Soft CLIL v.2.0: Integrating a mobile app and professional content into the language training

Tatiana Baranova¹, Luidmila Khalyapina², Elena Vdovina³, Camila Yakhyaeva⁴
¹,²,³ Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russian Federation
⁴Saint-Petersburg State University of Civil Aviation, St. Petersburg, Russian Federation
yakm94@gmail.com

Abstract. The presented article refers to the results of the “on-going” implementation of an educational model on the basis of Content and Language Integrated Learning (CLIL), aimed not only at the language and professional skills amplifying, but also at developing a range of such personal characteristics, as independence, critical thinking, quick decision making, and lifelong professional self-development. In the "soft" version of the CLIL model, learning is controlled by the language itself, the entire curriculum of the discipline is guided by it. In order to boost the efficiency of the above-mentioned model the authors, after analysing the theoretical works, consider mobile technologies as a sufficient learning and creating tool. The experiment training conducted at Saint-Petersburg State University of Civil Aviation, Saint-Petersburg and its findings revealed a great didactic potential behind the mobile note-taking apps (namely, Evernote) and a high tendency of increase in the engineering students’ writing and reading skills, necessary to perform their professional duties on top.

1. Introduction
Globalization and the development of the World Wide Web are opening up new horizons for professional activities and education, including the language training. Nevertheless, the technical progress also brings new challenges for the learners and teachers, turning the educational process into a frustrating, boring, and at some points badly organized routine. Also, according to international norms and standards, in order to be able to maintain the aircrafts, both the crew and maintenance technicians (including engineers) are obliged to obtain the language knowledge in order to pass an exam, the result of which is confirmed by an international certificate. It is assumed that graduates will continue to work directly at the airports. It’s important to train specialists in the aviation sphere able not only to master the foreign language for special purposes but also to be able to adapt to all changes in their professional life caused by the rapid progress and development of social thought [1]. These factors determined the goal of our study - to demonstrate the intermediate results of an experiment language training within an educational model, aimed at developing reading comprehension/writing skills, and to evaluate the effectiveness of the suggested model using a series of testing and mathematical analysis.

The constant synthesis of language and discipline of the professional course is reflected in the subject-language integrated learning (CLIL/ Content Language Integrated Learning), which has become some kind of a "trend" in the cultural and educational policy of the European Union of the last 20 years. Prerequisites for the formation of CLIL as an independent approach arose in Canada, during
the active use of "language immersion" programs in primary and secondary schools, due to the bilingual policy of the country. Also, a direct influence on the formation of CLIL had the provisions of the direction "English for special purposes" (ESP/ English for Specific Purposes), which appeared in the 60s. due to the increasing demand for English for use in certain areas, the emergence of new trends in linguistics and teaching methods, as well as a shift in emphasis on the interests of the student.

However, the difference between ESP and CLIL is that the main goal of the CLIL is to teach professional discipline by means of a foreign language, pursuing the dual purpose is to form at the trained knowledge of professional discipline and at the same time to develop at them foreign language competence. According to CLIL, both the level of proficiency in the subject competence and the level of proficiency in a foreign language competence are evaluated [2,3,4]. The European Commission views CLIL as a concept where a foreign language is used as a medium of instruction". The undeniable advantage of CLIL is the possibility of immersion in the language without the introduction of additional hours in the curriculum, which is especially important for educational institutions of professional orientation.

D. Marsh, the father of the approach, gives the following definition of CLIL, which is subsequently adopted and supplemented by other authors: “CLIL refers to situations where subjects, or parts of subjects, are taught through a foreign language with dual-focused aims, namely the learning of content and the simultaneous learning of a foreign language” [5].

The design of the educational process in the framework of an integrated approach is subordinated to the 4 “C” methodology by D. Coyle, which includes as the main components the following:

- content- the content of the subject matter;
- communication- oral and written professional communication;
- cognition, i.e. the development of cognitive abilities of students in the process of learning a language and a special subject;
- culture a wide range of cultural context aimed at developing students’ civic consciousness and the ability to "interact" in other cultures through learning in the language of these cultures [6].

2. Review

Research and active CLIL implementation in European universities is dictated by the status of "lingua franca" of the English language and its "dominant role in contemporary international discourse" [7]. And as mentioned in the previous section, Content and Language integrated learning (CLIL) being the umbrella term that combines together several independent fields of bilingual education (BE) are: CBI (Content-based Instruction), CBLT (Content-based Language Teaching), EMI (English as a Medium of Instruction), LAC (Language Across the Curriculum). However, despite all the diversity and universality of the integrated approach, its practical implementation is associated with a number of organizational difficulties (the inability to create and further support pedagogical tandems, insufficient educational and methodological support of the educational process, the requirements of curricula and work programs, etc.). In this context, it is advisable to talk about the use of flexible learning models, based on the system of universal traditional General didactic and particular methodological methods of teaching, developed in domestic and foreign didactics and methods of teaching languages, as well as taking into account the principles and features of the direction in which this model is developed.

Soft CLIL is a model that allows partial immersion in the language. This model is one of the most effective ways of learning a foreign language by students of non-linguistic specialties. It is customary to distinguish the concepts of partial and full immersion, as full immersion implies being in an environment where everyone communicates exclusively in a foreign language, and partial involves the transition to the native language. Partial language immersion contributes to the development of intercultural competence, increased motivation of students, as well as the expansion of linguistic horizons. In the "soft" version of the CLIL model, learning is controlled by the language itself, the entire curriculum of the discipline is guided by it.

Thus, specificity of the soft (language-led) CLIL technique implies:
Knowledge of the language and its consistent use as a tool for studying the content of the subject.
The predominant role of the linguistic content of special texts and, in particular, the professional terminology and grammatical structures characteristic of a particular professional discourse.
Support of the language environment for the possibility of discussing thematic material.
Increasing the level of motivation to use the language in the context of the studied thematic module.
Types of tasks are designed according to the level of complexity, built with an emphasis on the language content, its understanding, verification, for the purpose of subsequent discussion of the studied thematic material.
Despite the maximum focus on a foreign language, the teacher must think through the subject content of classes, coordinate it with the structure and requirements of the course and carefully select the material that can complement or already revise the studied within the professional course.

However, this flexible form of integrated learning has a number of drawbacks, one of which is connected with the selection of thematic materials and difficulties with it. For example, it is not always possible to find audio/video materials for highly specialized topics corresponding to the level of students’ proficiency. In this regard, the formulation of adequate and relevant learning objectives tasks is time-consuming and time-consuming process. In addition, the search for adapted professionally-oriented material for students who speak English at a level below Intermediate, it seems almost impossible, hence the need for selection, pre-adaptation and preparation of author's assignments, which also requires a lot of time. For this reason, a number of foreign methodologists notes the need to adapt the training tasks to the available thematic material. Another weak and strong side of this model is the lack of universal criteria for assessing the project activities of students in terms of subject content. Given that the project, as a product of project activities, is based on four different components (4 "C"), and not only on the content, the implementation of the soft-CLIL model is easier in any higher education institution. Thus, this type of model that facilitates project work can be presented in any context because of its adaptive nature. Also, among the problems of implementation of this model faced by the practice of soft CLIL can be listed difficulties for students to perform certain tasks that require reading, analysis of existing information and the subsequent creation of their own product in the form of a written text. In our view, this is due to the lack of preparation of students for these activities during primary education, and sometimes even in secondary school, where these activities are not sufficiently practiced. However, it is writing and reading, and their development are responsible for the further success of the development of other types of speech activity and the formation of the basis for further language learning. The elaborated soft CLIL v.2 model is created considering the following factors:

- authentic professionally-oriented materials for the lesson;
- support and instant feedback from the teacher during the learning process;
- intensive interaction of subjects of the educational process;
- mastering a language of specialty;
- taking into account personal characteristics of students and their learning autonomy;
- organizing and maintaining the language environment by accessing mobile applications;
- emphasis on cognitive activity of students, gradual development of their creative and critical thinking;
- the competence of teachers associated not only with the language and professional discipline, but also the ability to work with electronic resources and devices.

2.1. Mobile learning
Mobile learning, being a huge branch of E-learning, refers to “the learning across multiple contexts, through social and content interactions, using personal electronic devices” [8,9]. According to Mark Pegrum [10] mobile learning should be considered in three aspects:

- as a practical application of convenient portable mobile devices with Internet access.
- as an activity carried out through mobile devices and technologies, allowing to receive, analyze and create information.
- as an opportunity to receive and provide educational information of any format on personal mobile devices.

Analysis of the scientific works [11,12,13,14] showed a stable trend in modern language education - the appeal to mobile learning or to its individual ideas and principles. This trend, for the most part, is dictated by the concept of BYOD ("Bring your own device"), which has become a "global perspective" in business, and now in the educational environment as well. However, BYOD is beneficial in the educational context for both students and teachers. For students, it's familiarity with their own devices, and thus, increased flexibility and convenience. Teachers can find BYOD as cost-saving tool to improve the learning efficiency and students ‘productivity. An additional advantage of BYOD is the fact that in modern realities the constant development and improvement of mobile operating systems, as well as the portability of the devices themselves, makes it possible to select and combine applications, in accordance with the educational goals and objectives of a particular discipline, with-out departing from the conventional, traditional teaching methods. As it’s noted in the study "the use of applications makes possible the unlimited use of authentic materials in a foreign language in a foreign language, training various types of speech activities and preparing students for continuous education". There is also an abbreviation BYOT ("Bring Your Own Technology"). Some consider these terms interchangeable, others use BYOD in cases where students bring one of the devices from a list compiled by the school, and BYOT in cases where there are no restrictions on what devices students can use. It is important that the use of technology is not chaotic and spontaneous but based on a carefully designed policy for the use of mobile devices. It is necessary to provide the decent technical support and infrastructure, as well as to develop methods for assessing the effectiveness of the approach.

Although mobile technologies are becoming more and more accessible, these approaches may not always be implemented. Sometimes, while implementing mobile learning, educational institutions decide to centrally purchase all the necessary equipment, and issue devices to students in the classroom as needed. Some institutions prefer a hybrid option, where students can bring their own devices to class, but have the opportunity to use those purchased by the university. Many teachers note that in such cases, students prefer to use their own devices (even if the school offerings are more modern), both because they are more familiar, and simply because they like the feeling of ownership.

In order to evaluate the degree of motivation and psychological readiness for the mobile apps implementation, the preparatory stage of our research included of the data collection of a questionnaire spread among the teachers belonging to the “Language training” department. At the same time, a similar survey was conducted among students, but containing questions about the frequency of use of mobile apps during their preparation for the classes. From the data obtained, we can conclude that both teachers and students are willing to use mobile apps in the learning process, however, at some point they feel unsure about organizing of the proper work with them. The majority of teachers highlighted that

Some teachers expressed their concerns, because, to their mind, this integration can only disorder the process of language acquisition, so they preferred to refer mobile apps to the category of tools for the students’ self-training. The students, on the contrary, seemed friendlier and more opened up to the mobile apps’ implementation, referring it as “ highly important” (81%) and “important” (72%) step for the educational process upgrade.

3. Methods and procedures
The presented study has been currently conducted on the basis of Saint-Petersburg State University of Civil Aviation. The target group consisted of the 4th year students majoring at the airport systems management, planning and development. Hereafter, the participants were divided in two groups — the control and experiment ones, respectively. The general number of students involved into the experiment training is 100 (50 people for each group).

One of the basic conditions for our experiment is a language proficiency decent for starting the “Aviation English” course. Therefore, at the initial stage, all students passed the entrance test (Placement Test), which helped to determine the Intermediate level of foreign language proficiency for the vast majority, according to the Common European Framework of Reference for Languages [15].

Focusing on reading and writing is not accidental and is dictated by a number of reasons. First of all, according to the results of the initial survey, it is the reading foreign language texts that is most useful for the students of the profile "Organization of airport management" of the St. Petersburg University of Civil Aviation for their future professional activities. Secondly, for these majors the course “Aviation English” causes certain difficulties related to the organization of training and selection of educational material. Taking into account the specifics of their future profession that involves not only coordinating the work of all divisions of the airport and operation of technical means of service of passengers, but also the need for drawing up technical documentation (operating schedules, instructions, plans, estimates, requests for materials, equipment) and development of projects and programmes for the development of the aerodrome (airport systems). That’s why our experiment training is represented by the thematic modules of the discipline “Aviation English”, designed for both classroom and extracurricular work of students:

- Airport planning and management problems
- Airport supplementary services
- Airport security

At the formative stage of the experimental work, we instructed all the participants on the tasks and purposes of our study. Then, we suggested a pilot testing including 20 differently structured exercises. Traditionally, CLIL practices include text as their educational basis, as it merges all the “4C”s and gives a lot of opportunity for reading- and writing-centered activities[16]. As an educational basis for our training we took the “easy-to-use” text and notes editor Evernote, once aimed at creating a personal space to work on notes and tasks scheduling. After a series of experiments, conducted by Roy, Brine & Murasawa, the note-taking apps are proved to be an important tool for professional language acquisition. Results suggest that the majority were comfortable with the tasks, although they could not complete all the tasks in the stipulated time [17].

At the next stage, we offered the control group to read some professionally-oriented texts and to do traditional tasks, such as “answer the questions”, “fill in the gap”, “which statement is true and which is false”, in accordance with the traditional methodology and syllabus of the discipline “Aviation English”. A similar work was carried out in the experimental group, but with a skip of the “traditional” text and vocabulary exercises. Their place is taken by the graphic systematization of professional content in the form of mind charts (conceptual and schematic plans), which students create after the analysis of the content of each new text. The mind chart (“conceptual and schematic plan”) is a graphical flowchart that includes all key terms, cause-and-effect chains made up of abbreviations, arrows, and other symbols. They may also include small graphs and equations that demonstrate concepts using economic analysis tools [18]. Mind charts are considered to be an alternative for organising the information received and clarifying it for the students. The mind chart or map technique was first used by T. Buzan, but as a way of note-taking only. Discovering the great potential behind it, the author believed that by means of mind mapping you will always know where you are going to [19]. The traditional mind-mapping structure includes a main, central word or collocation, lines and boxes. In order to make a mind chart (map) the authors [20,21,22] suggested the students to use the X-mind – a free mind-mapping software. The collaborative work resulted in presentations at the classroom and showed greater results and quicker language acquisition. Grasping on the useful vocabulary, the students had to build their personal own mind charts. In addition to the
simple graphic scheme the participants could also integrate their notes with some “third party” sources (pictures, videos, business and productivity apps, additional links to the professional texts and articles) or just merge the notes within a collaborative or project work. Using the mind charts as a visual support, the students demonstrated not only the clear vision of the subject or understanding the main idea of the text, but the readiness for discussion and communication in any form.

The final stage of the experiment covered both groups and included a final discussion, where each student had the opportunity to speak on the topic and previously read texts, to evaluate the interpretation of the reading material and the accuracy of the arguments of other participants in the experiment, to clarify the meaning of certain terms. It’s noteworthy, that the students who studied in the experimental group while discussing the aviation-related topics were more creative and communicated more freely than their coursemates.

4. Results and discussion

In order to identify the dynamics, we addressed to the collection of data and the evaluation of the effectiveness of the learning process with the help of elements of mathematical analysis. A graph of the linear dependence of the overall performance of group (P) on the time of training (t) with the sequential introduction of autonomy is presented. As can be seen from the Figure 1., this dependence is described by the equation of the line having the form \( y = kx + b \), where \( k \) is the angular coefficient is defined as the tangent of the angle of the direct dependence of \( P(t) \) \( k = \frac{\Delta P}{\Delta t} \).

![Figure 1.](image)

Figure 1. The range of development of foreign language reading and writing skills during the experiment training.

As it’s shown on the graph, from the first to the fourth week the group’s progress isn’t very great, respectively, the angular coefficient \( (k) \) was 2.3. However, starting from the fourth week of implementing of mind chart activity via the Evernote apps in terms of the concept of "soft CLIL", which was characterized by an increase in the angular coefficient by 5 times, to a value equal to 10. As a result of the experimental implementation of Evernote app within the framework of soft content and language integrated learning, improvements in the indicators for the proposed tasks by the end of the training period were revealed.

Also, despite all the benefits of providing mobile learning tools to the students, it’s noteworthy, that its inclusion in the educational model should be systematical, “dosed” to some extent, and referring to the level of initial reading and writing skills of students, their motivation, as well as the curriculum requirements [23].

5. Conclusion
The main purpose of this study based is to demonstrate and evaluate the results of experiment reading and writing skills-centered training, prior to implementation of a mobile note-taking app in the system of “soft” CLIL, aimed at teaching content through the medium of a foreign language but with predominantly linguistic objectives. Having analyzed a number of works, in order to achieve the above-mentioned goals, we can say that this framework of the training is still mostly content-based, but it can also remain language oriented, depending on the syllabus and methodological techniques applied by the teacher, which proves its high flexibility.

As a mobile learning instrument for our experiment the Evernote text editor was chosen, as it combines the features of an “on-go” personal vocabulary and electronic workbook. Then, in addition to the traditional text exercises we suggested the participants to organize the received information in a form of a mind chart. Evernote enables saving everything a student needs to remember, so that it makes this app a great tool for learning a foreign language. At the end of our experiment training for the students this source has become a repository of new words and phrases, where they can mark the subjects and vocabulary they plan to focus on. However, the application of Evernote isn’t limited to vocabulary activities only – it can also be a powerful tool for developing the other aspects of English and rearranging the previously non-systematized knowledge.

Despite the fact that the use of the mobile text editor “Evernote” is aimed at practicing reading and writing skills separately, in our further research, this app is supposed to be used comprehensively and in conjunction with some other mobile resources, such as G-Suite or Genial.ly.

References

[1]. Rubtsova, A.V. Socio-linguistic innovations in education: productive implementation of intercultural communication. In Proceedings of International Scientific Conference "Digital Transformation on Manufacturing, Infrastructure and Service", IOP Conference series: Material science and engineering, vol. 497; St. Petersburg, Russian Federation, 1–22 November 2018; Sergeev V. (ed); IOP, 2018 Conference Series Materials Science and Engineering 497(1):012059 DOI: 10.1088/1757-899X/497/1/012059

[2]. Khalyapina, L. P. Current trends in teaching foreign languages on the basis of CLIL. Teaching Methodology in Higher Education, 6 (20), 2017. 56–52. DOI:10.18720/HUM/ISSN2227-8591.20.5

[3]. Hutchinson T.& Waters A. English for specific purposes / A learning centered approach/ Cambridge University Press. (1987), p.184.

[4]. Almazova, N., Andreeva, S., Khalyapina, L. (2018). The integration of online and offline education in the system of students’ preparation for global academic mobility. //Communication in Computer and Information Science. Third International Conference, DTGS 2018. St. Petersburg, Russia, May 30 – June 2, 2018. Revised Selected Papers, Part II, Springer, vol. 859.2018. pp. 162-174

[5]. Marsh,D., Mehisto,P.,Wolff,D.&Frigols,M.J.Framework for CLIL teacher education: A framework for the professional development of CLIL teachers. Graz, Switzerland: European Centre for Modern Languages. (2010)

[6]. Coyle D., Hood Ph., Marsh D. CLIL: Content and Language Integrated Learning/DoCoyle, Philip Hood, David Marsh. Cambridge University Press. 173 p. (2010)

[7]. Graddol D (2006) English next: Why global English may mean the end of “English as a foreign language.” London, UK:The British Council.

[8]. Crompton, H. “A historical overview of mobile learning: Toward learner-centered education,” in Handbook of mobile learning, 2013.

[9]. Burston, J. (2015). Twenty years of MALL project implementation: a meta-analysis of learning outcomes. ReCAL, 27(1), 4-20. https://doi.org/10.1017/S0958344014000159

[10]. Pegrum M. (2014). Mobile Learning: Language, Literacies and Cultures. Routledge.

[11]. Gillies C., (2016). To byod or not to byod: factors affecting academic acceptance of student
mobile devices in the classroom. Research in Learning Technology, 24. https://doi.org/10.3402/rlt.v24.30357
[12]. J. Gikas and M. M. Grant, “Mobile computing devices in higher education: Student perspectives on learning with cellphones, smartphones & social media,” Internet High. Educ., 19, pp. 18–26, 2013. https://doi.org/10.1016/j.iheduc.2013.06.002
[13]. CookT., Jaramillo D., Katz N., Bodin B., Cooper S., Becker C.H., Smart R., Lu C. (2013) Mobile innovation applications for the BYOD enterprise user // IBM Journal of Research and Development. vol. 57. no. 6. pp. 6:1-6:10.
[14]. Al Okaily R. Mobile learning and BYOD: implementations in an intensive English program. Learning and Teaching in Higher Education: Gulf Perspectives. 2013. vol. 10. no. 2.
[15]. Council of Europe. (2001). Common European Framework of Reference for Languages: Learning, teaching, assessment. Cambridge: Cambridge University Press.
[16]. Dalton-Puffer C. (2011). Content and language integrated learning – from practice to principles? Annual Review of Applied Linguistics, 31, 182–204.
[17]. Roy D., Brine J. & Fuyuki M. (2016). Usability of English note-taking applications in a foreign language learning context, Computer Assisted Language Learning, 29:1, 61-87, DOI: 10.1080/09588221.2014.889715
[18]. Vdovina, E. K. (2015). Content and language integration: English as an additional language of study in a non-linguistic University. Humanitarian Bulletin, (4), 30.
[19]. Buzan, T. and Buzan, B. 1993. The Mind Mapbook: How to Use Radiant Thinking to Maximize Your Brain’s Untapped Potential. New York.
[20]. Buran A & Filyukov A. (2015). Mind Mapping Technique in Language Learning. Procedia Social and Behavioral Sciences. 206. 215-218. 10.1016/j.sbspro.2015.10.010.
[21]. Wang X. & Dostál J. (2018). Using a Mind Map to Learn English Vocabulary. 10.1145/3291078.3291121.
[22]. Al Naqbi, S. (2011). The use of mind mapping to develop writing skills in UAE schools. Education, Business and Society: Contemporary Middle Eastern Issues, 4(2), 120–133
[23]. Bylieva, D.; Lobatyuk, V.; Safonova, A.; Rubtsova, A. Correlation between the Practical Aspect of the Course and the E-Learning Progress. Educ. Sci. 2019, 9, 167.