







INTRODUCTION OF ADULT EDUCATION AS A MODERN EDUCATIONAL AND ECONOMIC LABOUR MARKET TREND

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ABSTRACT

This article is based on a quantitative study using methods of statistical analysis of indicators of online education during adult life (25-64 years) within the EU. It has been revealed the relationship of changing forms of adult learning through the transformation of labor market requirements. The study confirms the link between employment in production and the provision of adult education by employers. This is well seen in the socio-economic development of the country, which determines the needs, regional specifics of the labor market, affects adult learning throughout life. The regional specificity of the labor market is a prerequisite for adult lifelong learning and determines the level of involvement of the population in online lifelong learning. There is a significant differentiation between formal and non-formal education (3.7% and 13.2%) within the EU. Online education is more common in the most developed countries with a highly developed economy of knowledge and creative economics. The latest trend in online employee education is the integration of training systems into software.

Keywords: Lifelong learning. Lifelong e-learning. Labor market. Employee digital skills. Digital economy.

INTRODUÇÃO À EDUCAÇÃO DE ADULTOS COMO UMA TENDÊNCIA MODERNA DO MERCADO DE TRABALHO EDUCACIONAL E ECONÔMICO

INTRODUCCIÓN A LA EDUCACIÓN DE ADULTOS COMO UNA TENDENCIA MODERNA DEL MERCADO LABORAL EDUCATIVO Y ECONÓMICO

RESUMO

Este artigo baseia-se em um estudo quantitativo utilizando métodos de análise estatística de indicadores de educação online durante a vida adulta (25-64 anos) dentro da UE. Foi revelado a relação de mudança de formas de aprendizagem de adultos através da transformação das exigências do mercado de trabalho. O estudo confirma a ligação entre o emprego na produção e a oferta de educação de adultos pelos empregadores. Isso é bem visto no desenvolvimento socioeconômico do país, que determina as necessidades, especificidades regionais do mercado de trabalho, afeta a aprendizagem dos adultos ao longo da vida. A especificidade regional do mercado de trabalho é um pré-requisito para a aprendizagem ao longo da vida dos adultos e determina o nível de envolvimento da população na aprendizagem ao longo da vida online. Há uma diferenciação significativa entre educação formal e não formal (3,7% e 13,2%) dentro da UE. A educação online é mais comum nos países mais desenvolvidos com uma economia altamente desenvolvida de conhecimento e economia criativa. A última tendência na educação online dos funcionários é a integração de sistemas de treinamento em software.

Palavras-chave: Aprendizagem ao longo da vida. Aprendizagem ao longo da vida por meio da internet. Mercado de trabalho. Habilidades digitais dos funcionários. Economia digital.

RESUMEN

Este artículo se basa en un estudio cuantitativo utilizando métodos de análisis estadístico de indicadores de educación en línea durante la vida adulta (25-64 años) dentro de la UE. Se ha revelado la relación de las formas cambiantes de aprendizaje de adultos a través de la transformación de los requisitos del mercado laboral. El estudio confirma el vínculo entre el empleo en la producción y la provisión de educación para adultos por parte de los empleadores. Esto es bien visto en el desarrollo socioeconómico del país, que determina las necesidades, detalles regionales del mercado laboral, afecta el aprendizaje de adultos a lo largo de la vida. La especificidad regional del mercado laboral es un requisito previo para el aprendizaje permanente de adultos y determina el nivel de participación de la población en el aprendizaje permanente en línea. Existe una diferenciación significativa entre la educación formal y la no formal (3,7% y 13,2%) dentro de la UE. La educación en línea es más común en los países más desarrollados con una economía altamente desarrollada del conocimiento y la economía creativa. La última tendencia en la educación de los empleados en línea es la integración de los sistemas de capacitación en software.

Palabras-clave: Aprendizaje permanente. Aprendizaje permanente a través de Internet. Mercado laboral. Habilidades digitales de los empleados. Economía digital.

INTRODUCTION

Innovative educational practices are the integration of online technologies, the spreading of 'blended learning' and the combination of online learning with traditional learning (EPURE, 2017). Online education as a new way of developing skills, competencies, professionalism is developing in accordance with the requirements of the labor market. The spread of online lifelong learning is evidenced by the growth of the population aged 25-64 who participate in non-formal education, training (44.4% of EU countries in 2016, including the majority in non-formal form; 10.8% in the last four weeks of 2019) (EUROSTAT, 2020).

At the same time, employers provide training for employees (33.8%). Among other major trends: "informal learning by using a computer (or similar devices) is reported to be the most frequent form of informal learning in most countries"; coaching or mentoring; self-study and group learning; differentiation of lifelong learning depending on the EU country; higher level of participation of women in education compared to men (EUROSTAT, 2020). So we may say that employers are the initiators of online lifelong learning through the dynamic transformation of competencies, professional and personal qualities of employees in the integration of technology in the business environment. This highlights the issue of identifying the effectiveness of online lifelong learning for the development of the labor market.

LITERATURE REVIEW

Lifelong learning is not a new phenomenon (MARTY, 2020). The integration of online technologies in all spheres of life and in the educational process has increased the necessity to develop professional, personal qualities, competencies of employees. At the same time, the concept of online education appeared in 2008 thanks to J. Siemens (SKIBA, 2012), who called the phenomenon the "shadow economy of education". The scientific literature has formed a negative and positive attitude to lifelong online education. E-learning is seen as a complement to formal education (EAGLETON, 2015). "Completing an online degree program would significantly limit the labor market prospects of typical college students" (LENNON, 2019). Lifelong learning on the one hand can eliminate inequality through the skills gap of the younger generations (generation Z) and the older generations (generation X, Y), provide support for the educational level, on the other - increase social inequality (KILPI-JAKONEN et al., 2014).

Reducing inequality through lifelong learning has been experimentally proven by the example of African countries. "Lifelong learning has negative net effects on the Gini index through financial deposit and efficiency channels" (TCHAMYOU, 2020). Other effects of online education are the cost of learning. It has been proven that "some hope that online technology can "bend the cost curve" in higher education, the impact of online learning on education quality remains uncertain" (DEMING et al., 2015). However, some studies contain opposite conclusions: "students who complete courses in the online format experience larger earnings gains than their peers who complete courses in the traditional, face-to-face format" (STREICH, 2014).

Online education is definitely a cheaper way to gain knowledge and develop competencies. "Online and blended learning are seen as a cost-effective modality for addressing high school reform issues" (PICCIANO et al., 2012). Along with the rising cost of traditional education in colleges and universities, the benefits of online education are growing too (VEDDER et al., 2013). In addition, it has been experimentally proven that traditional higher education is not able to form to the fullest extent the competencies of the future employee in accordance with the requirements of the labor market (VEDDER; DENHART; ROBE, 2013). As a result, an increasing number of graduates of traditional higher education institutions are employed in low-paid jobs. In such conditions, the employee is forced to develop, supplement professional personal skills to maintain an appropriate level of quality of life.

The labor market is diverse and requires different skills of employees, both soft and hard skills, in particular hard skills also include digital skills. "Soft and digital skills are related to the probability of automation of occupations" (COLOMBO et al., 2019). Types of skills are combined depending on the profession in the regional labor market, considering the socio-economic development of the country, the economic sector, education and experience of the employee (COLOMBO et al., 2019). The importance of lifelong learning, the development of skills and competencies are due to two important trends: aging process of the whole population and fast economic changes. Globalization and demographic changes affect the necessity of older generations for training, participation in lifelong online education considering new demands and the needs of the labor market (KILPI-

JAKONEN et al., 2014).

CONCEPT AND METHODOLOGY

Concept

This study is built on the concepts of online lifelong learning and modern labor market theory (supply and demand), social inequality (WILKINSON, 2013). Staff training costs account for a significant share of wages. 'First, the original Oi (1962) estimates seem in the right ballpark — with hiring costs a bit below 5% of the total labor costs. The bulk of these costs are the costs associated with training newly-hired workers and raising them to the productivity of an experienced worker' (WILKINSON, 2013). Online lifelong learning is seen as a way to ensure balance in the labor market through the development of professional, personal qualities, skills, competencies of employees. This point of view is absent in the scientific literature.

Methodology: data and methods

The study is based on a quantitative approach to assessing trends of lifelong learning and the labor market. The main research method is analysis that is based on statistical criteria and correlation analysis. Indicators within the EU were used to analyze trends in online education:

1. Adult participation in learning, 2014 and 2019.
2. Participation rate in education and training, 2016.
3. Providers of non-formal education and training activities, 2016.
4. Participation rate in informal learning by sex and learning form, 2016.
5. Correlation Non-formal education and training activities by Employer, 2016 and Employment in industry.

RESULTS AND DISCUSSION

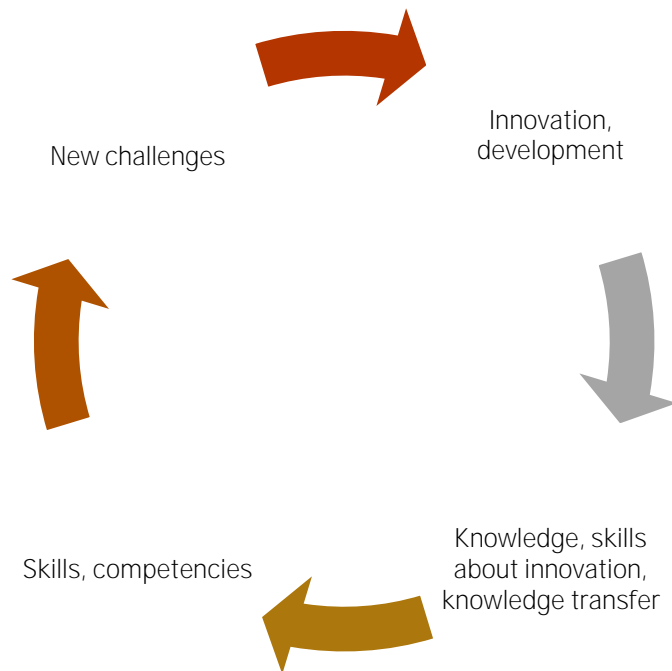
The reasons for getting online education vary a lot depending on the social characteristics of population. Online learning methods are used by students for various reasons (lack of opportunity to take courses - 47%, the only way to gain knowledge in a particular sphere - 21%, employer requirements - 21%, good reputation of a certain education institution- 8%, other reasons - 4%) (ONLINE EDUCATION STATISTICS, 2017).

This means that the labor market requires employees to develop competencies and skills. Accordingly, online lifelong learning is a way to meet the needs of employers and at the same time a way to keep the employee in the workplace, a way to develop professional and personal skills. The most popular fields of e-learning are counseling (6%), STEM (8%), teaching (9%), arts (11%), social sciences (12%), IT (13%), health and medicine (20%), business (24%) (ONLINE EDUCATION STATISTICS, 2017).

There is no point in contrasting online and traditional education. Online education does not contradict traditional forms of learning, but forms new methods that provide flexibility, adaptability of educational institutions in accordance with market needs. Online education provides a cycle of training. If labor market conditions change, then the employee has the opportunity to return and gain new knowledge about the profession. At the same time, it is paradoxical that new knowledge about the profession is formed in the process of practice.

For example, software development in a particular area requires knowledge and skills to use it. This knowledge extends from developers to theorists, from practitioners to scientists. The connection between innovators and teachers is inseparable: the innovator invents a solution to a problem that can be identified by the scientist. Problems in human life make it necessary to develop innovations. Innovations determine the need for specialists in various fields with relevant skills and competencies. In the process of using innovations, new challenges arise that lead to innovative solutions (Figure 1).

Figure 1. The correlation (scheme) of lifelong learning and the labor market through the prism of development, innovation - knowledge, learning - skills, competencies - new challenges



Source: author development.

A definite scheme can be applied to various spheres of public life. If we apply the process of problem formation, innovation, knowledge and skills to labor market theory and online education, it is possible to form a conceptual model of communication, where online education is an innovative solution to the problem of knowledge transfer. So, the methods, forms, tools of online education solve the problem of the personal need to acquire knowledge quickly in a particular subject for various reasons.

The necessity and requirements of the labor market are among the main reasons. Fragmentary training with the help of computer technology has solved this problem. As a result, online education has become an innovation in the field of traditional education, which has ensured the spread of knowledge worldwide about innovative learning practices. Dissemination of knowledge has led to the emergence of numerous studies on the effectiveness of online education and its relevance to the needs of the labor market, which studies the issues of innovative learning practices.

Online learning is especially effective as a type of employee training. Managers of companies use various forms of e-learning and confirm the ineffectiveness of traditional education because of the following reasons: lack of interest of employees, outdated classical methods that do not allow teacher-student interaction, the duration of traditional learning far exceeds online courses. Additional incentives for online learning are interactive methods of collaboration: videos, podcasts, games, expert instructions. Online education is a way to acquire knowledge and skills regardless of location and conditions, and speed, cost and efficiency are the main advantages.

Within the EU for the last 5 years (2014-2019) the participation of adults in education has not changed significantly: the average value was 10.4% in 2014, in 2019 - 11.7% (Table 1). The share of women participating in training exceeds the share of men: in 2014 - by 2.2%, in 2019 - by 2.8%. Within the EU, participation in training varies significantly: the minimum value of participation was 1.3% in Romania, 34.3% - in Sweden; the standard deviation within the EU is 8.5%.

Table 1. Adult participation in learning, 2014 and 2019, (% of the population aged 25 to 64 participating in formal and non-formal education and training in the last 4 weeks)

	Total		Male		Female	
	2014	2019	2014	2019	2014	2019
EU	10,1	10,8	9,3	9,8	10,9	11,9
Average	10,4	11,7	9,3	10,3	11,5	13,1
Minimum	1,5	1,3	1,7	1,4	1,4	1,2
Maximum	31,9	34,3	26,2	26,1	37,6	42,9
Standart deviation	8,1	8,5	6,6	7,0	9,7	10,1

Source: Eurostat (2020).

Non-formal education within the EU in 2016 was 42.1%, while formal - 5.1% among the population aged 25-64 (Table 2). The minimum value of indicator - non-formal education - was in Romania (5.6%) and in Slovakia (1.5%) in formal education. This confirms once again that the socio-economic development of the country, which determines the needs, regional specifics of the labor market, affects the adult's lifelong learning. So, the regional specifics of the labor market are a prerequisite for adult learning. Still, there is no need for learning, if there are no new requirements of employers to the employee in the context of skills, qualities, competencies.

Table 2. Participation rate in education and training, 2016 (% of the population aged 25 to 64 participating in formal and non-formal education and training in the last 12 months)

	Type of training			All types of training						
	All	Formal (?)	Non- formal	Sex		Age		Level of educational achievement (ISCED levels)		
				Men	Women	Age 25-34	Age 35-64	Lower secondary or less (levels 0-2) (*)	Upper secondary & post-secondary (levels 3 and 4)	Tertiary (levels 5-8)
EU	44,4	5,1	42,1	44,3	44,5	52,8	32,2	23,6	40,9	65,4
Average	43,6	6,0	40,9	43,1	44,1	53,2	29,5	23,1	40,1	62,5
Minimum	7,0	1,5	5,6	6,4	7,5	13,9	1,5	1,0	6,3	15,8
Maximum	64,1	14,2	61,5	64,7	68,2	73,9	54,7	45,1	63,3	81,2
Standart deviation	13,7	3,7	13,2	14,1	14,1	14,1	12,4	11,8	14,4	14,8

Source: Eurostat (2020).

There is a significant differentiation within the EU between formal and non-formal education: the standard deviation was 3.7% and 13.2%. So, in countries with a higher level of socio-economic development we can admit a higher level of participation in non-formal learning (Belgium 41.4%, Germany 50.2% and Hungary 52.5% Sweden 56.5%). Types of training are equally common among both men and women. The population aged 25-34 participates more in trainings - 52.8% within the EU with significant differentiation (standard deviation 14.1%). Depending on the level of education, participation in learning also varies: the largest share of lifelong learners is from Tertiary (levels 5-8).

Employers are the most frequent providers of non-formal education and training activities (33.8%, Table 3). Differentiation within the EU is significant: the standard deviation is 11.3%. For example, in Lithuania employers provide the population 12.6% of with non-formal types of education, while in Bulgaria - 63.5% of employers provide employee training. Among the providers we may also admit Non-formal education & training institution (19.3%), Commercial institution where education & training is not main activity (9.6%), Formal education Institution (7.8%), Non-profit Association (7.2%), Individual (5.8%).

Table 3. Providers of non-formal education and training activities, 2016 (% share of all non-formal learning activities of adults aged 25–64)

	Employer	Non-formal education & training institution	Formal education institution	Commercial institution where education & training is not main activity	Employers' organisation, chamber of commerce	Non-commercial institution (e.g. library)	Non-profit association	Individual	Trade union	Other
EU	33,8	19,3	7,8	9,6	4,5	3,7	7,2	5,8	1,2	5,1
Average	33,7	20,4	10,2	9,2	4,5	4,1	5,4	5,0	2,4	5,9
Minimum	12,6	5,1	2,9	3,1	1,1	0,9	1,2	0,9	0,5	0,7
Maximum	63,5	48,7	23,1	22,1	15,2	22,6	17,1	19,1	7,4	13,5
Standart deviation	11,3	9,1	5,4	4,3	3,4	4,2	3,8	4,0	2,1	3,9

Source: Eurostat (2020).

So, the regional specifics of the labor market, the market of educational services determines the level of involvement of the population in online lifelong education. Among the most common forms of education (Table 4) - using computers 94.1% within the EU, the next form - using printed materials (36.6%), with the help of family members, friends or colleagues - 28.7 % and through TV / radio / video (26.5%).

Table 4. Participation rate in informal learning by sex and learning form, 2016 (% of the population aged 25 to 64 participating in informal learning in the last 12 months)

	Sex			Learning form					
	All	Men	Women	From a family member, friend or colleague	By using printed material	By using computers	Through television/ radio/video	By guided tours of museums, historical/natural/ industrial sites	By visiting learning centres (including libraries)
EU	59,9	59,6	60,2	28,7	36,6	44,1	26,5	14,2	10,3
Average	65,1	64,1	66,0	34,8	39,7	48,8	28,7	15,1	11,5
Minimum	22,4	19,0	25,5	5,1	11,1	19,5	5,0	1,0	2,2
Maximum	96,1	94,9	97,1	76,2	58,0	73,6	51,3	38,3	24,6
Standart deviation	18,2	18,3	18,2	17,2	12,6	14,9	12,0	9,0	5,9

Source: Eurostat (2020).

Online education provides employers with a number of benefits (GODSEY, 2019):

1. Ability to control the learning process and results, the ability to optimize their own time by employees
2. Optimal distribution of the educational process by employees depending on the convenience, fragmentary training.
3. Flexibility of e-education, speed of information processing independently of other students, own educational pace.

4. Interactivity, convenience of the form of submission of materials, accessibility.
5. Materials are available for understanding. All materials consider the level of education of the employee.
6. Ability to refresh knowledge.

Online education is used by employers to increase productivity as a result of income and profits. Large companies with highly educated employees use online education as a way to motivate when income does not stimulate the employee to efficiency. For example, 75% of US companies have integrated online learning. The necessity of companies to provide changings due to problems in various business subsystems determines the need for training, acquisition of competencies by employees (PAPPAS, 2019). In particular, the common practice of companies is coaching. Coaching is used to increase sales and efficiency of interaction with the client, to increase the level of customer loyalty, the formation of competencies to close transactions with the client. Studies have shown that spending 1,500 per employee on online learning provides a 24% increase in profits (PAPPAS, 2019). The level of productivity increases by 30% per 1USD of investment in online employee training (PAPPAS, 2019). So, the main need of employers is to ensure stability and income growth. This need is transformed into requirements for the employee as a resource to ensure profitability.

The latest tendency in online employee education is the integration of training systems into software. For example, the company's sales management system integrates training that negotiates with the client to ensure 100% conclusion of the agreement. According to The e-learning Guild research (2018), among employees who have undergone e-learning, most workers are in the following professions: designers (24.9%), internet of Everything (17.10%), trainers and teachers (7.6%), instructional delivering (7.3%), content author (4.4%), business development (3.3%), project and product management (3.0%). In fact, they are workers in the creative industry and digital economy. It is logically explained by the necessity to acquire the skills that employers need to have. At the same time the lack of educational programs, educational services within the traditional training can be a problem to gain such knowledge (Table 5). Since the early 2000s, employment within the EU has averaged 27% in industry, which required the development of workers' skills due to a lack of skills to use new technologies integrated into production processes. Over some period of time, this trend has intensified with the development of creative industries as a competitive advantage in ensuring business sustainability. This has led to the necessity for a labor market for workers with creative, technical skills.

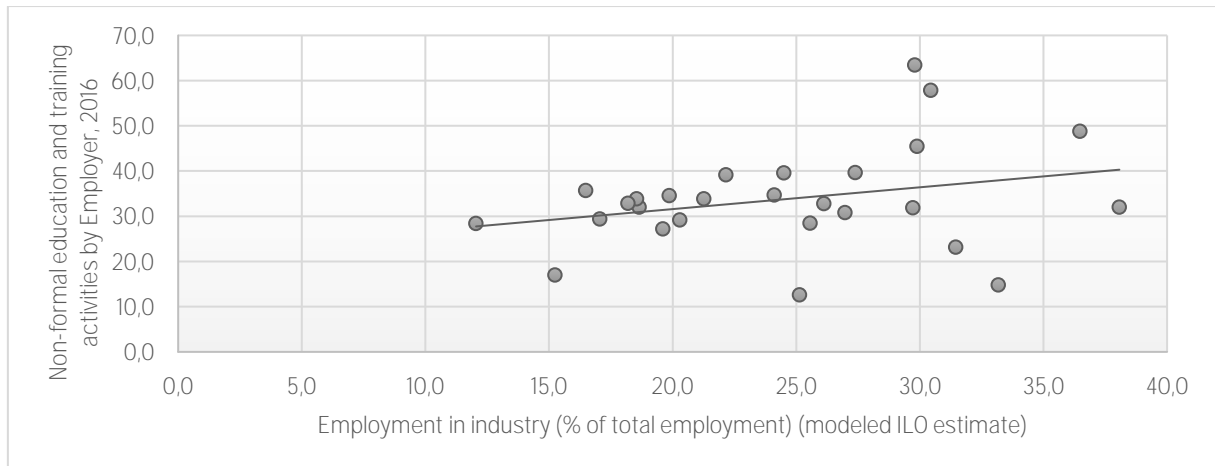
Table 5. Correlation Non-formal education and training activities by Employer, 2016 and Employment in industry (% of total employment) (modeled ILO estimate)

		Non-formal education and training activities by Employer, 2016
Non-formal education and training activities by Employer, 2016		1
Employment in industry (% of total employment)		-
2000		0,243
2001		0,225
2002		0,273
2003		0,270
2004		0,294
2005		0,276
2006		0,289
2007		0,286
2008		0,286
2009		0,330
2010		0,334
2011		0,322
2012		0,317
2013		0,296
2014		0,314
2015		0,294
2016		0,284
2017		0,298
2018		0,297
2019		0,294

Source: Author calculation, Eurostat (2020), World Bank (2020).

In fact, traditional training does not meet the needs of the labor market for specialists in high-tech industries of the new knowledge economy. Salaries are much higher in such areas, which encourages people to receive non-formal lifelong education, in particular through online learning technologies. As a result, lifelong learning is becoming a popular tendency. In particular, online education is more common in the most developed countries with highly developed knowledge economies and creative economics (Figure 2).

Figure 2. Employment in industry (% of total employment) (modeled ILO estimate) vs Non-formal education and training activities by Employer, 2016



Source: World Bank, Eurostat (2020).

The structure of the economy determines the level of demand of the labor market in specialists with digital skills. This situation accordingly determines the need for specialists in online learning because of the impossibility of traditional education to provide employers with employees with modern skills and competencies.

CONCLUSION

Online lifelong education develops in accordance with the needs of the labor market which are transformed under the influence of the formation of the digital economy, creative economy and knowledge economy. The structure of the economy determines the necessity of the labor market, which in turn calls for the development of innovative educational practices. The most common form among them is non-formal adult learning in creative industries. The study confirms the link between employment in production and the provision of adult education by employers.

In fact, there is no effective link between 'education - the labor market - the private sector'. Employers solve the problem of lack of competencies of specialists through the integration of innovative training practices and technologies. At the same time, traditional training does not meet the needs of the labor market in specialists in high-tech industries of the new knowledge economy. Therefore, online education will become an increasingly decisive factor in economic development in future.

The regional specificity of the labor market is a prerequisite for adult lifelong learning and determines the level of involvement of the population in online lifelong learning. There is a significant differentiation between formal and non-formal education within the EU (3.7% and 13.2%). Online education is more common in the most developed countries with a highly developed knowledge economy and creative economics. The latest tendency in online employee education is the integration of training systems into software.

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