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Freedom and Creativity:

An Approach to Science Education for Excellent Students and Its Realization in the Israel Arts and Science Academy's Curriculum

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The contemporary world of knowledge, characterized by an explosion of information and ways of communicating it, requires creativity more than ever in handling scientific knowledge. Thus, science education, especially for the gifted, must encourage the development of creativity. But, as creativity is not something that can simply be taught, we must create the conditions for its development. The main condition is freedom—freedom to raise original unorthodox ideas, freedom to deal with complex issues even when the student's body of knowledge is insufficient, and, most importantly, freedom to fail. This article describes, through examples, the main principles of the science education program in the Israel Arts and Science Academy and how the foregoing ideas are translated and applied there.

Freedom and Creativity

Excellence can be understood in several ways. I shall examine three of these: excellence as being gifted, excellence as achievement, or excellence as creativity. I shall then explain the reasons for the choice of one of the three as a leading approach in formulating the guidelines of the program of the Israel Arts and Science Academy (IASA).

Excellence as Being Gifted

The concept of being endowed with a gift or talent is an efficient one for the purpose of identifying students' skills, mainly in the younger age groups, and guiding them on that basis toward programs of enrichment and advancement. There is no doubt that this is an efficient concept in organizational contexts, but in the purely educational context, it is problematic. Frankly, I find no educational value in this concept because it is essentially passive; the gifted person is perceived as having been granted something extra. This passive concept does not motivate toward any special performance on the part of the gifted student. In addition, the concept presupposes that the rest of the students are lacking; they have not been endowed with the unique gift of talent. Landau (1990) has noted that the French concept *surdoue*, on the other hand, is more positive because it presupposes that all children are talented, but some are more talented than others. However, this concept does not solve the problem of passivity either, and therefore it cannot be considered an operational concept in the framework of the educational field.

Excellence as Achievement

This concept is not a passive one. The excellent student is the student who competes with other students and achieves the highest results. This kind of excellence is what Renzulli & Reis (1986) called "schoolhouse giftedness." This approach is taken in most academic frameworks, but its drawback is that it tries to quantify achievement on an axis that is essentially a time axis. This is the most common approach to gifted education. But, is there any intrinsic value in the fact that a talented student might start out from the same point of origin as other students, only to arrive at the same final destination as the others, only faster? Speed in itself has no value in contemporary society, which tends to prolong adolescence.

Excellence as Creativity

We prefer this definition of excellence. In terms of the imagery of sports, we prefer the all-terrain motorcycle that seeks out an original, unique route for itself, over the racing car that arrives first on a predetermined course. Furthermore, excellence, in our opinion, is a constant self-demand. Only those who are never fully satisfied with the achievements they've attained in certain fields will always be motivated and able to continue and will aspire to improve their achievements. Excellence is a demand made upon the self. As faculty, we address it to ourselves and attempt to educate our students in its light.

By one's demand of oneself I mean not only a demand that is on a higher level than most people's demand of themselves, but a *different* demand. It is a demand for originality, uniqueness and creativity. For us, excellent people are those who are not only willing to work hard in order to be the best on a common axis, but are also ready to take risks and create a new axis.

This definition is made for adults, but how can we recognize girls and boys with the potential for this kind of excellence? It is those who express much better study skills than their environment, but are also full of curiosity and a willingness to work hard to fulfill this curiosity. The potentially excellent student we are looking for fits Renzulli's (1986) nonelitist definition of giftedness, which means they have the three clusters of high ability, task commitment, and creativity. Those students are usually not satisfied with education in school and search for other frameworks of enrichment. The problem is that students in these frameworks are usually from the well-educated middle class.

The belief that these girls and boys exist in every environment was so strong in the minds of the IASA's founders that they created a framework for identifying potentially excellent students in communities that were known to have weak educational systems. This framework received the name "The Discovery Program" and was based on the local educators. It was meant to recognize the upper 10% of the community's students and to nurture them in scientific and mathematical thinking enrichment.

Freedom as a Necessary Condition for Creativity

Creativity is the capacity to confront a given problem in an original way. It is the capacity to look at a situation or problem from a different perspective or even from a variety of perspectives that are not derived directly from the problem's definition. "Major creative innovations often involve the seeing of an old problem in a new way" (Sternberg & Lubart, 1992, p. 67). Creativity is the capacity to create something, an entity, out of nothingness. In order to create an entity out of nothingness, one must first leave space for nothingness. Usually, in a system of education, there is no nothingness; there is no undefined space. Were such a space to exist, it could be the student's freedom of action.

A student who doesn't act in an atmosphere of freedom will never dare express a new idea, initiate a project that was not planned in advance by the school system, or ask a question in a way never asked before. A student without freedom is limited to develop only on the axis predetermined by his or her educational system. This kind of student will be able reach considerable achievements in collecting knowledge and acquiring information-processing techniques, but he or she will never be able to create an idea or raise a new problem. In a system where the student has no freedom, learning is liable to become mainly of the input/output variety. This means that the student takes in the information as input given to him or her directly by the teacher or through structured texts, giving out part of this information during the evaluation process as output. The excellent student in this system will be the one who succeeds in creating an output that is as close as possible to the input received. The problem is that, in this process, nothing new has been created. More than that, the information that was given out as output was not processed by the student's unique personality.

Freedom is also important for developing responsibility. One cannot demand responsibility from someone who is not free to decide his or her actions. When a students gets some freedom in their learning process, they are actually taking upon themselves some responsibility for the educational process.

An educational system is, by its very essence, a coercive institution. This is because it is based on predefined programs, structures, and hierarchy. So, how can we create conditions for freedom in a system that is in its very nature *not* free? Here, Berlin's (1969) distinction between two concepts of liberty can serve us well. The notion of freedom often used in educational environments is Berlin's "negative freedom." In this type of freedom, "no man or body of man interferes with my activity" (Berlin, 1969, p. 122). It is the *freedom from*, which is the concept upon which the Free Schools Movement is based, an approach that tries to reduce to a minimum the constraints on students' freedom. On the other hand, Berlin's concept of "positive freedom"—"the wish on the part of the individual to be his own master" (Berlin, p. 131)—describes the notion of autonomy, which is contradicted by heteronomy. If the first concept is mainly political, the second is mainly intellectual. Positive freedom is required to enable an environment that encourages development of intellectual creativity. Negative freedom, on the other hand, is the freedom from exterior domination, control, or even oppression. Berlin

calls it "negative" because it is defined by its negation and by the force it opposes. On the other hand, positive freedom is creative, it is the freedom to do, to think, to lead oneself in an autonomous way. We should not, however, be misled into thinking that the positive concept of freedom is sufficient in and of itself. Without negative freedom, which is the concrete political freedom of action, positive freedom can become self-illusion and the basis for tyranny, even in the intellectual field.

On my approach, I can summarize the use of these two concepts as the demand that the teacher keep in mind the need to allow the students negative freedom. This means freedom from the teacher's strict guidance and paternalism. For the students, the more useful concept is that of positive freedom—the aim and the courage to lead themselves autonomously, thereby taking responsibility for the consequences of their choices.

To me, complete freedom means denying the hierarchy between educator and educated. In such a situation, the educator cannot take the responsibility of leading the student and therefore loses his or her significance as an educator. Thus, we must instead create limited opportunities of freedom—some free spaces. In these cases, the educator does not dispose of his or her responsibility for the students' learning process, but only avoids defining its results in an exact and deterministic way. The educator indicates the general direction and facilitates the contact with stimulating materials for learning; from there on, however, he or she leaves the students with the opportunity to define for themselves their unique path and lets them use these materials in the best way they understand. One of the hindrances to students' freedom comes from the system of tests or exams. A student that was encouraged to redefine problems in his new, personal, and creative way will many times confront failures in examinations. This is because, in exams, it is someone else who defines the problem for him, and a different answer will simply be marked wrong. Taking this into consideration forces us to develop not only different teaching methods for encouraging creativity, but also alternative means of evaluation.

McCann (2002), following Lipman, thinks we should develop in a student three kinds of intelligence: critical, creative, and caring. In this paper, I will deal only with creative intelligence, which includes fluent, flexible, original, and elaborative thinking. Freedom is necessary for the development of all of these capacities. Fluent thinking requires the freedom to raise many ideas even if some are completely wrong. This need is even clearer when thinking about the other capacities.

One type of freedom that educators usually don't allow their students at all is the freedom to fail. Educators, like parents, are too often paternalistic; this means they are constantly trying to show the way, prevent their students from failing, indicating to them that the path they have chosen is a dead end. They tend to think that it is enough for the student to learn from the educator's own experience without needing to experience failure for themselves. In some domains, this is the only responsible attitude. There is no need for a student to experience an electric shock while carrying out a physics experiment or to experience the destructive results of drug abuse. On the other hand, in most other domains that are not related to danger, this paternalism prevents profound personal learning. Learning that is based on trial and error facilitates not only an intellectual understanding of the subject matter, but also profound and personal insight because it brings us into the emotional domain.

Another distinction regarding creativity that reinforces our understanding of the need of freedom is Diezmann and Waters's (2000) distinction between evolutionary and revolutionary thinkers. An educational system with a limited degree of freedom can encourage only evolutionary thinkers. For revolution, we always need freedom. Revolutionary thinking also requires the special freedom to fail, as many of humankind's most revolutionary ideas were born out of mistakes. A paternalistic approach that doesn't leave space for failure will develop only ideas that go along with the mainstream, that is, merely evolutionary ideas, but never real revolutionary ones.

A nice example from our experience in IASA concerns a radical cure. A 10th-grade student asked us to let him work freely in the physics laboratory. His reason was that he had a revolutionary idea for treating cancer and he wanted to develop it experimentally. The idea, in general, was to destroy the cancer cells by putting them into their unique resonance. We could have answered that this was a far-fetched idea, full of childish vanity. We could have scolded him that he dared think that he, with his limited knowledge, would have a solution to a problem that occupies the best minds in the world. However, we could have also told him that we found the idea interesting and that we wanted to check together with him what he needed to study prior to beginning any experimental activities: biology of the cell, acoustics, electricity, and mechanics. We chose the latter response.

After almost a year of independent, individual work on the subject, the student understood that he had come to a dead end and abandoned the idea. Can you imagine the amount of learning he acquired on the way? If we had chosen the first reaction—rejection—we would have taught him that it isn't worthwhile to come up with innovative ideas, especially revolutionary ones. We might have achieved the educational value of modesty, but would have damaged his motivation to confront great questions in an original way. A year later, this student gave us the best proof that our chosen attitude was the right one: His creative energy was not damaged, but was reinforced. In his second year of studies, he built independently

and with great self-discipline a model of the Calvin generator. This model is based on directing drops of water so that they create an electric charge that can be used as energy. Even though this project was not the student's original idea, as it had first been built by Calvin, it was difficult to build such a generator and the student redefined the way the energy was put to use. He used simple materials from his environment: coffee boxes and metal wires. Using exact mathematical calculations and much trial and error, he succeeded in building a system, with the end result of moving a small metal leaf that closed an electric circuit and opened a metal safe. The student received one of the highest prizes for his idea's originality and its execution. In this example we can see how the main requirements for creativity posed by Sternberg and Lubart (1991)—willingness to grow, willingness to take risks, and the courage of one's convictions—were exercised. This example shows us how an educational reaction encouraging an original idea, as outrageous as it may be, taught the student that raising original ideas is not only possible, but also pays off. The failure taught him to raise less pretentious ideas and thereby arrive at personal success.

One important question concerns the type of teacher that can promote creativity in gifted students. One way this question can be formulated is: "Does the gifted student need a gifted teacher?" My answer to this is clearly "no." Only when the teachers are not preoccupied by the question of their own intelligence can they deal freely with their students' potential. Teachers who wants to encourage a freedom of creativity amongst their students must accept as a working assumption that the students are more intelligent than they are. This should never be tested objectively, but serves to formulate a state of mind. Only if I believe that my students are more intelligent and creative than I am will I truly accept letting them find their own way and be able to control my urge to lead them the way I "know" is best. If we do not adopt this working assumption, we will have difficulties in leaving free space for our students and will find ourselves driven to use a paternal approach.

Discovery Experiments vs. Confirmation Experiments

Freedom must also mean the willingness to take some risks. As our subject is science education, laboratory work has much value in the development of the student's research capacities. Experiments carried out within the framework of the high school curriculum are usually structured experiments with predefined design. These experiments are used as "confirmation experiments," meaning that, after theoretically learning a scientific phenomenon, the student is asked to carry out a specific step-by-step experiment that, if executed to the letter, will exhibit the phenomenon.

We believe that some of the experiments *must* be "discovery experiments" in which students do *not* know in advance what the result *should* be. Rather, the students are the ones formulating the operational hypothesis, the experiment's specific design, and the variables' definition without knowing that the exact same experiment had been carried out by others before them. In this case, successful experiments will give a sense of discovery. We do not pretend that our students will make discoveries during their high school experiments that will be innovations in the world of science; but, for the students themselves, they will be completely personal and original discoveries. In these kinds of experiments, the risk of failure at every stage is high. The students may define the operational hypothesis incorrectly, and, even if they formulate it correctly, they may not correctly isolate the variables. They make mistakes in defining the experimental versus the control group or even confuse the dependant and the independent variables. Any of these mistakes will cause the experiment to fail, but the students will learn from the process and will usually be able to repeat the experiment with a better, truer understanding.

Obviously, failure is not always positive. The teacher's mission is to allow students to fail, yet prevent their defeat; the goal is to prevent a failure that can damage the students' self-confidence. When the students fail, the teacher must help them develop reflective thinking about *why* they failed and how this failure can become a stepping stone in their process of learning and development. The teacher is like a good swimming coach who must be ready with a dry towel when the student steps out of the cold water, yet must not prevent the student from jumping into the water—or even falling in!

In our school, we have created several kinds of time units and educational frameworks for this kind of freedom:

- *A Class-Free Day.* At least one day each semester is kept free of classes. The teachers are available as potential tutors and the students study what they have decided is important for them to study on that day. On this day, the gap between students who are capable only of individual learning (learning without direct teacher guidance) and those who are capable of independent learning becomes apparent. The latter independently study a subject they have chosen in the way they have chosen with the complete freedom to manage their time the way they think right. In this aspect, they are autonomous learners. Students of the first type choose this day to complete their class assignments. The latter will study fields not covered in class. Both ways of using this freedom—the individual and the independent—require a high level of responsibility.
- *Project Week.* This is a week where the school schedule is put aside in favor of individual investigation by each student

on an experimental question they have chosen in advance with the guidance of one of the faculty. The risk in Project Week is that some of the students will use this time for doing nothing. We don't have an absolute solution to this, but our experience shows that most of the students use their time effectively. For them, it is not only the most interesting week of the year, but also the most intensive and exhausting.

- *Research Project for 11th Graders*. Pairs of students chooses a research question that interests them from a list given by a teacher (if they don't find one, they can suggest one of their own). They investigate this subject throughout the year. The students independently study the theoretical background, formulate the experimental question, define the parameters of research, and carry out the experiment with as little interference as possible from the teacher.

Creativity in science can be perceived as a difficult and frustrating task. We do not expect students at the high school level to uncover significant new discoveries that will truly contribute to the growth of scientific knowledge; therefore, it is hard to show whether creativity is really expressed. On the other hand, in art, creativity is the name of the game. From the moment the student stands in front of the white canvas, an infinity of creative possibilities is open to him or her. When art education and science education take place within the same educational environment, the courage for creativity is encouraged and develops in the science student, too. The fact that the academy is for both arts and science gives some of the science students the possibility to combine their studies. Such a combination enables them to learn from art education some lessons relevant to science education. A student can learn, for example, that daring is rewarding in art, so she should dare also in her science studies. She can learn that an original good answer is worth more then an unoriginal good answer.

The Goals of Science Education in IASA

What is the main purpose in scientific education for gifted adolescents? Is it to develop their scientific literacy or to develop an understanding of scientific theories by creating a capacity to analyze the thinking of great, creative scientists? Or, might it be to encourage the capacity among them to someday develop new scientific theories? There is no doubt that we should strive toward fulfilling all three purposes.

More generally, the question of a high school's role—whether it should provide as broad an education as possible, if only to thinly cover ignorance, or promote in-depth study of particular fields and provide specialized knowledge—has long been under debate and is difficult to answer unequivocally. The main advantage of the former approach, which makes for a superficial, but broad education, is that it introduces young people to the society in which they live. It aims to explore and map out the questions asked by students on various topics so that later on these young people will be able to define the areas in which they wish to specialize. If the school has effectively provided its students with a good general education, it can be expected to turn out adults who will be specialists in certain fields (since they will almost certainly go on to specialize in them) who also have knowledge and interest in other areas.

The downside of this approach is that it gives students a superficial education that does not link together different fields of knowledge, not even the most closely related ones such as chemistry and physics. Another disadvantage is that exploring many fields of knowledge does not leave enough time to study any particular field in depth. This lack of time often leads to the use of the most effective and least time-consuming method of teaching, namely the input/output method discussed earlier. This mode of instruction emphasizes knowledge, rather than understanding, skills, or values. Such an approach to teaching makes the student a passive, estranged recipient of the knowledge transferred to him or her, and thus it often achieves the opposite of what it aims to achieve, namely rejection of the knowledge and the culture it represents.

The specialization approach, on the other hand, emphasizes in-depth study and so may lead the way to creative self-learning. This type of learning takes place mainly through trial and error, which is extremely time-consuming. Only by focusing on a small number of fields is it possible to carry out self-learning that includes trial-and-error components (i.e., leaves room for the failure factor). Incidentally, in order for this to happen, we educators must educate ourselves to enable and accept our students' failures, avoiding a paternalistic approach that aims to prevent failure on the pretext of saving the student from the inevitable frustration that comes with it. Learning through failure is essential to self-learning. The disadvantage of this approach, as mentioned above, lies mainly in the narrower horizons it allows and in the fact that the student is required to choose a field of expertise at such an early stage.

An educational program that puts the emphasis on creativity raises the risk of losing important knowledge and tradition in a field. The answer we give to this dilemma is to capitalize on the tension. We encourage creativity and innovation; but, at the same time, we emphasize cultural awareness and respect for the history and tradition of each field.

In science, taking the innovative approach creates the risk of fostering technology at the expense of pure science. For excellent students with high capacities, we believe that we should emphasize basic science without taking shortcuts into technology. As we are committed to a cultural approach, we

look at science in the framework of the history, philosophy, and sociology of science. In a parallel course, we explore ethical questions raised by contemporary science

From the outset, IASA's approach has been an attempt to grab the bull by both horns. On the one hand, each student is required to identify one chosen field of excellence, that is, an area in which that student will conduct in-depth study, specialize, and acquire tools for thinking and creating that will enable her or him to study independently and creatively. On the other hand, this specific field of knowledge must be linked to other areas. Education must be of the "broadening out," rather than the "narrowing down," of variety. Thus, we have always aimed to educate specialists with good all-around knowledge, believing that talented students, under the advantaged conditions created at IASA, can achieve both goals.

The Science Department Houses Program

Experience has shown that students who study several subjects at the highest level for the final exams, however gifted they may be, quickly lose the elements that characterize creative autonomous learners. They quickly redirect their learning efforts to fit examination requirements, abandoning personal curiosity and interest and becoming fearful of expressing personal creativity and uniqueness. This is a natural tendency given the obvious incongruity between unique, personal creativity and standardized examinations. In a world where knowledge doubles every few years, the Renaissance Man no longer exists. It is no longer possible to have both all-around education and specialized knowledge unless a clear distinction is made between the two.

For this reason we have, over the years, developed the Science Department Houses Program. In the framework of this program, students majoring in sciences focus their studies on one field of experimental science from among the three classical fields: chemistry, biology, and physics. This field will serve as the student's "base" during his or her 3 years at the school. The students, aided by staff, choose their base subject after an initial period of participation in introductory courses. Approximately 10 hours per week are allocated for studying the base subject, twice the number of hours allocated in the regular program. The extra hours are not used to cover more material, but rather to expand and deepen the study of the subject.

Science is studied in the context of the wider cultural context, and it includes the history, sociology, and philosophy of science, with major focus on the discussion of ethical issues posed by research in that field. In addition, in the framework of their base studies, students practice and develop basic research skills relevant to every scientific field, such as scientific reading, scientific writing, and designing an experimental plan.

In their second year, each student participates in a team of two or three students leading an independent research program in which he or she not only carries out an experiment, but also formulates the hypothesis and designs an experimental plan for exploring its validity. During this year, the student also studies the other two fields of science, but only in the context of his or her base field. For example, a biology-based student could study biophysics and biochemistry. The student then focuses on ethical dilemmas stemming from those disciplines. A physics-based student might explore issues raised by nuclear research both from the physics aspect (e.g., What is atomic fission?) and from the historical aspect (the geopolitical context that led to the decision to develop the atomic bomb). Most importantly, the students explore the issue from the moral or ethical aspect (the significance of the use of the bomb and the ethical considerations and positions held by various researchers who were involved in its development). A biology student might deal with issues such as genetic engineering, human cloning, mandatory vaccination, and so forth.

The program is a developmental one, taking into account the students' maturity and ability to deal with certain issues according to the different age groups. In the 12th grade, the program unfolds into an interdisciplinary exploration of the three scientific fields, with a direct treatment of the philosophical and sociological paradigm of ethical issues currently confronting scientific research. A team of science and humanities teachers cooperates in teaching these fields as part of the integrative interdisciplinary concept.

Disciplinary vs. Interdisciplinary

One of the most common definitions of creativity characterizes it as the ability to look at a problem from unexpected angles—to look for the connections where they had seemed not to exist, to move from point A to point D intuitively, rather than according to an algorithm leading from A to B and so forth (de Bono, 1990). This ability to view things from diverse perspectives can be attained through the cultivation of interdisciplinary teaching.

Interdisciplinary work in the school is expressed on two levels. The first is that students from a diverse range of fields spanning both the sciences and the arts live together. The assumption is that a student who is totally indifferent to music, for instance, who lives in the same room with a student who regards music as the center of his life would become curious and try to understand what it is that makes his friend so enthusiastic. Furthermore, this student would absorb musical experiences from the general school atmosphere, from

opportunities he would have to attend concerts and individual recitals performed by his peers, and this acquaintance could potentially develop at a later stage into a significant appreciation of music. This level focuses on a multidisciplinary experience, rather than an interdisciplinary experience. In other words, it puts one field alongside other fields instead of focusing on the interconnections between the various fields.

The second level is expressed by structured interdisciplinary courses. The most prominent example of this is an elective course that I have facilitated for several years. Intended for 12th-grade students, it is called "Major Dilemmas of the Human Spirit," and it deals with two dilemmas that intersect the majority of disciplines: the dilemma of "freedom versus determinism" and the dilemma of "monism versus pluralism." Approximately 10 teachers participate in teaching the course. I planned the course, but, for each discipline, an expert lecture is given by one of the teachers specializing in that field. In this manner, we achieve an understanding that major issues come into expression in diverse fields of knowledge. But, at the same time, we avoid creating an impression of charlatanism or lack of professionalism, which might have been the case if one teacher presented him- or herself as an expert in all the disciplines and attempted to teach all the different fields covered in the course alone. Each field has its own expert who enters the course and introduces the main issue from the perspective of his or her particular discipline. In addition, this method contributes to the development of teamwork among the teachers, which serves as a paradigm and encourages cooperation among the students. This same spirit of cooperation also characterizes the students' final task for that course, which involves them pairing up to conduct joint research that presents a new perspective that had not been touched upon by any of the teachers. Additional courses in a similar format, though less comprehensive in the number of disciplines covered, include a science seminar for outstanding students focusing on sight and science elective courses on topics such as brain research.

Discussion

Excellence, by our definition, deals with the notion of creativity. This creativity must originate from a standpoint of disciplinary excellence and must come with a high demand of oneself; otherwise there is a risk of charlatanism. The only way to create a change in the environment is to integrate creativity with excellence. The necessary condition for creative education is freedom. As we have seen, there is great difficulty in creating a completely free environment in an educational framework. This is because, in this case, the educator abandons his or her responsibility for the students' growth and development. The conclusion is that we must find ways to create specific, well-defined frameworks of freedom. The Israel Arts and Science Academy has succeeded in creating some of these well-defined, but limited frameworks of freedom that enable the students' expression of creativity with the Class-Free Day, Project Week, and Research Project for 11th Graders.

Freedom is not only the freedom to initiate and create, but also the freedom to fail. No significant learning that includes emotional insight can occur without failure. The role of the educator is to leave the space for mistakes and failure while also preventing the student's defeat. This is done in such a way that students recognize their failures and express their frustration, but simultaneously begin a process of reflection that enables them to understand the causes of failure, get up, recover, and create a new proposition, research design, or paper.

In order to promote creativity, we must advance interdisciplinary work, as this encourages approaching a subject from a variety of different perspectives. Interdisciplinary work must be based on profound, preliminary study that permits students to define for themselves the borders of the discipline they wish to break.

Above all, the educational program of the Israel Arts and Science Academy tries to create the ideal conditions for the growth of a complete human being, one who is knowledgeable, hard working, courageous, and creative, but, most importantly, devoted to a clear set of moral values and humane sensibilities.

Have we succeeded in achieving this great ambition?

According to our own definition of excellence, we must answer negatively, as our definition includes a permanent demand of oneself. This means permanent dissatisfaction with any actual achievement and a constant ambition for greater achievement. Every year, we reach higher, succeeding more and with an increasing percentage of our students in realizing our goal of creative excellence that is well integrated with social responsibility.

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