

Self-reflection on the Learning Styles of Students in the Tertiary Education Sector

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Abstract

One of the main tools with which a teacher contributes to the effective education of students is the issue of learning styles. A teacher should not only be able to recognize these learning styles and respect them, but also to effectively influence them. If there occurs a failure to respect the learning styles of individual students as well as of those regarding the teacher's styles of teaching, one may lose original individuals, or thinkers (Mareš, 1998). In this study, attention is not only focused on the possibility that learning styles differ merely in terms of students' individual attitudes, but also on the opportunities where learning styles may be significantly influenced by the nature of various fields of study. This article aims to present the results of a quasi-experiment which was conducted at the Institute of Business and Technology in České Budejovice during the academic year 2013/2014. The main purpose was to determine and take into account the differences in the learning styles among students of economic and technical study programmes.

Key words

learning style, cognitive style, gender, tertiary education

Introduction

Generally speaking, the way students acquire knowledge and skills varies for each of them. This process is called learning. Everyone's approach to learning is different as are the variety of methods utilized to find out more about a subject matter or curriculum. These methods of acquiring a curriculum are called curriculum learning styles because upon entering a college or university (a transition between the secondary and tertiary level of education), each student gradually becomes familiar with the new set of requirements presented to them in the corresponding study programmes, fields or subjects. Based on those requirements, they generate ways or methods of coping with these accordingly. They therefore establish their own systems, strategies or learning tactics that are suitably adapted to their learning style (or styles). According to a number

of authors, this is (these are) linked to a particular school, subject, school learning situation, or even preparation for a school (S.M. Schenk, R. Säljö). When taking these elements into consideration, it is necessary to distinguish the terms styles of learning (or learning styles), cognitive styles and approaches to learning (or learning attitudes), as presented in professional literature.

Furthermore, Mareš (1998, p. 50) defines the term cognitive styles as the characteristic ways through which people perceive, memorize information, think, solve problems or make decisions. To add to this, the Czech edition of the Pedagogical Dictionary (Průcha, Walterová and Mareš, 2001, p. 102) defines cognitive styles as peculiar ways of perception and cognition and individually different courses of perceptual, cognitive and intellectual processes belonging to the category of disposition, which is largely innate, thus difficult to vary, yet able to be diagnosed.

Moreover, Průcha, Walterová and Mareš (2001, p. 236) define the term learning styles as procedures for learning that an individual uses within a certain period of life in most pedagogical types of situations (independent to a certain extent of the learning content), with these (the cognitive styles) being formed on an innate basis and developing through the interaction of internal and external influences. In addition, Mareš (1998, p. 55) sees cognitive styles as a constituent that is not impressionable - probably the core of learning styles, which is largely innate.

Differences between Cognitive Styles and Learning Styles

Firstly, whilst studying selected professional literature, it is clear that the relationship between the cognitive styles and learning styles is the subject of many discussions. Many foreign authors merely talk about cognitive styles (Cassidy, 2004; Riding and Cheema 1991), while others describe their mutual relationship as superior and subordinate, smaller versus greater, dependent and independent (Desmedt and Valcke, 2004). To be more specific, Riding and Cheema (1991) state that the importance of the learning style concept depends largely on its definition by individual authors of different models whilst at the same time taking into consideration the potential existence of multiple elements in the learning style that cannot only be characterized on a polar range. Curry (1991) argues that the term learning style may be evaluated as a cognitive style, thereby pointing out that the construct of cognitive styles was originally proposed by Allport (1937), who referred to an individual's habitual or typical way of perceiving, remembering, thinking, and problem solving. Further in their work, the British researchers Riding and Cheema (1991) go on to define the term cognitive style as being a two-dimensional one with the possible characteristics of either an x or a value. They also define this style as a theoretical basis for more practically measured learning styles and divide the cognitive style into being globally analytical and having verbal imagination. As for the learning styles, they mention different views on the stability of cognitive styles (Riding and Cheema, 1991, p. 194). In addition to this, Witkin et al., express the perceived stability of cognitive styles through individual differences in thinking, perception, problem solving, learning and finding relationships (Witkin, Moore, Goodenough and Cox, 1997). They further add that this does not mean they are invariable and consider bipolarity as being a particularly important feature of cognitive styles.

Secondly, some Czech experts, including Lojová and Vlčková (2011), refer to the hierarchical relationship of cognitive styles, learning styles and learning techniques and

strategies, thereby confirming a theory expressed by Mareš (1998). That theory suggests that cognitive style forms the deepest and most hereditary layer in terms of perception and cognition, which is joined by a layer of (mostly) acquired learning style, is more tied to and influenced by specific content and situations, and is initially spontaneous but later conscious. They also state that this cognitive style forms a special component of learning style, but it is difficult to vary as it is fairly consistent.

Furthermore, concepts of cognitive and learning styles within pedagogy and didactics are very common. For example, Vlčková (2007, p. 12) complements the relationship between the cognitive style and learning style by projecting it onto a relationship between cognition and learning, which are two terms that intersect. Mareš (1998, p. 75) claims that the cognitive processes mediate a particular learning process and are rarely a learning objective. He also adds that learning styles have the character of a meta strategy, bringing together learning tactics and operations. These are then monitored, evaluated and oriented towards a particular direction and regulated with regards to the conditions of learning, the actual course of the learning curve, the achieved results of learning and the social learning context. Vlčková (2007, p. 13) also states that an individual does not realize their particular learning style, but takes it for granted and considers it to be compliant with their specific needs. According to some opinions, it is possible to diagnose and change individual learning styles. For example, Švec (1998, p. 43) refers to learning styles as an individual's characteristics which can be seen as an intrinsic component of the skills that an entity acquires. Additionally, Witten and De Bell (1990, p. 204) claim that any learning style is the way people absorb, process and memorize information. At the same time, they provide different learning models that focus on cognitive, affective and psychological characteristics relating to both, and primarily in the areas of psychology and cognition.

Thirdly, the influence of learning styles and their impact on the performance and success of university students was studied by R. Dunn, A. Honigsfeld and L. S. Doolan (2009). They argue that university students' knowledge of learning styles helped them to become better at learning and increased their efficiency, whereby it was necessary to take into account the reality that a specific curriculum requires specific procedures for learning. Messick (1994) highlighted the compliance of teaching and students' learning styles, stating that this compliance has its advantages in that teachers and students with similar styles are closer to one another, appreciate each other more and communicate better.

Also, several learning styles are significantly affected by the perspective of gender. This was dealt with in the studies by Oxford (1986), Oxford and Ehrman (1987) and Vlčková (2010). All of the studies verify that females use more diverse, efficient and different learning styles than males. Gender differences affecting some of the learning styles were also examined by C. D. Miller, J. Finley and D. L. McKinley (1990), using three types of questionnaires: SPQ - Study Process Questionnaire, ASI - Approaches to Studying Inventory, ILP - Inventory of Learning Processes. As a result, 16 gender differences were identified out of 26 variables (for males - prevalence of deep learning, learning-oriented understanding of meaning and importance, whilst for females - methodical learning, strategic approach, superficial learning or even super-meticulousness).

Finally, while conducting a specific research into learning, the terms strategy of learning or learning strategy are often used. Riding and Cheema (1991, p. 195) state that these strategies are specific ways with which to deal with a given situation that can be learned and that above the different learning strategies there is a learning style that takes on the

form of a meta-learning strategy. Moreover, the Czech edition of the Psychological Dictionary (Hartl and Hartlová 2000, 2004, Sillamy 2001, p. 567) defines only cognitive strategies as ways of how individuals use their prior knowledge, skills and experience in subsequent learning. Klauer, Rosnagel and Musch (1997), and Van Dijk and Knitsch (1983) see the strategies as a hierarchically superior process that is mentally represented as plans or sequences of acts through which a certain goal is to be achieved.

Research Objective and Methodology

This research study is based on a thesis that one of the authors wrote as part of their studies into pedagogical sciences for teachers of vocational subjects, practical subjects and vocational training. The authors' aim was to extend the thesis in light of their research. By using a questionnaire survey, the research objective was to explore individual preferences for learning styles among students attending higher education in the technical and economic fields with a view to comparing their preferences to determine the similarities or differences between them. It is assumed that the different requirements of the study programmes also influence students' actual preferences for different learning (or studying) strategies. The authors also focused on the students' age and their stage of study. Lastly, when evaluating the learning styles, a certain emphasis is put on making a gender comparison of the variables of individual learning styles.

Target Group and Research Sample

The questionnaire survey was aimed at establishing the learning styles of students in higher education and was carried out at the Institute of Business and Technology in České Budějovice, with its bachelor degree students being the target group. The research sample consisted of adolescents (young adults) of selected economic (study programme Economics and Management) and technical (study programme Civil Engineering) study programmes. In total, 100 respondents were interviewed, with 50 respondents from each study programme.

Questionnaire Survey

The questionnaire survey was conducted at the Institute of Business and Technology in České Budějovice during the academic year 2013/2014. A total of 100 students of full-time bachelor's degree programmes were assigned (in paper form) standardized IASLP questionnaires by N. Entwistle and P. Ramsden, translated into Czech by Jiří Mareš in 1984. Each questionnaire consisted of 45 items (questions) in order to establish the different variables of learning styles. It distinguished six basic variables, of which three supported students' learning (performance, meaning and purpose of learning, systematic learning) and three hindered it (reproduction of curriculum, extracurricular orientation, negative trends or tendencies in learning). Each of these variables further comprised of sub-components (sub-variables) which could be evaluated separately as well.

The students were engaged in answering questions for about 15 minutes. On the basis of the Likert scale, they were asked to select from one of the following options: complete consent (4); utter disapproval (0); cannot decide (2).

The questionnaire survey also identified information about the individual respondents on the basis of their gender, for the main focus was concerned with establishing the respondents' learning styles.

Method of Data Processing

All the data gathered through the questionnaire survey were analysed with consideration given to the psychometric properties of the questionnaire. The data were subsequently verified by a correlation analysis of the differences between the main and intermediate learning style variables among the subgroups of students of the two selected study programmes (Economics and Management - E; Civil Engineering - T) and among the male (M) and female (F) students.

Research Questions and Established Hypotheses

Research question 1:

Does the students' particular learning style correlate with their selected subject of study?

Hypothesis 1: Students of economic subjects record higher scores for the negative variable "reproduction of curriculum", as opposed to technically oriented students.

Hypothesis 2: Students of technical subjects achieve lower scores for the positive variable "systematic learning", as opposed to economically oriented students.

Research question 2:

Does a learning style correlate with the gender differentiation?

Hypothesis 3: Compared with males, females record higher scores for the variable "reproduction of curriculum."

Hypothesis 4: Males achieve lower scores than females for the variable "meaning and purpose of learning."

Results

In the practical part, the authors focus on analysing the learning styles of higher education students at the Institute of Business and Technology in České Budějovice (IBT). The aim of the analysis was to take into account gender variables and the differences between the technical and economic fields at IBT.

Table 1: Research sample

Study programme	Frequency	Gender	
		F	M
Economics and Management(E)	50	32	18
Civil Engineering (T)	50	33	17
Total	100	65	35

Source: Authors (based on Polanecký, 2014)

Using the questionnaire, the authors obtained data to determine the main (basic) variables by which each student was to be assessed. The main listed variables that support students' learning were:

- Performance (orientation towards);
- Meaning and purpose of learning (orientation towards);
- Systematic learning.

In contrast to the supporting variables, there were also three basic variables listed with a negative impact on students' learning. These were:

- Reproduction of curriculum (focus on);
- Extracurricular orientation;
- Negative tendencies in learning.

In terms of the psychometric properties of the standardized questionnaire, these main variables also included partial variables (sub-variables). These are presented in Table. 2.

Table 2: Overview of all the studied variables

Main variables	Sub-variables
Orientation towards performance	Strategic approach
	Efforts to achieve success
	Professional motivation
Orientation towards meaning and purpose of learning	In-depth learning (Deep learning)
	Intrinsic motivation
Systematic learning	
Focus on reproduction of curriculum	Superficial approach

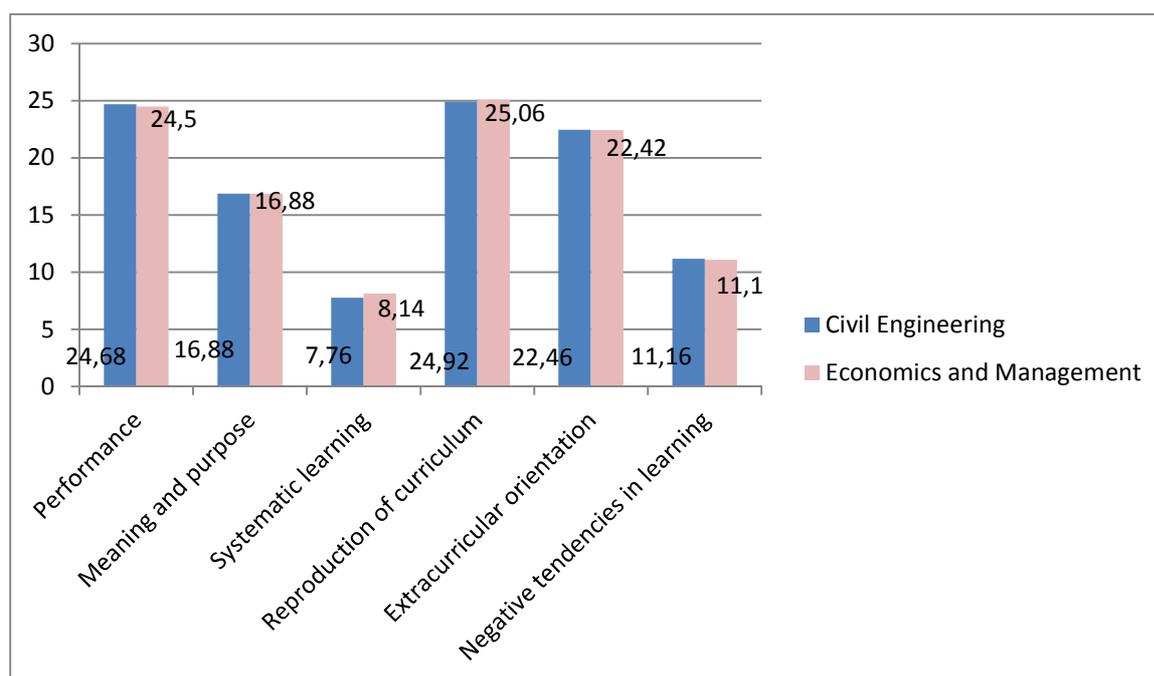
	Efforts to avoid failure
Extracurricular orientation	Piecemeal approach
	Negative motivation
	Need for social contact
Negative tendencies in learning	Reckless approach
	Meticulousness, lack of perspective

Source: Authors (based on Polanecký, 2014)

Evaluation of Main Variables in Relation to Study Programme

An evaluation of the main variables was undertaken according to the average points earned, which were further divided according to the degree courses (Economics and Management and Civil Engineering). The results are shown in Figure 1.

Figure 1: Comparison of main variables according to study programme



Source: Authors (based on Polanecký, 2014)

Figure 1 indicates that the highest numbers of points for Economics and Management were recorded for the variables "reproduction of curriculum" (average score 25.06) and "performance" (24.5). In contrast, the fewest points were recorded for the variables "systematic learning" (8.14) and "negative tendencies in learning" (11.1). With regards to Civil Engineering, the highest scores were also attained by the variables "reproduction of curriculum" (average score 24.92) and "performance" (24.68), and

similarly the lowest scores for the variables "systematic learning" (7.76) and "negative tendencies in learning" (11.16).

Evaluation of Main Variables According to Gender

The data in Table 3 show that the highest scores among male students of Economics and Management were attained by main variables "reproduction of curriculum" (the highest being 25.04) and "performance" (24.69). The results of the main variables for male students of Civil Engineering are not significantly different. The highest average scores were again for "reproduction of curriculum" (24.92) and "performance" (24.68). In addition, the data also show that the highest average scores of the main variables for female students were almost identical to those of their male counterparts. Once again, these variables were "reproduction of curriculum" (average score for Economics and Management was 25.09, whereas the average score for Civil Engineering was 24.88) and "performance" (24.07 for the Economics and Management and 24.66 for Civil Engineering). In contrast, the lowest average score for a main variable for both genders was attained by "systematic learning", with scores not even reaching nine points for either study programme. Another variable with low scores (just over 11 points) was "negative tendencies in learning".

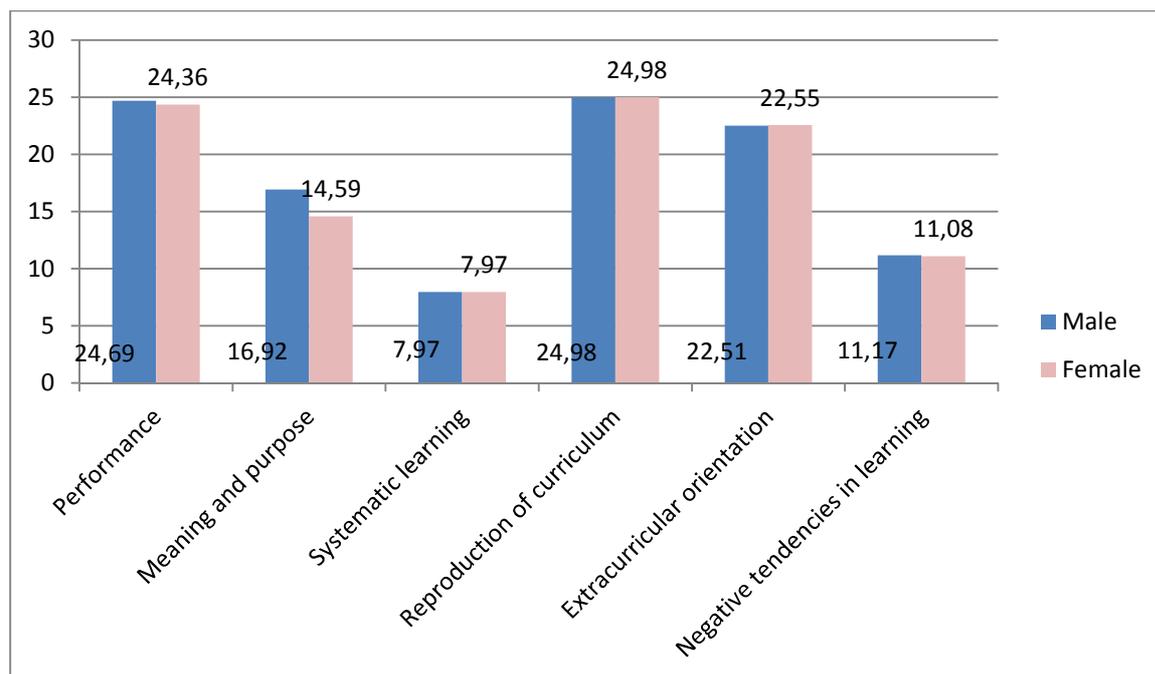
Table 3: Evaluation of main variables according to their average scores from the gender and study programme perspectives

Males			Females		
Average			Average		
Variables	E	T	Variables	E	T
Performance	24.69	24.68	Performance	24.07	24.66
Meaning and purpose	16.96	16.88	Meaning and purpose	16.67	17.07
Systematic learning	8.18	7.76	Systematic learning	8.15	7.78
Reproduction of curriculum	25.04	24.92	Reproduction of curriculum	25.09	24.88
Extracurricular orientation	22.55	22.46	Extracurricular orientation	22.41	22.68
Negative tendencies	11.18	11.16	Negative tendencies	11.11	11.05

Source: Authors (based on Polanecký, 2014)

Another observed criterion in terms of gender was the total average scores of male and female students irrespective of the study programme. These average scores were gained as an average score of the two sub-variable scores in Table 3.

Figure 2: Overall evaluation of the main variables according to gender



Source: Authors (based on Polanecký, 2014)

Figure 2 illustrates that both males and females achieved the same high scores for the main variable "reproduction of curriculum" (average score 24.98), with this variable also being the most frequent for both genders. Other very frequent variables included "performance" and "extracurricular orientation". Overall, almost all of the variables in the graph are essentially balanced in terms of scores for males and females and there are no large observable differences. The only variable with a notable difference between the two genders (males score it higher by 2.33) is "meaning and purpose of learning". The lowest scores were attained by the variables "systematic learning" and "negative tendencies in learning."

The Relationship between Main Variables and sub-Variables as Expressed by Correlation Matrices

Using correlation matrices, the intensity of the linear relationships between the examined variables was expressed.

Table 4: Main variables

Main variables
1. Performance
2. Meaning and purpose
3. Systematic learning
4. Reproduction of curriculum
5. Extracurricular orientation
6. Negative tendencies in learning

Source: Authors

Table 5: Correlation matrix for the main variables of Economics and Management

	1	2	3	4	5	6
1	1.000	0.422	0.485	0.151	-0.146	0.088
2	0.422	1.000	0.424	0.105	-0.266	0.186
3	0.485	0.424	1.000	0.359	0.222	0.293
4	0.151	0.105	0.359	1.000	0.262	0.461
5	-0.146	-0.266	0.222	0.262	1.000	0.290
6	0.088	0.186	0.293	0.461	0.290	1.000

Source: Authors

As may be inferred from this correlation matrix, there are four strong dependencies between the main variables: a) between "performance" and "systematic learning"; b) between "reproduction of curriculum" and "negative tendencies in learning"; c) between "meaning and purpose of learning" and "systematic learning"; and d) between "meaning and purpose of learning" and "performance" (with a value of 0.4). All of these correlation dependencies clearly prove their direct dependency (with an increase of one variable, the other one rises as well).

Table 6: Correlation matrix for the main variables of Civil Engineering

	1	2	3	4	5	6
1	1.000	0.374	0.440	0.294	-0.166	0.318
2	0.374	1.000	0.275	0.295	-0.055	0.094
3	0.440	0.275	1.000	0.236	-0.092	0.200
4	0.294	0.295	0.236	1.000	0.266	0.402
5	-0.166	-0.055	-0.092	0.266	1.000	0.129
6	0.318	0.094	0.200	0.402	0.129	1.000

Source: Authors

As for Civil Engineering, the strongest correlation dependencies proved to be those variables that achieved a minimum value of 0.4, the strongest dependency being between "systematic learning" and "performance", followed by the dependency between "reproduction of curriculum" and "negative tendencies in learning."

Table 7: Sub-variables

Sub-variables
1. Strategic approach
2. Efforts to achieve success
3. Professional motivation
4. In-depth learning (Deep learning)
5. Intrinsic motivation
6. Superficial approach
7. Efforts to avoid failure
8. Piecemeal approach

9. Negative motivation
10. Need for social contact
11. Reckless approach
12. Meticulousness, lack of perspective

Source: Authors

Table 8: Correlation matrix for the sub-variables of Economics and Management

	1	2	3	4	5	6	7	8	9	10	11	12
1	1.000	0.228	0.157	0.232	0.162	0.201	0.145	0.042	-0.029	0.007	0.097	0.033
2	0.228	1.000	0.181	0.279	0.220	0.172	0.085	-0.063	-0.059	-0.074	-0.075	0.057
3	0.157	0.181	1.000	0.281	0.184	0.248	0.124	0.030	-0.040	0.062	0.103	0.217
4	0.232	0.279	0.281	1.000	0.492	0.142	0.028	-0.003	-0.027	0.068	0.104	0.176
5	0.162	0.220	0.184	0.492	1.000	0.011	0.030	0.053	-0.118	0.052	0.071	0.204
6	0.201	0.172	0.248	0.142	0.011	1.000	0.421	0.144	0.189	0.196	0.233	0.176
7	0.145	0.085	0.124	0.028	0.030	0.421	1.000	0.295	0.331	0.087	0.311	0.267
8	0.042	-0.063	0.030	-0.003	0.053	0.144	0.295	1.000	0.283	0.102	0.338	0.189
9	-0.029	-0.059	-0.040	-0.027	-0.118	0.189	0.331	0.283	1.000	0.115	0.326	0.140
10	0.007	-0.074	0.062	0.068	0.052	0.196	0.087	0.102	0.115	1.000	0.131	0.068
11	0.097	-0.075	0.103	0.104	0.071	0.233	0.311	0.338	0.326	0.131	1.000	0.201
12	0.033	0.057	0.217	0.176	0.204	0.176	0.267	0.189	0.140	0.068	0.201	1.000

Source: Authors

The data in Table 8 show that no significant direct correlations occur here. The strongest dependencies can be seen between "intrinsic motivation" and "in-depth learning", and between "superficial approach" and "efforts to avoid failure."

It is therefore possible to come to conclusion that while learning, the students of economics try to learn their subject matter by rote rather than to think about it and understand it.

Table 9: Correlation matrix for the sub-variables of Civil Engineering

	1	2	3	4	5	6	7	8	9	10	11	12
1	1.000	0.528	-0.006	0.283	0.308	0.347	0.397	0.265	-0.091	-0.028	0.216	0.102
2	0.528	1.000	-0.065	0.197	0.380	0.470	0.091	0.341	-0.124	-0.449	0.094	0.155
3	-0.006	-0.065	1.000	0.008	0.045	0.118	-0.060	-0.402	-0.004	-0.416	-0.139	-0.052
4	0.283	0.197	0.008	1.000	0.682	0.096	0.452	0.029	-0.036	0.176	-0.123	0.085
5	0.308	0.380	0.045	0.682	1.000	0.276	0.279	0.023	-0.107	-0.107	-0.297	-0.083
6	0.397	0.091	-0.060	0.452	0.279	0.171	1.000	0.047	0.112	0.171	0.100	0.180
7	0.265	0.341	-0.402	0.029	0.023	0.156	0.047	1.000	0.177	0.128	0.227	0.447
8	-0.091	-0.124	-0.004	-0.036	-0.107	0.019	0.112	0.177	1.000	0.424	0.123	0.287
9	-0.028	-0.449	-0.416	0.176	-0.107	-0.328	0.171	0.128	0.424	1.000	0.176	0.240
10	0.216	0.094	-0.139	-0.123	-0.297	0.059	0.100	0.227	0.123	0.176	1.000	0.379
11	0.102	0.155	-0.052	0.085	-0.083	0.179	0.180	0.447	0.287	0.240	0.379	1.000
12	0.050	0.174	0.164	-0.025	0.087	0.100	-0.108	0.349	-0.017	-0.288	0.008	0.157

Source: Authors

The data in Table 9 shows that the highest direct relationship exists between the "strategic approach" and "efforts to achieve success", followed by the relationship between "learning in depth" and "efforts to avoid failure". It is clear from these results that the students of the technical programme try to comprehend and understand their curriculum.

Assessment of hypotheses

Hypothesis 1: Students of economic subjects record higher scores for the negative variable "reproduction of curriculum", as opposed to technically oriented students.

The first hypothesis was confirmed based on the results of Figure 1, which shows the comparison between the two study programmes and a noticeable difference for each of the main variables. The main variable (i.e. "reproduction of curriculum") for hypothesis 1 was aimed at proving that students of Economics and Management in fact achieved higher scores than students of Civil Engineering. The scores were expressed by the average number of points the variable was awarded. The students of Economics and Management recorded 25.06, compared to the students of Civil Engineering with a total average of 24.92.

Hypothesis 2: Students of technical subjects achieve lower scores for the positive variable "systematic learning", as opposed to economically oriented students.

Based on the results shown in Figures 1 and 2, the second hypothesis was confirmed due to the average scores for the main variable "systematic learning". This variable has some positive impacts on students' learning. The total score for Civil Engineering was 7.76, whilst for Economics and Management was 8.14.

Hypothesis 3: Compared with males, females record higher scores for the variable "reproduction of curriculum."

The third hypothesis contained two levels, the first being the concept of gender in terms of the studied programmes. The researched programmes were divided into male and female categories and the average scores subsequently determined for the main variables. In this case, the hypothesis could be confirmed for Economics and Management students, whereby the average scores were 25.09 for females and 25.04 for males. Although the differences were only slight, the results confirmed that females recorded higher scores. However, this hypothesis was refuted for Civil Engineering because males on average achieved a score of 24.92, whereas females scored 24.88.

The second of these two levels regarded the issue of gender for both study programmes together. According to the results, garnered on the basis of the average of the given scores, the hypothesis could not be confirmed because both males and females achieved identical scores (i.e. 24.98).

Hypothesis 4: Males achieve lower scores than females for the variable "meaning and purpose of learning."

Based on comparison of the average scores for both gender and the study programmes, the last hypothesis was refuted. The average total score for females was 14.59, as opposed to males at 16.92. The visible difference of 2.33 points represents a clear explanatory power that disproves the hypothesis.

The only aspect in which this hypothesis could possibly be confirmed is from the gender point of view according to the individually examined study programmes. When considering the hypothesis in this manner, it may only be confirmed for Civil Engineering, whereby males actually scored lower (16.88) than their female counterparts (17.07points).

Conclusion

The main purpose of the research, conducted on the basis of a questionnaire survey into the specific learning styles of full-time students (aged 19– 26) in higher education at the Institute of Business and Technology (IBT) in České Budějovice, was to find out whether there were any differences in the learning styles of the individual students.

Based on the research, it is not possible to claim that all of the established hypotheses were confirmed. The gender differences that have an impact on several learning styles affected the variables "meaning and purpose of learning", "performance" and "negative tendencies in learning." The results of the research also produced the rather surprising finding that full-time male students at IBT focus more on the "meaning and purpose of learning" than their female counterparts.

In terms of the learning style correlations of students within a particular study programme, the students of Economics and Management awarded more points to the variable "reproduction of curriculum" than the students of Civil Engineering. Those studying Civil Engineering awarded the highest points to the main variable "meaning and purpose of learning". These differences in the learning styles of students of Economics and Management and Civil Engineering, in their second development stage (16-40 years), confirm the authors' findings. At this stage, the students begin to develop one specific style of learning, whilst the other styles are not utilized as much.

The study was composed within the scientific activities at the Institute of Business and Technology in České Budějovice as well as the PhD studies at the Faculty of Economics at the University of West Bohemia in Pilsen.

References

- ALLPORT, G. W. (1937). *Personality: A Psychological Interpretation*. 1st edition. New York: Henry Holt and Company, 1937, 588 pages.
- CASSIDY, S. (2004) *Learning Styles: An overview of theories, models and measures*. Educational Psychology. 24:4, 419-444, DOI: 10.1080/0144341042000228834.
- CURRY, L. (1991). *Patterns of learning styles across selected medical specialties*. Educational Psychology, 11(3/4), 247-278.
- DESMEDT, E., a VALCKE, M. (2004). *Mapping the learning styles "jungle": An overview of the literature based on citation analysis*. Educational Psychology, 24(4), 445-464.

- DUNN, R., H., a A., DOOLAN, L. S., BOSTROM, L., RUSSO, K., SCHIERING, M. S., SUH, B., H.TENERO. (2009). *Impact of learning-style instructional strategies on students' achievement and attitudes: Perceptions of educators in diverse institutions*. The Clearing House: A Journal of Educational Strategies, Issues and Ideas, 82(3), 135-140. - See also: <http://cinglevue.com/blog/application-learning-style-models#sthash.ZyRWp4N0.dpuf>
- HARTL, P., a H. HARTLOVÁ. (2000). *Psychologický slovník*. Praha: Portál. 776 pages. ISBN 80-7178-303-X
- KLAUER, K. C., C., ROSNAGGEL, J., MUSCH. (1997). *List-con text effects in evaluative priming*, *Journal of Experimental Psychology: Learning, Memory & Cognition*, 23, 246 - 255.
- LOJOVÁ, G. K. VLČKOVÁ. (2011). *Styly a strategie výuce cizích jazyků*. Vyd. 1. Praha: Portál, 231 pages. ISBN 978-80-7367-876-0.
- MAREŠ, J. (1998). *Styly učení žáků a studentů*. Vyd. 1. Praha: Portál, 239 pages. ISBN 80-717-8246-7.
- MILLER, C. D., J. FINLEY, L. D. McKINLEZ. (1990). *Learning approaches and motives / male and female differences and implications for learning assistance programs*. *Journal of College Students Development*. Vol. 31, pp. 147/154.
- MESSICK, S. (1994). *The interplay of evidence and consequences in the validation of performance assessments*. *Educational Researcher*, 23(2), 13-23.
- OXFORD, R. L. (1986). *Development of the Strategy Inventory for Language Learning*. Washington: Centre for Applied Linguistics.
- OXFORD, R. L., E. M. EHRMAN. (1987). *Effect of sex Differences, Career Choice, and Psychological Type of Adults' Language Learning Strategies*. Washington: Centre for Applied Linguistics.
- PRŮCHA, J, E WALTEROVÁ, J. MAREŠ. (2001). *Pedagogický slovník*. 3. rozš. aktualiz. vyd. Praha: Portál, 322 pages. ISBN 80-7178-579-2.
- RIDING, R a J. CHEEMA. (1991). *"Cognitive styles – An overview and integration"*, *Educational Psychology*, 11.3-4: 193-215.
- SÄLJÖ, R. (1987). *The educational construction of learning*. In J. T. E. Richardson, M. W. Eysenk, & D. W. Piper (Eds.), *Student learning*. Milton Keynes: Open University Press.
- SILLAMY, Norbert. *Psychologický slovník [Sillamy, 2001] :Dictionnaire de Psychologie (Orig.) : Larousse : psychologický slovník (Variant.)*. Translated by Irena Strossová. 1. české vyd. Olomouc: Univerzita Palackého, 2001. 246 pages. ISBN 80-244-0249-01.
- ŠVEC, Š. a kol. *Metodológia vied o výchove*. Iris, 1998. ISBN 8088778735.
- VAN DIJK, T. A., a W. KINTSCH. (1983). *Strategies of discourse comprehension*. New York: Academic Press.
- VLČKOVÁ, K. *Strategie učení cizímu jazyku*. Brno: Paido, 2007. 217 p. ISBN 978-80-7315-155-3.
- VLČKOVÁ, K. (2010). *Žákovské strategie učení cizímu jazyku ve všeobecném vzdělávání (průřezový výzkum)*. Habilitační práce. Brno: PdFMU.

- WITKIN, H. A., a C. A. GOODENOUGH, D. R. COX. (1997). *Field-dependent and field-independent cognitive styles and their educational implications*. Review of Educational Research, 47(1), 1 - 64.
- WITTEN, I. H. a T. C. BELL. (1990). "Source models for natural language text", Int. J. Man-Machine-Studies 32:5, 545 - 579.

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POLANECKÝ, L. a D. RAUŠER. Self-reflection on the Learning Styles of Students in the Tertiary Education Sector. *Littera Scripta* [online]. České Budějovice: Vysoká škola technická a ekonomická v Českých Budějovicích, **8** (2), 78-92[cit. 2015-12-17]. ISSN 1805-9112. Dostupné z: <http://portal.vstecb.cz/publishingportal/littera-scripta/rocnik/8/cislo/2>
