



Ethical issues of crowdsourcing in education

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ABSTRACT

Crowdsourcing has become a fruitful solution for many activities, promoting the joined power of the masses. Although not formally recognised as an educational model, the first steps towards embracing crowdsourcing as a form of formal learning and teaching have recently emerged. Before taking a dramatic step forward, it should be estimated whether it is feasible, sustainable and socially responsible. A nice initiative, which intends to set a groundwork for responsible research and innovation and actively implement crowdsourcing for language learning of all citizens regardless of their diversified social, educational, and linguistic backgrounds is enetCollect. In order to achieve these goals, a sound framework that embraces the ethical and legal considerations should be established. The framework is intended for all the current and prospective creators of crowd-oriented educational systems. It incorporates the ethical issues affecting the three stakeholders: collaborative content creators, prospective users, as well as the institutions intending to implement the approach for educational purposes. The proposed framework offers a practical solution intending to overcome the revealed barriers, which might increase the risk of compromising its main educational goals. If carefully designed and implemented, crowdsourcing might become a very helpful, and at the same time, a very reliable educational model.

Introduction

Human beings are the most creative and conscious creatures, determined to socially interact. As such, by proactive engagement, many people are eager to enthusiastically contribute towards accomplishing common outcomes (Leonard, 2008). At the same time, many others are keen to passively consume the results produced by others (Schor, 1999). Following the new management and business trends initiated by the mutual interaction between the creators and the end users, social entrepreneurship was established (Dees, 1998), promoting its great impact to integration, contribution, coherence, actualization, and finally, the acceptance of joint multi-user results (Keyes, 1998).

Knowledge can also be considered a public goal, owned and maintained by the community (Wasko, & Faraj, 2000). In the new globalized era, concerned with the challenges of constrained budgets for education, a significant amount of information gathering and learning is to a great extent mediated by technology (Beaven, Hauck, Comas-Quinn, Lewis, & De los Arcos, 2014). It endorses crowdsourcing as a suitable model of modern education.

One of the recent online learning phenomena are massive open online courses (MOOCs), which made a significant step toward the evolution of education (Daniel, 2012; Liyanagunawardena, Adams, & Williams, 2013). Open educational resources (OER) share some of the crowdsourcing concepts, because apart from being open and free for

use, some of them also provide the opportunity to be adjusted according to one's needs (Porcello, & Hsi, 2013). And, while the MOOCs and OERs are predominantly aimed for students, Khan Academy offers online courses for learners, their parents and teachers starting from kindergarten. In parallel, it offers standardized tests for high schools, such as SATs (Khan Academy, 2017).

All these examples are success stories of crowdsourcing intended for gaining new knowledge and skills. The “massification of courses” represented in the form of MOOCs has been officially approved by governments, institutions and commercial organizations (Yuan, Powell, & CETIS, 2013). The systematic survey, which included more than 2000 US faculties, revealed that the concept of OER is highly appreciated by the faculties, which recognize the value of the OER's proven efficiency and trusted quality (Allen, & Seaman, 2014). However, it has never been suggested to adopt OERs as a prospective mainstream of higher education, although they have become a very conventional way of increasing knowledge and skills.

Many crowd-oriented educational projects from various domains have attracted thousands of volunteers, and reached millions of users. They demanded plenty of time, energy and resources, but they involved many enthusiasts who actively participated in the knowledge creation and sharing, through a constant social interaction and collaboration.

These learning platforms are used by hundreds of millions learners, and they encourage the massive creation of collective learning resources. They also promote the implementation of crowdsourcing as an

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official method of education. Therefore, it is important to judge whether further efforts to create and accredit some new crowdsourcing learning platforms will inevitably be fruitful and prosperous as the previously mentioned, particularly if they are intended to become one of the main learning models in formal education.

Huge popularity and massive contribution to various crowd-oriented initiatives raises an important question: can crowdsourcing rise above being a standalone approach and become a part of formal education, but predominantly as a complementary learning methodology? It will be examined throughout this paper, in light of enetCollect, a large COST supported network of researchers from 39 European countries (<https://enetcollect.eurac.edu/>). Its main goal is to implement explicit and implicit crowdsourcing and to propose a robust and flexible solution intended for language learning (Agerri, Maritxalar, Lyding & Nicolas, 2018). Taking into consideration the obligation “to cope with the increasing demand for language learning material and the striking diversification of learner profiles due to the intensified migration flows motivated by educational, professional, economic or geopolitical circumstances” (<https://www.cost.eu/actions/CA16105/>), the action initiated a special working group responsible to identify all the ethical and legal implications related to the implementation of crowdsourcing in education. The members of this working group will devise guidelines and unite them into a sound framework for an ethical language learning solution, which is at the same time compliant with the legal considerations of introducing crowdsourcing as a supplementary or standalone model of official education. The framework will be evaluated by external experts, and upon their approval, the crowd-oriented language learning will become available to all citizens regardless of their diversified social, educational, and linguistic backgrounds, strongly supporting equality, inclusion and diversity.

This paper has an intention to examine whether crowdsourcing can become a part of formal education, and to alert the creators of crowdsourcing educational platforms about the challenges the approach can trigger. It first presents the taxonomy of crowd-oriented education, and then consecutively examines the main concerns of collaborative content creators; the advantages and challenges of the prospective users; and the ethical and legal responsibilities of the institutional system intended for crowd-oriented formal education. Then, the recommended design framework, which takes into consideration all the concerns mentioned in the previous session is established. The last section presents the concluding remarks based on the premise whether or not crowdsourcing has matured to become officially recognised as an educational model.

Taxonomy of crowd-oriented education

One of the crucial fundamentals of distant education are the three basic types of interaction: learner-content, learner-instructor, and learner-learner (Moore, 2009). Recently, it has been proven that the educational content can arise from the huge army of instructors, students, as well as from the independent crowd (Mitros, & Kim, 2015). These three involved parties are severely dependent on the underlying technology mediated solutions, provided by the educational institutions they are affiliated with. In order to illustrate the potential of this coupling, merged with the learning objectives in the educational context, a crowd-oriented taxonomy for learning, teaching and assessing is proposed (Figure 1.). The taxonomy involves the three active axes:

- 1 Schools. Institutions providing crowd-oriented education.
- 2 Teachers. Collaborative content creators, assessors and consumers.
- 3 Learners. Collaborative content consumers and supporters.

According to Brabham, “crowdsourcing is an online, distributed problem solving and production model where organizations tap the collective intelligence of online communities.” (Brabham, 2013). The school intending to successfully implement it, should provide a sound

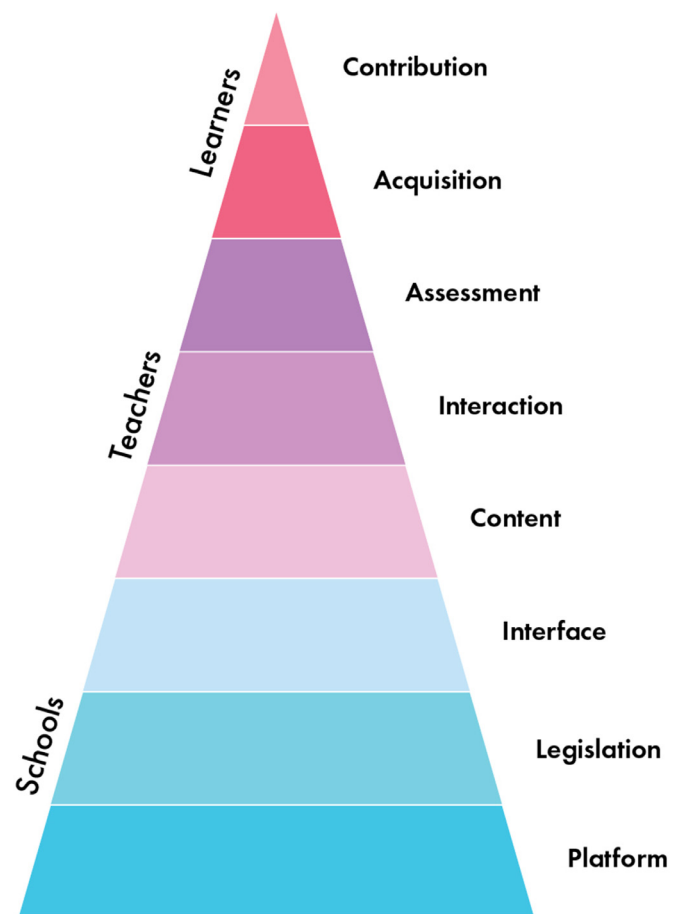


Fig. 1. The taxonomy of crowd-oriented formal education

and pleasing harbour for all the participants and at the same time design an application according to the educational legislation in force. The multi-user platform should be a technological and pedagogical content knowledge system, which is safe, secure and highly reliable, while the application should have an easy-to-use and motivating interface.

Using such a platform, teachers are able to create and observe the pedagogical content, which is consistent to effective learning and teaching methodologies, and facilitate the objective and efficient assessment. Entitled by the increasing content, teachers will themselves become content consumers, as well.

In the highly interactive and exciting crowd-environment, learners start gathering new knowledge, skills and experience in an extraordinary, and at the same time, very relaxed way. In parallel, they also contribute to the creation of new content. Learners might be confused, and forget that although the new approach has very entertaining methods, even in the most innovative schools, the same educational goals remain in effect: remembering, understanding, applying, analysing, evaluating and creating (Krathwohl, 2002). Thus, to successfully play their role in the crowd, they should adhere to the same integrity and honesty values as during performing their academic work using the more traditional learning methodologies.

Following are three sections explaining the three axes of crowd-oriented education, and the seven taxonomy layers in more detail, revealing the ethical issues which may arise in each layer. If crowdsourcing is intended to become part of formal education, they should be carefully observed. The order of introducing them is opposite from the order in the taxonomy, according to the level of responsibility each axis carries in the crowd-oriented education. The learners, as the least lasting entities in the whole process, are the first to be introduced. They are

followed by their teachers, and finally, by the schools, which will continue evolving the crowd-oriented education, if this educational model proves its value.

Crowd-oriented learners: their rights and duties

The pedagogy of the 21st century has shifted from being teacher-centered towards learner-centered, supporting students to “explore, deconstruct and share knowledge of themselves, their experiences, and the world in which they live” (Bodinet, 2016). This active approach interconnects teachers and learners enabling bidirectional communication between both groups of educational participants, and many-to-many communication within these groups.

Mutual communication, cooperation, and collaboration enhance the quality of learning, understanding, and the capability of sharing gathered knowledge. They can be established even when the learners don't know who their team mates are. Interpersonal compatibility among co-workers doesn't necessarily imply that they should be acquainted, particularly in the online communities.

The power of crowd-oriented education goes far beyond the traditional active learning. Learners' contributions are a visible part of the common outcome and whenever these outcomes are effective, they motivate participants to contribute more, and stimulate their ambitions to produce a better result. The learners with a competitive spirit are motivated for self-improvement and ready to produce more or greater materials than their colleagues. Therefore, this educational shift looks promising.

Crowd-oriented learning and teaching enable learners to actively construct their own knowledge, usually by making several trials and errors. Additionally, their recognition and production activities are assisted or supervised. For example, Duolingo provides learners with a set of assisted recognition exercises within the introduction level, and afterwards, using the word bank of a corresponding language, they go through assisted production (<https://blog.duolingo.com/crown-levels-a-royal-redesign/>). In enetCollect, this informal assistance will be enhanced to active supervision performed by the language teachers responsible for supporting learning of one foreign language. Taking into consideration that active construction of own knowledge is the major feature of constructivism (McLeod, 2019), and enhancing it with the supportive supervision, crowdsourcing is promoted to a gold standard of social media assisted supervised constructivism.

In order to benefit from the power of crowdsourcing, apart from pedagogical and technological constraints, several ethical prerequisites should be observed. One of the key issues of modern education are student privacy and disclosure rights, which have significantly evolved since the creation of the social Web (Walter, 2011). Walter recognized the three factors, which are directly applicable to education: “(1) a misplaced presumption that online behaviour is private, (2) that the nature of the Internet at a mechanical level is quite incommensurate with privacy, and (3) that one's expectation of privacy does not constitute privileged communication by definition.”

In the crowd-oriented learning and teaching, the behaviour becomes far from private, unless the learners register to the system anonymously, or when their contribution is concealed. Using the anonymous or masked access, students feel more comfortable to disclose many private data, and protect private communication, but it might become a source of tweaking the results (Simula, 2013), or trigger the naïve disclosure of private matters (Renik, 1995), which can be annoying to others. As a consequence, some students might become a source of harassment and bullying due to their incompetent or inexperienced behaviour (Hui, Glenn Jue, Gerber, & Dow, 2015). To avoid these obstacles, prior to enrolling the crowd-oriented course, students should be acquainted with the privacy policy, knowing exactly which personal data do they share with the community, who has an access to their data, and how are their personal data protected (Johnstone, & Soares, 2014). This policy should also include binding statements about information accountabil-

ity (Weitzner, Abelson, Berners-Lee, Feigenbaum, Hendler, & Sussman, 2008).

Freedom of expression should be stimulated and at the same time carefully supervised, to avoid the risks of deliberate promotion of hate speech, propagation of fake news, and last, but not the least, proliferation of various dogmas or ideologies (Jelen, Lewis, & Djupe, 2017). It was recently reported that crowdsourcing platforms are increasingly being used by untrustworthy and malicious users, such as: non-eligible participants, who have not fulfilled the prerequisites to take part in some micro tasks; fast deceivers, who supply ill-fitting responses; rule breakers, who provide incomplete answers; smart deceivers, who enter unrelated words, conforming all the instructions; and finally, the so called gold standard preys, who are tripped by some questions, mainly due to their inattentiveness (Gadiraju, Kawase, Dietze, & Demartini, 2015).

If crowd-oriented learning includes the grading of the test items, students should be aware of the rating scales that evaluate their performance (Parkes, Stein, & Reading, 2015). Grading schemes should predict negative points for all kinds of information abuse in the short answer and essay type answers, including the disclosure of sensitive data or confidential information, abuse of the freedom of speech, as well as plagiarism. It should also have a mechanism to ignore the answers by untrustworthy or malicious users. Otherwise, the information abuse should be sanctioned outside the crowd-oriented learning environment. To prevent further escalation of inappropriate content, such should be automatically redacted, or immediately removed if noticed by the teachers or system administrators (Mármol, Pérez, & Perez, 2014).

Students should be granted a protection of their intellectual property rights, particularly after the accusations that some students' results were appropriated by their teachers or mentors, or at least “that they have been denied rightful authorship” (Woolston, 2002). Conversely, students should be reminded that the same rights are valid to all the content creators (Hagedoorn, & Zobel, 2015; Wolf, Greer, Driscoll, Anderson, & Bobrowsky, 2013). Namely, it was noticed that apart from the high levels of plagiarism from various sources (Glendinning, 2014), students are also keen of appropriating the results of others inside the learning systems (Zdravkova, 2014).

According to The UN Universal Declaration of human rights, everyone has the right to education (Assembly, 1948 - Article 26). If crowd-oriented courses are intended for official use in education, they should obey the rights to be accessible to everyone, no matter the place, religion, nation, or language (Knight, 2015). All these issues can easily be provided by the educational platform.

Particularly welcome is the inclusion of students with various special needs, with a special emphasis to visually impaired children. Crowdsourcing was already used to support people with reduced mobility (Mirri, Prandi, Salomoni, Callegati, & Campi, 2014), visually (Xiao, Joseph, Zhang, Li, B., Li, X., & Zhang, 2015), and hearing impaired (Shiraishi, Zhang, Wakatsuki, Kumai, & Morishima, 2017). The fact that people with disabilities have easily grasped new technologies, although their leadership still remains overlooked (Bigham, Ladner, & Borodin, 2011) is an additional motivation to promote crowdsourcing as a formal educational methodology.

Crowd-oriented teachers: educational obligations

Crowd-oriented learning platform is a supplementary educational component created to enhance the traditional in-class and online activities. It supports performing of simple educational games, and completion of unfinished tasks intended to stimulate language acquisition. The key focus of crowdsourced language learning is mutual competition, collaboration, and cooperation. Collective activities are performed by means of a peer-learning approach. Teachers involved in crowd-oriented education have several obligations: they should carefully create and maintain the content; interact with their students and other content creators via crowdsourcing system; and evaluate the content created by their students. These are very responsible and time-consuming demands

many teachers can't cope with. The new school context becomes stressful for many teachers, who are emotionally exhausted (Hollins, 2015). Inevitably, their decision to participate in crowdsourcing education will become their additional challenge, mainly due to value conflicts caused by "different goals, values and beliefs" of their collaborators (Skaalvik, & Skaalvik, 2016), but also due to highly increased engagement caused by the demand for instant reaction (Schaufeli, & Bakker, 2004). Therefore, it is essential to introduce new educational model on a voluntary basis, engaging the most enthusiastic teachers, who will be supported by more experienced supervisors. Hopefully, such educators exist. To successfully participate in the crowd-oriented education, they must be professionally very responsible, prepared for continuous professional self-development and activism (Sachs, 2016). At the same time, they should expect an increased engagement, and be ready to predict the consequences of their actions in the exceptionally transparent and vibrant environment (Nicholls, 2014).

Before activating the whole system to real-life students, several experts should be engaged to prepare the pilot knowledge content, problem generators, and questions for evaluating student answers and knowledge (Anderson, 2011). These experts will be experienced to seek the source of quality information, in order to create reliable information. According to Sallis (2014), they should be searched among those outstanding teachers, who possess high moral values, have access to plentiful resources, and are capable of applying the latest technology. For learners with learning disabilities, additional experts should be engaged to adapt the presentation of the whole curriculum and content in a comprehensible way (Foreman, & Arthur-Kelly, 2017; Kauffman, Halahan, & Pullen, 2017).

Another important issue of crowd-oriented education is the constant dynamic interaction within the system. Teachers should exchange experience and resolve mutual questions, including problems arising from incompetent or inappropriate use by the learners, which can be organized as a supplementary professional blog or discussion forum (Pigozzi, 2006).

Teachers should supervise their learners, to prevent the activities of untrustworthy and malicious users, they will have to act efficiently, fairly and with trustworthy arguments (Franklin, & Harmelen, 2007). This needs an extreme concentration, professionalism and expertise. Even more responsible is teachers' role as a live mentor, who is actively engaged to assist the learners whenever any support is needed. To support teachers to efficiently and reliably perform this task, a pool of stored mentoring sessions could also be created (Anderson, 2011).

If implemented in formal education, it is expected that crowd-sourcing content created by the learners will be of acceptable quality (See, Comber, Salk, Fritz, Van der Velde, Perger, & Obersteiner, 2013). Some teachers who actively participate in the system might be tempted to appropriate the content of the experts and other collaborators, as well as the contribution produced by the learners (Woolston, 2002). They should be aware that all the created contents are copyright protected, thus any copyright infringement will be sanctioned according to laws that protect intellectual property. The decisive teacher obligation is the objective assessment of open answers and short essays. There are many techniques, such as the SOLO taxonomy, which assesses the five levels of understanding: visualization, analysis, informal deduction, formal deduction, and rigor (Collis, & Biggs, 1979; Biggs, & Collis, 2014). Crowd-oriented systems offer an ideal possibility for an objective assessment through crowd-oriented peer assessment (Widodo, 2015). So called writing selection items (multiple choice, true-false questions, matching, and interpretative exercises) will be fully automated, and the grade will be presented to students according to a predefined strategy, immediately after the evaluation, or afterwards. However, the crucial advantage of a crowd-oriented approach is the essay questions, where learners demonstrate their language confidence and performance. To avoid subjective assessment, a unified grading criteria including the level of language skills and the quality of the created content will be established.

To assure the success of the proposed crowd-oriented educational platform, teachers should perform their best. Unfortunately, it seems that due to the increased amount of obligations, a teacher can chronically suffer from a burnout (Rumschlag, 2017), which triggers a severe emotional exhaustion (Han, Yin, Wang, & Zhang, 2020) and consequently, negatively affects students' performance (Arens & Morin, 2016). In order to keep the teachers fully engaged, professionally responsible and efficient, they should be highly motivated and appropriately rewarded. Some proficiency level rewards for teachers' excellence include rewarding: individual practitioners or teams; collaboration; internationalization; innovation; and leadership (Land, & Gordon, 2015). For some teachers, the most motivating will be student-led awards (Madriaga, & Morley, 2016). With none of the aforementioned rewards, the established crowd-oriented learning system will get stacked in its initial stage, due to teachers' exhaustion, which might motivate them to decide to even leave the teaching profession (Skaalvik, & Skaalvik, 2016).

Schools: ethical and legal responsibilities

Schools carry the greatest responsibility of the whole educational process independently of the implemented educational model. They have a legal obligation to protect the students and teachers, the content which is delivered, as well as the whole educational process. Therefore, the crowd-oriented education should be planned in accordance with the ethics by design, predominantly considering privacy, security, and intellectual property protection (Moore, 2010). If not, the well-defined objective will be poorly developed (Moore, Ellsworth, & Kaufman, 2008).

Fair Information Principles foresee five protections: notice/awareness, choice/consent, access/participation, integrity/security and enforcement/redress (McDonald & Cranor, 2008). Furthermore, privacy requirements should take into consideration the seven vulnerability goals: information monitoring, aggregation, storage, transfer, collection, personalization and contact (Antón, Earp & Reese, 2002).

Privacy rights and obligations should be made according to existing national or international acts, but should also include common sense as much as possible (Greenberg & Goldstein, 2017). Serious information security measures should be established to prevent any form of hacking and information security threats (Halder, 2014). They should be crafted to fit the users in the educational needs, caring of the technological and behavioural aspects of prospective digital crime and terrorism (Taylor, Fritsch, & Liederbach, 2014). In parallel, many reliability procedures should be embedded, to avoid the loss of collected data (Gardlo, Egger, Seufert, & Schatz, 2014). Copyrights should be very carefully protected not only within the crowd-oriented system, but also from the prospective publishers, such as Sci-Hub (Priego, 2016), a pirate website that provides an illegal access to more than 75 million research papers. Finally, a set of sensible and binding terms of use should be created.

All these documents should be well known to all the users prior to enrolling the crowd education. But, it is more than clear that none of the new users read the privacy policies. Therefore, the most important issues should be separated and introduced to all of them and presented step-by-step during the registration. The registration will take more than usual, but the users will be completely aware of them, thus they will take the consequences of not obeying them.

Quality of collected data should carefully be examined, to minimize the influence of generally accepted misconceptions, beliefs, viewpoints, which can be seen by other users (Zaveri, Rula, Maurino, Pietrobbon, Lehmann, & Auer, 2016). Knowledge experts should create the initial content according to recommendations for pedagogical content knowledge, where apart from the content of the lessons, future teachers will have to be warned about the questions that they might be asked, and advised which explanations to offer (Shulman, 1986). For all the alternative ways of looking at the same idea or problem, a consensus must be found prior to uploading the content into base of knowledge (Koehler,

& Mishra, 2009). Experienced teachers, who are aware of cognitive, social, and developmental theories of learning through interactive dialogs embedded in the system should advise their less skilful colleagues how to apply them to learners (Koehler, & Mishra, 2009). Knowledge experts and experienced teachers will also produce the pool of stored mentoring sessions before the crowd-oriented system starts (Anderson, 2011).

Particular attention should be paid to assessment, which will be completely crowd-oriented. It will include the suggested personalized dynamic assessment, which is based on the previous learner's performance, as well as a personalized adaptive annotation, offering the learners to enhance the knowledge of some carefully selected topics, again depending on the level of their previous performance (Wang, 2014). The obligations should be carefully balanced, to avoid the observed heavy workload in the online environment (Ellis, 2018).

For the learners with various disabilities, the assessment should consider reasonable accommodations to participate, such as a slower pace, extended submission dates, or alternative arrangements (McLoughlin, Lewis, & Kritikos, 2017; Overton, 2003).

Crowdsourcing might make emotionally vulnerable learners, specifically those who doubt their ability not only to absorb, but also process information, even more vulnerable, and it could develop a larger insecurity, due to personal feeling of incapability to participate in the crowd-oriented process. This requires further attention in a more classic, face to face interaction between those learners and their teachers (Gable, Park, & Scott, 2014).

Institutions participating in the educational crowdsourcing system should obey the legal regulations of education, being aware that some countries might insist on an official accreditation and benchmarking of the approach (Armstrong, Brown, & Smith, 2014). These legal regulations should be taken into consideration, both in the design of the system and in the terms of use. They should also be prepared for the inevitable ranking of the education they offer, striving not only to get a good position, but also to enable excellence (Hazelkorn, 2015). Apart from the approval of the new learning and teaching approach, all the acts connected with the protection of human rights should be included in the system design (Tarow, 2014). They will incorporate the rights of access and equal opportunity; education free from discrimination; freedom of speech; privacy and security protection; and protection of digital rights.

Once the technological and pedagogical content knowledge and assessment methods are created, and the legal and human rights obligations implemented in the design, user satisfaction and motivation should be taken into account. The prospective users should feel excited to connect and enjoy the crowdsourced learning and teaching (Rolfe, 2015).

The addictive methodology, which is similar to social networking, is not sufficient to ensure the capacity to attract and retain a crowd (Cook-Sather, & Luz, 2015). The learners and their teachers should be inspired for a greater engagement in a highly responsible manner. Therefore, the motivation should be encouraged by many stimuli for the learners and for the teachers. Learners should be motivated by intrinsic, integrated and identified motivation, which include, among others, the perceived enjoyment, sense of belonging, and social identification (Lin, 2007). These personal factors can be reinforced by various rewards for achieving different goals, such as: the best result in some knowledge areas; rewards for the greatest contributor, the fastest problem solver, the greatest team player, or a reward for the learner who was the best colleague, the best motivator, or supporter of others. The external and intrinsic motivation, such as the improvement of job prospects, peer recognition, and perceived usefulness are more applicable for the teachers, although many ethically responsible and mature learners might also tend to reach them (Lin, 2007). Moreover, teachers could expect a certificate of excellence; a promotion; an award for best teachers; or a grant for further professional development. If the approach is successful, the greatest motivation for all will be the effective and outstanding achievement of the desired result (Anderson, 2011), leading to personal identification with the crowd-oriented learning system.

It is very difficult and time consuming to achieve all the aforementioned ethical, pedagogical and technical goals. It is even more difficult to find several target groups willing to participate in the pilot crowd-oriented system for some particular body of knowledge. The whole experiment might start as a pilot prototype for a small group of selected learners and teachers, who will simulate the crowd-oriented education during several weeks. Their experience will be decisive whether to carry on with the experiment, while their feedback will significantly influence the reorganization of the design presented in this paper.

Design framework of enetCollect

The main intention of COST action enetCollect is to establish a crowd-oriented framework for learning foreign languages, which involves a pool of linguistic and education experts responsible to prepare the initial multilingual body of knowledge. Prior to launching the platform, various prototypical experiments and evaluation with the enetCollect participants will be performed. Since January 2019, they have been examined as part of the crowdfests (<https://enetcollect.eurac.edu/cost-tools-events/meetings/>). The first success of the crowdfest was achieved: the initiation of six successful tasks, which were created and presented during annual meeting in 2019. Some of them, such as the nameless vocabulary trainer are available online. Creating a pool of useful crowd-oriented applications, which enable language learning is the major criterion for evaluating the action. In order to become widely used, user-oriented design strategies should be compliant with the following ethical and legal suggestions:

Protecting human rights

The platform has two end users: the learners and their teachers. Their human rights are crucial, and they should be carefully protected. Here are the main legal and ethical concerns of the platform that should be implemented while designing the platform:

- UN Equality and Non-discrimination law (UNENdL, 2019)

EnetCollect is compliant with UNENdL per se. It was motivated by the intensified migration flows and proposes a methodology of unrestricted education for the heterogeneous target groups. It stimulates gender equality, multiculturalism, and multilingualism, with particular devotion to endangered languages. Additional attention will be paid to users with various intellectual disabilities, enabling them an equal access to all the contents and full inclusion. The pace of presenting new content will be determined according to learners' fulfilment of previous tasks. Moreover, if the knowledge evaluation or content collection has time limits, they will be modified to disable discrimination of these users, and provide them with equal educational rights.

- The Marrakesh Treaty (MT, 2013)

In order to enable access to learners and teachers with visual impairment and print disabilities, the platform will enable collection and reproduction of all the published content in various formats, including magnified or spoken. Pre-recorded explanations will support all the languages covered by enetCollect participants.

- General Data Protection Regulation (GDPR, 2018)

All the users will be anonymous, using a predefined pseudonym randomly generated by the system during their first registration. The authorization of learners and teachers is different, thus the prefix L and T should be part of the pseudonym. During the first registration, users will be provided with a dedicated e-mail account, implementing the same pseudonym and the password the user created during the registration. No personally identifiable information (PII) will be collected, including those which are necessary to establish the mutual communication among platform users. Mutual communication will be enabled within the platform, and the recipients will know only the role of the user, not

the identity. No information about users' access will be collected, including their IP address and location. No data will be sent outside the platform, particularly not towards Google Analytics. The platform will generate no HTTP cookies. If they are unavoidable, Opt in/Opt out capabilities will be enabled. In such case, the platform will be integrated with an appropriate tag management systems to provide minimum cookie load. To protect users' privacy, some leveraging technologies for protecting confident data will also be implemented. All personally modified and removed data will be permanently deleted, even if they were previously graded.

- Directive on security and information systems (NIS Directive, 2016)

The platform and the central authentication system will be hosted and maintained by the most qualified action member, which has a long experience with providing a safe learning management solution. All the personal data, the content and learners' grades will be reliably stored and regularly backed up to avoid massive loss of data. The platform will be administered by an experienced team of computer security professionals from partner institutions, capable of immediately resolving the security obstacles. Their mutual communication will be supported by various blogs embedded in the crowdsourcing platform.

- UN Freedom of expression (FoE, 1948)

Each user will have a right to freely express own thoughts. In order to avoid deliberate proliferation of various dogmas or ideologies, harassment and bullying, all the learners' contributions will be temporarily concealed from other learners, prior to become officially approved and published. Teachers will be able to access all the contents, because they decide about the quality of the generated content. To avoid any kind of censorship, learners' contribution will go through a blind evaluation by at least two teachers. Since the identity of the learners is unknown, the likelihood that the teacher recognises the learner is minimal.

- Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS, 1994)

All the created content within the crowdsourcing platform is copyright protected, and the copyright is automatically granted. Invisibility of learners' contributions will prevent the appropriation of the content created by other learners. Whenever one content is accepted, the pseudonym of its author will appear in the list of contributors, providing them with the authorship credit. Since the learners' content is visible to all the teachers, the appropriation of one's content by some teacher will be immediately noticed, and the copyright infringement will be sanctioned. The authorship of the teachers' content will be negotiated outside the crowdsourcing system.

- Encouraging human rights

All the end user rights will be presented within the corresponding privacy, security policy and terms of use. They will be prepared in a very concise manner and presented step-by-step during the registration. To enable users to complain against the violation of some of their rights within the platform, the consortium of schools implementing the platform will create a Platform Rights Body (PRB), with specialized bodies for all the six treaties: UNENdL, MT, GDPR, NIS, FoE and TRIPS. PRB will define precise procedures for the complaints. It will get the complaints anonymously from user's pseudonym and try to resolve the problem within no more than five working days.

Fulfilling educational obligations and responsibilities

In order to be efficiently used for educational purposes and become part of formal education, the whole process should be carefully organized, starting with the selection of the experts, who will provide the initial body of knowledge and the pool of evaluation content; selection of the system developers with good presentation skills, who will train the "technology geeks" among the teachers; selection of such teachers,

who will learn how to use the platform and train their colleagues to successfully implement it. These are the major obligations and responsibilities, which will enable smooth functioning and maintenance of the educational crowdsourcing platform:

- Increasing usability

The crowdsourcing platform should have a user-friendly interface, which can be easily used and learned. Efficiency to use the platform, intuitive interactions, as well as user satisfaction are crucial. This is particularly important for the less experienced teachers, who sometimes feel incompetent and refuse to use the technology enhanced solutions in education. Special attention should be given to human factors and ergonomics for all the end users, including those users suffering from various musculoskeletal disorders, having in mind that longer activities might cause repetitive strain injuries. In order to achieve this goal, the basic recommendations stated in the ISO 9241 standard should be obeyed.

- Increasing user competence

Teachers should become competent to use the platform. It will be achieved with initial training of those teachers, who can easily become familiar with the system, and then they will then become tutors of the less experienced colleagues. The whole training process will be organised and supervised by enetCollect. Young learners have already been exposed to technology since their early childhood, so it is expected that they will competently use the platform. To avoid any unpredicted problems, a small team of online technology advisors can be engaged. The advisors should include the software developers, and the language learning teachers.

- Increasing motivation

Lack of motivation is a problem of all the users, but also of the creators of the platform and the body for complain. The platform will measure learners' amount and quality of contribution and acknowledge the best learners each week. The success of the teacher will be similarly recognised. To avoid rivalry, the success will be visible to the winners. The tasks for all the stakeholders will have a reasonable amount, for example, activity that can be finished within five days, to enable the users feel their progress. The next two days should be free of obligations. The new state of the crowdsourcing system will be presented each month and compared with the previous state. It will show and celebrate the progress. Statistical reports will be updated every three months, including the reports from PRB.

- Increasing content quality

One of the crucial prerequisites for the evolution of the crowdsourcing content is its quality. Many generally accepted misconceptions, beliefs, viewpoints might compromise it. Therefore, enetCollect should appoint teams of experts for all the languages incorporated in the platform. They will carefully assess the new content, and decide which new content is of good quality. In order to become a valid contribution within the body of knowledge, mutual consensus should be reached among all the team members.

- Increasing sustainability

Deployment of crowdsourcing in formal education needs a long-term sustainability. It can be advertised to excite more schools to implement it, who will compete to solve similar tasks. Another prospect is the massification of education (Tillman, 2010). Creation and maintenance of opportunities and models can finish with an institutional and financial support, sponsorships by companies willing to support education, or commercialization.

Conclusions and recommendations

Less than 20 years ago, the terms MOOCs and OERS were buzzwords. They were progressing rather fast becoming a mainstream in education. It seems that nowadays crowdsourcing has a comparable potential. It has already attracted hundreds of millions active learners of several educational systems, and many volunteers who generously contribute to their make them available. Modern education can seriously rely on their power.

The leitmotif of the paper is the question: can crowdsourcing become a part of formal education. The answer is, undeniably affirmative, under a condition that all three active axes meet their obligations. Next three paragraphs summarize the recommendations, which were introduced in the paper.

Learners, whose privacy and disclosure rights are protected providing them with an anonymous access to crowd-oriented learning platform, should be careful not to abuse the concealment and start disclosing their own private life; proliferating dogmas and ideologies; bullying their mates; or discriminating the incompetency of inexperienced participants, including the teachers. A carefully shaped privacy policy will increase their awareness of all the unsolicited activities, without restricting their freedom of expression. Additionally, their privacy, security, and intellectual property rights should be ensured by design. As fundamental human rights, equality and non-discrimination should also be enabled. The inclusion of learners with special needs should be encouraged. In such an environment, their cultural, social, racial, religious, educational, and linguistic diversity will be stimulated.

Teachers have an obligation to create, and maintain the content, vigorously interact with learners and content creators; supervise and evaluate students' contribution. Particular attention should be paid to learners with various disabilities. Undoubtedly, teachers' obligations will significantly increase, making them more exhausted and under constant stress. If accepted in formal education, they will have to voluntarily become part of the team. They should be technically competent, professionally responsible and should obey the same policies as their students. More experienced teachers will have an additional obligation to assist less experienced colleagues in their professional development. In order to persist through all the above mentioned challenges, motivation of all involved teachers should be repeatedly stimulated by many stimuli and professional rewards.

Schools should protect all the stakeholders, the content, and the educational process. They should also obey the fair information principles, raise the awareness and warn the participants of all the challenges. To protect privacy, security and intellectual property, they should shape well-defined policies, acknowledge them during registration and take care to be accurately implemented. Evaluation of experts' base of knowledge and crowdsourced material should be done using many quality assessment techniques, including semi-automatic tools, which already exist in the learning management systems. Particular attention should be paid to the rights of access and equal opportunity and to education free from discrimination. To achieve this, learners with special needs, and emotionally vulnerable learners should be given equal opportunity via full inclusion in the crowd-oriented learning. Schools are the most responsible to enable external and intrinsic motivation of learners and teachers. All these solutions should be compliant with the legal regulations of education in the countries they are implemented.

To conclude, crowdsourcing can become a supplementary part of formal education. If it becomes, ethics will be the crucial feature of the responsibility of this education, where all the three axes of crowdsourcing taxonomy: schools, teachers and learners are equally responsible to actively create, maintain and evolve it.

Once established, it can be successfully extended to real-life education, where crowd-oriented projects prepare all the participants for the online world challenges. But, in order to be institutionalized as a form of a successful and socio-ethically responsible formal education, many preliminary actions should be carefully taken into consideration prior to

its launching, starting with the creation of sound privacy, security and copyright policies opposed by the sensible and binding terms of use. In such a system, ethically responsible, motivated and proactive partners will generate a very positive impact on modern education, which enables constant and competent quality assessment.

Declaration of Competing Interest

I have no conflict of interest to declare.

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