

THE ROLE OF EDUCATION SYSTEM IN KNOWLEDGE TRANSFER AMONG YOUNG PEOPLE

Vendel Lőre, Andrea Bencsik
Széchenyi István University, Hungary
E-mail: lore@sze.hu

Abstract

Our investigation is in connection with knowledge management, but we would like to present another aspect of this field. We have investigated the general willingness of knowledge transfer among children and students. The philosophy of our research was that we did not investigate the processes of knowledge transfer among the walls of a company, however, we looked for the basic issue of knowledge management: whether young people are ready to share their knowledge or not. When we were conducting our research, we were looking for the answers of two questions: on the one hand we wanted to know how cultural factors can influence the effectiveness of knowledge transfer, on the other hand we looked for the impact of age, i.e. how one's age changes helpfulness in the respect of knowledge transfer. So we wanted to know what the role of education system was in this process. We investigated the influence of cultural elements and education systems through two nearby countries: Hungary and Slovakia. We created two samples which included 600-600 people in each country to investigate the difference of cultural environment in the field of knowledge transfer. Our another assumption was that not only the cultural items, but the age can influence knowledge transfer essentially. We could prove the influence of education system with this hypothesis as well.

Key words: *helpfulness, knowledge transfer; students; teamwork.*

Introduction

The terms “innovation”, “information” and “knowledge” have become popular in the field of Economics and Business Studies. The notion “Knowledge” and some more or less similar concepts are appearing in the different fields of Economics. More and more research and practical recognitions make this area turbulent and fast developing. Of course we can cast doubt on the fact that management science only follows the increasing value of knowledge or stimulates it. Though, we have to accept the fact that knowledge and related terms are getting a more and more important role in the near future. Nowadays some researchers from social science talk about knowledge-based economy. Alan Webber –who has been the editor of Harvard Business Review- summarized the importance of new economy as follows: “In the end, the location of the new economy is not in the technology, be it the microchip or the global telecommunications network. It is in the human mind”. So different resources become important factors in the new economy –or more expressively in knowledge economy: whilst labour and capital played an important role in the “traditional” industry, they are being pushed into the background and are giving place to human knowledge (Sveiby, 1997; Bakacsi, 2004). We can say that the paradigm of new economy is knowledge and knowledge-based services as well as knowledge-based production. Parallel with the enlargement

of knowledge-based economy the role of education system –especially of universities- becomes more and more important.

As we have already mentioned, the field of knowledge can be found both in the literature and in the practice of management. Moreover, it means a separate discipline. Publications in this field are being issued almost every day. But their common features are that researchers investigate knowledge from the point of view of firms (Gyökér, 2004; Búzás & Lengyel, 2002; Meinolf, 2001). They present the importance of knowledge, the process of knowledge integration and knowledge transfer, as well as the management tools that can be used in this area (Davenport & Prusak, 1998; Géró, 2000). In spite of the large number of publications we can already find some blazes.

We would like to aim at a blaze with this study. We would not like to insist on the common field of research of knowledge management; this investigation is in connection with knowledge management too, but we intend to present another aspect of this field.

Our research can be considered as an interdisciplinary investigation, not as one of the typical management research. More exactly we conducted in part a management and in part a sociologic research: we have investigated the general willingness of knowledge transfer among young people, but not from the aspect of companies. The philosophy of our research was that we did not investigate the processes of knowledge transfer inside a company, however, we looked for the basic issue of knowledge management: whether people are ready to share their knowledge and if they are ready to do it, what its conditions are and how we can improve the efficiency of knowledge transfer. When we were conducting our research, we were looking for answers for two questions: on the one hand, we wanted to know how cultural factors –and indirectly education systems - can influence the effectiveness of knowledge transfer and on the other hand, the impact of age, i.e. how a person's age changes helpfulness in the respect of knowledge transfer.

Our definite opinion is that the effectiveness of knowledge management systems is “cultural-dependent” (Sveiby, 1997). What does it mean? Nothing else than cultural items of employees – for example attitude, social activities, etc. – influence the effectiveness of management systems definitely.

Methodology of Research

We investigated the influence of cultural elements through two nearby countries: Hungary and Slovakia. As a first step we created two samples which included approximately 600-600 people in each country to investigate how different cultural environment (including the role of education system) can influence knowledge transfer. Our other assumption was that not only cultural items, but age can influence knowledge transfer as well. Our assumption was in the background that the quality and the common learning-methods of education system influenced student's attitude in connection with helpfulness and knowledge transfer. Moreover, different education systems affect it other way. To investigate this supposition, we aimed at young age-class: within it we identified five distinct groups. We created five different types of questionnaires to conduct our research. We geared the questionnaire into five age-groups, tailored to the different situations of life, communication, etc. It means a necessary compromise between information content and clarity: in order to collect essential and true data we gave up the opportunity of the comparison among the different age-groups. We have chosen a wide range of age-groups because we wanted to investigate the role of age –indirectly the role of social environment- in the field of knowledge transfer.

The created age-groups were the following: kindergarten, elementary school, comprehensive school, college/university, distance teaching, and employees.

Although our sample was quite attractive (in the respect of the size of the sample) we cannot consider it as a representative sample. We would like to lay down already here that our results are authoritative, but these results cannot mean general connections in the population according to strict statistic rules. Apart from this we have to emphasize that we consider our investigation as a discover examination because such a complex research has not been conducted according to our note yet.

Table 1. The Methods of Samples.

	Number of cases Slovakia	Method of sample Slovakia	Number of cases Hungary	Method of sample Hungary
Elementary school	140	Random sample	63	Convenience sample
Comprehensive school	118	Random sample	120	Convenience sample
College/ university	188	Convenience sample from one university	120	Convenience sample
Distance teaching	98	Convenience sample from one university	60	Convenience sample
Employees	114	Random sample	111	Convenience sample

Source: Own construction

As we can see in Table 1, the method of the sampling was different, but the main part of the sample was a convenience sample. As we have mentioned before, it means that our results are not representative.

We had two hypotheses: our first assumption was that an individual's age influences knowledge transfer in negative direction: if you are older, you are less willing to share your knowledge. The second hypothesis was that the cultural environment affects the attitude of helpfulness and so indirectly the knowledge transfer. The two hypotheses are in connection with the teaching methods of education system as well.

The structure of the questionnaires was different: we had four different types. Every form was directed towards the habits and communication situations of the interviewed people. But we measured the complex concept of knowledge transfer during the research with the following factors in all the questionnaires: approach to knowledge transfer, helpfulness, factors of learning in a team, and channels of collecting information and knowledge. Apart from these we examined some demographic items as well, e.g. age, gender, etc.

We collected a huge quantity of data and we elaborated them with statistical programmes: SPSS, and Windows Excel 2003. First of all, we compared the Slovakian and the Hungarian sample with each other. We used simple statistic indices: frequencies and means. On the other hand we examined the affect of age within the different age groups, independently of the nationality. We applied simple statistical methods to investigate the affect of cultural environment (differences in Slovakia and in Hungary). On the other hand we employed the method of factor analysis and curve estimation to examine the impact of age. We wanted to divide students into different groups with cluster analysis to receive a characteristic typology as well.

Results of Research

We could examine the two age-groups (young people who attend elementary and comprehensive school) together because we had used the same questionnaire at both age-groups.

The information channel was our first examined area: we investigated which sources young people use as information source. If we compare the two examined age-groups, we can state significantly that the younger age- group acquires less information from its parents. They compensate the lack of information from their class-mates. But this recognition fits our preliminary expectations because it can be explained by the features of age.

The other examined component was the factor of learning in a team. There were essential distinctions between the two examined age- groups: 60% of people who attend elementary school learn in groups. This ratio is 33% at the older age group. It is a crucial difference and it shows that older people dislike learning in groups. This data shows the increasing role of individualistic thinking and action. On the other hand, the frequency of learning in a group does not change: namely the frequency inside the lower proportion does not change at a crucial level. But there are shifts in the aspect of effectiveness of learning in a team: 87% of the interviewed people answered that learning in a team is useful. This proportion was only 80% at the other age- group, i.e. among young adults who attend elementary school. It means that the younger people who have the opinion that learning in a group is not effec-

tive enough, finish learning in a group. These connections can mean that each investigated education system –as well as the Hungarian and the Slovakian one- influences the common thinking in negative direction. This aspect is not favourable considering the importance of knowledge transfer. We have experienced this problem in our education praxis and we have already initiated the use of teamwork in the education of management sciences at our university. We have favourable experience in connection with teamwork and common thinking, but we have to solve a lot of questions yet: e.g. how we can value students’ real performance.

We measured the helpfulness as the main factor of knowledge transfer. We examined this item in several situations: we measured in general situations, whether they are ready to share their homework with each other or not; or have open attitude to new students, how they are willing to help them, or in case a class- mate gets ill they are ready to help him/her or not. Figure 1 contains the frequencies of typical answers. The darker parts of the bars mean higher willingness to help other people, so it shows higher willingness to share knowledge. The lighter colours mean that young people have conditions or they are unwilling to help.

Although we can state as a general rule that the helpfulness is more characteristic, there are high deviations in the concrete values. Its reason is that we used different scales to measure the answers: some variables have only two; the others have four categories that allow us a more exact measurement. We can see in Figure 1 that the ratio of people who are ready to help is multiple of those who are not keen on helping.

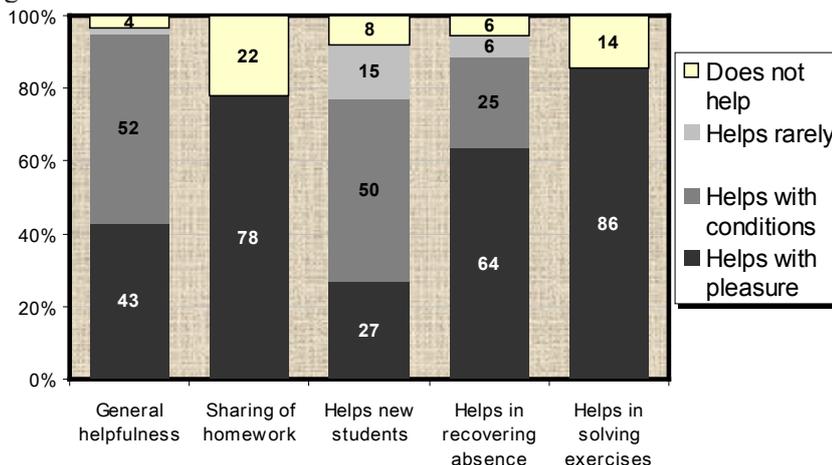


Figure 1. Helpfulness among people who attend elementary school.

We compared these data with the observed frequencies at the older people. As we can see in Figure 2, we found different proportions.

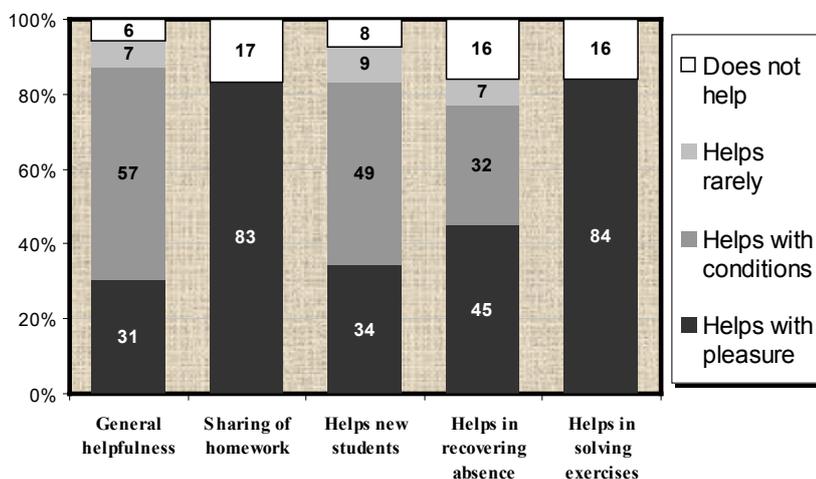


Figure 2. Helpfulness among people who attend comprehensive school.

If we compare the two diagrams, we can see that general helpfulness, the attitude to help a student in recovering absence and in solving exercises reduced in the second group (older group). Contrary to this, students are more open-minded to share their homework and to help new students by age. On the basis of the evaluation we cannot state that the attitude of helpfulness decreases by age; it is a more sophisticated connection. It is true in some respect, but not in all cases. To examine this inconsistency we used sophisticated models, too. Although before we present the results of our models, we would like to compare the Slovakian and the Hungarian sample with each other.

If we compare the differences between the two mentioned countries, we will receive an important piece of information: the indicators that measured general helpfulness shows that the Slovakian students have higher attitude to help other people, than Hungarian people from the same age-group. It is a distinctive feature in the younger age-group (among people who attend elementary school), but this difference is not valid for the older people, because it disappears by the increase of age.

We examined other communication situations as follows: there are several cases in our life, when the information is of high value. In these cases we have stronger interest to maintain our information monopoly. We share our knowledge or information with less pleasure in these instances. On the basis of this recognition we examined these situations among young people as well. So we investigated the following situations: helpfulness at writing papers, and solving extra exercises for a good note. As we expected it, the willingness of students to share their knowledge is significantly lower than in a general situation. The figures show that the attitude of helpfulness gets better as well in Hungary as in Slovakia by age. So we received a positive correlation between age and helpfulness, but only in the situation where information is of high value. Furthermore we identified cultural affects: Hungarian students are more open-minded at elementary school, but this advantage disappears by the increase of age. It is an important notice to Hungarian teachers, and is a criticism against the Hungarian education system. Socialization at elementary and comprehensive schools moves children toward individualistic direction. We have to remark that individualistic socialization has not only negative affects. It stimulates independent thinking and the ability to think at holistic level.

We found a further interesting connection: we asked students to whom they usually give their homework. There are significant differences between the two age-groups: the ratio among those who share their homework with somebody else (independently whether they are friends or not) is 29% at the younger age-group. Contrary to this, the proportion is 53% among students who attend comprehensive school. This effect can be traced back to the earlier mentioned connections: i.e. helpfulness has positive correlation with age in the situations when the information is of higher value. On the other hand, homework is not of such high value in the comprehensive school and it can stimulate helpfulness.

We are presenting the results of curve estimation in the following part of our paper. First, we have tried to find some factors that are in connection with each other. Our work proved to be successful since we had found three items that has positive medium-sized correlation with each other. Afterwards we aggregated the three items into a principal component and the three elements were the following: (1) general helpfulness, (2) helpfulness of students' environment (percept helpfulness), and (3) claim of social environment in return.

Students' helpfulness and the other two variables that measure helpfulness of the environment "move together" quite well. (Babbie, 1996; Székelyi & Barna, 2002) We can say on the basis of the performed analysis that students' behaviour is influenced by the perception of social environment. If a student lives in a helpful micro-society, he/she will act more helpfully at higher probability. So it confirms the relevance of reciprocity. It can be interpreted also as a message to teachers: it is an evidence of the importance of social environment.

We examined the impact of age to the attitude of helpfulness. We used the method of regression to evaluate the connection. Table 2 includes the details of the analysis.

Table 2. Results of regression between age and helpfulness.

Result of regression		
<i>Dependent variable</i>	Factor of helpfulness (1)	
<i>Independent variable</i>	Age	
<i>Equation</i>	$y = 0,723 - 0,05x$	
<i>Parameters</i>	<i>R square</i> 0,025	<i>Significance</i> 0,011

After the performed regression we can state that the connection between age and helpfulness has negative direction, i.e. the attitude of helpfulness shows a decreasing trend with age. The negative value of parameter β_1 is the evidence of this connection in the equation of linear regression.

As we can see in Table 3, the connection between the two mentioned variables is significant for the basic population, too. The value of R-square indicates that although the connection exists without doubt, it explains only a small part of the heterogeneity of the sample. According to these results we can draw the conclusion that other external –and not considered- factors have more notable affect to the factor of helpfulness.

We measured the helpfulness with another principal component to confirm the presented connection between age and students' attitude. This created factor also aggregated three items: (1) general helpfulness, (2) helpfulness to new students' direction, (3) helpfulness to class-mates to recover absence. So this factor includes other items than the first one. We examined the first principal component to find a connection between the helpfulness of students and the environment. Now we aggregated the characteristic situations in connection with the helpfulness into one variable.

We examined the connection of this factor with the age, too and this regression confirmed the earlier data: the direction of correlation was negative, so the attitude of helpfulness shows a decreasing trend with age in this respect as well.

We tried to find typologies in the next step. We used the method of cluster analysis to identify some characteristic groups inside the sample. We used seven items during the econometric analysis. Table 3 contains the technical details of the investigation.

Table 3. The result of cluster analysis.

	Final cluster centres		
	Clusters		
	1	2	3
Frequency of learning in a team	-0,48	0,49	-0,18
General helpfulness	-0,75	0,08	0,27
Attitude of helpfulness to new students	-1,03	0,14	0,35
Helpfulness to students in recovering absence	-1,02	0,58	-0,02
Helpfulness in writing a test	-0,52	-0,48	0,63
Willingness to sharing essential information	-0,81	-0,33	0,63
Helpfulness to younger people	-0,60	0,38	-0,05
Ratio (%)	19,77	36,05	43,80

We received three different groups according to the performed cluster analysis. The interpretation of the first group does not mean any problem: because the values of final cluster centres are standardized values (due to the cluster analysis with standardized value). The negative signals of standardized values show that every item is below average. This group contains such students who have less willingness to help other people and they are not ready to share their knowledge. Apart from this they learn in a team at lower probability. This group is the smallest with less than 20%.

We cannot interpret the second group so easily. The general factors of helpfulness (positive values in column 2) are above average, but some situations involve exceptions. The situation of writing a test and the transfer of essential situation are exceptions. These cases were the situations where information was of high value. This student group share knowledge if it is not valuable enough, but if the information is of high value, they maintain their information monopoly. So we could demonstrate the earlier mentioned results also by the help of econometric models.

The third team is the most exciting group from the point of view of the researcher. The “coordinates” of this cluster centre are above average or they just achieve the average (the positive standardized values show it). The factor of team-learning is the only exception: it is deeply below average. So common learning is not characteristic for this student group. They are ready to help other people and they are open-minded, but surprisingly they do not like learning in a group. The size of this group was the biggest with the proportion of 44%. It can be even interesting, if we compare the average students’ age in each groups. This value is 14.35 years in the first, 12.95 in the second and 15.77 years in the final group. But what do these numbers mean? Although we have mentioned that the helpfulness decreased with age, this analysis modulated this recognition. The lowest age is experienced in the second group. These students are apt to keep back the essential information. It is characteristic mainly for the younger age group according to data. The results in connection with common learning proved the earlier results.

As we have already explained it in the first section of our paper, we investigated the features of student knowledge transfer from college (younger age group) and distance teaching (older age group). The structure of questionnaire was the same in part, so we could compare the two age groups directly. We used similar groups of questions like among younger students.

If we examine the sources of information and knowledge we cannot find significant differences between the two older age groups. The only exception is the use of Internet: 30% of the younger students regularly use it as an information source, and this proportion is only 25% among students who participate in distance teaching. This result was not surprising. We had a question from whom they accept information. In this aspect –according to our expectation – we received similar answers, but the younger age group prefers accepting information from friends (41%) than people in distance teaching (34%).

It is also an interesting question in the case of distance teaching where the environment is more helpful: at university or at workplace. We examined this connection too. We received the result that the half of the sample values the two places as similar. But the rest proportion thinks that the environment at university is more helpful. What can be the reason? Our definite opinion is that we meet again the factor of information of high value. According to this rule high value of information decreases the willingness to share it. Workplace can be considered as a place where information is of high value and it decreases the willingness to share knowledge.

We cannot find any significant differences between the two age groups in the habits of learning. The most dominant learning form is single learning that represents 65% of the sample.

We have to compare the two age groups considering knowledge transfer because there are significant differences. The index of reciprocal helpfulness was 57% among younger students and 44% among the older age group. In spite of this free-will helpfulness was higher (41%) among distance teaching students and only 33% among college students. According to this data we can state that the older age group would rather share its knowledge without reciprocity than younger students. This is an argument for the fact that people who have already experienced the importance of knowledge sharing in the world of work, are ready to share their knowledge at a higher probability.

Conclusions and Discussion

First, we investigated the differences resulting from the cultural environment. We can state that this factor definitely influences knowledge transfer and the factor of helpfulness. Even the simple descriptive statistic data (mean, standard deviation, etc.) show that young Slovakian people would rather help each other in the field of knowledge and information transfer than their Hungarian counterparts. This connection can be confirmed with another data: Slovakian people would rather work and learn in a team than Hungarian youngsters; actually they use the method of learning in a team

more times. Apart from this, Slovakian people are not only in general, but in all the situations are more significantly helpful. It is characteristic of the four age groups, in which we have data from both of the countries. Apart from this, there is another difference: Slovakian young people are more extrovert than Hungarian ones: more people learn without any pressure. It can be seen very well by the research that the Hungarian society is more individualistic. Common thinking, teamwork and common interest are less characteristic. Hungarian people try to solve their problems independently from each other.

The other factor of our investigation was the influence of age in the respect of knowledge transfer. In this research period we also found interesting connections. We found out that among elementary and comprehensive school students within the age group the willingness of knowledge transfer decreases with age. This connection depends on the exact situation, because young people's behaviour is quite different in some situations, for instance if somebody has important information, he/she is less willing to tell it to anybody. We investigated the negative connection as well with regression as with simple statistic indices. We definitely think that this context can be explained by two processes: on the one hand the socialization can influence the attitude of students in this way, i.e. young people see this pattern of behaviour in their environment and they follow it willy or nilly. The other process is the role of the education system in the background. The question is that the education system itself, its framework and its methods socialize people so that they have to solve their problems individually and they do not need the help of their partners.

We investigated the contexts with sophisticated econometric models and these results prove again the above listed facts. We identified three different groups within the under-eighteens: there are some students who are willing to share their knowledge unconditionally. And there is a group which helps under the condition that their opportunities are not reduced, so they retain the really important information. The third group involves people who do not like sharing information with each other at all.

We investigated the features in connection with knowledge transfer in other age groups. The students who study at a university or at a college would rather share their knowledge with age. This way we assume that the lowest level of knowledge transfer is at the end of the comprehensive school and at the beginning of the university years. Unfortunately, due to the special structure of our research we cannot compare the two different groups with each other.

Our definite opinion is that socialization and especially the education system as well as in Hungary and in Slovakia stimulate individualization and it results in the reduction of teamwork, common thinking and common solutions of problems. This negative direction also decreases the opportunity of knowledge management. Employees who study beside a job, have already collected some experience in the world of work, so they see the importance of knowledge and information; that is why they would rather share their knowledge than the younger age-class.

According to our research we can state that cultural features as well as the quality of the education system can affect the attitude to knowledge transfer. Our definite opinion is that the consequence is that knowledge management systems have to consider cultural differences. The consequences in connection with the education system are not less important: in order to help the development of knowledge-based economy, students' ability to work in a team has to be developed. We can improve their skills so that they will be willing to communicate in a better way and to share their knowledge. Knowledge management systems and competitiveness of companies can be improved this way.

References

- Babbie, E. R. (1996). *The practice of social research* (4th ed.). Belmont: Wadsworth.
- Bakacsi, Gy. (Eds.). (2004). *Stratégiai emberi erőforrás menedzsment*. Budapest: KJK- KERSZÖV.
- Buzás N. & Lengyel I. (Eds.). (2002). *Ipari parkok fejlődési lehetőségei: regionális gazdaságfejlesztés, innovációs folyamatok és klaszterek*. Szeged: JATEPress.
- Davenport, T. H. & Prusak, L. (1998). *Working knowledge*. Boston: Harvard Business School Press.
- Géró, K. (2000). *Communities of practice*. Retrieved November 10, 2005, from www.tudasmuhely.hu.

- Gyökér, I. (2004). A vállalat szellemi tőkéje- számolatlan vagyon. *Harvard Businessmanager*, 14, 48-58.
- Hunyadi, L. & Vita, L. (2002). *Statisztika közgazdászoknak*. Budapest: KSH.
- Lengyel, I. (Eds.). (2003). *Knowledge Transfer, Small and Medium-sized Enterprises, and Regional Development in Hungary*. Szeged: JATEPress.
- Meinolf, D. (Eds.). (2001). *Handbook of Organizational Learning & Knowledge*. New York: Oxford University Press, 491-517.
- Sajtos, L. & Mitrev, A. (2007). *SPSS kutatási és adatkezelési kézikönyv*. Budapest: Alinea.
- Sveiby, K. E. (1997). *The New Organizational Wealth: Managing and Measuring Knowledge-Based Assets*, San Fransisco: Berrett-Koehler.
- Székelyi, M. & Barna, I. (2002). *Túlélőkészlet az SPSS-hez*. Budapest: Typotext.

*Advised by Ilona Papp,
Széchenyi István University, Hungary*

Vendel Lőre	Ph.D. student, Széchenyi István University, Hungary. 9027 Győr, Egyetem Tér 1. Phone: 06-30-498-65-77. E-mail: lore@sze.hu Website: http://gtk.sze.hu/mmt/
Andrea Bencsik	Senior lecturer, Széchenyi István University, Hungary. 9027 Győr, Egyetem Tér 1. Phone: 06-30-387-72-05. E-mail: bencsik.andrea@yahoo.com Website: http://gtk.sze.hu/mmt/