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# TALENT DEVELOPMENT AT THE BUDAPEST UNIVERSITY OF TECHNOLOGY AND ECONOMICS

Gabriella BODNÁR* and Gábor HORNYÁNSZKY**

*Department of Ergonomics and Psychology
Budapest University of Technology and Economics
H–1521 Budapest, Hungary
Phone: (36 1) 463-4021, Fax: (36 1) 463-2106
e-mail: bodnar@erg.bme.hu
**Department of Organic Chemistry
Budapest University of Technology and Economics
H–1521 Budapest, Hungary
Phone: (36 1) 463-1358, Fax: (36 1) 463-2106
e-mail: hornyanszky@mail.bme.hu

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## Abstract

The talent development of gifted young people youth has been evaluated differently in Hungary and internationally during the last decades.

Different sources in psychology and pedagogy reveal that professionals have undertaken continuous efforts in Hungary in all school types in this field, and as a result, the number of students with scholarships has increased at colleges/ universities. Much emphasis has been put on talent development also in the case of secondary schools. Before describing the work undertaken by the cooperation of the Ergonomics and Psychology and An-Inorganic Chemistry Departments Chairs at the Budapest University of Technology and Economics Technical University, let us briefly review the current definition of outstanding talent, creativity and talent development.

*Keywords:* talent development, development programme at the Department Ergonomics and Psychology and Chemical Engineering Group, cognitive abilities, sociall skill, camp in the summer, trenings camp to organizing in chemistry, physics, mathematics or biology.

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What possibilities have children and youth in developing their talents? The formation of gifted young people – i.e. elite-education – has been confronted for a long time by the official principle of equal chances.

Raising and educating gifted and creative children bring often not only joy but mean also a multitude of problems. Society is confronted with this issue as a certain type of deviance; these youths need special care, for which (where) teachers are not always prepared. Post-graduate courses have been launched recently in order to prepare teachers to identify and develop gifted children and youth.

Talent development is on the one hand an individual approach, on the other hand it is the differentiated approach towards the community. Society and our educational system can handle gifted youth only if it is able to recognize the characters of talent and the methods of talent development.

Talent consists of 'three rings' following the (three interlocking rings) conception of giftedness (RENZULLI, []):

- *Above average talent*,
- *Task commitment*
- *Creativity.*

Complementary elements to this model are *environment in school, fellow students of the same age and family.*

When defining these three components, it can be concluded that *above the average giftedness* belongs to the domain of psychology.

Several scientists try to develop a definition of this component, however, Renzulli emphasizes the importance of results scored at intelligence and performance tests which mark the difference from others and differentiation from general abilities. Developing above-the-average abilities above the average necessitates cooperation of teachers, parents and members of the students's age group, in order to achieve best results and success.

*Task commitment* means simply motivation. Motivation includes components like endurance, autonomy, self-confidence, pro-active behaviour, taking initiative, and the ability to become absorbed into one's activity. Motivation is a process that gives power, which may effect different reactions at the individual and which gives energy to resolve problems.

*Creativity* has several definitions by different authors.

Creativity is a complementary ability to intelligence. Creative human thinking pattern is not convergent (i.e. thinking is directed towards a single right solution) but rather divergent; striving to find several answers and solutions.

Creativity can be ability, a process or a product. There is a general consensus in the scholarly definition of creativity, that the term must entail originality, being different, modern attitude and the will to change.

Following Renzulli, individual creativity must be measured through previous and current performance and/or work.

Creativity consists of the following components:

- *cognitive*,
- *affective*,
- *social/interpersonal*,
- *and psycho – motoric* factors.

*Cognitive component* includes the ability toe of resolving problems, associations, analogy, transformations, divergent thinking.

Among *affective factors* the effect of motivation, emotional needs and the multitude of personal characteristics must be emphasized.

*Social/interpersonal* components are defined as contacts of humans with each other as well as their effects, i.e. communication, socialization, norms, rewarding, feedback, and sanctions.

*Psycho-motorical* components also include consciousness, comprehension, and the manifestations of physical, mental and intellectual functions.

A *creative and gifted person* is an extraordinary individual who may induce special problems to his/her their environment. He/They think and behave differently and might have special requests and expectations.

## 1. What Characteristics Might be Defined Because of their 'Difference'?

Creative individuals are independent, self-confident and risk-takers. They have a high energy level, adventurer mentality and exhibitionist attitudes (striving for sensation-seeking) are typical.

They try out activities which are new or unusual. They have a wide range of interests and they are curious.

They are discoverers and their range of interests has very often a childish curiosity.

They have a good sense of humor, a playful imagination, and are willing to take hardship. During their puberty they very often gain attention through non-conformist behaviour. They are concerned about their own importance and the role of others in their lives. They have affection towards mysticism and are attracted by everything that is asymmetric.

Characteristics of creative persons also include the resistance against their environment, they are stubborn, extremely sensitive, however, can be sometimes very indifferent towards their environment.

The *term talent* is a complex cluster of abilities, which can be hardly defined in a uniform way. At early stages of life –apart from some lyrical gifted people- rather promising talents or some features promising talent are typical; i.e. the individual child is gifted, demonstrates above the average abilities/skills in some areas, can be developed more efficiently and achieves better results than others.

The final outcome, i.e. whether the individual becomes a real talent, is largely determined by his/her education, training and school. Family, home environment have also a paramount importance which may amplify both positive and negative influences from school, or can compensate with corresponding care and attention. It is rather worthwhile to consider one third of all children as promising talents and real giftedness should be defined only during the process of talent development.

## 2. What Clusters of Abilities Deserve Attention from the Viewpoint of Talent Development?

Ability is the summary of talents, skills and dispositions resulting in outstanding results.

*Intellectual Ability*

can be measred the most easily. Individuals with outstanding intellectual abilities can achieve outstanding results in learning natural sciences, mathematics and languages etc.

*Artistic talent*

can also be recognized easily. The environment recognizes drawing skills music talents of the child at a very early stage. We can talk about giftedness on the specific field of art only if talent development is also supported by the individual's own will, motivation factors and the environment. Literary talent can be recognized more difficultly in childhood, but fantasy and the ability of expression may be good indicators.

*Psycho-motorical abilities*

This ability comprises physical skills or manual skills. These abilities are necessary for example in wood carving and for works as mechanics.

*Social abilities*

Individuals with outstanding abilities can master their social relations, are excellent communicators and are able to effectively influence and lead their environment. Due to their empathy and leadership skills they can become good leaders, managers or teachers.

Different abilities can not be separated in early years, they appear together and exist rather theoretically at this stage.

Talent development has a history of over 100 years. During this period significant efforts were undertaken to determine the most effective method in identifying and developing the talented child.

The first years of talent research (1880–1905) emphasized the importance of intelligence tests in identifying gifted children. Furthermore, they focused on areas of abilities and creative work, which provide feedback on positive deviations against

the average. After the receipt of such feedback there is the option of involvement in different talent development programs – even today. At these programs it is important to consider the factors of the age, maturation psychology, because asymmetric development is typical; discrepancies between social-, emotional-, communicational competences and intellectual and psycho-motorical skills exist very often. It can be concluded, that the needs of gifted youth are largely identical to those of the average, with a difference in some areas.

### 3. There are Different Patterns of Talent Development, which are Summarized Acceleration, Pacing i.e. the Gifted Youth is 'Jumping an Academic Year'

The youth learns the material of several academic years in a concentrated manner. This also implies that physical and mental development and social adaptability of the individual must be considered with great care. It is worthwhile to advance one or two years, so the individual is not isolated from his/her fellows.

*Separation, Segregation*

According to a special selection criterion; e.g.: branch classes, intense courses, foundation schools to educate talented children, well-planned educational programs exist within the Hungarian educational system that can effectively and diversely develop the personality of youth.

*Enrichment Programs*

are based on the core assumption that gifted children and young people need other educational and development programmes than the average ones. It is important to know, that students participating in these programmes are integrated in regular education receiving additional, special development. Children 'discover' programmes, teaching material and resolve future-oriented problems. Subjects are not closely bound to scholarly material: e.g. archeology, drawing caricatures, humour, journalism, resolving social problems, rhetoric, astronomy etc.

Development of thinking patterns, creativity, empathy, social competence and leadership skills play an important role in these programmes.

During the management and coordination of the programme the *education of parents and teachers, guidance and care of gifted youths* must be considered alike. The advantage of the above mentioned pattern is that it can be integrated into the education profile of any school. Education of the gifted is done beyond regular classes in talent development camps during summer.

## 4. References Emphasize the Significance of Environmental Factors Besides the Character Thinking and Behaviour Patterns of the Talented Youth

The environment of creative and gifted youths has a significant impact on their environment. They need a variety of options and flexibility. As a result of their wide range of interests and different thinking patterns they feel only comfortable where only few or no constraints exist. In the opposite case these youths would become very soon rebels. They need the helping hand of their environment where their sensibility and impatience are understood, their independence is supported and their curiosity is satisfied.

The early identification of talent, a supporting, helping and developing environment provides a good opportunity of guided talent care of students. Hungarian talent development programmes considering the above mentioned factors are eligible to correctly develop students. Development and care of gifted youth can be done through programmes. The participants of the Hungarian talent development programme are high-school pupils with interests in natural sciences showing outstanding performance in chemistry and physics during their studies.

*The Development of Ergonomics and Psychology at the Budapest University of Technology and Economics (BUTE) – in cooperation with the Chemical Engineering Group* of BUTE of 'Pro Talent Movement' – decided to launch a project aimed at offering individual development schemes to students participating in secondary school and university education. We also decided to design and test an educational programme of talent development. The two groups started working together in 1999.

We started with the assumption that high-quality training provided to the most talented students plays a key role in higher education, generally aimed at providing education in general and vocational subjects. Such high-quality training can only be provided if talent development programmes are appropriately designed and receive high priority. Higher education has a role to play in this process as early as in the secondary school, by supporting talented secondary school students in general, and – in order to ensure equality of opportunity – by providing special support to talented students coming from socially disadvantaged environment.

Our project is headed by a group of university tutors involved in talent development, with several years of experience in preparing talented secondary school students for university education and in giving social skills trainings to students and trainers alike.

The Chemical Engineering Group of BUTE of 'Pro Talent Movement' has been involved in providing support to talented secondary school students for almost 30 years. In 1992 their programmes were extended to students who have just passed their secondary school final examination and/or university entrance exam, i.e. each summer around 70–80 young people participate in their preparatory camp.

Besides professional issues, the camp offers training in some special aspects of life at university, games and quizzes help students get to know each other and come together as a group. This is a very important part of this new phase of their life.

Due to the *continuous contact* with them, secondary school students participating in our programme get to know about university requirements already prior to getting there, and talented students with less prior learning receive support in filling gaps in their knowledge.

University students who in earlier years participated as secondary school students in the university's preparatory programme join in later during the year. Their task is to prepare secondary school students intending to pursue studies at Faculty of Chemical Engineering by sending and then evaluating tests that help them to prepare for their university studies and develop their skills in relevant areas.

Communications training is given to students demonstrating the greatest talent, thereby preparing them for a potential career as trainers.

These students, accompanied by tutors, participate at a training camp in the summer, where they train around 40 newly entered university students and app. 30 secondary school students in chemistry, physics, mathematics or biology and in issues related to organizing training camps in two weeks. Thus, they have the opportunity to apply their newly acquired theoretical knowledge in practice.

The practice university students participating in our programmes gain in training, significantly contributes to their success as engineer-tutors. This is also an opportunity to test their aptitude for the profession.

Increasing professional competence receives the greatest priority in our courses, but we also wish to give students an opportunity to discover and assess their talents and capabilities, to come into contact with other talented fellow-students, to learn how to think and solve problems creatively, to inspire their thirst for knowledge and interest in what is new, and to improve their cognitive abilities.

The next year, *a selection* of the newly entered students participating in our camp is involved in preparing secondary school students for university studies and in corresponding with them during the academic year. These students will also participate in our spring and summer camps as trainers.

In this way we have a continuous pool of new research and training staff to draw on. It has been our experience that participating students also have a greater tendency to choose a career as engineer-tutors.

Besides the development of cognitive abilities, importance is also attached to general social skills. In these trainings, verbal and non-verbal communication skills are trained: students receive feed-back on their personal appearance and attitudes demonstrated in team-work. Training social skills in a safe, playful environment helps them to adapt to new, previously inexperienced situations.

In each training we have some students who have difficulties adapting to the situation. For them, this form of training is unusual. They have inhibitions about talking of themselves in front of audience or about giving their opinion and providing feed-back. Nothing is forced upon participants: our trainings have a safe, playful atmosphere where participants can relax and learn to adapt.

These trainings are important to talented young people also because in this way they get an opportunity to make use of the most of their abilities.

Each year app. 50 people participate in our talent-development programme. We have 6–8 university tutors, 20 students and – year by year – an increasing number of 1st grade students.

The programme is well developed and delivers excellent results. The enthusiasm and consistent effort of trainers and students have resulted in useful experiences for both groups. Besides cognitive abilities, social skills and personal development programmes are also part of our trainings.

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