

# 21ST CENTURY SKILLS AND THE NEW LITERACY: THE GENDER GAP

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**Abstract:** The rapid development of computer and information technology is changing the face of the modern world, making it more and more sensitive to innovation. Changing technologies are having an increasingly rapid impact on the development of digital skills and literacy skills. The transition to a new technological order changes the gender balance of personnel in all spheres of life. Analyzing the gender dimensions of digital literacy and skills is important both from the point of view of social justice (unequal distribution of men and women in the exact and natural sciences) and from the point of view of improving the efficiency of the use of labor resources to ensure sustainable development.

**Key words:** the era of digital technologies, skills and competencies of the XXI century, new information and its critical assessment, gender gap, STEM workforce of women, the gender balance of workforce.

## INTRODUCTION

**Method (methodology).** The theoretical and methodological basis of the study is made up of scientific works, current legislation, and regulatory legal acts of the Republic of Uzbekistan aimed at digital training and raising the level of digital competencies of girls and young women to increase the efficiency of the use of labor resources.

**Results.** Based on the study, the main trends in the development of digital technologies have been identified, which require new skills and abilities, universal competencies for the application of digital knowledge in practice based on a gender approach.

**Presentation of the main research material.** Questions of what to teach and how to teach, how to improve the quality and effectiveness of learning, how to

develop creativity and innovation of teachers and learners at all levels of education are traditionally the most relevant in the world. The solution to the problem of ensuring the quality of education, its compliance with global challenges and the rapid development of technologies, the needs of society and the state in the 21st century, largely depends on the solution of these issues. "In the past, education was about teaching people something. Now his task is to provide a person with a reliable compass, the ability to pave their way in an increasingly uncertain, unstable, and increasingly complex world. " "Schools must prepare children for economic and social change faster than ever, for jobs that don't yet exist, for technologies that haven't yet been invented, and for solving social problems that we can't yet predict." [one].

## **MATERIALS AND METHODS**

The new era of digital technologies requires new skills and abilities when the main goal of education is no longer the acquisition of knowledge that is rapidly becoming obsolete, but the important spectrum of universal competencies to obtain, select, systematize, analyze and apply in practice the necessary knowledge, depending on the situation. Patrick Griffin, one of the leading experts in the assessment and teaching of 21st-century skills, professor at the University of Melbourne, and leader of the international research project on the assessment and teaching of 21st-century skills and competencies (ATC21S), believes that 21st-century skills are "a special area that attracts the attention of many educated people currently. The core of the concept is that reading, writing, and arithmetic were the key skills that defined literacy in the industrial era. In the 21st century, the emphasis is shifting towards the ability to think critically, the ability to interact and communicate, a creative approach to business. " Therefore, "people now need to be taught not what was taught before; you need to teach them the ability to think, independently obtain information and critically evaluate it, and not just accumulate and remember. Very soon, educational institutions will be forced to move from old, "industrial" curricula to a training system that will train personnel for an

innovative economy and information society. " "Today, thanks to the Internet and information technology, students in schools and universities sometimes have much more knowledge in some areas than their teachers. Teachers "from transmitters of knowledge will turn into educators-organizers" "because the most in-demand in this era are the ability to build interpersonal relationships." "When drafting curricula, it will be necessary to focus on broader professional competencies - the ability to find non-standard solutions to problems and problems, teamwork skills, and so on. But so far we still have teachers of geography, history, physics, chemistry, but no teachers of critical thinking, teachers of interaction, or teachers of curiosity. " "We must teach children the skills of self-education, self-learning - for this, both students and teachers must become more active and rebuild" [2 [.

The rapidly evolving digital economy requires entirely new skills and competencies. Leveraging digital technologies and expanding businesses nationally and internationally requires professionals with the right mix of technical, business, interpersonal and creative skills. Modern technical skills are critical to any production process or service. The digital industry requires many talented people with an understanding of ICT. In this regard, the importance of digital training and the level of digital competencies of girls and young women for increasing the efficiency of the use of labor resources is immeasurably increasing. The loss of the scientific, creative and innovative potential of women is already recognized by scientists as economically disadvantageous. Researchers found that if the digital industry employed as many women as men, Europe's annual GDP would grow by 9 billion euros [3, p.76]. The importance of women's participation in technical sciences and technical production as a factor in the stable development of society is emphasized. The human capital of both men and women, especially those with digital skills, is vital to keeping up with rapidly evolving digital technologies and skills. Digital technical skills are critical to the effective functioning of today's digital workplaces, which traditionally have few female workers. Globally, women make up 70% of the workforce in the health and social

sectors [4]. Experts from the World Economic Forum have calculated that 75% of the fastest-growing jobs in the world require knowledge and skills in the field of STEM, where there are traditionally few highly qualified STEM cadres of women [3, p. 77]. There is a shortage of young women involved in ICT research in companies and government agencies around the world. The industry is now dominated by men, especially at the top management level. There are still very few women among the leaders of well-known companies in high-tech business (5% - on average in the world), and public opinion believes that IT is a non-female profession [5]. To find out at what age and why there is a decline in girls' interest in STEM disciplines, Microsoft Corporation conducted a study and found out that many girls are sure that exact sciences are predominantly male sphere [3, p.77].

The positions held by women are often low in level and qualifications. However, studies have shown that achieving a wider diversity of personnel is beneficial for the business. Thus, the increase in the number of women professionals in leadership positions has a positive effect on the financial performance of the production. Therefore, ICT companies are looking to attract more women talent and ensure their promotion. There have long been studies showing that women optimize the work of the entire team, thus increasing labor efficiency: companies in which there are women among managers showed better results in innovation, with other things being equal, they cost more, had better indicators in the field of health insurance. , workflow optimization, etc. Women bring additional profit, a new point of view, help to see wider. Contrary to the patterns, the advantage of the high-tech sphere is that it is perfect for women, also because it allows you to have a flexible work schedule, work in outsourcing, and therefore combine work and family.

It is well known that parents, teachers, and peers play an important role in shaping the life and professional strategies of schoolchildren and young people, who, in the process of interaction, construct certain gender expectations in them. Gender incorrect beliefs are often the reason for the decrease in the motivation of girls,

girls in the choice of technical sciences, which affects the future gender balance in various fields of professional activity and the formation of gender roles. In recent years, experts see the reasons for the gender-different socialization of schoolchildren in the "hidden curriculum". "The hidden curriculum is, firstly, the organization of the institution itself, including gender relations at work, gender stratification of the teaching profession. Secondly, this includes the content of the subjects, and thirdly, the style of teaching. These three dimensions of the hidden curriculum not only reflect gender stereotypes but also support gender inequality"[6].

## **RESULTS AND DISCUSSION**

The very interesting work "Women And Stem In The Digital Era: Employment Policy In The Megapolis" (Moscow, 2017) [7] reveals the problem of gender inequality, leading to a decrease in the motivation of girls, girls, young women in choosing technical sciences and STEM-professions as a career. The authors draw attention to two important stages in the life of women: professional choice during school years and choice of a profession after graduation, and argue the importance of additional measures to encourage women at these stages of choosing a profession. They ask the question: Why is it that to equalize the involvement of men and women in technical specialties, it is necessary to introduce special mechanisms to increase the chances and opportunities for women in the world of science and innovation? And finally, what is necessary for this to be done at different stages of socialization and choice of a professional path?

To answer these difficult questions, the authors of the study conducted a content analysis of the official websites of 26 world-leading universities to determine whether they have any practices concerning supporting women in scientific, technical fields, and business. As the review has shown, the overall global recognition of the university is not associated with its activity towards women in science and business. The leader, as in the QS-2017 ranking, remains the Massachusetts Institute of Technology: 12 examples of various kinds of activities

implemented in the framework of the institution's activities concerning women in technical sciences and business were identified. Yale University took second place with a small margin (10 practices). The third place was shared by the National University of Singapore and the Federal Polytechnic School of Lausanne (8 practices each) [7].

Numerous scientific studies and analysis of best management practices show the importance and role of encouraging and motivating women scientists, women innovators in the industry, especially those who are taking their first steps in their careers. This is necessary to overcome the existing gender stereotypes, which in the process of socialization affect the decrease in self-esteem and the motivation of girls and women in their future professional activities.

As the proportion of women in high-tech industries declined during the early decades of the 21st century, laws were passed in the United States to encourage women to pursue technical sciences and innovative engineering in the industry. So, to prevent gender imbalance at the end of February 2017, two laws were signed in the White House. The first is H.R. 321, or the INSPIRE Women's Support Act, which requires NASA to inspire and encourage women and girls to study STEM disciplines, pursue careers in the aerospace industry, and advance US space exploration. The second law is H.R. 255 - For the Promotion of Women in Entrepreneurship, authorizes the National Science Foundation to support entrepreneurial programs for women. Funds were allocated for the implementation of this law in September 2017, business circles were involved in the program [7]. Europe also attaches great importance to increasing the number of women in high-tech fields. In the report of the European Institute for Gender Equality (EIGE): "Beijing: 25 years later", the 5th review of the results of the implementation of the Beijing Platform in the EU member states. It is emphasized that serious elements of gender inequality persist in the education, training, and science sectors. A key example is gender segregation in education, where women dominate primary education or health research, while men dominate high-tech fields such as

computer science and information and communication technology. Recognizing the importance of this important topic, the Council of the European Union adopted in December 2019 the Council Resolution on Gender Equal Economies in the EU: The Way Forward. The resolution reaffirms Europe's commitment to implementing effective measures to overcome gender segregation in education and vocational training at all levels, to promote equal access to all educational disciplines, in particular, to facilitate access for women and girls to study STEM disciplines (science, technology, engineering, and mathematics). ) [eight]. The European Commission has published its Digital Education Plan 2021-2027. ETUCE welcomes the Commission's position on the need for quality and inclusive education, as well as its plan to develop and advance digital skills, setting ambitious goals to be achieved by 2025. The new DEAP sets out a comprehensive plan to close the digital hardware gap and proposes ambitious goals to improve digital literacy and skills through multiple computer-based courses to prepare students for life in today's fast-paced world and lifelong learning [9].

One of the priority development goals of Uzbekistan is to increase the share of the digital economy in the country's GDP by 2 times by 2023, the volume of services in this area by 3 times, bringing their exports to \$ 100 million. As the head of state Shavkat Mirziyoyev noted in his Address to Parliament, the Technological Park of Software Products and Information Technologies (IT-Park) is already yielding results [10, p.17]. According to the research of the Head Hunter Company "Information Technologies / Internet / Telecommunications" for January-August 2019, the increase in vacancies in Uzbekistan compared to the same period in 2018 amounted to 266%, in the direction of programming and development - 18.7%, in telecommunications - 13. 6%, which indicates the demand for specialists in this area. For several years now, the ratio of men and women in the IT industry has remained unchanged: the majority of job seekers are men (90% of respondents) [11]. IT Park and USAID launched Tumaris Tech to support women's IT entrepreneurship. In The Decree Of The President Of The Republic Of Uzbekistan

"On Approval Of The Strategy" Digital Uzbekistan-2030 "And Measures For Its Effective Implementation, It Is Provided To open wide objects of youth and infrastructure for women based on digital technologies; the phased creation by the end of 2023 in all districts and cities based on existing educational institutions of more than 200 specialized schools with in-depth study of computer science and information technology for creative development and teaching students the basics of computer programming [12].

Recently, the most popular are the so-called "flexible skills" (personal qualities and social skills (the ability to work in a team, curiosity, initiative, critical thinking, self-management, the ability to solve complex problems, interact with different people, correctly prioritize) and "digital skills "(a set of skills in using digital devices, communication applications and networks for searching and managing information, creating and distributing digital content, interaction and collaboration) [13] Ministry of Education of Singapore (according to the results of PISA, this country has one of the best educational systems in the world ) so justifies the need for changes in education: "Globalization, demographic change and the development of technology are the main driving forces of the future. Our children must be ready to meet these challenges and be able to use the opportunities that they bring" [14].

Soon, the main focus will be on recruiting staff with the necessary digital skills. Aware of this trend, many companies, together with leading universities and colleges, are actively developing special education and training programs. In recent years, various courses and online training programs have gained particular popularity, not only for potential job seekers for new jobs and professions but also for improving the digital qualifications of company personnel [13]. The COVID-19 pandemic proved the need for such a policy, pushing companies towards new technologies and changing business forever. McKinsey Consulting researchers surveyed 899 representatives of companies of various sizes from different sectors of the economy around the world (July 2020) and found that since the beginning of



the pandemic, companies have leaped digitalization of internal operations, company relationships with customers and suppliers, comparable to 3-4 years changes. And the share of products and services based on digital technologies in the portfolio of companies has grown as in the previous seven years [15].

## **CONCLUSION**

**Conclusions and prospects for further research.** As research by scientists show, the formation of women's motivation in professional development should be developed already from preschool education. At the same time, to involve girls in mathematics and exact sciences in preschool and secondary education, the tasks they perform must be more focused on a specific result related to helping people or socially significant groups for them, and allow them to work more often in a group, supporting each other. It is also necessary to develop programs of gender equality in schools and support the motivation for participation and achievement of girls in Olympiads, and especially in Olympiads in the exact sciences, creation of initiative projects in technical universities to support gifted women, develop their leadership qualities, promote their employment in leading industrial enterprises [7].

A wide-ranging information campaign should be launched to encourage women to pursue new professions in technical fields. To conduct a targeted campaign in the media aimed at overcoming conservative ideas in society about the limited intellectual capabilities of women in the exact and natural sciences and to actively promote the achievements they are achieving in the IT field.

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