The Perception and Assessment of Masculine and Feminine Qualities among Teachers And Parents

Keywords: pink education, higher education, overrepresentation of women, gender differences, masculine/feminine qualities, demography, economic consequences

Abstract

Significantly more women than men are admitted to higher education in Hungary every year. Among the graduates, the proportion of women is 60%. The purpose of the study is to reveal the possible causes of the so-called 'pink education' phenomenon. In our research we sought to find out, whether a different evaluation of boyish and girlish qualities lies in the background of the phenomenon so we asked parents and teachers (n=700) how they evaluate gender differences and the importance thereof in education. The respondents' perceptions showed significant gender differences for all characteristics. According to those participating in the survey, the most feminine qualities are emotional and social maturity; diligence; obedience; manual dexterity; good oral and written expression skills; tolerance of monotony and precision, accuracy. In contrast, the most masculine qualities are the technical-mechanical sense; risk-taking; liveliness, agility; spatial vision; entrepreneurship and logic. The interviewees consider the qualities attributed to girls to be more important in education. The skills considered the least relevant are technical-mechanical sense, innovativeness and entrepreneurship, while diligence, verbal skills and adaptability are more important than logic. In the discussion section we point out that the 'pink education' phenomenon can have numerous economic and social consequences.

1 INTRODUCTION

Paragraph (3) of Article XV of the Fundamental Law (Constitution) of Hungary states that women and men shall have equal rights, while Paragraph (1) of Article X states that Hungary shall protect the freedom of learning. In accordance with the document, every Hungarian citizen shall have the right to education, free and compulsory primary schooling, free and universally accessible secondary education, and higher education made available to all on the basis of their abilities.

Act CXC of 2011 on National Public Education defines the legal framework for public education, the basic principles of the management and operation of the public education system, as well as the rights and obligations of those participating therein. Government decree 110/2012 (VI. 4.) (last amended in 2020) includes the National Core Curriculum (NCC). According to the NCC, the main goal of the learning activity is the development of such student competencies that enable the creative application of knowledge in different situations, the development of creative and logical thinking. The main function of the NCC is to establish the content of public education in terms of concepts and approaches. Higher education is regulated by Act CCIV of 2011 on national higher education, which is accompanied by executive decrees.

Pursuant to the legislation, the purpose of national higher education is to provide competitive knowledge, serving the public good, to ensure the intellectual and economic development of the nation, to provide transparent, competitive theoretical and practical education, to conduct basic and applied scientific research, innovation, as well as the education of the next generation of teachers and researchers. The Strategy titled 'Gear-shift in Higher Education', which defines the future vision of national education until 2030, states that '*By fulfilling its complex mission, higher education serves the community in many ways, but even among its important functions, the promotion of social mobility should be highlighted. In relation to any level of education, it is a basic expectation that it supports social mobility...*'. (Government of Hungary, 2016, 2020)

Every year between 2010 and 2021, more women than men were admitted to higher education in Hungary. The purpose of this analysis is to reveal a possible reason for this phenomenon, namely that in the Hungarian public education 'girlish' characteristics are ranked higher and considered more important than 'boyish' ones. That being the case, the question arises whether the Hungarian education system provides equal opportunities for male and female students. Through a questionnaire survey, we wished to find out whether the public education system favours certain qualities, and whether this may infringe equal opportunities between the sexes. The aim of the survey carried out by Impetus Research was to learn about the perceptions of teachers and parents, to reveal in terms of which qualities and competences the respondents see gender differences based on their perception, and to find out to what extent the qualities (competencies) identified as boyish or girlish are an advantage in public education.

In the first part of the study we present the so called 'pink education' phenomenon, pointing out the gender inequalities appearing at certain levels of Hungarian public education. Following that, based on the literature, we take stock of the characteristics and abilities that, according to the empirical evidence, show gender differences. In our own research we examined the perception and evaluation of these differences.

The importance of the topic is underlined by the fact that the above mentioned phenomenon may not only affect the country's competitiveness, but it may also have a negative impact on the role of the school system in promoting social mobility and reducing selectivity (Németh & Vida, 2021).

2 THE 'PINK EDUCATION' PHENOMENON

A common term in the sociology of work is 'pink collar work', which covers jobs filled by women in majority. The term 'pink education' began to spread in the 2000s to describe the role of women in the world of education.

The reversal of gender inequalities is an ongoing trend in the OECD countries, that is, the advantage of men in higher education has been eliminated since the mid-1990s, in the early 2000s the proportion of female students exceeded 50% (Vincent-Lancrin, 2008). The UNESCO report on gender equality underlines that through the education universities provide, they can contribute to the equal chances of female students. Another important finding of the report was that there is a 'humanities bias' among female students, as – in contrast to men – more of them are studying arts, humanities or social sciences on average than STEM subjects (science, technology, engineering and mathematics) (UNESCO, 2022).

2.1 OVERREPRESENTATION OF WOMEN AND UNDERREPRESENTATION OF MEN IN HIGHER EDUCATION IN HUNGARY

In the years following the regime change of 1989, a quantitative expansion took place in the higher education in Hungary. According to the Hungarian Central Statistical Office's (HCSO) data, 108,376 students studied in higher education in the 1990/1991 academic year, and 424,161 in the 2005/2006 academic year, which was the highest headcount. Thereafter there was a decrease in the number of those participating in higher education, in the academic year of 2021/2022 they amounted to 293,566 students. Since 2004, after the gradual introduction of the so-called Bologna system, a kind of integration took place in higher education, as a result of which the number of major study fields decreased in the following years, and – in a parallel way – so did the number of students.

In the period 2010-2022, there was a significant difference in the number of applicants for higher education for the autumn semesters, with more women than men applying for higher education every year. At the same time, the proportion of accepted students among the applicants showed no significant difference in the case of girls and boys, typically hovering around 70%. The admission success rate of boys was therefore no different from that of girls, but at the same time, since fewer boys applied for higher education in the first place and more dropped out after starting their studies, the proportion of women who obtained a diploma in higher education was even higher than among applicants, around 60% each year recently.

The quantitative expansion of higher education has stopped in the last 10 years, the number of students admitted to higher education decreased sharply in 2012, and - apart from minor increases - has stagnated since then.[1] However, the difference between the sexes did not change significantly:

1 The education statistical data were provided by the Hungarian Office of Education for the purposes of the analysis, and the HCSO education data are provided by the Office of Education. The statistical number of students applies to primary courses with an active status within the statistical date, i.e. even if a student attends several courses at an institution, they are included in the statistics only once. In case a student attends courses at several institutions, they are included in the statistical number of each institution, but only once per institution. At a

between 2010 and 2021, more women than men were admitted to higher education in Hungary every year. Summing up the data of this 11-year period, a total of 600,086 women (55.3%) and 485,153 men (44.7%) were admitted to higher education, i.e. a total of 114,933 (10.6%) more women than men.

In the fall semester of the 2021/2022 academic year, a total of 293,566 people studied in higher education, including all forms of education, of which the proportion of women was 54.55%. In the fall semester of the 2021/2022 academic year, with the exception of doctoral training (the proportion of women totalling 49.13%), female students predominated at all levels of education.

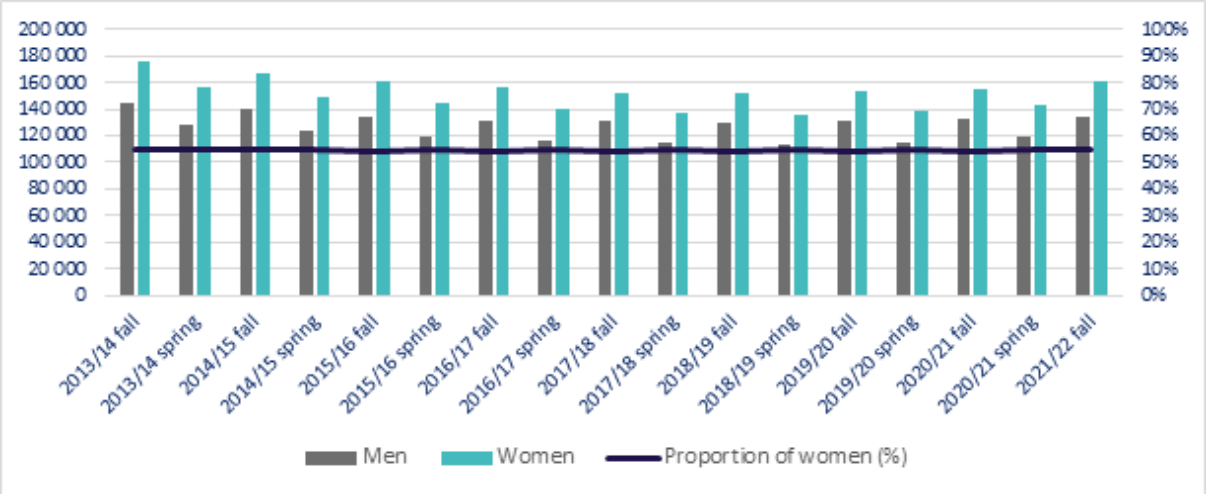


Figure 1. Distribution of students studying in higher education by gender in the spring and fall semesters of the 2013/2014-2021/2022 academic years

Source: Own editing based on data provided by the Hungarian Office of Education for the purposes of the analysis

According to the 2020 results, among the 46 countries examined, Hungary has the 4th highest proportion of women among 25-64-year-olds with at least a bachelor's or an equivalent degree (64.4%), however the proportion of women is already decreasing when it comes to university (51.5%) and doctoral (44.1 %) training levels. Among the 25–64-year-olds with a doctoral degree, men still outnumber women. It can be concluded that at the highest levels of education there is no longer a numerical advantage of female students.

Based on data from the Hungarian Office of Education, the majority of graduates in higher education in 2021 were women in all age groups, who return to the education system at a much higher rate than men after starting a family.

national level, the metrics are therefore not the same as the number of the physical students. The data also take into account students studying at cross-border training locations of Hungarian higher education institutions.

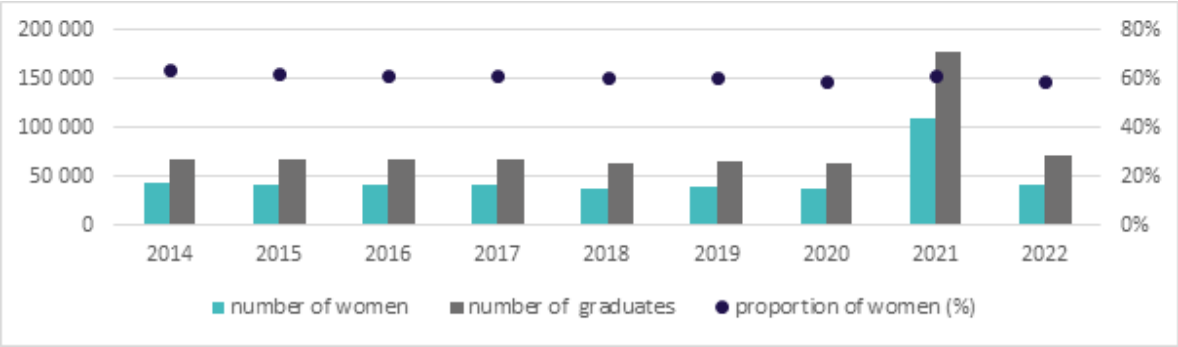


Figure 2. Number of students graduating with a diploma in higher education by gender (years 2013-2021)

Source: Own editing based on data provided by the Hungarian Office of Education for the purposes of the analysis

The outstanding data of the year 2020 is explained by the Government Decree No. 101/2020 (IV.10.), according to which those who successfully passed the final exam by August 31, 2020, were exempted from the obligation to take the language exam required as a condition for issuing their diploma. However, this had no effect on the gender ratio of students graduating with a diploma.

Those who leave higher education without a degree are considered dropouts. The Hungarian Office of Education showed in its study titled 'Dropout studies in higher education (2020)' that 36-39% of bachelor studies, 32-36% of undivided studies, and 19-20% master's studies other than teachers' training were closed without a leaving certificate (absolutorium), i.e. with a dropout. Male students had a higher dropout rate than women in bachelor's studies (43-47%), undivided studies (35-39%), and master's studies other than teachers' training (21-24%), respectively. The difference was significant in bachelor studies, the proportion of men not completing their studies was one and a half times higher compared to women. The dropout rate was highest overall in the fields of IT (49-55%), technical (40-44%) and natural sciences (47-50%) for both bachelor's studies and master's studies other than teachers' training.

In addition to the dropout rate, it is also a problem that extremely few people start teachers' training in the field of STEM majors. Based on the data of the Hungarian Office of Education (taking into account the relevant major pairs of the undivided two-major teacher training), in 2022, 30 people applied to become a chemistry teacher in the first place, and 28 people applied to become a teacher of physics. And many of those completing the courses do not start their career as a teacher (Lannert, 2021).

2.2 SECONDARY EDUCATION IS THE GATEWAY TO HIGHER EDUCATION

Secondary school has a significant impact on one's prospects of higher education, which will determine the occupation and the expected income.

In the 2020/2021 academic year, 469,428 students studied in secondary schools, 15.2% of them in the framework of adult education (Table 1). The gender ratio is balanced at the level of secondary education, the ratio of boys and girls is equal (girls representing 49.6%). At the same time, there are significant differences by types of institution. The most popular type of institution is the grammar school, almost half of the students studied here (47.2%), with the proportion of girls being the highest (55.4%). In the 2020/2021 academic year, boys represented a significant majority in vocational and skills development schools, as well as vocational training schools, their proportion was 63.9%. Many

of them do not even make it to higher education, as they study at a type of secondary education institution that does not provide a school leaving certificate, from which there is no path to higher education.

Table 1. Secondary school headcount data by types of institution (2020/2021 academic year)

Type of institution	Number of students				
	Full-time education	Adult eduation	Total	Girls (out of total)	Percentage of girls
Vocational and skills development schools	6 948	14	**6 962**	2 711	38.9%
Vocational training schools (and former secondary vocational schools)	56 601	17 169	**73 770**	26 401	35.8%
Grammar schools	191 496	30 224	**221 720**	122 724	55.4%
Technical schools, vocational grammar schools	143 242	23 734	**166 976**	81 097	48.6%
Total of secondary schools	**398 287**	**71 141**	**469 428**	**232 933**	**49.6%**

Source: Own editing based on 2020/2021 data provided by the Hungarian Office of Education and HCSO for the purposes of the analysis

Higher education acceptance scores for the 2020/2021 academic year indicate that the majority (58.1%) of those admitted to higher education (for all fields of study in total) came from grammar schools. Based on secondary school headcount data, the proportion of girls is significantly higher in the type of institution (grammar school) where the chance of entering higher education is the highest (less than half of the students attend grammar schools, while more than 58% of them enter higher education). On the other hand, in those types of institutions where there is no, or not a direct path to higher education, boys are significantly overrepresented by 64%. The shifts between the gender ratio in the types of secondary education institutions therefore fundamentally determine the evolution of the ratio of boys and girls admitted to higher education.

2.3 SCHOOL TEACHING AS A FEMINISED PROFESSION

The expertise, dedication and attitude of the teachers are important because, in addition to the parents, they have a significant impact on the development of the vision, further education plans and career choices of the students they teach. Many education experts draw attention to the fact that female teachers are overrepresented in public education, which may have an impact on the development of the 'pink education' phenomenon (Fényes, 2010; Lannert, 2021).

In 2021, the number of teachers in Hungarian public education was 96,000, more than 82% of whom were female teachers. The feminization of the profession is strongest among kindergarten teachers,

school teachers and special education teachers. 69.4% of secondary school teachers and 85.8% of primary school teachers were women (Hungarian Office of Education, 2021).

Teachers believe they treat their students equally, but they still have a stereotyped image of girls and boys. This was the conclusion of the Hungarian research carried out by the Faculty of Pedagogy and Psychology of the Eötvös Lóránd University, which surveyed 344 teachers and assessed their views on gender roles and stereotypes (Szabó et al., 2014). Among other things, teachers were asked to write positive characteristics about both boys and girls – a question only very few refused, saying that they did not want to generalize. According to the respondents, boys are creative, active, they think logically, and have a good sense of humor, while girls are kind, empathetic and hardworking. When it came to listing positive and negative qualities of girls, external features appeared much more often than in the case of boys. According to the opinion of the respondents, boys are talented in science subjects and girls in humanities subjects - this opinion was more associated with the respective genders by the female teachers than by their male colleagues. According to the researchers, this shows that the problem of social gender does not appear openly in the school. They say that the state of 'gender-blindness' is typical - that is, in many cases teachers are very biased, without being aware of that.

3 Male and female characteristics, competences, literature review

The researches started in the 1960s have revealed that in addition to external features, there are differences between the sexes also in terms of behavior, attitude, and the way of thinking, and this can have an impact and consequences on a social level as well.

The intelligence and intellectual abilities of girls and boys are the same, i.e. the average IQ value for both sexes is 100 points. However, the distribution curve of boys' intelligence values is flatter (Grabinski - Klinkova, 2020). This means that there are more boys with extreme values, that is, more of them are geniuses with exceptional abilities, as well as intellectually disabled, with limited abilities. On the other hand, in the case of girls, there is a higher proportion of those with average abilities (Czeizel, 1985). Researchers at the University of Manchester analyzed the results of 80,000 IQ tests. The tests were conducted in 20 countries between the 1960s and the present day, and the researchers compared the performances of women and men according to social and age groups, finding that the number of men in the category above 130 IQ points is three times that of women, while among those achieving a value above 145 points the number of men is 5.5 times higher (Irwing - Lynn, 2005). In the age group of primary schoolers, there is a significant gender difference among children with special educational needs: while only 5.4% of girls belong in this category, almost twice as much boys, altogether 10% of them. More boys struggle with behavioral and learning difficulties, their dropout rate is higher, but at the same time, more of them have outstanding abilities (HCSO, 2020).

Both national and international competence assessments show differences between the abilities of boys and girls (OECD, 2021). In 2000, the OECD first administered the PISA survey (Programme for International Student Performance Assessment) with the aim of comparing the performance and other characteristics of education systems. Among the educational systems participating in the 2018 PISA test, girls performed better everywhere in reading comprehension, while in the mathematics test the boys scored only 5 points better on the average than the girls, but in Hungary this value was almost 9 points (a significant difference) in favor of boys (Hungarian Office of Education, 2018). The determining evaluation element of the operation of the Hungarian education system is the National Competence Test, whose 2019 results indicate that the maths and reading comprehension results of boys and girls differ significantly from each other. In all three grades examined, the girls achieved a better average

result on the reading comprehension test, while the boys performed better in mathematics (Hungarian Office of Education, 2019).

Several studies draw attention to the fact that boys mature later than girls, and differences between the sexes can be identified in certain areas of development. Benyák and Mazurné Kiss (2017) examined the development of the skills and abilities that underpin school performance at the end of kindergarten and at the beginning of school. By comparing the data series of ten years, they found that in terms of the development level of the cognitive psychological functions (sameness/difference, rhythm, conceptualization, eye/hand coordination, form recognition, directions, body schema, relations, linguistic processing), there were significantly more girls who performed above the expected level, while in the case of boys, the opposite results were obtained. This trend was particularly striking among boys aged 6–6.5 years, the authors therefore recommend further consideration of the issue of schooling children who have just turned six, especially boys.

Kent and Pitsia (2018) reached similar results by examining the cognitive skills of 134 children on the British Ability Scales. Their research shows that as early as at the age of 4, girls outperformed boys in areas such as verbal ability, pictorial reasoning, and spatial ability.

Némethné (2007) examined the relationships between motor skills and the skills necessary for learning among large groups of kindergarten children. In the movement tests, the boys proved to be better, while the girls performed better in terms of attention as a basic psychological function.

From the above, it can be concluded that, in general, school maturity may occur at different ages for boys and girls. The general regulations on compulsory education for children have changed since 2011. It is obligatory for children to start school in the year in which they turn six by August 31. Per parental request, based on the decision of the body granting the exemption, the child may participate in kindergarten education for one more educational year. Despite the different maturity levels, the statutory requirements for compulsory education are the same for boys and girls.

Maccoby and Jacklin (1974) revealed a difference between the two sexes in four areas: (1) verbal skills, (2) visual-spatial skills, (3) mathematical skills and (4) aggression, while they also pointed out many similarities. During a comprehensive examination of the results of meta- analyses, Hyde (2005) found significant differences between the representatives of the two sexes in sensorimotor behavior (e.g. throwing distance) and in certain aspects of sexuality.

In a series of studies Németh (1999) examined achievement and interest of 226 first-grade pupils (6-7-year-olds) in performing a task and the changes in achievement and interest via interventions including various rewards. The children’s task was to put a circle round the differences on the drawings they were given. After completing the first task the children could choose whether to go to play in the school-yard or to ask for another similar exercise. The degree of intrinsic motivation is shown by the spontaneous activities performed without any rewards. The achievement was the number of correctly identified details in the first task. Experiments revealed gender differences: public feedback on achievement brought about a significant increase in achievement of both boys and girls, while if feedback was withdrawn the boys lost interest in the task to significantly more than the girls. The author interprets this as being due to the greater social inclination and empathy typical of females in a competitive situation, in contrast with males' typically greater inclination towards facts and higher motivation to achieve.

Based on interviews with pediatricians and educational experts, Tóth (2018) summarized her conclusions regarding the fact that boys are less able to control their emotions, have fewer behavioral

inhibitions, have a harder time dealing with stress, and are more inattentive. According to the interviewed experts, girls behave more responsibly, more seriously, more thoughtfully, even more calmly as teenagers, so we see them as more mature. The communication skills of girls are more sophisticated, more compassionate, they can relate to other people better, they try harder to meet expectations, and they perform better in language tests. In terms of vocabulary, there seems to be no significant difference between the two sexes.

In Kende's (2022) stimulated laboratory experiment, the researchers involved 1088 students from 9 secondary schools. Based on the survey among high school students, girls' and boys' risk-taking decisions are independent of their family background. Boys clearly took more risks, while girls are risk-averse or risk-tolerant, but selfless. Boys are more competitive, they entered a competitive situation even if they were not better than girls, and they were happy to participate in a situation that, although it involved risks, could have higher profits. Girls are more altruistic, they don't procrastinate, and they trust others less. According to the results of the research, attitudes are shaped not only by socio-economic status, but also by gender. Social expectations regarding gender behavior become stronger during adolescence.

Girls' verbal skills, their ability to speak and learn languages, as well as their short-term memory are more developed. Boys have better spatial vision, logical skills, mathematical - calculation and geometry - skills and technical-mechanical sense, also they also have greater self-confidence. In the case of girls, better social, community and communication skills can be identified. Girls prefer cooperative learning, while boys prefer competitive learning. Girls are easier to influence, they are more strongly affected by the pressure of external conformity, social expectations, family patterns, the opinions of parents, teachers and the external environment (Fényes, 2010). Girls are better at spelling and association tasks, boys are better at mechanics and spatial tasks (Pléh - Boross, 2017).

Different competences and characteristics can also affect success in the education system, as long as the education system does not build equally on the competences of both sexes. In our own research, we examine this phenomenon.

4 MATERIALS AND METHODS

4.1 OWN RESEARCH: THE PERCEPTION OF PARENTS AND TEACHERS

In view of the above, the following three hypotheses were formulated before carrying out the actual research:

H1 – According to the perception of both parents and teachers, the distribution of feminine (girlish) and masculine (boyish) characteristics is close to being equal.

H2 – Due to the overrepresentation of female teachers in public education, feminine (girlish) characteristics are likely to be considered more important in schools than masculine (boyish) traits.

H3 – There is a detectable difference in the assessment of certain qualities between parents and teachers when it comes to making a distinction between feminine (girlish) and masculine (boyish) characteristics.

In the course of the research, we examined the perception of the persons who exert the greatest influence on students' school decisions: public education teachers (n=300) and parents of minor

children studying in public education (n=400). A total of 700 people filled in the questionnaire, using a combination of online and telephone methods.

The sample of teachers participating in public education (being representative of gender, type of school, and regional location) consisted of 300 people. The proportion of men and women in the sample was 23.7% and 76.3%, respectively, the average age was 50 years. 32.3% of the interviewed teachers taught in lower elementary school, 35.3% in upper elementary school, and 32.3% in secondary school. 18.3% of them were located in the capital, 16.7% in a county seat or in a city with county rights, 37.7% in other cities, and 27.3% in other settlements.

The sample of parents (being representative of gender, place of residence, and the educational level of their child in public education) consisted of 400 people. The proportion of men and women in the sample was 44.75% and 55.25%, respectively, the average age was 42 years. 5% of the parents interviewed had an education of 8 years or less, 17.5% of them were skilled workers, 34.5% were educated in a vocational secondary school or high school, while 43% of them had a degree in higher education.

With the help of a seven-point Osgood scale, we asked the opinions of teachers and parents about a total of 23 characteristics regarding which gender differences can be identified on the basis of the relevant research, and which may be important in public education.

Completing the questionnaire was voluntary and anonymous, it was not driven by an incentive system, which increases the validity of the responses thereto. When creating the quotas, we considered all aspects that could affect the answers given when filling in the questionnaire.

When processing of the research results, we performed statistical calculations on the data, with a 95% confidence level (5% significance level). One-sample and two-sample t-test, Welch's two-sample t-test and descriptive statistics methods were used. The calculations and figures were created using Microsoft Excel and SPSS programs.

The data collection took place between March 28 and April 11, 2022, with quota sampling. The maximum standard deviation measured for the average values was 1.56, based on this the maximum sampling error was +/- 0.18. The smallest measured deviation was 1.16, based on this the minimum sampling error was +/- 0.13. That is, based on the sample, the error margins for the estimates of the averages are quite narrow.

4.2 RESULTS

4.2.1 Characteristics considered to be feminine (girlish) or masculine (boyish)

With the help of the one-sample t-test, we examined whether the average values for each question significantly differ from the value 4, i.e. whether the given characteristic can be linked to a gender based on the answers. Since we used a 7-point scale for the questions (1. being definitely a boyish/masculine trait, 7. being definitely a girlish/feminine trait), a value of 4 means that the given trait is independent of gender, i.e. it is equally characteristic of both sexes.

Based on the results, the deviation from the average value of 4 is significant for all characteristics. The combined results are presented in Figure 3. Based on the average values, the most feminine qualities are emotional and social maturity; diligence; obedience; manual dexterity; good oral and written

expression skills; tolerance of monotony and precision. In contrast, the most masculine qualities are the technical sense; risk-taking; liveliness, mobility; spatial vision; entrepreneurship and logic. Examining the deviation values, we can see that they fluctuate between 1.16 and 1.45, the relative deviation (the deviation compared to the sample mean) is between 24.6% and 51.79%, i.e. it can be considered relatively low. Based on the results, a greater relative difference can be measured between the answers of the respondents mostly in the case of qualities classified as masculine (e.g. technical sense, risk-taking, etc.). Based on the results, out of the 23 characteristics, according to the joint opinion of the teachers and parents, 12 are attributed to females and 11 are attributed to males. As a result, our hypothesis about the balanced distribution of feminine and masculine characteristics can be considered proven.

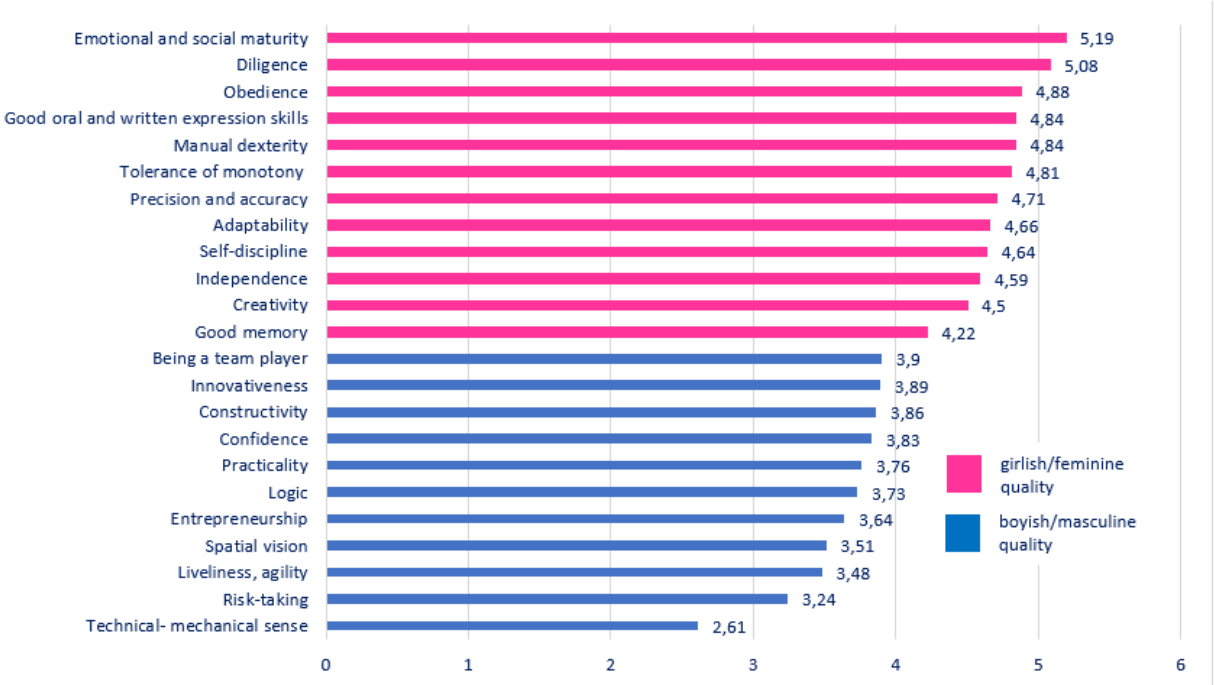


Figure 3. Characteristics considered more boyish/masculine or more girlish/feminine. On the scale from 1 to 7, the two extreme values represent a definitely boyish or girlish quality

Source: Own editing

4.2.2 Qualities preferred, expected or considered as important in public education

With the help of the arithmetic mean and the standard deviation, we examined the opinions on which qualities the respondents prefer, expect, consider important or necessary in public education. For the questions, we used a 7-point scale (1. representing 'quality not at all important', 7. representing 'very important quality'). The combined results are presented in Figure 4.

The results show that the respondents consider qualities labelled more girlish to be more important in public education. Based on the answers of those interviewed, technical-mechanical sense appears as one of the least important skills in public education. According to respondents, qualities such as diligence, verbal skills, and adaptability are more important than logic. Our second hypothesis seems to be partially verified: although it has been proven that more feminine traits are generally considered to be more important in public education, it cannot be undoubtedly stated that this phenomenon is caused by the overrepresentation of female teachers in public education.

Looking at the deviation values, we can see that they fluctuate between 1.14 and 1.56, the relative deviation (the deviation compared to the sample mean) ranges from 18.9% to 37.16%, i.e. it can be considered quite low, which shows that the interviewees similarly assess the importance of individual characteristics in public education.

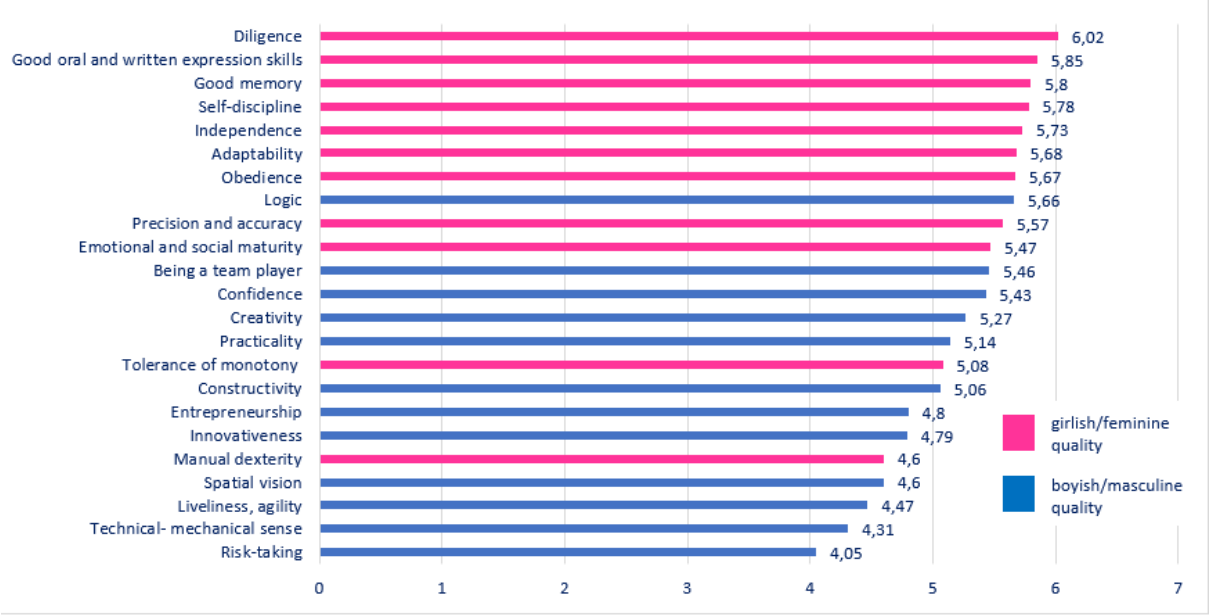


Figure 4.: Which of the listed student qualities do you prefer/expect/consider important/necessary in public education? (1 is not important/necessary at all, 7 is very important)

Source: Own editing

4.2.3 Is there a difference between the opinions of teachers and parents in the assessment of whether certain characteristics are feminine or masculine, and how important are they in public education?

The average of the responses of the two groups was analysed using the two-sample t-test. Based on Levene's test, the homogeneity of standard deviations is present for the following characteristics: adaptability, confidence, independence and diligence, so the two-sample t-test could be performed in these cases. Based on the results, the difference is significant in the case of adaptability and independence. In the case of the other characteristics, in view of the lack of homogeneity of the standard deviations, Welsch's t-test was performed. Based on the results, there is a significant difference between the opinions of teachers and parents in the assessment of liveliness, agility; tolerance of monotony; creativity; logic; self-discipline as well as precision and accuracy.

The results of the research show that there is no difference between teachers and parents' assessment of whether a trait is more girlish or more boyish (value below 4 or above 4), but at the same time, teachers consider adaptability, independence, precision and accuracy and tolerance of monotony as more girlish/feminine and creativity and logic as more boyish/masculine than parents, i.e. teachers see a bigger gender difference than parents in terms of these qualities. Our third hypothesis gained verification as it turned out that teachers did assess a defined group of feminine or masculine characteristics in a different way in comparison to the perception of parents. The more significant

gender difference perceived by teachers can probably be attributed to their professional experience as well as their more profound insight into the educational requirements in schools.

Since the homogeneity of variance does not exist in relation to any of the properties, we used Welch's t-test for the importance of the individual properties. We found that in the case of several characteristics there is a significant difference between the opinions of parents and teachers in terms of how important they are in public education, as we experienced in the case of gender differences. Based on the results, teachers consider adaptability, being a team player, emotional and social maturity, practicality, innovativeness, good oral and written expression skills, constructiveness, creativity, confidence, self-discipline, precision, accuracy, diligence and entrepreneurship more important, while manual dexterity less important than the parents. Based on the results, teachers consider many skills to be important for school progress. In addition, teachers were more inclined to give higher points on the 7-point scale in the case of questions about the importance of individual characteristics.

As for teachers and parents, in both groups we calculated the average of the scores for the questions relating to individual characteristics and created a ranking based on them. Based on the ranking, it can be seen that teachers and parents judge the relative importance of individual qualities in public education quite similarly. For 4 properties, the ranking is completely the same, for 6 properties there is a difference of 1, for 11 properties there is a difference of 2 positions. A significant difference can be observed in two cases: in the case of teachers, being a team player and innovativeness are also 5 places higher in the ranking of qualities, i.e. these qualities are considered significantly more important than in the opinion of the parents. In the case of both groups, the technical-mechanical sense occupies the penultimate place in the ranking of importance.

The most important result of the research is that, in the opinion of both target groups, girlish/feminine qualities are more relevant, important, and necessary in order to meet the expectations of the current public education system than boyish/masculine qualities (Table 2). Figure 5 shows the opinions of teachers and parents respectively about each characteristic.

Table 2. Summary of answers given by parents and teachers filling in the questionnaire

	Number of characteristics belonging to the group		The average importance value of the characteristics belonging to the group		The minimum and maximum average importance value of the characteristics belonging to the group	
	Teachers	Parents	Teachers	Parents	Teachers	Parents
More girlish/feminine characteristics	12	12	5.66	5.46	4.48-6.13	4.70-5.94
More boyish/masculine characteristics	11	11	5.02	4.79	4.06-5.77	4.04-5.61

Source: Own editing

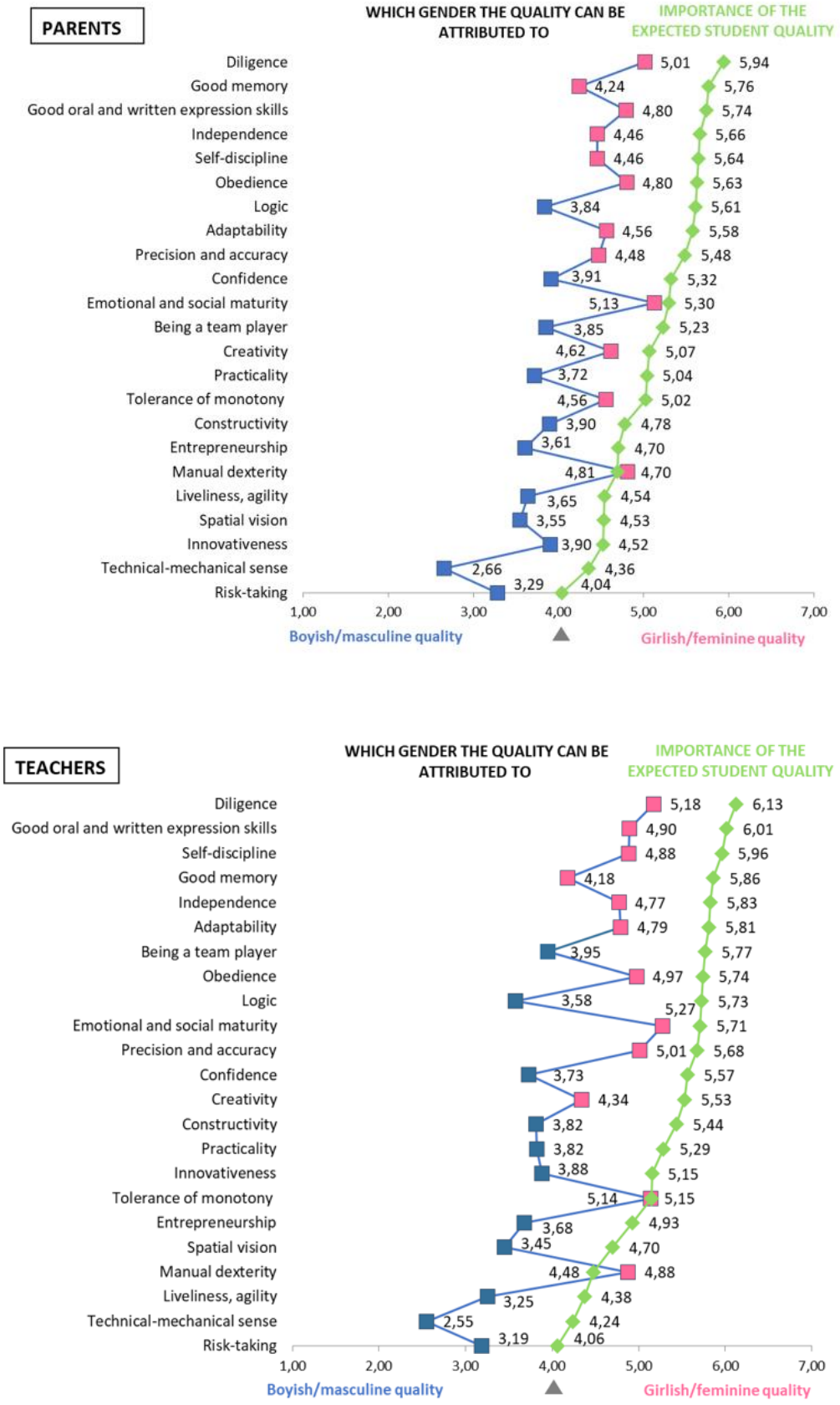


Figure 5. The gender classification and importance of the characteristics according to the answers of parents and teachers to the questionnaire

Source: Own editing

5 DISCUSSION: THE SOCIO-ECONOMIC CONSEQUENCES OF THE PHENOMENON

The data presented in the literature draw attention to the significant overrepresentation of female students and, at the same time, the underrepresentation of male students in higher education. Although the gender ratio is balanced at the level of secondary education, there are significant differences by types of institution. The proportion of girls is the highest in the grammar schools, while the chance of entering higher education is also the highest there. On the other hand, there is a significant majority of boys in vocational schools, which do not give a school leaving certificate, from which there is no direct path to higher education. The aim of our study was to reveal, why the proportion of females is higher at the higher levels of Hungarian education and why boys are overrepresented at certain types of lower levels. As one of the potential reasons, we examined the different evaluation of boyish and girlish characteristics.

Examining the literature data, it can be concluded that there are differences between the genders in terms of attitude, way of thinking and many competencies, and while women and men have the same intellectual abilities, the distribution of intelligence and performance in certain sub-skills is different. In our research, we asked parents and teachers about their judgement on certain characteristics and competences discussed in the literature and also appearing in public education, as well as about their opinions on which qualities are boyish or girlish, and more or less important in public education.

The topic is particularly important not only because the basic constitutional rights of students may be violated if equal opportunities are not ensured, but also because these factors trigger changes in terms of the competitiveness of the economy, social mobility and equal opportunities, as well as certain demographic factors.

The results show that diligence, good oral and written expression skills and a good memory were the three most important qualities and all three were rated more girlish/feminine by the respondents. The characteristics considered most boyish, that is risk-taking and technical-mechanical sense, were rated as the least important; innovativeness and entrepreneurial spirit were rated less important; while logic finished in 8th place. According to both parents and teachers, the characteristics considered to be boyish and necessary for STEM subjects are less important in public education.

All of the above have socio-economic effects and consequences. Creativity, innovation, entrepreneurial spirit, technical sense and a competitive, performance-oriented attitude are necessary for the optimal development of the Hungarian economy, the success of national enterprises, and the improvement of competitiveness and sustainability. It is also important to emphasize that both boys and girls need these qualities in their everyday lives, too. In addition, if the national education system favors or highly values characteristics that can be attributed to one of the sexes, it may significantly destroy social equality and justice. If equal opportunities for boys and girls are not realized in the field of education, it affects social mobility and, at the same time, endangers the implementation of the educational strategy.

6 REFERENCES

1. Benyák, A. – Mazurné Kiss, M. (2017). Az iskolai teljesítményt megalapozó/befolyásoló készségek és képességek alakulása az óvodáskor végén, iskoláskor kezdetén. [The development of skills and abilities that underpin/influence school performance at the end of preschool and at the beginning of school.] *Képzés és Gyakorlat*. 15(4), pp. 7-16. http://dx.doi.org/10.17165/TP.2017.4.1
2. Czeizel, E. (1985). *A nők biológiai „természete" és társadalmi lehetőségei*, In: Koncz Katalin (szerk.): *Nők és férfiak*. Hiedelmek, tények. [The biological "nature" and social possibilities of women, In: Katalin Koncz (ed.): Women and men. Beliefs, facts.] Kossuth Könyvkiadó, Budapest. pp. 21-50.
3. Fényes, H. (2010). *A nemi sajátosságok különbségének vizsgálata az oktatásban. A nők hátrányainak felszámolódása*. [Examining gender differences in education. Eradication of women's disadvantages.] Debreceni Egyetem Kiadó, pp. 228. https://docplayer.hu/18638691-Fenyes-hajnalka-a-nemi-sajatossagok-kulonbsegenek-vizsgalata-az-oktatasban-a-nik-hatranyainak-felszamolodasa.html
4. Grabinski, M. - Klinkova, G. (2020). Scrutinizing Distributions Proves that IQ is Inherited and Explains the Fat Tail. *Applied Mathematics*, 11, pp. 957-984. https://doi.org/10.4236/am.2020.1110063
5. Government of Hungary (2016): Fokozatváltás a felsőoktatásban középtávú szakpolitikai stratégia F(2016) [Gear-shift in higher education medium-term policy strategy (2016)] https://2015-2019.kormany.hu/download/c/9c/e0000/Fokozatvaltas_Felsooktatasban_HONLAPRA.PDF
6. Government of Hungary (2020): Az Európai Unió számára készített köznevelési stratégia 2021-2030. [Public education strategy prepared for the European Union 2021-2030] https://2015-2019.kormany.hu/download/d/2e/d1000/Köznevelési stratégia.pdf
7. HCSO Oktatási adatok, 2020/2021 (előzetes adatok) [Education data, 2020/2021 (preliminary data)] https://www.ksh.hu/docs/hun/xftp/idoszaki/oktat/oktatas2021e/index.html Downloaded: 11.01.2022
8. Hungarian Office of Education (2018): PISA 2018. összefoglaló jelentés: [PISA 2018 summary report:] https://www.oktatas.hu/pub_bin/dload/kozoktatas/nemzetkozi_meresek/pisa/PISA2018_v6.pdf Downloaded: 11.01.2022.
9. Hungarian Office of Education (2019): Országos kompetenciamérés 2019 országos jelentés: [National competence test 2019 national report:] https://okm.kir.hu/fit/files/OKM_2019_Orszagos_jelentes.pdf Downloaded: 11.01.2022.
10. Hungarian Office of Education (2020). *Lemorzsolódási vizsgálatok a felsőoktatásban, Összefoglaló tanulmány*. [Dropout studies in higher education, Summary study.] https://www.oktatas.hu/pub_bin/dload/felsooktatas/projektek/fir/EFOP345_FIR_LEMORZSOLODAS_VIZSGALAT_tanulmany.pdf, Downloaded: 15.01.2022.
11. Hungarian Office of Education (2021) Education statistical data were provided by the Hungarian Office of Education for the purposes of the analysis.
12. Hyde, J. S. (2005): The Gender Similarities Hypothesis. American Psychologist, 60. pp: 581-592. https://doi.org/10.1037/0003-066X.60.6.581
13. Irwing, P. - Lynn, R. (2005). Sex differences in means and variability on the Progressive Matrices in university students: A meta-analysis. *British Journal of Psychology*, 96, pp. 505–524. https://doi.org/10.1348/000712605X53542
14. Kende, Á. (2022). A nemek közötti különbségeket vizsgálták magyar kamaszokon: a lányok önzetlenebbek, a fiúk versengőbbek. [Gender differences investigated on Hungarian adolescents:

girls are more altruistic, boys more competitive.] *QUBIT Tudomány*, https://qubit.hu/2022/01/19/a-nemek-kozotti-kulonbsegeket-vizsgaltak-magyar-kamaszokon-a-lanyok-onzetlenebbek-a-fiuk-versengobbek Downloaded: 20.01.2022.

15. Kent, G. – Pitsia, V. (2018). Gender differences in cognitive development and school readiness. Findings from a randomised controlled trial of children from communities of socio-economic disadvantage in Ireland. *Children's Research Digest*, 5(3), pp. 33-41.
16. Lannert, J. (2021). *Zárótanulmány az emberi erőforrás szűkösségekről a magyar közoktatásban*; [Final study on human resource shortages in Hungarian public education] T-TUDOK Tudásmenedzsment és Oktatáskutató Zrt., https://www.t-tudok.hu/files/2/kutatasi_zarojelentes_t-tudok_magyar_210x297mm.pdf Downloaded: 13.01.2022.
17. Maccoby, E. E. – Jacklin, C. N. (1974): The Psychology of Sex Differences. Stanford University Press. https://doi.org/10.1515/9781503620780
18. Németh, E. (1999). Gender Differences in Reaction to Public Achievement Feedback. *Educational Studies*, 25(3), pp. 297-309.
19. Németh E. – Vida C. (2021). Felsőoktatás a változások tükrében - verseny, minőség, teljesítmény [Higher education in the light of changes - competition, quality, performance]. https://www.asz.hu/storage/files/files/elemzesek/2021/felsooktatas_valtozasok_tukreben_20210406.pdf
20. Némethné Tóth, O. (2007). Tanulási képességek összehasonlító vizsgálata óvodáskorú gyermekeknél az iskolaérettség függvényében. [Comparative study of learning abilities in preschool children in light of school maturity] *Folia athropologica*, 5(5), pp. 115-121.
21. OECD (2021): Education at a Glance 2021: OECD Indicators, OECD Publishing, Paris. https://doi.org/10.1787/b35a14e5-en
22. Pléh Cs. - Boross O. (2017). *A nemek hatása a megismerési folyamatokban*, In: Kovács M. (szerk.) *Társadalmi nemek - Elméleti megközelítések és kutatási eredmények*. [The influence of gender on cognitive processes, In: Kovács M. (ed.) Social gender - Theoretical approaches and research results] ELTE Eötvös Kiadó, Budapest. pp. 9-20. https://www.eltereader.hu/media/2017/03/Kovacs_Monika_szerk_Tarsadalmi_nemek__READER.pdf
23. Szabó, M. – Kovács, M. – Nguyen, L. L. A. – Fliszár, É. (2014). *A pedagógusok nemi szerepekkel és sztereotípiákkal kapcsolatos nézetei*, In: Gordon Győri J. (szerk.): *Tanárok interkulturális nézetei és azok hatása az osztálytermi munkára: Kutatási eredmények*. [Teachers' views on gender roles and stereotypes, In: Gordon Győri J. (ed.): Intercultural views of teachers and their impact on classroom work: Research results.] ELTE Eötvös Kiadó, Budapest. pp. 57–58. https://www.eltereader.hu/media/2014/09/gyori_I_reader.pdf#%5B%7B%22num%22%3A122%2C%22gen%22%3A0%7D%2C%7B%22name%22%3A%22FitR%22%7D%2C-176%2C18%2C697%2C705%5D
24. Tóth, R. (2018). Tényleg korábban érnek a lányok, mint a fiúk? [Do girls really mature earlier than boys?] *Gyermekpszichológia*, https://mindsetpszichologia.hu/tenyleg-korabban-ernek-a-lanyok-mint-a-fiuk Downloaded: 11.01.2022.
25. UNESCO (2022): Gender Equality: How Global Universities are Performing. Part I. https://www.iesalc.unesco.org/wp-content/uploads/2022/03/SDG5_Gender_Report-2.pdf
26. Vincent-Lancrin, S. (2008): The Reversal of Gender Inequalities in Higher Education: An On-going Trend. In: Higher Education to 2030 – Volume 1: Demography. OECD. pp. 265-298. https://www.oecd.org/education/ceri/41939699.pdf