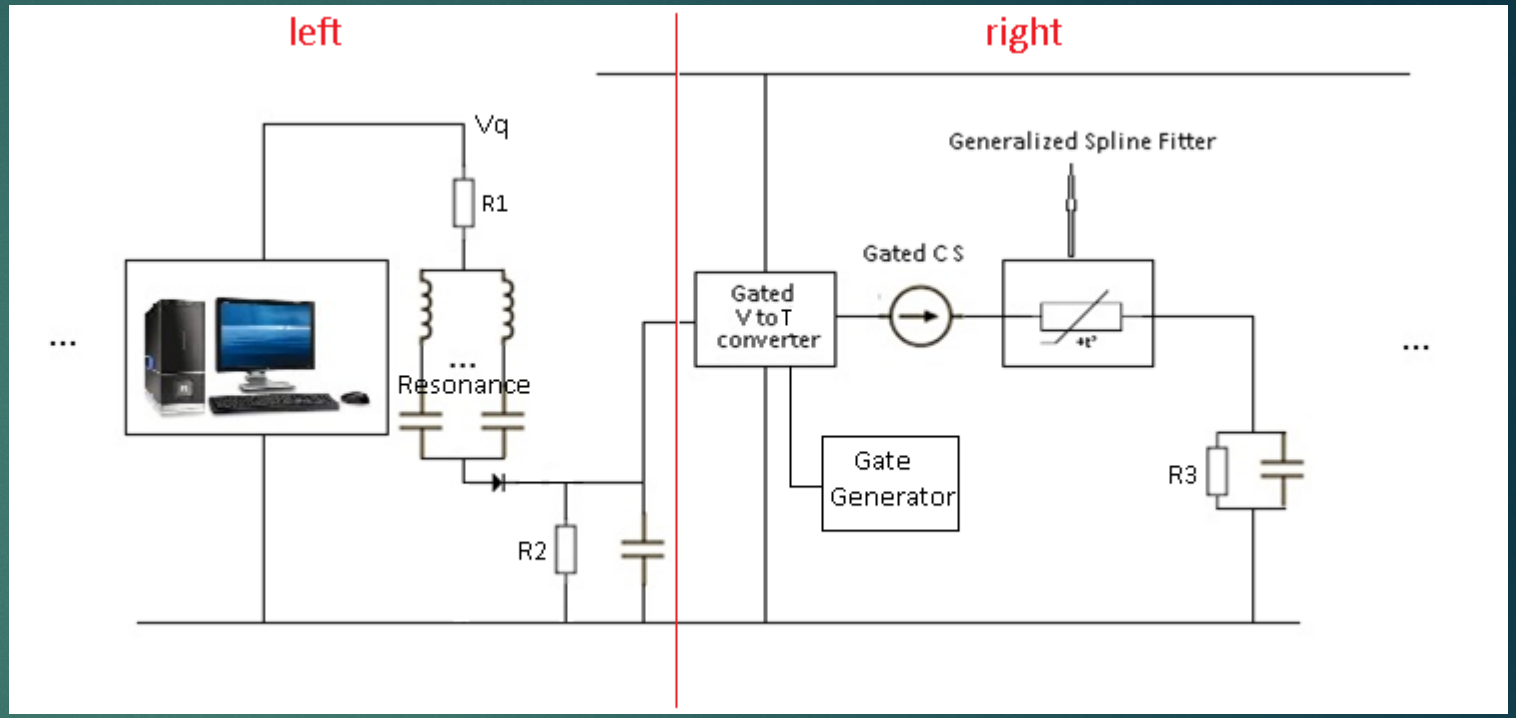
- Inductive reactance: $X_L = 2\pi f L = \omega L$
- Capacitive reactance: $X_C = \frac{1}{2\pi f C} = \frac{1}{\omega C}$
- When $X_L > X_C$ the circuit is Inductive
- When $X_C > X_L$ the circuit is Capacitive
- Total circuit reactance = $X_T = X_L - X_C$ or $X_C - X_L$
- Total circuit impedance = $Z = \sqrt{R^2 + X_T^2} = R + jX$





A sample symbolic block

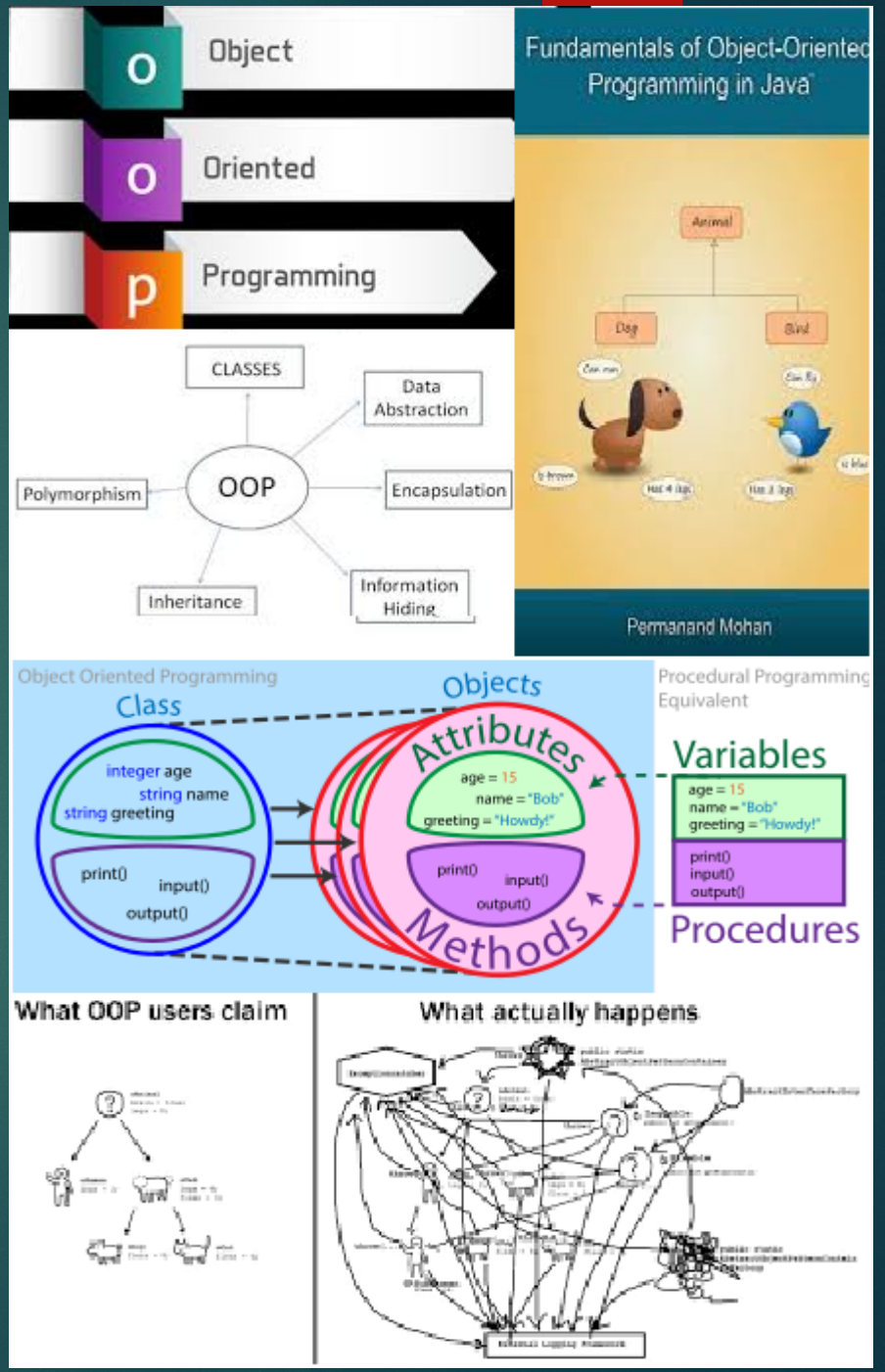
For each student the symbolic block shown right is proposed to be used.
Left of the red line is for each question.
Right of the red line is an integrator.
Vq is the difficulty of the question.
R1: The environmental stress on student.
Each topic is associated with a freq.
1/R2 is the time of solution.
Right and in time solution implies resonance which is noted.
Just after the answer given, a gate is opened and voltage on capacitor is converted to time which Gates the current source.



Learning via training happens to be in quatized jumps. Generalied spline fitting is a method of fitting splines where integral parameters area under the curve, arc length, etc. are also used in determining the coefficients. Shepes may ve multidimensional and this method will be used for determining over training and to optimize the process.
R3 represents forgetfullness which will also be measured.

Implementation:
The implementation of the Project is to be done via OOP.
The symbolic block given in the previous slide is just a way to have an idea about objects, methods and attributes etc. to be used during implementation.
There may be alternative blocks to be considered and the proposed block is certainly to evolve during the implementation of the Project.

Not to forget is the immense siz of the project. Projects of this size are always to be handled with extreme care from the very beginning. Otherwise disaster arises.

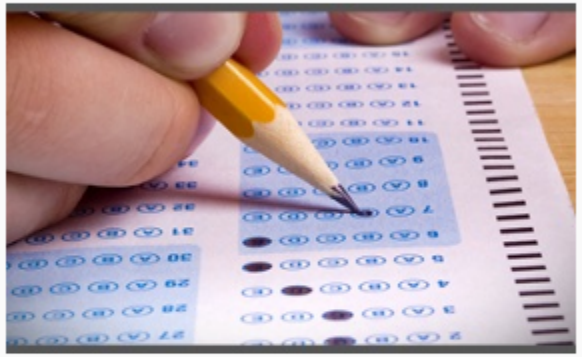


Can tests teach?

The opinion of the author is a well yes provided that the educ ation system is designed correspondingly.
He learned best as he solved questions.
To this end tests questions

- must be ordered in order to teach the subject;
- must contain written and visual helps , enogh in numbers, providing leveled tips;
- must cont ain the best links teaching the subject;
- must contain links to animations, Java applets etc. regarding the questions;
- must cont ain constructive feedback after the solution.

DEBATE.ORG DEBATES OPINIONS FORUMS POLLS



YES or NO

Students do not learn more about the material or skills involved by taking a test. First I'd like to acknowledge that people have some things to learn from taking a test and so I am not arguing against that students don't learn -anything- from taking tests - as might be implied by the vague opinion proposed. I am arguing that students don't learn more about whatever's being tested in the test - by taking the test. My example is: a student studying English as a foreign language takes a writing test. He writes an essay and later receives his test back which says "Failed. 20%". As is typically with most academic tests, there's no indication of why he failed, what he did wrong or what could've been improved. All he could possibly learn from this is he should do something different next time - though he doesn't have any idea of how different.
So: Learning of the material or skill from a test could be achieved by receiving constructive criticism. Most tests and exams do not offer such feedback but only a score.
A score alone as feedback cannot help a student learn about the test subject
Therefore: students don't learn from taking tests.

25% Say Yes 75% Say No

No, Because they're not supposed to
Tests are rarely supposed to teach kids. They were invented for, and continue to be used for the purpose of assessing how much the students have learned. While students can learn a little from tests, most of the learning is done by the other classwork. The tests are to let the teacher know how well the students learned the material, and to let students know what they have trouble on so that they can practice more with that. It was never the purpose of tests to teach students.

Tests aren't helpful
I believe tests causes stress for students who really care about their grades but are poor tests takers. It could also lead up to extreme measures like drop outs, it could cause low self-esteem and can make the kid feel like they are not capable of reaching the standards that most schools hold.

Learn and Cram
Its depends on the type of student but ultimately, students don't learn from tests. They just learn the material and take a test to see how much they know. The test itself does not teach them anything, the teacher does and they make the test for you to put down what YOU know.

No, of course not
When a student study, what does he do? Does he actually try to understand the material, or does he just try to memorize everything so he can pass the test? This is why I'm against tests, tests were designed so you have to memorize everything, then a few weeks later you just forget everything.

www.test-dr.com

www.test-dr.com was designed with the stamentd given in the previous slide in mind. It was no success because of the followings:

- Students prefer good grades to learning.
- Students adapt themselves to the main requirements of the system.
- Students prefer learning shortcuts due to the fact that time in an exam is scarce.
- Students are after solutions to their homework problems.
- Students do not want to pay for the service they make use of.
- Transfer of small amounts of Money is pretty expensive.
- Competition is hard, there are a good deal of similar service providers and many do not hesitate to try every means possible.
- Search motors do suppress sites from abroad.
- Test-dr emphasized understanding and included a good deal of difficult questions.

- Load was heavy. The site intented to provide 3 groups of tests, 1st to group directed to teach, without time limit; 2nd intermediate with 4 minutes per question and 3rd with the aim of testing, 2 minutes per question. For the 1st group more than 6000 questions were prepared in about 4 years.
- Host was free and discarded the main file attracting about 100000 visitors a year due to bandwith costs.

The most important among these was that the education system was not designed correspondingly.

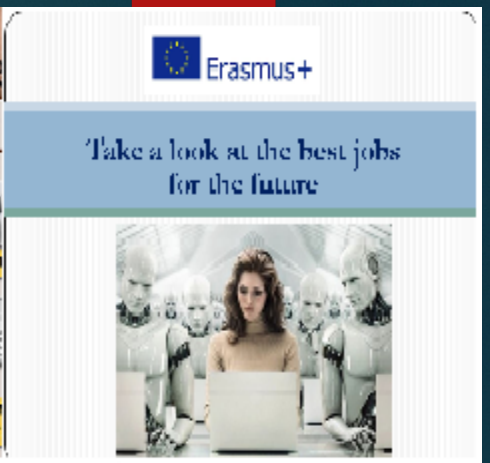
Targets

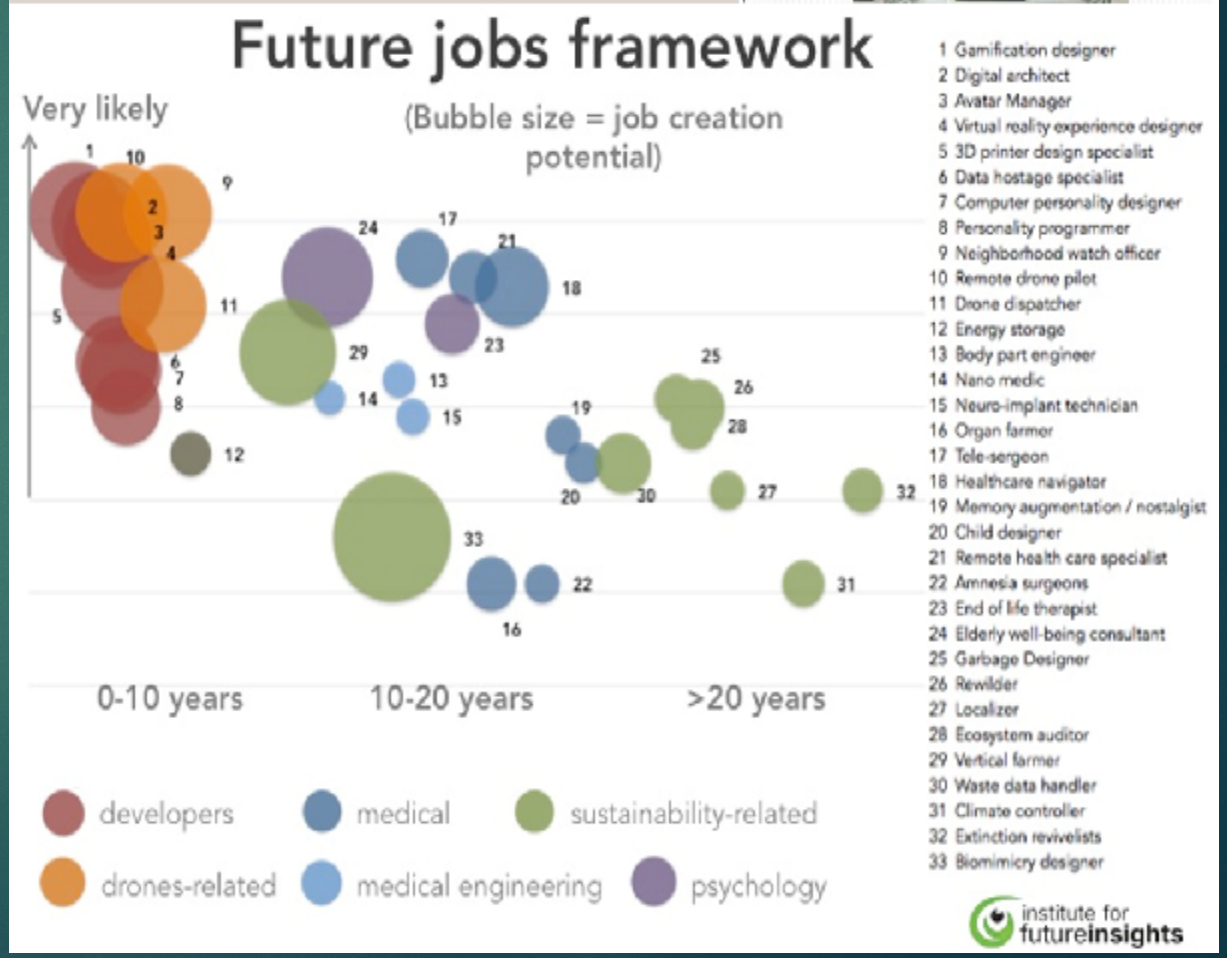
- Targets are future jobs.
- They are hard to foresee.
- They are to be estimated by administrations with the help of business & academia.
- Their requirements are to be estimated.
- Theit promised benefits are to be estimated.

«Disruptive changes to business models will have a profound impact on the employment landscape over the coming years. Many of the major drivers of transformation currently affecting global industries are expected to have a significant impact on jobs, ranging from significant job creation to job displacement, and from heightened labour productivity to widening skills gaps. In many industries and countries, the most in-demand occupations or specialties did not exist 10 or even five years ago, and the pace of change is set to accelerate. By one popular estimate, 65% of children entering primary school today will ultimately end up working in completely new job types that don't yet exist. In such a rapidly evolving employment landscape, the ability to anticipate and prepare for future skills requirements, job content and the aggregate effect on employment is increasingly critical for businesses, governments and individuals in order to fully seize the opportunities presented by these trends—and to mitigate undesirable outcomes.»

«The Future of Jobs Report's research framework has been shaped and developed in collaboration with the Global Agenda Council on the Future of Jobs and the Global Agenda Council on Gender Parity, including leading experts from academia, international organizations, professional service firms and the heads of human resources of major organizations. Our analysis groups job functions into specific occupations and broader job families, based on a streamlined version of the O*NET labour market information system used by researchers worldwide.»

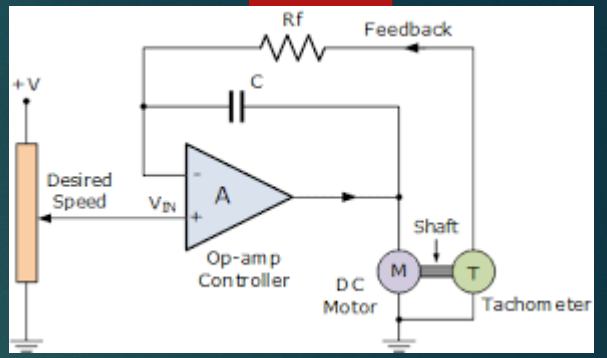
http://www3.weforum.org/docs/WEF_FOJ_Executive_Summary_Jobs.pdf





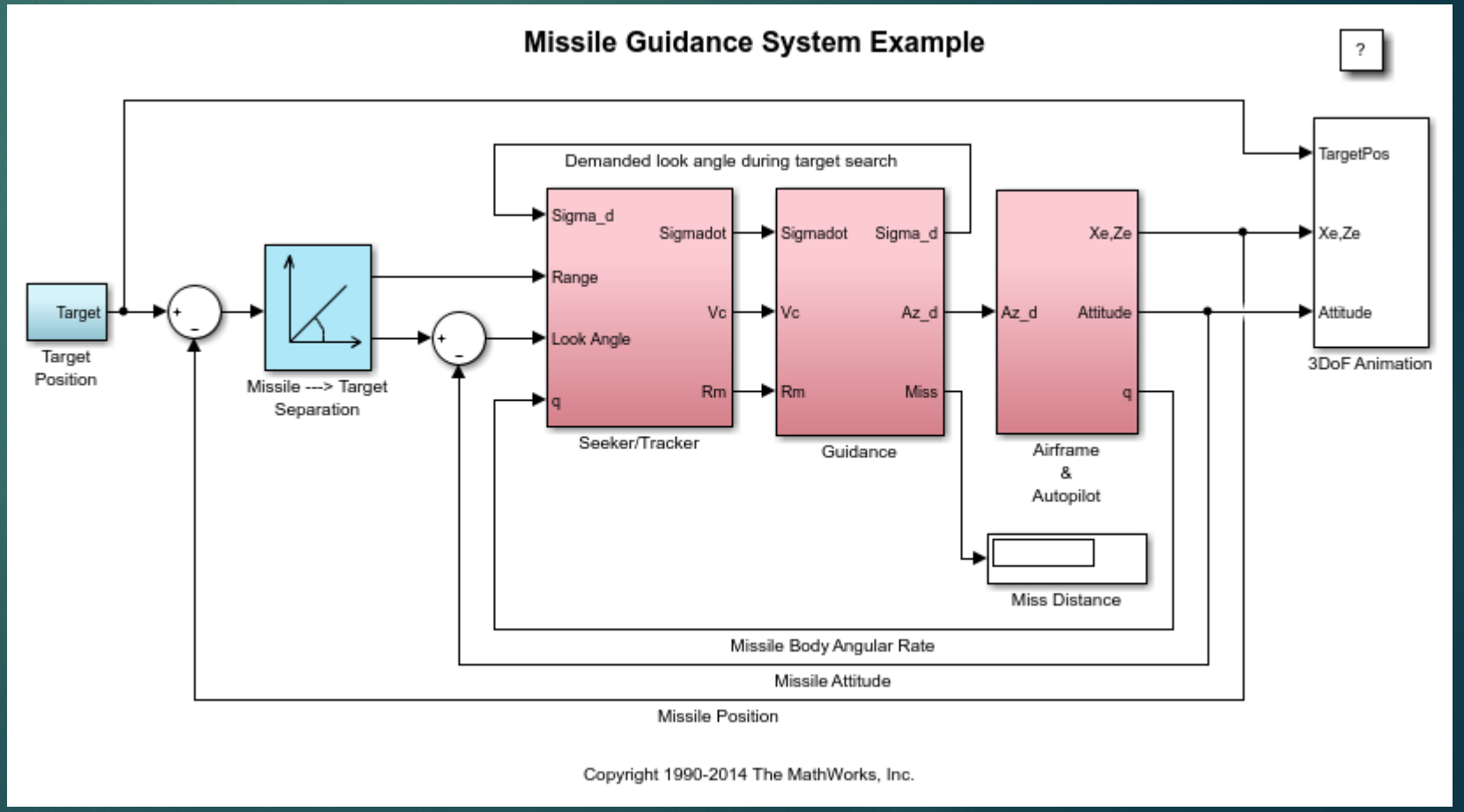
Method (in principle)

A **Closed-loop Control System**, also known as a *feedback control system* is a control system which uses the concept of an open loop system as its forward path but has one or more feedback loops (hence its name) or paths between its output and its input. The reference to “feedback”, simply means that some portion of the output is returned “back” to the input to form part of the systems excitation.
Closed-loop systems are designed to automatically achieve and maintain the desired output condition by comparing it with the actual condition. It does this by generating an error signal which is the difference between the output and the reference input. In other words, a “closed-loop system” is a fully automatic control system in which its control action being dependent on the output in some way.



«The core element of the model is a nonlinear representation of the rigid body dynamics of the airframe. The aerodynamic forces and moments acting on the missile body are generated from coefficients that are non-linear functions of both incidence and Mach number. The model can be created with Simulink® and the Aerospace Blockset™. The aim of this blockset is to provide reference components, such as atmosphere models, which will be common to all models irrespective of the airframe configuration. Simplified versions of the components available in the Aerospace Blockset are included with these examples to give you a sense of the potential for reuse available from standard block libraries.
The airframe model consists of four principal subsystems, controlled through the acceleration-demand autopilot. The Atmosphere model calculates the change in atmospheric conditions with changing altitude, the Fin Actuator and Sensors models couple the autopilot to the airframe, and the Aerodynamics and Equations of Motion model calculates the magnitude of the forces and moments acting on the missile body, and integrates the equations of motion.»

https://www.mathworks.com/help/simulink/examples/designing-a-guidance-system-in-matlab-and-simulink.html?requestedDomain=www.mathworks.com



Means:
Hilbert Space

Future jobs, their estimated positions, will be described as dynamic vectors in an Hilbert Space to be constructed.
Present positions of the students will be determined by tests and desribed as vectors in this space.
Rough homing will be done by the students whenver they feel they can.
In this space angles may be defined with the help of the inner prodcuct.
Deviations will be measured and the required feedback will be provided.
In case deviations are beyond a determined limit, proper steps will follow.

Hilbert Spaces: Definition

- A Hilbert space is an inner product space that is complete under the norm defined by the inner product $\langle \cdot, \cdot \rangle$ by

$$\|x\| = \sqrt{\langle x, x \rangle}.$$

- "Complete" means that if a sequence of vectors approaches a limit in the space, than that limit is in the space as well.
  - For example real numbers are complete, rational numbers are not, since some sequences approach irrational numbers like sqrt(2)
- An inner product space is a vector space of arbitrary dimension, with an inner product, which associates a scalar quantity with each pair of vectors
- A vector space is a collection of objects having operations of vector addition and scalar multiplication and satisfying 8 axioms, such as operations being associative, commutative, distributive, containing an identity element, etc.

Proposal part B
A method of evaluating experimental aptitudes of students from a distant center.

«The SAT is a standardized test **meant to show schools how prepared you are for college by measuring key skills** like reading comprehension, computational ability, and clarity of expression. Because so many students take the test, it also provides schools with databout how you compare to your peers nationwide.

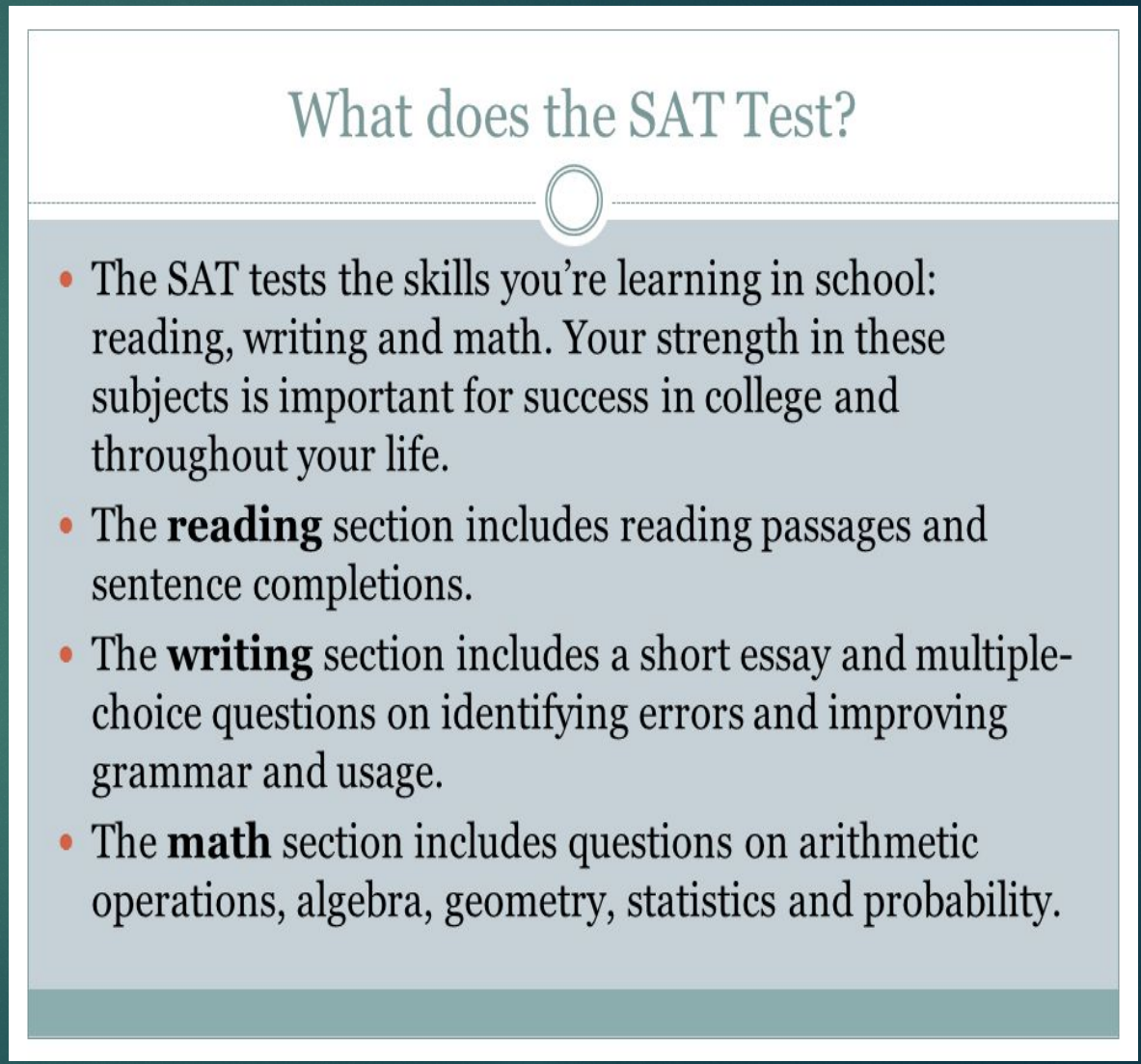
You'll almost certainly need to take the SAT or ACT if you're applying to any colleges or universities in the United States, since most require you to submit test scores with your application. Depending on where you want to apply, your ACT or SAT score can account for as much as 50% of the admission decision, so a strong standardized test score is vital.»

Some developed countries make use of SATs during they choose students to be accepted to universities/colleges. There, schools are mostly uniform and grades from the schools as well as previosly done scholarly works are also taken into account.

In developing countries schools are diverse and admission to higher education is done dominantly via central SATs that are unable to test pratical, directed to experimental work, capabilities.

It will be seen in the next slide that thorists and experimentalists are different persons and science evolves nowadays vi a the experimentalists work.

These justify the proposal.



Theorists vs. experimentalists

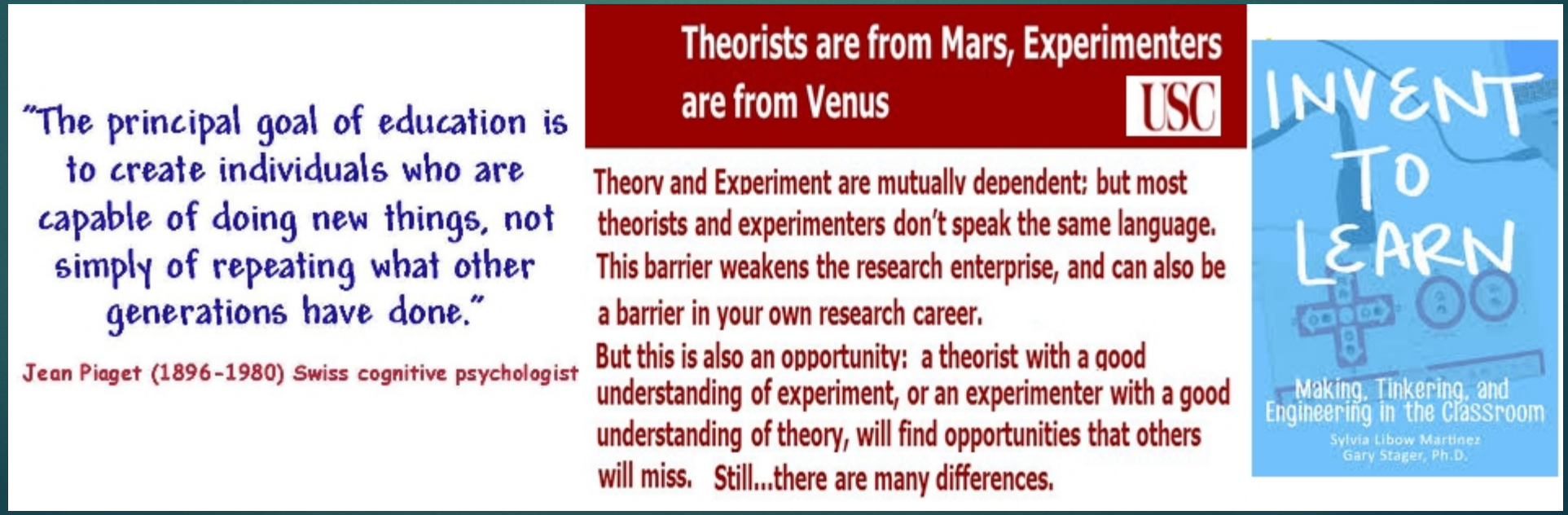
«I started mulling over this vivid gap between the public's appreciation of theorists vs experimentalists reading a post by physics professor Chad Orzel who, taking a cue from my post about famous American physicists, makes the cogent point that while American theorists lagged behind their European counterparts until the post-war years, they were almost equal to the Europeans even in the 1920s. His point is that we often tend to overemphasize the role of theory over experiment.»

«It seems that Nobel Prize winning experimental discoveries outnumber theoretical ones at about 5-2! Contrary to popular belief, experimentalists as a whole actually receive *more* recognition from the Nobel committee than theorists.»

Scince evolves based on experimentalists work because we have no unified thory of everyting. Our theories begin with postulates and their nature is if that then it follows. They are therefore not supposed to be unique. Due to this fact more experimental Nobels.

On the other hand all of the authors classmates graduated from Robert College between 1971 and 1973 have made theoretical PhDs abroad. Because their basic education was theoretical.

They could rarely find a laboratory during their undergraduate work to conduct experiments.



Materials

Selected experiments are from electronics because it is pretty high-tech, not dangerous in case of low vol*t*ages and simple to implement in addition to being remotely controllable.

Materials to be used are breadboards, electronic components and microcontrollers.

A **breadboard** is a construction base for prototyping of electronics. Originally it was literally a bread board, a polished piece of wood used for slicing bread. In the 1970s the **solderless breadboard** (AKA **plugboard**, a terminal array board) became available and nowadays the term "breadboard" is commonly used to refer to these. "Breadboard" is also a synonym for "prototype".

An **electronic component** is any basic **discrete device** or physical entity in an electronic system used to affect electrons or their associated fields. Electronic components are mostly industrial products, available in a singular form and are not to be confused with electrical elements, which are conceptual abstractions representing idealized electronic components.

The **Raspberry Pi** is a series of credit card-sized single-board computers developed in the United Kingdom by the Raspberry Pi Foundation to promote the teaching of basic computer science in schools and in developing countries. The original model became far more popular than anticipated.

Method

- There will be 10 experiments which are introduced in the next slide.
- Class of 20-30 students will be grouped such that every group will have 2-3 students.
- 5 experiments will be conducted in a term which means an experiment per two weeks.
- Study of the experşments will be done in the week in between.
- Each group will conduct one of the experiments on a day and each of the experiments will be conducted by each group in a year.
- The group that has finished the experiment of the day will inform the center of examining as they finish.
- The center will send a signal to the implemented unit after the handshake and the experiment will run.
- The output, converted to digital form will be conducted to the center.
- The output and duration of implementation will be graded.



The 10 experiments involved

- Simple led communication
- Simple fm radio
- Simple remote controller
- Simple ultrasonic sing-around velocimeter
- Simple impedance analyzer
- Simple ultrasonic nebulizer
- Simple oscilloscope
- Simple ultrasonic a-type scanner
- Simple ultrasonic echo-sounder
- Simple earthresistivitymeter