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Online e-learning application for practicing foreign language skills with native speakers

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Abstract

Background: The paper describes an online e-learning web-based application for practicing foreign language skills with native speakers. Educational materials are a part of the application, along with the live audio–video feed between the participants.

Findings: The proposed technology is designed to supplement traditional methods of studying spoken language by bringing native speakers, students, and language-learning materials in one place. The main research question is whether strangers, first met on the internet can teach and learn languages using integrated training materials.

Conclusions: In the developed platform, any native speaker can perform a role of a teacher, i.e., facilitator of foreign language learning. Over 40,000 users registered in the system over a 6-month period. The system includes gamification as the part of user retention and virality mechanisms.

Keywords: e-learning, Mobile application, Gamification

Findings

Verbal communication is based on speech activity, which can be developed and applied during foreign language learning. Learning foreign languages is also associated with acquiring the knowledge of other cultures, which is impossible without practical speech communication. Necessary properties of online applications, which provide language communication practice are the possibility of audio and visual contacts; teaching methodology, including conversation scenarios, allowing participants to actually start and carry on a conversation on a given topic and motivation of the participants.

However, it was noted that traditional language learning does not provide enough training of direct verbal communication. Without conversational practice, mastering the language is slow and inefficient. Techniques, such as trips to foreign countries, living in a foreign family, and even socializing with foreigners on the street, all increase the language-learning outcomes. However, these methods are expensive and are not feasible for mass education. Live conversations with native speakers using Skype can also help, but it is hard to find a companion to speak in the desired language. Furthermore, this companion needs to have some training skills, while an average native speaker does not know the teaching methodology and simply does not know what to say.

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Computer training system in the form of a game was developed, called i2istudy, to implement all the necessary components of spoken communication for training spoken foreign language skills. This game consists of the computer-aided conversation and communication with native speakers. For example, English-speaking users can learn Spanish from Spanish-speaking users, and vice versa. The i2istudy system allows native speakers to teach others without knowing how to teach and without knowing foreign languages. In other words, i2istudy allows all native speakers, not necessarily professional teachers, to teach their native language as a part of collegial network game (Buga et al. 2014; Zolfaghar and Aghaie 2012). The main feature of the system consists of providing a common space with educational materials, including specifically designed lessons, which are simple and understandable step-by-step educational instructions aiding communication. The platform, which allows live audio–video communication, is built into the web interface, based on the modern Web real-time communications (WebRTC) technology.

Application

The i2istudy.com is currently a free multilingual web service for studying foreign languages online. The main idea of the service is based on the "time banking" principle (Válek and Jašíková 2013; Seyfang and Longhurst 2013). For every minute that a person teaches in the mother tongue, s/he is rewarded with a minute that can be used to learn foreign languages. This approach currently allows using the system free of charge (Seufert 2014). The name "i2istudy" comes from the idea of the "eye-to-eye" learning, based on the peer-2-peer principle (Hsu et al. 2007). A new model of studying with the native speaker according to a set of interactive courses was created. Every "lesson" is based on the split screen platform. On one side of the screen, live video feed with the native language speaker is shown, and on the other half is a set of audio and video slides (Fig. 1). Together with the native speaker, the learner goes through the predefined content. All the teacher has to do is read information presented in the slide in their native language. Therefore, there is no need for the professional teacher, and theoretically every person can teach their mother tongue within this format. The student is presented with similar materials, which can be translated into their native language, depending on the selected level. Furthermore, the i2istudy is a self-regulated system, as it allows every user to pick their own paste, time, level, gender, and plenty of other characteristics of their instructor, along with the lesson, thus everyone can find their "right" teacher.

The i2istudy is a social and informal approach to learning languages (Lai et al. 2013). It is not only a mere learning platform, but also a learning community that brings users together and builds relationships (Cohen 2014). Learning foreign languages is a universal international activity uniting like-minded individuals all over the World. While studying, the system users enter into an intense live communication process with a native speaker, not only by studying the language, but also the culture, behavior, and manners. They not only discuss the set topics, but can also enter into a more personal communication. Currently, the system supports four languages: English, Spanish, Russian, and German; however, more languages can be added without significant technical changes of the system (Osipov et al. 2015).

This capacity is provided through the combination of three components for the user interactions with each other. One component provides real-time audio–visual
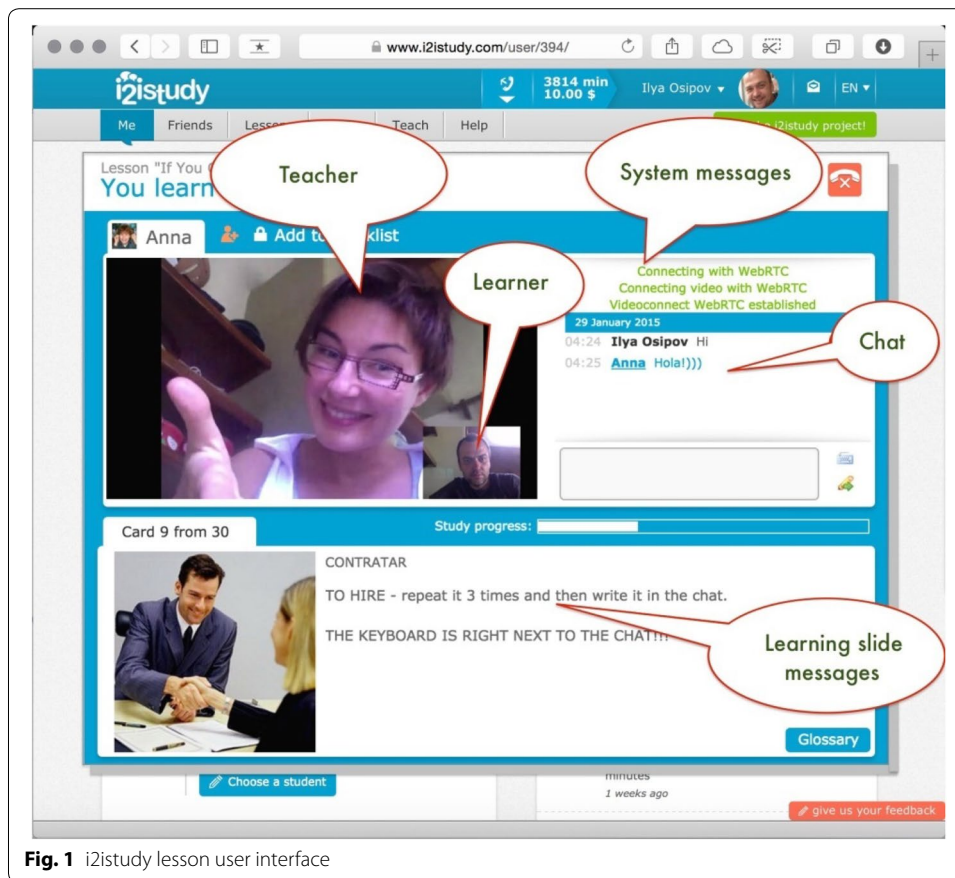
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Fig. 1 i2istudy lesson user interface

communication for users, the next component displays text and a scenario of topics used for communication in languages understood by the users, and the third component allows communicating by sending and receiving instant text messages in the chat. The system–user interface is shown in Fig. 1. The system automatically tracks the time, which is reported in user accounts for the purpose of time banking (Marks 2012). The user interface, user interaction, and the script are presented by means of individual cards (slides), connected by a mutual discussion topic. Each slide consists of a separate text, graphics, and video in an interface, which is clear and understandable to each user, in their own native language. Each slide consists of a set of common fields provided in two languages, or in each individual language.

User interactions

The system also allows for the connection of multiple users with individual roles in the educational process. The logic of assigning roles within the framework of the system is that each user separately determines their own solutions. For example, to organize teaching of several students by a specialist in a particular knowledge, along with the monitoring of the teaching process, it may be necessary to have the roles of a teacher, a student, and a supervising controller. The teacher conveys the material to one or more students. However, the decision concerning the successful presentation and mastering

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of the material, for example, whether to jump to the next course or not, is taken by the controller (Fig. 2). The controller oversees the educational process.

For example, decisions on whether the students can independently take the interactive tests available in the system, along with assessing the competency level of the teacher, are taken by the controller. Currently, for the study of foreign languages in the form of a game, the system allows only two roles: the teacher and the student.

Gamification

The developed application implements the following gamification methods:

The time banking principle

When user acts as a student by taking lessons, virtual system currency in minutes is spent from the user account. One minute of learning is debited from the account, while 1 min of teaching is credited to the account. Thus, the user acting as a teacher earns minutes, and the same user spends minutes as a student. In this way, all users participate in the virtual economy. Users are motivated to earn minutes, pushing the user to periodically assume the role of a teacher. Each user currently gets 30 min in the system as a part of the registration process. If all minutes are spent in the account, the system does not allow to study, but offers to teach to earn more minutes. Accumulated minutes are shown on the top of the interface screen in Fig. 1. The implemented time banking goal is to motivate users to teach in addition to learning (Osipov et al. 2015).

Fig. 2 Teacher–student–controller interaction
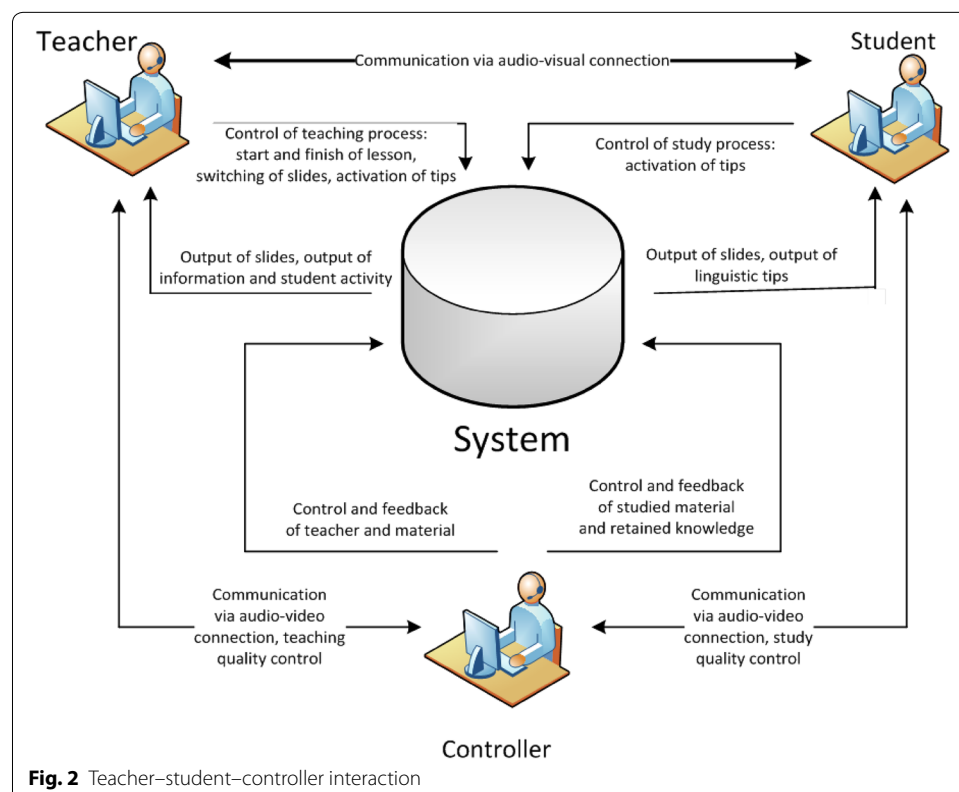
Sequential lessons presentation

Most computer games utilize gamification principles when the next game level becomes available after previous level has been completed. New lessons become available as the user goes through the previous lessons. Moreover, there is a grade displayed for each passed lesson as a single, dual, or triple star, reflecting how well the student passed the test at the end of each lesson. Sequential opening of the lessons in batches intrigues the user to find out what's coming next, and boosts user engagement. Explicit visibility of the grade encourages user to retake lessons with poor grades.

Achievements and badges

The user acquires nominal status, positioned as an achievement, for learning and teaching in the system. The user gets status notifications by email, while other users also see these "achievements and badges," and can select their learning partner based on this information. Basic list of "achievements and badges" includes "The First-grader; Middle school student, and High school student." To make it short, these are presented by the first two letters of the achievement, displayed in the corresponding language next to the user name, and are called badges. Shortened badges are used to save the space in the list, and will be replaced with medals in the future for better visibility. The goal is to motivate users to receive awards as an external evaluation, thus motivating them to come back and spend more time in the system.

Peer evaluation

For positive behavior reinforcement and encouraging polite communication between the users, peer evaluation is implemented. After each lesson, both the teacher and the student can evaluate each other. There are two types in this kind of evaluation. The fist is simple like/dislike, which are accumulated for each user and displayed in the personal profile. This information is also visible to other users in the lists of teachers and students. Thus, polite and positive users are clearly visible, based on the large number of likes, while impolite and unpleasant users are also apparent due to dominating dislikes. In addition, there is an option to report indecent user behavior to the system moderator. However, this option is a part of system moderation, rather than gamification (Osipov et al. 2015).

Experimental results

As a result of the conducted experiment, 39,729 users registered in the system in 6 months. 28,180 users indicated that they want to learn English, 8711 Spanish, 1028 Russian, and 1791 German languages (Table 1). About 20 % of all the 40,000 registered users participated in the experiment. As seen in Table 2, 20 % of the registered users have been involved in communicating with foreigners as a student or a teacher. The rest were either shy to speak with strangers, or decided not to spend their time. Some users failed to configure their microphone and web camera needed for the real-time audio–video connection, or their browser did not support the WebRTC protocol.

   As a result of the conducted experiments, it was established that two users, who were previously unfamiliar with each other, and who met in the developed application for the first time, could carry on a conversation following the suggested scenario, helping each

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Table 1 Newly registered users' distribution by the native language

New users by languages									
Month	01.12–31.12	01.01–31.01	01.02–28.02	01.03–31.03	01.04–30.04	01.05–31.05	01.06–30.06	01.07–31.07	01.08–31.08
Russian language, users	1069	3671	191	94	746	2186	3220	4329	1762
English language, users	178	746	68	25	295	978	4005	5582	2539
German language, users	15	22	3	3	6	22	29	38	14
Spanish language, users	17	43	12	3	79	760	903	1644	372

Table 2 Newly registered users' involvement in the learning/teaching process

Involvement									
Month	01.12–31.12	01.01–31.01	01.02–28.02	01.03–31.03	01.04–30.04	01.05–31.05	01.06–30.06	01.07–31.07	01.08–31.08
Number of just registered users who made a call in period	93	734	61	15	251	1026	2037	2072	722
Percent of just reg. users who made a call in period	7	16	22	12	22	26	25	18	15

other to learn foreign languages. Moreover, some users did not have a common language to use for communication. Average connection time was 11.9 min (189,207 min or 3153 h), divided by the number of successful connections (15,842). Table 3 shows the distribution of monthly successful connections.

Any kind of interaction interruption was taken into account, including closing the browser or turning off the computer, or successfully finishing the lesson materials. Regardless of the fact that the average connection time is not very long, the experiment

Table 3 Successful connections, based on the duration and quantity for each month

Real connects									
Month	01.12–31.12	01.01–31.01	01.02–28.02	01.03–31.03	01.04–30.04	01.05–31.05	01.06–30.06	01.07–31.07	01.08–31.08
Successful connects duration, min	151	10,835	5021	3645	6202	37037	47,140	54,974	38,202
Number of successful connects	19	1228	492	131	587	3093	3868	3763	2661
Average duration, min	7.95	8.82	10.21	27.82	10.57	11.97	12.19	14.61	14.36

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showed that two unfamiliar and unprepared users can carry on a conversation in a foreign language for quite long. Besides, the average connection time continued to increase with the number of registered users, and reached 14.4 min in August 2014. Moreover, the most loyal and active users became apparent, spending more hours learning and teaching, and even repeating the same lessons (Osipov et al. 2015).

The users registered as a result of advertising placed in social networks and conducted lessons either as a teacher or a student, learned the system interface on their own, without any special training. There were users not specifically recruited to conduct initial proof of concept experiments. The users accepted roles of the teacher and the student on their own. The corresponding ratio of 6.4 "teacher" users to 10.6 "student" users indicates that an average user is not afraid to play the role of a teacher in the developed system.

Conclusions

Online foreign language learning application was developed, where native speakers can act as teachers using teaching materials and scenarios available in the system. Over 40,000 users registered in the system. Combining modern information technology, spoken language teaching methods and gamification allowed developing an effective and quite popular tool for improving speaking skills in the study of foreign languages. The system allows finding a partner for practicing foreign language. The system can be used for developing foreign language communication skills and accelerated learning of foreign languages. The combination of online communications technology, educational content delivery, and gamification methods allowed maintaining average session duration at 14 min, which is longer than an average conversation in a store or on the street between strangers. Further development the system should be based on maintaining user interest through interesting content and gamification techniques and will probably allow achieving greater involvement and retention of users.

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