# FROM THE SAGE ON THE STAGE TO THE GUIDE ON THE SIDE: THE CHALLENGE FOR EDUCATORS TODAY

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## Abstract

This Paper presents a broad outline of what learning is, styles of learning and how people learn using different methods. The impact of school on learning is explored with the conclusion that it can do considerable harm to our learning. The difference between information and knowledge is explained.

A new model of learning is presented (**The Jones Model of Learning**) and discussed, which applies to all age groups.

Learning myths are explored and discredited. Principles of adult learning are presented, in addition to the differences between learning by adults and by younger people. Barriers to learning are discussed.

The relationship between learning and creativity, and between learning and spirituality, are discussed and emphasized.

Finally, the Implications for these Ideas on today's Teachers and Schools are explored together with the characteristics of Learning Environments.

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*A. Noel Jones*

## INTRODUCTION

I[1] studied Science and Mathematics in my first year of University. Physics was one of the Science subjects on the curriculum. One of my classmates had difficulty understanding the Physics professor so I agreed to help her with her studies. Coming up to exam time she thanked me for all my efforts in helping her to learn all that she knew in Physics. After the exam results came out she excitedly called me to let me know that she had passed. I was delighted for her, but also had to share my news that I had failed my exam. How could this be, I thought! How could I fail when she passed, yet I knew more Physics than she did? I wrestled with this for a long time and eventually came to realize that the answer lay in ***how*** I learned Physics rather than ***what*** I learned in Physics. By the way, I did pass the exam on my second attempt and finally graduated with a B.Sc. in Biology and Mathematics.

The importance of this failure, however, stayed with me and still guides me today over thirty years later. It is from this experience that I began my exploration of learning and "***how people learn versus what people learn***." It is somewhat like the adage that: "it is better to teach someone to fish, than to give them fish." The first ensures continued survival, while the second has only short-term limited impact. The same goes for learning - if someone ***learns how to learn*** effectively, they can apply this throughout their lives, and on any subject they choose, if you only teach them what to learn, you limit their development to that subject or content which you teach.

### Learning Common to All

We are all learners. How else could we know all we know? We are all learners, but we do not all learn in the same ways. Also, we do not learn in the same ways throughout our lives. There are many different types of learning and we generally use many of them as we go through life.

### Types of Learning

Our early learning experiences were predominantly based on what we call "*imitation learning*," - that is, we learned by imitating others, usually our parents or older members of our families and friends. A second form used frequently by young people is "discovery learning," in which we learn through exploring our environment. A third method is a modification of the second one and is called "*guided discovery learning*," in which a young person is guided through a series of activities by someone else. Then comes "*rote learning*," which is the repetition of words, phrases or sentences, often in the form of a rhyme. This is common the world over in early childhood schools.

Many people who are introduced to these forms of learning as children continue to use them throughout their lives without ever really questioning their efficiency or effectiveness. There are many more useful approaches to learning that have been developed as the result of research and exploration worldwide over the past thirty years.

Another belief common to many people is that learning by doing is essential. It is true that, in many cases, we can learn by doing. But this cannot be generalized; it depends on what we are doing and what we wish to learn. In other words, this principle does not apply to all forms of learning.

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[1] This Paper is written from the perspective of my own experience as a student and teacher for over 50 years and hence the use of the personal pronoun "I."

## Learning

For me, ***Learning*** is the processing of ***information*** that leads to ***knowledge*** (see figure 1). It is unique to the learner, but may be similar to what others have concluded by their processing of the same information. To share this knowledge is to give it to another person as information for their individual processing. The result of their processing is that they then convert this information into their own knowledge.

**Processing**

Information   ⟹   Knowledge
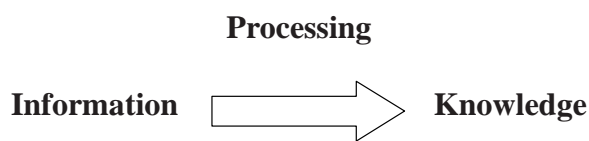
**Figure 1. Basic Learning Model**

## The Traditional Learning Model

In the Traditional Learning Model that is used in most schools, the ***Information In*** comes from the instructor, a text, or some other resource materials used in the classroom. The brain is virtually by-passed in this process. Thus, the ***Information Out*** tends to be very similar to what went in. In the case of classroom learning -- in a test or exam situation -- as long as the ***information out*** is similar to the ***information in***, then the instructors feel that they have done a good job. Furthermore, as long as the ***information out*** is similar to the ***information in***, then the students feel that they have done a good job. Learning is erroneously perceived by both to have occurred.

**Information In**          **Information Out**

⟹   **The Brain**   ⟹

**Figure 2. Traditional Learning**

What's wrong with this? The main problem is that the brain is not effectively utilized in the processing of the ***information in***. The brain minimizes its activity by only storing the information for later recall, not for processing it into knowledge. There is no attempt by the learner to actually make use of the ***information in*** except for the purpose of recalling it later in a test or examination. This is why it is questionable whether students would still get the same, or even similar results, if they were to re-sit their exams again at the time they get their results a few weeks later.

The brain is not engaged in processing the ***information in***. The learner is left to think (s)he has achieved some beneficial result by merely recalling the ***information in*** at a later date. The instructor implies that learning has occurred by the mere fact of later recall. Not sufficient regard is taken of the importance of processing the ***information in*** to convert it to ***knowledge***. The result! Both the instructor and the learner are deceived by this apparent learning, when none has actually occurred. The school system has done harm to both the instructor and the learner. The brain of the learner is virtually ignored in this process. The less impact of the brain on the ***information in*** the better. Too much interaction with the **information in** will result in the ***information out*** being very different. I think this is why I failed that first Physics exam in collage - I had put a lot of effort into processing the information I got from my lecturer and from the texts, whereas my friend had merely taken the information in and held it there for later recall.

### The Jones Model of Learning

In attempting to make sense of all of this, I spent the next ten or more years reflecting on ***how I learned*** and observed ***how others learned***. I had plenty of opportunities to do this as I spent a total of 14 years taking college courses at universities in Ireland, Canada and the UK. I also trained as a secondary school

teacher, and taught secondary school science and mathematics in Ireland, Canada, and Sierra Leone. I also had the opportunity of training teachers in all three countries. The result of my explorations was the creation of "The Jones Model of Learning." This is a five step process which centers around the processing of an information stimulus, from whatever source - a teacher, text, video, movie, a conversation with a colleagues, or whatever. It is illustrated here in Figure 3.

1. The learner receives a stimulus in the form of information, from an instructor, text, or other learning resources.

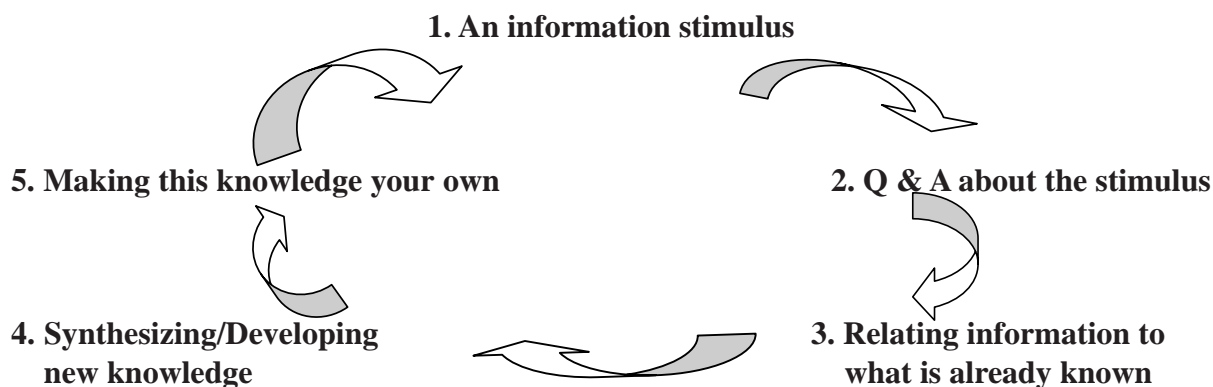2. The learner questions and analyses this information, and examines it from different perspectives.

3. The learner relates this information to what is already known.

4. The learner synthesizes knowledge from these two steps.

5. The learner makes the knowledge his/her own - and internalizes the knowledge.

These steps seem quite reasonable until one thinks about what actually happens in many classrooms around the world. Step one is a given in that all teachers provide information stimuli through their classroom lessons and also from texts. However, if students exercise their desire to question and analyze these stimuli, it won't take long for the teacher to call a halt to this by moving on with the class in order to cover the agenda for that day. However, with Peer Learning, referred to below, students who are ahead of a particular class can play an active and beneficial role in helping their less informed peers to learn new material.

In Step 3, students may also get little encouragement to relate what they are learning to what they already know, because this is not on the curricula for that day's class. Yet! This is an essential part of the learning process.



**1. An information stimulus**

**5. Making this knowledge your own**

**2. Q & A about the stimulus**

**4. Synthesizing/Developing new knowledge**

**3. Relating information to what is already known**

**Figure 3. The Jones Model of Learning**

**How to find the height of a building?**

Suppose students in a Physics class on barometric pressure were asked to find the height of a building, and came up with the following answers, what would the teacher say?

**Student 1**: Climb up to the top of the building and drop a stone off the roof. By measuring how long it took to reach the ground, you can calculate the height of the building.

**Student 2**: Climb up to the top of the building and let a string with a stone tied onto it fall over the side until it hits the ground. By measuring the length of the string you can calculate the height of the building.

**Student 3**: You can calculate the height of the building by using a meter stick and moving it against the side of the building from the ground to the roof – one length on top of the other.

**Student 4**: By measuring the barometric pressure on the ground and at the top of the building you can calculate the height from the difference between the barometric readings.

**Student 5**: You can take the barometer to the caretaker of the building and offer to give it to him if he tells you the height of the building.
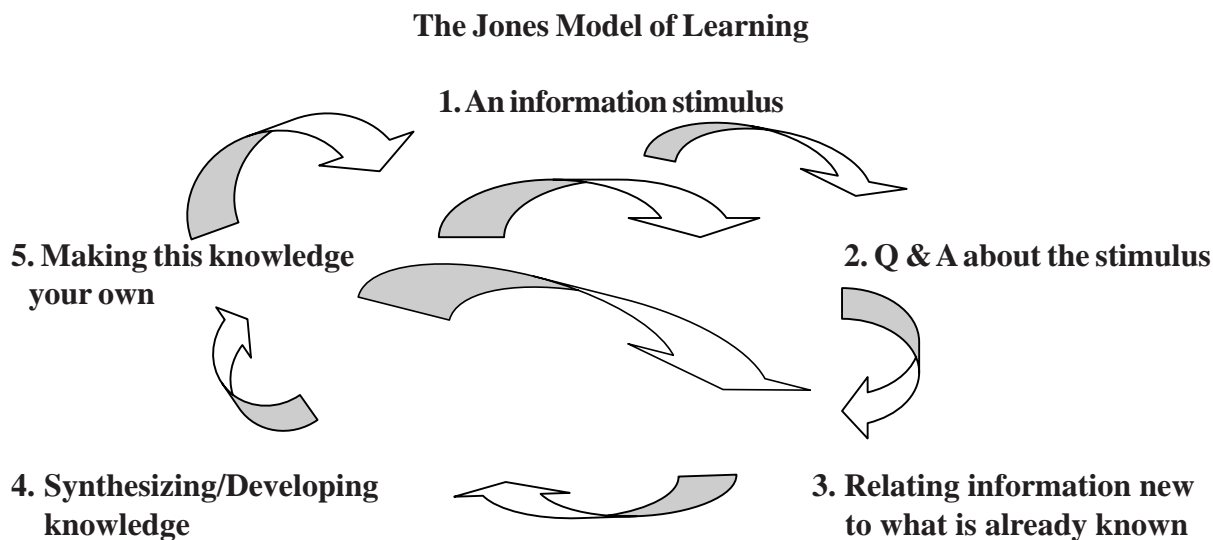
Now!**Which answer is correct?** *All of them are correct*. However, in a typical classroom, only answer 4 would be accepted, because that is the one dealing with barometric pressure – the subject of the lesson.

In Step 4, the student must use the outputs of Steps 2 and 3 to synthesize/develop new knowledge, which reflects the student's own understanding of the information stimulus after processing it. Finally, in Step 5, the student makes this new knowledge his/her own. That is, they internalize the knowledge and make it their own. If they wish to share this new knowledge with others they may do so, but it will be received by others as information stimuli and not knowledge. For them to convert it to their knowledge they too must go through this five Step process.

Further modifications of this Model are seen in Figure 4.

What else can happen? The knowledge acquired and internalized in step 5 can subsequently be used as a stimulus for Step 2 -- Q & A, or for Step 3 -- relating this new knowledge to previously acquired knowledge, thus providing for the synthesis of yet more new knowledge with a second round of Step 4. This new knowledge then moves to Step 5 for further internalization. In this way, it is possible for anyone to create new knowledge from what they already know by simply using what they know to seek new connections and relationships by Q & A etc. What this means is that we have the capacity to generate a great deal of new knowledge through simple reflection and re-processing what is already known. This does not necessarily require us to read another text or attend another lecture. This is not to say that such reading or attending lectures may provide useful additional stimuli for our brains to work on.

**The Jones Model of Learning**

**1. An information stimulus**

**5. Making this knowledge
your own**

**2. Q & A about the stimulus**

**4. Synthesizing/Developing
knowledge**

**3. Relating information new
to what is already known**

**Figure 4.  Making New Knowledge from What we Already Know**

In the case of manipulative skills learning, the only difference is that in **Steps 2 and 3** the learner adds practice for each.  In **Step 2** -- the practice maybe mere repetition.  While in **Step 3** -- the practice maybe connected to an already learned skill -- e.g.,  computer keyboard skills may be related to the skills of playing the piano or musical keyboard.

**Implications for National Education Systems**

I was recently asked by a Romanian friend, who read this chapter in draft form, how the ideas presented here could be mainstreamed in the School System of Romania?  I believe that the answer for Romania is the same for any other country.  I must revert back to my Learning Model to answer this query.  If I were to take a more prescriptive approach and actually lay out an implementation plan etc., to improve or change Romanian education, I am back in a telling mode, which I do not want to do as I don't believe it is sustainable.  My approach is to present some provocative thoughts on education and learning (step 1 of my model

- the provision of a stimulus), especially *on how vs. what*, and then let the reader question and analyse this (step 2), relate it to what they already know (step 3), and then synthesise new learning from this (step 4), and finally implement it (step 5).  I cannot presume to know enough about the education system in Romania or any other country, or the cultural and social factors influencing it.  But! Romanians, and especially Romanian educators will better understand this, and when they then begin to reflect and question my provocative thoughts they will come up with their own new understandings and implement accordingly.  This will be uniquely geared towards Romania.  How they might do things in Bulgaria or Macedonia may be different, and that is okay.  As I have often pointed out in my classes, each learner has their own unique body of knowledge, and based on this, each student will come away from my lectures with their own unique understanding of them.  This is as it should be.  If all came away with the same understanding (really it would only be memorizing what I said), then where has their brain been in attempting to make sense of what they

heard? Remember, the more you use the brain (and not just your memory) in learning, the more actual learning takes place.

## Importance of Peer Learning

When a teacher is attempting to teach new students about a subject or topic, they are working from a broad mass of knowledge about that subject or topic -- the full circle. Furthermore, they may have forgotten how difficult it is to learn this new knowledge because it has been such a long time since they had to do so.

All that a teacher might know about a given subject or topic
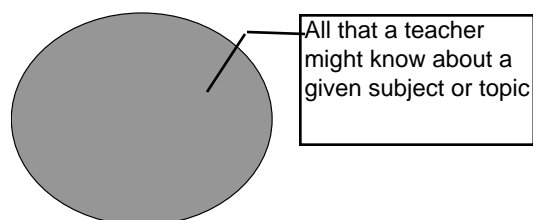
**Figure 5. Knowledge Repertoire of the Teacher**

The teacher is only trying to teach a slice of what they know. However, the gap, or difference, between the new student's knowledge and that of the teacher is very large.

This gap may appear to be so large as to be off-putting to the student, and in turn it can also be a source of frustration to the teacher.
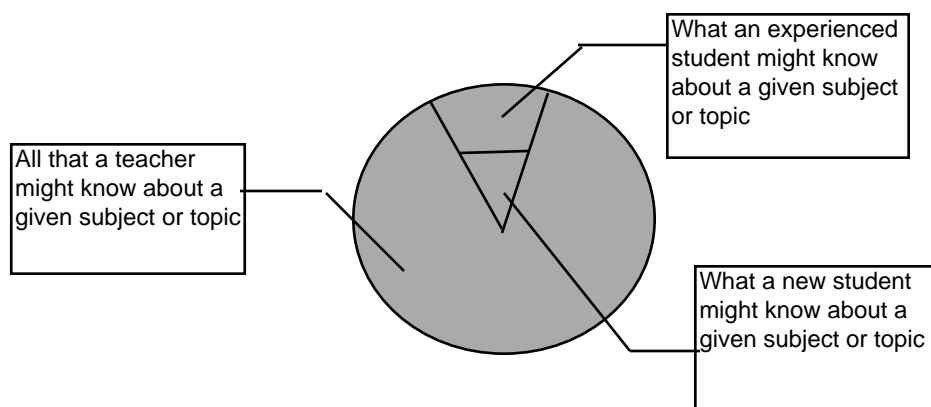
However, when experienced students, or even less experienced students, are attempting to teach the new students, they are working from a mere slice of that known to the teacher.

When a more experienced student attempts to teach a new student from their slice of knowledge, the gap, or difference in knowledge is much less between them. Furthermore, the experienced student will more easily empathize with the new student because of recent memories of their own in learning this subject or topic. Thus, the new student is less awestruck by the difference between their knowledge and that of their more experienced peer, and can thus grasp the new learning more easily.

It is for these reasons, among many, that ***peer learning*** can be so successful, and should be encouraged in every classroom. However, care needs to be taken to ensure that the *peer teacher* is patient and capable of explaining the ideas/concepts being taught -- in language known to the learner. They must also take care to answer any questions posed by their ***peer learner***.

## Classroom Discipline

When I first taught High School in Canada in the late 60's, I noticed that the students I punished at the beginning of the academic year, in

What an experienced student might know about a given subject or topic

All that a teacher might know about a given subject or topic

What a new student might know about a given subject or topic

**Figure 6. Knowledge Repertoire of the Teacher and Peer Learners**

September, were the same students I had to punish at the end of the academic year, in the following May. Not only this, but the punishment was for the same things - not doing homework, making noise in class, being disruptive, etc. Reflecting on this during my summer vacation, I realized that the punishment was not effective in bringing about a change in students' behavior. I then decided that for the next academic year I would try to eliminate the poor student behavior by instituting a few changes. The first of these changes was to institute one rule in class, and one rule only. All other rules such as not talking unless given permission to do so, not leaving their seats, or leaving the classroom, unless given permission, etc., were all to be eliminated. This new rule was going to be enforced rigidly throughout the year.

The new rule was that there would be no chewing allowed in the classroom. The value of this rule was that even if it was broken and a student was caught chewing or not, it had no impact on the students' learning environment and was not disruptive. However, it did provide an important psychological opportunity for students to hit out and try to defy the system. They had a rule to challenge and break if they chose to. I believe that teenage students need something to fight back against as part of their desire for independence and freedom from external controls. I used to get a great feeling of satisfaction at the end of class when a student would come up to me with a handful of sweet papers and tell me that they had eaten a number of sweets during class and I had not caught them. I feigned annoyance and warned them that I would be on the look-out for them the next day. Of course, secretly I was delighted that they had "beaten the system" while not disrupting their colleagues' learning.

The second innovation I introduced was to take the first two weeks of the academic year to play relationship games, and so help students to better get to know each other. An example of

such a game is if a group of people are forced to abandon a ship and they end up with 12 passengers but only 10 can be accommodated on the lifeboat. Each passenger is given a role to play, based on age, profession, marital status, whether they have young children etc., and then to decide how they will select the two who will be left off the lifeboat. What criteria, would they use? Other examples could be role playing - such as asking someone out for a date, asking for a refund on a broken CD player, etc. All these examples help students to better understand what they do, and how they relate to others under different circumstances.

Playing these relationship games also provided an opportunity for me to get to know the students better, while helping them to deal with any embarrassment they might have with each other. This is particularly true with 13-16 year old boys and girls in the same classroom. Often they are not comfortable asking questions of the teacher for fear of looking or sounding stupid, being too bright, and being called names such as nerd, swat, teacher's pet, etc. While I "lost" two weeks out of the curriculum time available for my Science subjects, what I noticed was that by the end of the first term my students had already progressed past their peers in other classes who were studying the same subjects and at the same level, but with different Science teachers. Furthermore, when it came to the Science Fair each year, my students tended to win most of the prizes because they were free to experiment and learn in a conducive, safe and supportive learning environment.

The result of introducing these two innovations was that my students were happier, there were no more discipline problems and the quality of learning was enhanced for all. It also proved much more fun for me as the teacher. I also noticed that the noise level in my classroom was about the same whether I was present or not. This contrasted sharply with col-

leagues' classes where when they left the room the noise level suddenly increased by two or three-fold and did not return to "normal" again until the teacher returned. I also noticed that if a student was making too much noise or becoming disruptive, his fellow students had no hesitation in telling him to stay quiet or get out. The students actually took over the disciplining of each other and so left me free to get on with my teaching.

After trying this approach out with up to seven different classes, or about 200 students, the first year I felt confident to try it again in subsequent years and always with the same level of success. I concluded from this that many of the discipline problems I hear about in schools are in fact brought about by the teachers and the rules than by the students themselves. If we have confidence in our student's ability to learn and tap into their natural curiosity, I believe there is no limit to what learning they will engage in.

At one time I decided to teach a segment in my Biology class entitled "The Biomedical Aspects of Space Travel." This was to be a six week segment. I asked students to come to the first three classes on the subject and agreed with them that they would have to submit a project on some aspect of the topic every two weeks. This meant three projects over six weeks. They could work in pairs or small teams. I would propose a set of project topics for them to research and learn about or they could propose a subject themselves, but if they did so, they should discuss it with me first. During the first three classes, I introduced them to the subject and showed them the material I had gathered and made available to them to use. After these first three classes, I promised to be available at the same time each day in case any student or project team wanted to discuss anything with me. Otherwise, they could spend the time as they wished, in the library, in the cafeteria or on the school ground, but they had to submit a project every two weeks by 4.00 p.m. every second Friday. Failure to

meet this deadline meant that I would not accept the project and it would be given a zero score.

Not alone were all projects in on time but the quality of the work was far superior to anything I could have given them. The amount of research and learning that went on during this six weeks was impressive and more than I had ever seen from these students before. The only down side to this anecdote is that some parents became concerned about my not teaching their students anymore and rang up the school to complain. The Principal generally passed the complaint over to the Science Head who "covered" for me but never told me about the complaints until the six weeks were up. I was disappointed because I would love to have had the opportunity of talking to the parents and explaining what I was doing and why. Looking back, I believe that this was one of the most successful six week experiments I ever had with teaching.

## Making Boring Subjects Interesting - An Example

While Biology as a whole is a very interesting subject for many students, a subset of this which focuses on Nutrition can be viewed as quite boring. However, let us use this as an example for making the subject more interesting and enjoyable for students in secondary (high) schools. For four years I taught Biology at a Canadian High School. The students were in the age range of 14-17 years. In order to bring more excitement to the subject I asked for 2 or 3 volunteers from the class of 30 who could cook, and would be willing to prepare a lunch for their class-mates. The challenge was that they would collect 25 cents from each student and from me as the teacher, and with this money - i.e., $7.75, they were to cook a fully nutritious meal to feed all 31 of us in the class. They were to tell us a day in advance when this meal would be ready so that we came prepared with paper plates, cutlery and a glass.

These meals turned out to be a great success. In all cases the students accomplished the task within the budget allowed. Meals consisted of variations on spaghetti with meat sauce, lasagna, or some form of stew. Meals were also accompanied by a drink such as tang orange juice. After eating the meals we then analyzed it in terms of its nutritious content. This is how we began discussing the difference between carbohydrates, fats and proteins etc. We also talked about the calorie content, the vitamins and minerals present etc. This brought Nutrition to life in a meaningful way for the students. I often speculated afterwards that many years hence, some of these same students would be preparing for a dinner party at home with their friends and they would recall how inexpensive this school lunch was compared to the cost of their dinner party.

It is through these types of practical and fun exercises a teacher can make their subjects come to life and be both entertaining and reinforcing of the lessons learned.

## A Coaching Example

While teaching in Canada I also became the track and field coach for the school team. I had been a track athlete and had competed up to international level in my own youth and was devoted to athletics, as my father was before me. Each of the first two years at the school that I coached the track team we won all the competitions. I then had to take a break for a year due to my studying for my Master's degree and so left the coaching to the Physical Education staff, who were after all trained as coaches. However, that year the school team lost every competition. I then took over coaching again in my fourth year and we again won all the competitions. What does this say about the importance of coaching or those being coached? I believe that with the right coaching a team can always succeed. The raw material for good athletes are all around us. Our job as coaches is to help discipline and inspire the talent that is there and draw it out of the athlete just as we do in class with academic subjects. This refers to helping to inspire the athlete to dig deep into themselves to draw out their talent. It is showing them that I believe in them, and what they are capable of accomplishing. For example, if I was to say to a student that I thought they were very talented, had a great intellect, were caring and compassionate and extraordinarily generous, what would be the response of the student to these words, if they were spoken with complete conviction? ***This is inspiring the talent***.

I later went to teach in Sierra Leone, West Africa. Again I took over the coaching of the school track team. This school was never known to have a successful track team before, so there was no history of good coaching or competitors there. However, to the surprise of the school administration and all the local Provincial schools, we won the Provincial Championships that year. Again, I believe I proved that with the right coaching and attitude, students can accomplish a great deal, even far beyond their expectations.

## Types of Intelligence

According to the well known management writer Charles Handy ("The Hungary Spirit") there are eleven main types of intelligence, as follows:

**Factual:** the know-it-all facility of the encyclopedia;

**Analytic**: the ability to reason and to conceptualize;

**Numerate:** being at ease with numbers and mathematical concepts;

**Linguistic:** facility with language & languages;

**Spatial:** ability to see patterns in things --

artists, entrepreneurs, system analysts;

**Athletic:** the skill of athletes;

**Intuitive:** an aptitude for sensing and seeing what is not immediately obvious;

**Emotional:** self-awareness and self-control, persistence, zeal, self-motivation;

**Practical:** referred to as common sense, ability to recognize what needs to be done and what can be done;

**Interpersonal:** ability to get things done with and through people -- social intelligence or leadership; and

**Musical:** easy to recognize in musicians, singers, composers, etc.

**Implications for schools.** Schools primarily focus on the first three of these intelligence types: Factual, Analytic and Numerate. By doing so, they may often label students as having low intelligence, thus causing them to feel stupid or a failure when in fact they may be very intelligent on one or more of the other intelligence types. Life is a long-term activity and needs many types of intelligence, and, at different times, for us to be successful. Oftentimes knowing "*what*," is not as important as knowing "*where*," "*how*" and "*why*." The job of the teacher is to set the tasks for students, which require them to search for the knowledge to use and to give guidance on how it can be used. Here I refer to the teacher setting tasks for the student according to the curriculum. Say for example, the Literature teacher was teaching a class on Eminescu's poetry (a famous Romanian poet): she may ask the students to analyze the poem "Emperor and Proletarian" with particular emphasis on the historic period in which it was written, and compare this to what the writer might have said in today's society? The students are unlikely to create such a challenge for themselves in this way, yet it would be a very good intellectual exercise for them to address such a challenge. From dealing with these types of challenging questions, the students too will begin to craft

their own challenges in time. This is what the Master's and Ph.D. student does for their research. When the students study research methodology, they learn how to develop hypotheses and how to identify dependent and independent variables, etc. At first and second level education, the teacher must give some guidance to the student to help focus the students' search for knowledge. Otherwise, how can the student manage to study a curriculum and answer exam questions based on this curriculum? If the students are in a free form school, such as a Montesori or Steiner school, they are given opportunities to explore things as they choose, but again, within certain boundaries. How realistic is it for a student to set fire to the carpet to see what happens? The teacher still has a role to help guide students' enquiry, but this role should be open and not too restrictive.

## Learning is Additive

One of the most interesting and positive findings from learning research is that learning is *additive*. What this means is that whatever a person learns will in some way assist in future learning. It has been found for example, that where a person has not engaged in active learning for some time, their learning mechanisms get rusty. If, on the other hand, they engage in active learning on a continuous basis, irrespective of the type of learning involved, this in turn will assist in new learning activities.

This occurs despite the fact that there may appear to be little connection between the things being learned. For example, if one engages in learning a musical instrument, it can help in learning a new language or craft.

The reason for this is two-fold. One is the fact that all learning requires certain mental activities which keep our learning faculties in good working order. They are kept alert and functioning freely. They also, of course, help

to build confidence in the learner's perception of their learning ability.

Second, the content of what is being learned may be related to some of what we already know - see the **Jones Model of Learning** above. This allows new connections to be made between the new information and what we already know. Thus, the greater our knowledge base the more possible connections that can be made between new information (stimuli) and this knowledge base. Again, this also enhances our new learning.

Consequently, there is no real limit to our learning ability other than that which we impose on ourselves. An example might be in learning a language. If we know one language, it will help us to learn a second; if we know two, it will be even easier to learn a third. The style or method of learning used, and the confidence with which we approach learning, are of course crucial to our success.

**Learning a foreign language:** There are many approaches used, from phonetics, to immersion - only speaking the language at all times, whether good or bad, living in the country, eating the food of the place, and getting involved in the culture of the place. Other methods are more systematic and deal with the language structures, grammar, syntax etc. Others deal with speaking using different situations, such as ordering a meal, booking a hotel room, going shopping, asking for directions, -- this is a situational approach. The grammar is dealt with only to the extent that it is used to explain how to carry out these situations effectively. Still others are based on learning phrases - how to say hello, how to ask for directions, purchase theatre tickets, etc. The grammar is not really dealt with systematically at all in these approaches.

Two examples for consideration: when I lived in Africa the children of the Mende tribe all spoke Mende (tribal language), and Creole - which was a national language and based on English. These two languages were learned naturally in the village and home. They also learned Arabic through repetition and it was beaten into them, so that they could memorize the Koran - I don't think they could actually speak Arabic. Finally, when they went to mission schools they learned English. After many years of learning English in a formal sense, they still couldn't speak it well or write it very well. Yet! They spoke Mende and Creole fluently - why? I think it was because they learned these languages without being taught them in any formal sense - they just picked them up by listening to others, as children around the world learn the language of their people.

The second example is of a Jordanian woman I met on a course in Amman some years ago. She only spoke Arabic and then went to Moscow to study at University for her Master's degree. She had no Russain and noone in the place she stayed in spoke any Arabic. So! She studied as hard as she could using textbooks, and each day she would venture down to the shops to buy things and speak to the shop owner. In this way, she learned to become quite fluent in Russian in a matter of months.

**Questioning as Part of Learning**

The importance of questioning and analysis as an integral step in the learning process has been emphasized in the above section. Yet! what type of questioning is appropriate? Much of the questioning used is not very constructive or helpful. This is because of our earlier school experiences, when questioning was not encouraged and was often seen to be an attempt to disrupt or undermine the teacher. It was also often used by the teacher to trick us or expose our lack of study. For the sake of illustration, let me classify types of questions under two headings, positive and negative. These are presented in table 5.1.

**Table 5.1  Positive and Negative Questioning**

| Positive Questioning | Negative Questioning |
| --- | --- |
| To clarify | To trap |
| To test | To expose weakness |
| To help understand | To put down |
| To seek more information | To deny |
| To elaborate | To show alternatives |
| To seek examples | To ignore |
| To form hypotheses | To divert attention |
| To seek proof | To contradict |
| To explore | To disprove |

We can see from the above lists that one set of questions (the positive set) is supportive and help to clarify and expand the stimulus or information, while the negative set of questions usurp the teacher or student and, thus, is not supportive of learning.

There can be a very fine line between some of these positive and negative questions. If for example, a person is asking a question to clarify or understand, the tone used can influence the way in which the question is perceived - whether positive as a genuine attempt to clarify, etc. or whether negative as a way to trap or expose the instructor in some way.

The positive set can be used effectively to get more information from the source of the stimulus, especially if it is in the person of a tutor or teacher. The negative set, in contrast, merely antagonizes the tutor or pupil and hence hinders or builds up resistance to learning.

Thus, learning is not necessarily enhanced merely by asking questions in **Step 2** of the **Jones Model of Learning**. The type of question asked and the tone of the question are of crucial importance as to whether learning will take place.

**Learning Myths**

There are many myths about learning that are widely held and which do a great deal of harm to those who seriously wish to pursue learning actively in their lives.

**1.  Learning ability is reduced as brain cells die!**

It is true that our brain cells die as we get older. Some of them are replaced, but others are not. Irrespective of this however, it is estimated that most humans only use about 5-10% of their available brain cells. Thus, there is a huge unused resource available to us throughout our lives.

**2.  Learning deteriorates with age!**

It has been found by some researchers that our learning ability slows with age. It is also true, however, that we can learn more effectively with age even at a slower pace. Since we have greater experience and thus a greater knowledge base to work with, learning is enhanced. So, we are more likely to be able to relate new information to previous experience and thus, to existing knowledge. Although we may take longer to learn something as we get older, we learn it better. In addition, as we get older we are more selective about what we learn and tend to pursue topics that are relevant and important to us, enhancing the probability that we will learn effectively. A younger person is often expected to learn topics in which they have little interest or commitment.

**3.  You cannot teach an old dog new tricks!**

This is a particularly misleading statement which has done untold damage to people's learning perception. It **is** possible to teach older people, but it may be necessary to alter the approach used, in order to make it consistent with the style of learning of the adult, and to make the content of the learning material relevant and important to the individual.

There is a great deal of inaccurate and misleading information about learning. This includes the presentation of these myths in the public arena. In addition, there is a great deal of wrong

information presented to each young person about their learning abilities, which may discourage them and inhibit effective learning.

## Principles of learning

### Adults Learn Best When:

1.  They perceive that the end result is relevant to their self-image and that rewards may follow.
2.  They perceive success in learning is likely.
3.  The learning begins at "where the learner is" in terms of their current knowledge of a subject and uses their language.
4.  Material is presented logically and interestingly and the learners are clear about the learning objectives.
5.  The climate is psychologically safe, being free from ridicule, punishment or negative criticism.
6.  Self-diagnosis is possible, in that the learners can assess their own learning needs and measure their own progress.
7.  They actively participate in the learning environment.
8.  They have considerable control over the learning environment.
9.  They can set short-term goals.
10. They get rapid feedback of their progress.
11. They get recognition and positive reinforcement.
12. They have confidence in the source of the learning.
13. They have models of learning available to them.
14. They are physically and psychologically prepared to learn.
15. There is group support available.
16. It is accepted that individuals learn in different ways.

## Differences between adults and young people

There are a number of key differences between adults and young people which affect their learning. These are:

1.  Adults have much more experience to draw upon.
2.  Adults will not accept behavior/treatment that they dislike.
3.  Adults have a choice in what to learn. They know what they want and must see relevance in a piece of information before they process it to create knowledge from it.
4.  Learning may be perceived to be more difficult for adults because they are out of practice.
5.  Long-term goals are easier for adults.
6.  Adults often fear failure, for as adults, they may feel that they have more to lose in terms of self-esteem.

## Barriers to learning

**1.  Personal Traits**
- Nervousness
- Fear
- Worry
- Sense of inferiority
- Lack of confidence
- Low learning ability (may be a slow learner due to lack of experience or practice)
- Receipt of negative feedback or criticism

**2.  Attitudes**
- Apathy
- Resentment
- Antipathy to instructor
- Hostility
- Boredom

**3.  Environment**
- Poor heating/lighting

- Poor ventilation
- Discomfort
- Distractions
- Awkward timing
- Domestic factors

## Learning and Creativity

The role or impact of learning on creativity manifests itself in terms of how we think. If our thinking mechanisms are not fully developed, or are developed with a bias for the left side of the brain, then there is limited holistic thinking taking place in our lives. This is a limitation in each of us which hinders full creative expression, which by definition requires us to use our whole brain capacity.

Our formal education system primarily focuses on the development of the left side of the brain and, indeed, is primarily limited to the individual from the neck up -- it deals only with our brains and not our bodies and minds. Thus the consequences of not developing a large base of knowledge are not surprising.

For our creative potential to be fully realized, it is important to educate the whole person, in spirit, mind and body, and not separate these from each other.

Our education system could be greatly improved to enhance the process of learning. The following are some of the needed changes.

1. It is essential that education be what it purports to be - "educare" - a drawing out -- development of the whole person.

2. Both the left and right sides of the brain must be developed and attended to.

3. The physical side of the individual must be developed with sports, recreation, arts, crafts, music, sex education and instruction on biological functioning.

4. The education system must address the psycho-emotional development of the individual, which helps them to understand their own behavior as an individual and in groups. This would include education in self-expression, self-presentation, self-development and interpersonal relationships.

5. The system needs to validate the emotional states of the person, explain their origins and meanings and teach how they might best be managed and dealt with.

6. The system also needs to address the spirituality of the individual. This does not mean the teaching of religion, although such teachings could be one aspect of Spiritual education. Rather, what is needed is an exploration of the essence of the individual, including their relationship to the universe and to the forces (spirit) within them.

Unless, and until, education addresses these needs and fully develops them, then the full development of people's creative potential as they are progressing through school will remain a potential rather than a reality.

## Learning and Spirituality

In many discussions with people from all walks of life, it has become clear to me that, for a person to successfully remain closely connected to their original happy, joyous, creative and intelligent self, they must first be closely connected to their own spirituality.

Spirituality does not refer to religion as such, although for many it is expressed through their religious beliefs.

What I refer to is the connection each person has to their own divine selves, to the universe and the realm of existence beyond time and place, cause and effect, and the material world around them.

It is through our spirituality that we achieve inner peace and harmony in our lives. It is what gives us a vision of what is possible. It is what connects us with our inner voice, our source of inspiration, our true freedom, our faith in the possible and our true love, which is unconditional in relation to both ourselves and others. This true

life force gives our life real meaning, harmony with nature and the universe and true connection with the source of all life.

I was talking to a potter recently and she described the difference between a pot made with mere skill and one made with love. In the first case the pot may be functionally effective and have good form, but it lacks life. In the latter case, it has both function and form but it also feels alive. This latter pot is different in that the potter has expressed their spirituality in their craft, responded to the clay and together allowed the life to develop and express itself in the finished product. Many people may not be able to detect any difference between the pots.

The difference will both be seen and felt in the handling of the pot. Yet it may be difficult, if not impossible, to articulate the difference, for our language is too limited to express such concepts. Perhaps it might be easier to understand in terms of a meal. If a meal is cooked and served with love then the partaker of the meal will enjoy it better. Another example is the difference in perspective between the person who pays a large sum of money for a ticket to a football game and really enjoys it, while another person employed by the grounds as an usher, may be bored or disinterested because for him it is a job.

The potter described to me the importance of attunement in her work. This is the concept of reverence or harmony among the parts of herself and the interaction of these parts with the tools and materials of her craft. This attunement results in a sense of empathy, understanding, caring, nurturance and mutual support for herself, the objects she creates and the people for whom they are created. It is not a commercial relationship; rather, it is one of love.

When this attunement is in focus or, as she says, "when she is centered," then some force seems to work through her and she breathes life into her pots. When she is not, she merely

makes objects which happen to be pots.

This artist's description of how her spirituality and creativity are inter-related has parallels in all our lives, whatever we work at. If we work out of a sense of love, our work will be superior to that which is performed out of a sense of need.

We cannot separate true creativity from spirituality, and when we include spirituality in our learning and in our schools it will allow people to develop and broaden their understanding and perspective of the world.

## What are the Implications for these Ideas on today's Teachers and Schools?

With increasing access to worldwide information and data sources available to student populations -- university faculty, teachers, or indeed libraries, are no longer in control of, or indeed the primary sources of, information. Thus the traditional role of lecturer or teacher is changing from being "***the sage on the stage to being the guide on the side***."

This implies that faculty and teachers will increasingly become mentors, coaches, catalysts and guides for students and no longer "lecturers" or "teachers" as in the past.
The re-emergence of the Socratic Method will become necessary -- assisting students' learning through effective questioning techniques.

Furthermore, the focus will shift to ***facilitating student learning rather than actively teaching/lecturing, and all that this implies***. With the large explosion of available information for students via the Internet, many are swamped by the volume of information and need guidance to help sort through it. They also need assistance in learning how to analyze the information and process it into knowledge. One of the big dangers is that students and teachers will take the information from the Internet and begin treating it as knowledge. But, as pointed out at the beginning of this chapter, informa-

tion is not knowledge. It is the processing of information that leads to knowledge. Take for example the information about the Second World War (WWII). Knowing that Germany, Britain and Russia were key players in the war in Europe, is just information. Why were these involved in the war in the first place, and who fought against who, and for what reason, etc.? This is where the information about WWII becomes knowledge about WWII. Students need to be assisted in this processing of information to convert it into knowledge and not merely retain it as information. A key role of teachers in the future is to help guide their students to the appropriate sources of information, and to help them distinguish between factual information and propaganda or marketing ploys.

We can see from earlier examples that students will learn and be happy to engage in learning activities if these activities are presented in an appropriate form. The challenge to teachers today is much greater than in the past because of the availability of so much media in the homes. Students are used to using their remote controls to switch TV channels, change the music on the CD player, or to surf the web. Their tolerance for boredom is very low, and their need for stimulation is higher than ever. Teachers can no longer expect to retain their students' attention unless they make their instruction interesting and stimulating to "hold" the attention of students. The Nutrition and Biomedical Aspects of Space Travel are examples of how teachers can make their subjects more interesting, while also enhancing the learning available to their students.

Coaching is another important role for teachers in today's schools. This means that teachers must be able to inspire their students to reach beyond themselves and develop a desire to know more. This does not mean that education has to become competitive as in sports. However, there is the concept of ***competitive collaboration*** which is valuable. What this means is that students challenge each other to learn more while collaborating in a joint or peer learning sense. This approach to learning can have dramatic effects in that students can greatly exceed their expectations if the conditions are right and they are engaged in an effective learning environment.

Another role for teachers is to help create *A Learning Environment* in the classroom.

*A Learning Environment* is the set of conditions under which people learn best. It is the circumstances in which good solutions are found, good policies are made, and in which we can remove the barriers to our own individual power. It is characterized by creativity, incisiveness and pleasure. *A Learning Environment* has the following ten characteristics:

*Listening:* Get the scope of the issues the person is addressing, notice where they are stuck and help them remove barriers to their best thinking.

*Incisive Questions:* Remove the barriers in a person's thinking, e.g., Why are you doing it this way? or If you were not afraid, what would you do? or What do you really want?

*Appreciation:* The environment needs to be ten times more appreciative than it is critical for the highest level of learning to take place.

*Encouragement:* We need others' belief in our ability to learn well.

*Equality:* We learn best with peers, holding each other in mutual respect.

*Diversity:* Human beings learn better with diverse colleagues, than we do with similar colleagues, this provides a reality check for our learning.

*B**oundaries:* Keeping the boundaries clear and sacred between learning partners is essential for learning progress.

*Feelings:* A learning environment recognizes that learning and feelings are a beautifully intertwined mechanism in the human being.

*Physical Environment:* A learning environment is not just intellectual, it is also physical.

When it is right, it is comfortable.

*Information:* We can learn well about a subject to the extent that we have the correct information about it.

Universities and schools will need to take greater care in helping students prepare for the world of work and life outside their hallowed walls. However, many faculty and teachers have limited experience outside the University or school -- having gone through the education system, got their degrees and begun to teach. With little or no experience of work outside the education system: how well are they then equipped to help "educate" their students for this work and life outside? Perhaps, the answer to the challenge is for faculty and teachers to build closer linkages with the community at large, and especially, with the local surrounding communities of villages or urban areas, and business community! In turn, the business community needs to take greater interest and care in supporting and helping local Universities and schools. This will ensure greater relevance in educational curricula, while also better equipping students for life after school. It may also assist students in being better prepared for *lifelong learning*. France is one of the few countries that supports Education Permanent. Yet! We know that for many people already in the workforce or who will enter the workforce in the 21$^{st}$ century, they will need to engage in life-long learning just to stay current with developments at work and in their lives. It is interesting to note that even today in the US; retired persons are one of the fastest growing entrants to the Information Technology Age. They are learning computer skills and using these to communicate with family and friends, while also using the Internet for educational purposes, and e-commerce. In China today there are upto 2000 universities deticated to the over 50's students, and the most popular courses are in computer technology (learning how to use email to connect with their absent family members) and English language.

## SUMMARY AND CONCLUSIONS

This Paper presents a broad outline of what learning is, styles of learning and how people learn using different methods. The impact of school on learning is explored with the conclusion that it can do considerable harm to our learning. The difference between information and knowledge is explained.

In attempting to 'correct' much of what's 'wrong' about Formal Education and the Challenges faced by students and Educators today, the author introduces the **Jones Model of Learning** and links this Model to the relationship between learning and creativity, and between learning and spirituality.

Education is now more critical than perhaps anytime in history because of the huge developments in ICT and the Information Revolution, through which people are bombarded from all sides with new information that needs to be processed into intelligible and useful knowledge to meet the demands of a rapidly changing world. This requires Educators to become coaches, guides and mentors for learners rather than assume the role of the 'font of knowledge' as in the past. This challenges Educators, students, school systems and curriculum designers alike to meet these new and emerging challenges with creativity and innovation.

Emphasis has to shift from '**what to learn'** to **'how to learn**.' It is only in doing so that learners will be able to apply their learning abilities to any area of knowledge as they progress their lives and careers. There are no limits to our learning other than those we impose on ourselves, or are imposed by others who give us false information or invalidations for our efforts. If we are confused with all that is going on around us, then we can take heart in what Einstein stated many years ago – "The road to enlightenment is through confusion."

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