
RESEARCH

Educational Triangular Pyramid: A New Concept in Education

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Abstract: We believe that one of the most important tasks of education is to establish an organic relationship between family, school, community/society and self-learning in educating a human being as a citizen. In this article an attempt is made to use the concept of triangular pyramid in elementary geometry to illustrate this relationship, emphasizing the fourth element, which is **self-learning**. These four elements form a quadrilateral in the plane/two-dimensional space, or rather a tetrahedron or a triangular pyramid in three-dimensional space. In fact, all these four elements, their roles and the relationships between them in the process of education and training, and the formation of a man, a citizen, have been studied since ancient time both in Viet Nam and overseas. What is new here may be that the diagram indicating the relationship is illustrated by elementary geometry, specifically by “**educational triangular pyramid**”. The main idea of this article is derived from [5].

Keywords: Educational triangle, educational triangular pyramid, the relationship between family, school, community/society and self-learning.

1. Educational Triangle

It has been known for years that three factors family, school and community/society (see, e. g., [1]) play a decisive role in the formation and development of every human being. These elements form the three sides of a triangle with respective lengths as F, S, C (see Figure 1) tentatively referred to as **educational triangle** [5]. It should be added that the

concepts of family, school and community today has acquired extended connotations, new meanings which are broader, deeper, and more modern, because of the crossovers of cultures, the strong influence of information technology and the process of globalization.

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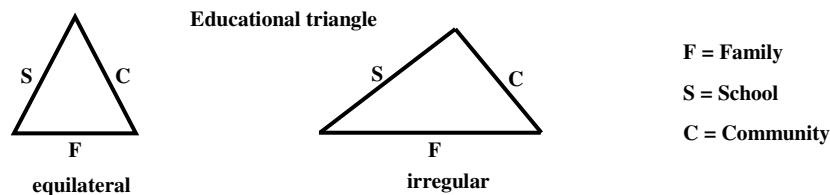


Figure 1.

At each particular time t in a human life, $0 \leq t \leq T$ (T stands for the life span of that person), we set the length of the three sides of the triangle by $F(t)$, $S(t)$ and $C(t)$ respectively. The impact of each of these elements on the formation of a human being at time t is different. Geometrically speaking, this triangle is never equilateral, that is, the lengths of the three sides of the triangle at time t are not equal: $F(t) \neq S(t) \neq C(t) \neq F(t)$ for all t on the time interval $[0, T]$. At time t , when a child is at home not yet in school, family affects her the most, so the length of $F(t)$ indicating the family is the longest, $F(t) > S(t) > C(t)$. When the child goes to school, the school may influence him or her more and more, and so the school side of the triangle increases gradually, $S(t) \uparrow$, $S(t) > F(t)$, $S(t) > C(t)$, and when the child goes to work, and becomes a citizen, both the family and the school sides of the triangle become shorter, giving priority to the gradual influence of society, the length of the society side $C(t)$ increases gradually, $C(t) \uparrow$, $C(t) > F(t)$, $C(t) > S(t)$.

If we take the average in time along the whole life from 0 to T of a **normal person**, to put things simply, we can assume that the educational triangle is **equilateral**; this does not underestimate the role and responsibility of any element or any side. Mathematically speaking,

if we take the average length of each side of the triangle on time on $[0, T]$, we have

$$F = \int_0^T F(t) dt/T, \quad S = \int_0^T S(t) dt/T, \quad C = \int_0^T C(t) dt/T$$

And when the educational triangle is normal, i.e., equilateral, the three sides are equal, i.e., $F=S=C$.

In special cases, for **special people, this triangle is not equilateral**. For example, there are people who lost their parents after their birth, and who have no relatives, the length of the family side is considered close to zero, $F(t) \approx 0$ for all t on $[0, T]$. There are people who have never had a chance to go to school, have never had any idea about school, are entirely self-taught from family and society and yet become good, successful, outstanding and even great men. In this case, the length of the school side is considered close to zero, $S(t) \approx 0$ for all t on $[0, T]$, but $\int_0^T (C(t) + F(t)) dt \approx \infty$.

Recently, when seeing that some students do not behave decently, showing a decline

ethics and conduct, many people in the society and some parents put all the blame at the school's door, without realizing the influence, the role and responsibility of themselves, of family and of society. That is, accidentally or intentionally they forget the role and responsibility of the other two sides of the equilateral educational triangle - the family and the society sides. Is it fair and impartial to blame only the school in this case? Surely, it is not. It is not wrong to blame education, but education should be understood in a broad sense, as throughout his life, a man is educated and is influenced equally from three directions - the three sides of the equilateral triangle; i.e., family, school and society. It is better not to put the blame on each other's door, and family, school and society should cooperate closely in the process of forming a (global) citizen. A harmonious and optimal cooperation will create an optimal product.

2. Self-learning is very important

In 1996, based on the Report by Delors (1988), UNESCO recommended that education worldwide in the twenty-first century should be built on **four pillars**, namely, "learning to know, learning to work, learning to live together and learning to be" [2,4,5]. All humans acknowledge this truth. This can also be viewed as the educational philosophy of the world, including Vietnam, in the twenty-first century. However, if we notice, we may realize that basically this truth was raised by President Ho Chi Minh in September, 1949 on the first page of the golden book when he visited Nguyen Ai Quoc Political Academy, the forerunner of the current Ho Chi Minh National Academy of Politics: "Learning to work, to be a man, and to be a cadre. Learning to serve the unions, the class and the people, the fatherland and the

humanity. If one wants to achieve that aim, one should be industrious, economical, honest, righteous, and impartial.", cited in [3], p.684, or [5]. I do not know whether this information has reached UNESCO. If not, I suggest the Vietnam National Committee of UNESCO send the above-mentioned original autographs of Ho Chi Minh with an English and French translation to UNESCO in Paris to see how over half a century ago Ho Chi Minh contributed to building up the four pillars of education worldwide as recommended by the UNESCO in 1996. By the way, I would also suggest that the Vietnam National Committee of UNESCO, in introducing our tangible and intangible heritage to UNESCO for recognition, which we have been doing very well, should pay more attention to the introduction of the ideological and cultural heritage of our Vietnamese people in general and of our Uncle Ho in particular, of which the above example is just a specific one. This is because ideological and cultural heritage of each nation is no less important than tangible one created and left by "nature".

The concepts of "**self-learning**" and "lifelong learning" are proposed by UNESCO and need to be understood in a broad sense, in its full meaning; that is to say, in self-learning one continues to learn not only knowledge but also culture, ethics, and life skills throughout their life. It is the fourth element, the element of self-learning or self-osmosis that facilitates the three other ones (i.e. learning from family, learning from school and learning from society) to be maximized informing a full human being. **Self-education is even more important and more decisive than the education one receives from family, school and society.** The fact that some people are better than others is due to this self-learning ability. The distinction between two children in the same family (or even between twins), two students in the same

class, or two citizens in the same community, depends first and foremost on their ability, on the genetics of the individuals, and then it depends very much on their self-learning, self-osmotic, self-adjusting, self-adaptive, and self-improving ability.

The same is true in the plant world: Two identical seedlings, grown on the same plot of

land, receive the same amount of fertilizer and water, breathe the same volume of air (oxygen and carbon dioxide), and receive the same amount of sunlight, but the tree that performs better metabolism, higher photosynthetic efficiency will grow faster and more strongly, will be less prone to pests, and will adapt itself to external conditions better.

3. Educational Triangular Pyramid

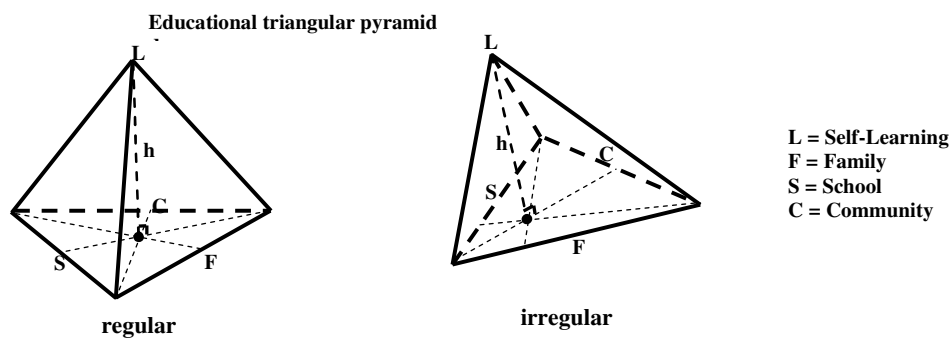


Figure 2.

We think that the element of “**self-learning**” should be emphasized and added to the diagram to illustrate the process of human education, i.e., the educational triangle as mentioned above. For ease of visualization, we see that vertex four, vertex self-learning (self-osmosis, self-perfection), denoted by L, along with the three sides of the base triangle FSC - family, school and community/society, form the triangular pyramid LFSC in the three-dimensional space, like the space we are living, which can be tentatively referred to as the **educational triangular pyramid** (see Figure 2). To put things simply, a triangular pyramid is a tetrahedron having a top and a bottom which is a triangle. Its three side faces are triangles. We can think that this may be a full illustration of the relationship between the four elements of education to form a full human being. The study of the change in the form and lengths of the six sides and the areas of the four faces of this educational triangular pyramid with top L

over time on $[0, T]$ can also be done in the same way for the educational triangle FSC. The “self-learning” vertex L of the educational triangular pyramid LFSC lies over the base educational triangle FSC. The forms and areas of the three side faces indicate the self-learning and self-perfection ability of each individual being influenced by family, school and community/society.

At each time in a man's life, the triangular pyramid LFSC is not regular, i.e., its four faces are four irregular and unequal triangles. But if we take the average life time on the segment $[0, T]$ of a **normal human**, to put things simply, we can assume this educational triangular pyramid as regular, i.e., its base is an equilateral triangle and its three sides are equal. Then the base triangle FSC and the three side faces of this pyramid are equilateral and equal. We should not overlook any vertex, any side, and any face.

The shape and the size of this triangular pyramid are, in fact, constantly changing over

time during the life of a man on the segment $[0, T]$. It is tied to a particular person to characterize the maturity process and the capability of that person. We denote the capacity of self-learning of each person by height h of self-learning vertex L on the base triangle FSC . The better the self-learning ability of a person, the higher the **self-learning** vertex, and vice versa. With **abnormal people**, for example, with the very incompetent ones, h is very small, $h \approx 0$, or even $h = 0$, that is, they have absolutely no ability to learn. As for **genius** or **great people**, the educational triangular pyramid is no longer regular; it is even very "singular" or "strange": the vertex L on the bottom triangle FSC can move upward to infinity, $h \rightarrow \infty$. So h varies in human life from 0 to ∞ , $0 \leq h \leq \infty$.

As has been known in elementary geometry, volume V of the triangular pyramid $LFSC$ is calculated by the formula $V=Bh/3$, where B is the area of the base triangle FSC and h is the height of the pyramid, i.e., the distance from vertex L to the base FSC . We want to use the magnitude of the volume V of the educational triangular pyramid to denote the ability, the learning and research capacity, and the growth of each human being. When the area of the base triangle FSC (the conditions and educational influences from family, school and community/society) is temporarily fixed and denoted by B , then the only way to increase the volume V of the pyramid is to find ways to increase its height h , finding all ways to maximize the value of the parameter h , i.e., maximizing the spirit, the will, the method and the efficiency of self-learning, self-osmosis, self-striving, and self-perfection of each person. In human beings, h can vary from 0 to ∞ and V may also vary from 0 to ∞ . For those who are incompetent, $V \approx 0$, while for genius or great people, $V \rightarrow \infty$, $V \approx \infty$.

Thus, the important and noble but most difficult task or mission for the teacher and

education is to "inspire" students so as to transform the process of "being educated" into that of self-education and self-learning, i.e., maximizing the self-learning height h of each human being. As Anatole France once said: "Nine tenths of education is encouragement". And in the same vein, William A. Ward maintained: "The mediocre teacher tells. The good teacher explains. The superior teacher demonstrates. The great teacher inspires".

4. One is still unwise even when he or she is old, there is still something more to learn

Before concluding this paper, I would like to tell a short story that has obsessed me. About five years ago, when I was flying from Tan Son Nhat Airport (Ho Chi Minh City) to Hanoi, I saw a foreigner walking to the stairs for boarding. He was pulling a suitcase and was about 10 meters in front of me. Suddenly I saw him slip, stagger and almost fall his head onto the floor. He looked very frustrated, and he muttered something. Walking closer to him to see what was happening, I saw a slippery puddle where he had almost stumbled. I discovered that there was an air conditioner over our heads which was broken down, and it was dropping water on the ground. Realizing that it was the fault of our airport, I apologized to the foreigner for that. He smiled and said, "It's OK". While I was approaching an airport staff to ask him to fix the air conditioner, the foreigner took a chair nearby and placed it on the slippery puddle as a signal to show the passengers behind him so that they would not fall off. Thus, the work the foreigner had done was more agile, more effective, and more humanitarian than mine. The chair he had put on the puddle as an obstacle could help the passengers behind to avoid falling off onto the ground which might cause injuries, and at the same time it was a reminder to tell the airport staff to quickly fix the air conditioner; while I

had done only one thing - "to transfer duty" to the airport staff, and it was likely that a few seconds or a few minutes later someone would fall off onto the ground and would be seriously injured, because the air conditioner was not yet fixed. Well, one is still not wise enough even when he or she is old, there are still more life skills or soft skills one needs to learn! Human culture is so deep and so vast!

Conclusion: Family + School + Community/Society + Self-Learning = Full human being.

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Hình chóp tam giác giáo dục: Một khái niệm mới trong giáo dục

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Tóm tắt: Chúng tôi cho rằng một trong những việc làm quan trọng nhất của giáo dục là xây dựng được mối quan hệ hữu cơ giữa gia đình, nhà trường, cộng đồng/xã hội và việc tự học trong việc đào tạo một con người, một công dân. Vì vậy trong bài viết này chúng tôi thử dùng khái niệm hình chóp tam giác trong hình học sơ cấp để minh họa cho mối liên hệ này, trong đó nhấn mạnh yếu tố thứ tư, đó là **tự học**. Bốn yếu tố này tạo thành bốn đỉnh của một tứ giác trên mặt phẳng/không gian hai chiều, hay đúng hơn là một khối tứ diện hoặc một hình chóp tam giác trong không gian ba chiều. Thực ra cả bốn yếu tố, vai trò và quan hệ giữa chúng trong quá trình giáo dục, đào tạo và hình thành một con người, một công dân, đã được nói đến và nghiên cứu nhiều từ xưa cho đến nay ở trong và ngoài nước. Cái mới ở đây có chăng chỉ là sự minh họa sơ đồ quan hệ bằng hình học sơ cấp, cụ thể là bằng hình ảnh "**hình chóp tam giác giáo dục**". Ý tưởng chính của bài viết này được bắt nguồn từ [5].

Từ khóa: Tam giác giáo dục, hình chóp tam giác giáo dục, mối liên hệ giữa gia đình, nhà trường, cộng đồng/xã hội và việc tự học.