AUGMENTING COLLECTIVE INTELLIGENCE THROUGH BLENDED LEARNING AND OPEN EDUCATIONAL RESOURCES

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The recent technological advancements in computing have made it possible to develop methods of measuring the intelligence of groups, pertaining that a group can demonstrate broader knowledge than any individual, regardless of how bright this individual is. This led Pierre Lévy to apply the term “collective Intelligence” to describe a form of universal, distributed intelligence, which arises from the collaboration and competition of many individuals [1]. The principles of collective intelligence were studied rather fragmentally in economics, management and decision-making before P. Lévy published his seminal work, which indicates the continuous quest for new possibilities of harnessing human intelligence and advancing it with new technological tools.

Key words: collective intelligence; crowdteaching; blended learning; knowledge management.

РАЗВИТИЕ КОЛЛЕКТИВНОГО ИНТЕЛЛЕКТА ЧЕРЕЗ СМЕШАННОЕ ОБУЧЕНИЕ И ОТКРЫТЫЕ ОБРАЗОВАТЕЛЬНЫЕ РЕСУРСЫ

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Последние технологические достижения в области вычислительной техники позволяли разработать методы измерения интеллекта групп, согласно которым группа может демонстрировать более широкие знания, чем любой отдельно взятый человек, независимо от того, насколько ярким, талантливым он является. Это привело к тому, что Пьер Леви применил термин «коллективный интеллект» для описания формы универсального интеллекта, который возникает в результате сотрудничества и конкуренции [1]. Принципы коллективного интеллекта были довольно фрагментарно изучены в области экономики, управления и принятия решений, прежде чем П. Леви опубликовал свою основополагающую работу, которая указывает на постоянные поиски новых возможностей использования человеческого интеллекта и его совершенствования с помощью новых технологических инструментов.

Ключевые слова: коллективный интеллект; крауд-обучение; смешанное обучение; управление знаниями

Friedrich August von Hayek, a Nobel laureate in economics in 1974, who regarded mind to be a dynamic and self-organizing system, may well have been the first economist to clearly frame the issue of how to make best use of distributed knowledge: «The economic problem of society is . . . not merely a problem of how to allocate given’ resources if “given” is given to a single mind which deliberately solves the problem set by these “data”. It is rather a problem of how to secure the best use of resources known to any of the members of society, for ends whose relative importance only these individuals know. Or, to put it briefly, it is a problem of the utilization of knowledge, which is not given to anyone in its totality» [2, p. 19]. Collective intelligence can be compared
to a kind of interface, which, as an active intellect, in the words of P. Lévy, encompasses the total human intelligence emerging bottom-up from the multitude of actual human knowledge [3, p. 262]. S.J. Russell, a computer scientist and founder of the Center for Intelligent Systems at the University of California and the coauthor of «Artificial Intelligence: A Modern Approach», concluded that «the way I think about it is everything we have of value as human beings—as a civilization—is the result of our intelligence. What AI (artificial intelligence. – L. D.-H.) could do is essentially be a power tool that magnifies human intelligence and gives us the ability to move our civilization forward» [4, p. 165].

Intelligence has been a highly researched concept beginning with Spearman’s work [5]. Human intelligence is often defined as the ability to learn from experience and adapt to the environment. More specifically, intelligence can also be described as the ability «to achieve one’s goals in life, within one’s sociocultural context» [6, p. 189] or «a biopsychological potential to process information and to solve problems» [7, p. 34]. Used in plural, intelligence is understood as skills that humans learn over time to adapt to their environment [8]. In addition to human intelligence, the phenomenon of artificial intelligence (AI) emerged recently with the enhanced abilities of machine intelligence to mimic the human abilities such as the power of knowledge and reasoning, problem-solving, learning, communicating, perceiving and acting [4].

Despite its natural existence, collective intelligence has only been studied informally and rather intermittently in the field of organizational behaviour and leadership. However, many organizations discover collective intelligence and apply it in practice for categorizing, evaluating and sharing knowledge as well as making predictions, and solving problems [9, p. 220].

In the conceptual analysis of collective intelligence it is necessary to make a distinction between its various components. Knowledge is the organized body of facts and principles within an individual's mind pertaining to the characteristics of objects in a given domain [10, cit. from 9, p. 221], which goes beyond mere accumulation of facts to interpret and organize small pieces of information into meaningful categories.

Knowledge structures are formed through training, education, and experience [11; 9] and can include both codified and tacit knowledge. Codified (explicit) knowledge can be explained in words or shown with drawings or writing, whereas tacit knowledge cannot easily be conveyed to another person and it involves movement skills, physical experiences, senses, rules of thumb, and intuition [12; 9]. Individuals with greater knowledge have more extensive and diverse knowledge structures in which they organize information based on underlying principles and have the ability to efficiently store this information. Greater knowledge is associated with greater problem solving capabilities [11; 9].

Within a collective, the concept of intelligence refers to the collective's ability to solve problems, while at the individual level knowledge it is correlated with problem solving [9]. This relationship is expected to hold at the collective level, so that the knowledge of each individual within the collective contributes to the collective's problem solving ability, or collective intelligence [ibid].

Collective intelligence is the next big thing in information technology, focusing on such phenomena as «peopleware» and the «Global Brain». Even the United Nations has been considered as a future center for global collective intelligence through a series of meetings and papers. In 1960-70s, the first attempts were made to create software and hardware augmenting collaborative decision-making: the Delphi method,
SYNCON, Murray Turoff’s pioneering Electronic Information Exchange System (EI-ES), to mention a few.

One of the areas where applying the tools and principles of collective intelligence is critical nowadays is education. Occupation of a teacher has traditionally presupposed involvement in the process of designing curricula and lesson plans. More recently, this phenomenon of describing teachers as designers, has drawn renewed interest [13], prompted in part by the widespread availability of Web resources. These open educational resources (OER) become increasingly available, being an integral part of blended learning as a tool to engage students outside the classroom and in between classroom sessions. Being implemented at Copenhagen Business School (CBS), blended learning combines the best features of on-line and face-to-face teaching. There are at least five reasons for applying blended learning:

- Blended learning provides new opportunities for activating students as well as of giving feedback of their work. It increases student performance, motivation and learning outcome;
- Blended learning helps to make efficient use of the time that students spend on learning when they are together in a classroom as well as when they are online;
- Blended learning provides an online learning environment, which offers new opportunities for students outside the classroom;
- Blended learning provides an opportunity to support CBS’ strong international profile, creating virtual classrooms for students at partner universities and thus the option of offering classes across national borders;
- Blended learning represents a means to ensure practice-oriented teaching (source: https://blog.cbs.dk/ribl/the-ribl-project/).

Recker et al. introduce a concept of crowdteaching, which, based on a participatory Web culture and infrastructure, allows teachers to share their creations as well as leverage from the best that their peers have to offer to support a collective intelligence or crowdsourcing community [14].

Perhaps one the most exciting application of the Web in teaching languages is its capacity to bring together students and native speakers [15, p. 191]. Online communication offers remarkable opportunities of bringing together language learners in different countries in order to carry out collaborative projects or undertake intercultural exchanges [16]. With the help of a free, Web-based authoring tool called the Instructional Architect (IA.usu.edu), teachers are able to find and design instructional activities for their students using OER [14]. IA provides an infrastructure for collective intelligence and crowdsourcing (known as crowdteaching), in which teachers can create, share, and iteratively adapt instructional activities using OER, leveraging from their peers’ work to best serve the needs of their students [ibid].

In collective intelligence communities, organized groups of students and teaching connected by the Internet work together to accomplish tasks in ways that appear more intelligent, more effective, and more efficient than working alone [ibid]. However, studies of collective intelligence sites, such as Wikipedia, suggest that these peer production models may succeed only when they are aimed at focused tasks and coupled with incentives to harness the work of the best contributors [ibid].

Although an e-learning system can be adapted technically to support integrated programmes, to bridge national, international, and cultural issues and be used as an alternative to the very costly mobility of students, some of the barriers to overcome in this scenario are: legal obstacles, national, and international recognition, quality assur-
ance, the need for compatible credit systems, varying teaching approaches, examination procedures, the bureaucracy involved in the administrative processes, cultural differences, and bandwidth limitations. The administrative support in this context plays a crucial role to ensure the success of this approach.

BIBLIOGRAPHY


ПОДГОТОВКА КОНКУРЕНТОСПОСОБНЫХ ПЕРЕВОДЧИКОВ ИЗ ЧИСЛА СТУДЕНТОВ НЕЯЗЫКОВОГО ВУЗА

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