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A COMPARISON OF THE EDUCATIONAL POTENTIAL OF PROFESSIONAL CLOUD-BASED AND FREE, STANDALONE DESKTOP-BASED SUBTITLING TOOLS

Andrea Bekafigo

University of Zagreb

Abstract

There are two main types of subtitling systems on the market, standalone desktop-based systems and cloud-based systems. Both types can be free or proprietary. The use of cloud-based technology for educational purposes is on the rise, with non-professional desktop-based systems still being used often, as they are mostly free of charge and offer similar features. This study investigates the educational potential of these types of systems, desktop-based vs. cloud-based and free vs. proprietary, to show whether there is a significant difference in their role in subtitling education at university level. A questionnaire was conducted among two groups of students who used one or the other of the above-mentioned systems. The study primarily focused on the perceived level of skill acquisition and the satisfaction with software functions. Desktop-based and cloud-based systems have proved to be similarly useful in subtitling education with few differences in skill acquisition, which depend on whether the software is free or proprietary. Educational implications are discussed based on the findings.

Keywords: subtitling, desktop-based software, cloud-based software, audiovisual translation, technology

1. Introduction

Two types of subtitling software solutions exist on the market today, according to their activation mode or storage location – desktop-based and cloud-based.[1] Each of them carries their own benefits and setbacks, and serves as, among other things, a slightly different didactic tool for subtitling education. Universities approach the challenge of acquiring subtitling equipment in several different ways: developing their own subtitling software (Bartrina 2009, 229), opting for freeware, using demo versions of paid software or purchasing licences for professional programmes with or without educational discounts (Díaz-Cintas 2008). Some desktop-based software solutions, such as Subtitle Workshop or Subtitle Edit, are free and used in amateur subtitling. Due to their affordability and availability, some educational institutions use free software in their subtitling courses to provide students with basic subtitling skills (Bolaños-García-Escribano 2018; Bolaños-García-Escribano et al. 2021; Kruger 2008; Baños 2018). Cloud-based software is relatively new on the audiovisual translation (AVT) scene, and is commonly proprietary or paid and used in professional practice. By carrying out a questionnaire at the Faculty of Humanities and Social Sciences (University of Zagreb) among two groups of graduate students of the translation module (Department of English) who were provided with different kinds of software in their subtitling education, this study attempts to compare the educational potential of free desktop-based and paid cloud-based subtitling software. The starting point of the study is the hypothesis that professional cloud-based systems, such as OOONA Tools, are more efficient in subtitling education at university level in terms of the current translation market than free desktop-based systems. The second hypothesis is that the tools the students were provided with as part of the software were sufficient for their needs at this level of education. The study aims to assess and compare the educational potential of these systems, determine whether they offer different didactic possibilities, and provide companies with feedback to improve their software, the quality of subtitling education, as well as students' preparedness for the translation market.

[1] This paper is a revised version of the author's M.A. thesis written at the Faculty of Humanities and Social Sciences at the University of Zagreb, Croatia.

1.1. AVT and subtitling

AVT is an academic (sub)discipline and profession that involves the localisation of audiovisual media through different translation and language transfer practices (Bolaños-García-Escribano 2020). The two main AVT practices are revoicing and subtitling (Chaume 2013).

The practice of subtitling involves conveying a target language version of the original dialogue, audio and text through sequences of written text positioned over the original visual footage (Bolaños-García-Escribano 2020). Subtitling has been referred to as "constrained translation" due to the spatial, temporal and linguistic limitations imposed on the subtitling environment (Díaz-Cintas 2013, 274). Subtitles are commonly placed at the bottom of the screen and centered, and they usually consist of two lines (Díaz-Cintas 2013; Bolaños-García-Escribano 2020). The synchronisation of on-screen text with the original utterances and the visual material is another crucial consideration affecting the viewer's experience. This process of setting the in- and out-times of subtitles so that they are synchronised with the spoken dialogue is known as spotting or cueing (Díaz-Cintas 2013). Spotting is facilitated by the use of a timecode, an eight-digit number for each frame, that defines its timing (Bolaños-García-Escribano 2020). One of the standards in the process of spotting suggests not prolonging a subtitle over a shot change or a cut in the visual footage (Díaz-Cintas and Remael 2014). This recommendation is based on eye movement research, according to which the viewer tends to re-read the subtitle after a shot change (Díaz-Cintas and Remael 2014). Many subtitling software solutions on the market today can automatically detect shot changes in video files, which largely facilitates the process of spotting (Díaz-Cintas and Remael 2014). The subtitle should not linger on the screen too long because it would allow the viewer to start re-reading the subtitle. On the other hand, it should not limit the viewer's ability to read the entire subtitle before it disappears. This is influenced by the factor of the reading speed, measured in words per minute (wpm) or characters per second (cps). Reading speed refers to the "relationship that exists between the quantity of text contained in a subtitle and the time it remains on screen" (Bolaños-García-Escribano 2020, 76). For the viewers to be able to read the subtitles at the appropriate reading speed, the agreed maximum number of characters per line should also be observed. Six

seconds is the recommended maximum duration of a subtitle, while one second is commonly agreed to be the ideal minimum duration (Díaz-Cintas 2013). Lastly, subtitles, as a form of translation, must convey a semantically accurate account of the original dialogue in the source language, keeping in mind the syntax, grammar, cohesion, coherence, idiomaticity and natural flow of the target language. Due to limitations imposed upon this form of translation, partial condensation and complete reduction or deletion are the main strategies employed by subtitlers (Díaz-Cintas 2013). Subtitles have to be segmented and line breaks placed logically so that they form a semantically and syntactically coherent unit with a clear structure (Díaz-Cintas 2013).

1.2. AVT technology and desktop-based subtitling software

AVT is a translation specialty rooted in technology, which implies it is affected by continuous technological advancements. Along with computer-assisted translation (CAT) tools, which include project management (PM), translation memory (TM) and machine translation (MT) functionalities, and more general automation, specialist software is continuously being developed specifically for AVT (Georgakopoulou 2018; Baños 2018; Díaz-Cintas 2014). Subtitling has undergone an explosion in the digital era and it is closely associated with globalisation, with language professionals working in different areas around the world, the outsourcing of work to international freelance translators amplified by the development of Internet access, as well as the unprecedented quantity of audiovisual material requiring high-quality translation within a constantly shrinking timeframe (Georgakopoulou 2018; Kapsaskis 2011; Chaume 2007; Bolaños-García-Escribano 2018; Baños 2018).

Paid subtitling systems involve monetary compensation or rental fees. Proprietary subtitling software is created for certain vendors and translation agencies, and tailored for their employees or freelance translators. As technology is becoming more accessible, with affordable or open-source desktop-based subtitling software and commercial online subtitling solutions appearing on the market, subtitling is becoming more community-based (Georgakopoulou 2018; Baños 2018). Higher education institutions typically use open-source subtitling programs like Subtitle Workshop or Aegisub in the classroom due to a lack of financial

resources or utilities, but these programs may not always meet the standards of the actual translation market. Alternatively, students can practise subtitling on computers in the classroom using licenses for commercial subtitling systems that are offered at educational discounts (Bolaños-García-Escribano 2020).

Desktop-based software solutions are local versions of programmes that usually do not need a browser or Internet connection for their activation (Pedamkar 2021). Desktop-based subtitling tools require an installation or setup package in a specific operating system, Windows, Mac or Linux. Many are open-source, but with limited functionalities. In this study, the features of free desktop-based software solutions will be exemplified with the three systems used by one of the student groups: Subtitle Workshop (Figure 1), Subtitle Edit (Figure 2) and Aegisub (Figure 3). The numbered elements in these figures refer to:

1. The video player with subtitle preview
2. The subtitle editor
3. The waveform.

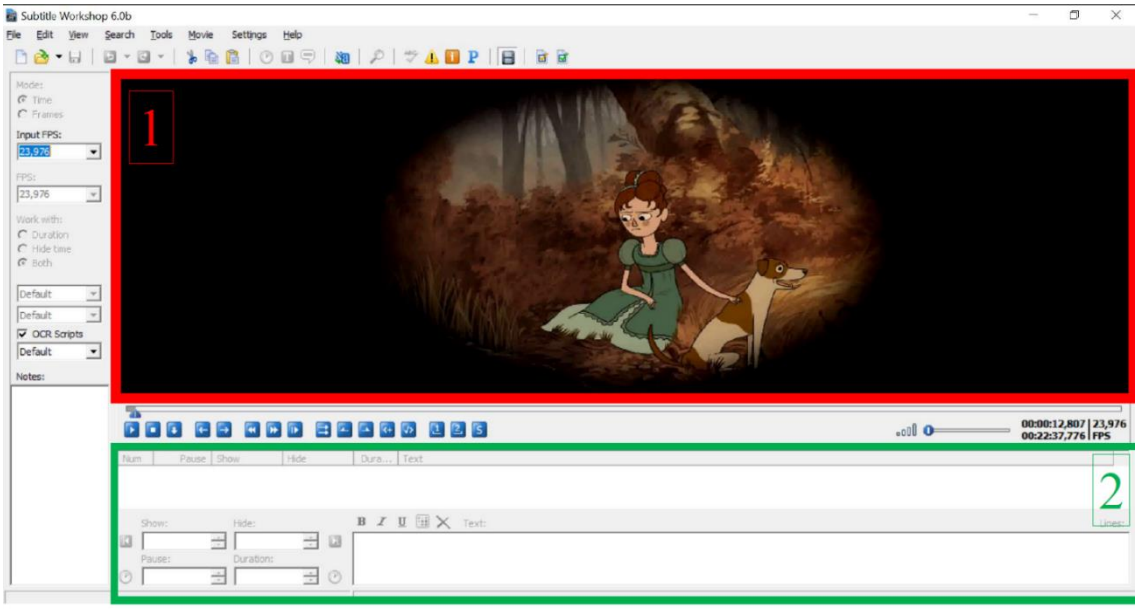

Figure 1. Subtitle Workshop interface (1 - video player; 2 - subtitle editor)

The interfaces of desktop-based subtitling software solutions usually consist of four main areas: a subtitle area with listed subtitles and visible errors (exceeding the maximum duration or the maximum number of characters per second or words

per minute, spelling errors, overlapping subtitles, etc.), a video area where the video is rendered with the subtitles presented over it, a media timeline with or without a waveform which contains the subtitles with in- and out-times, and a toolbox for creating and adjusting the subtitles (Bolaños-García-Escribano et al. 2021).

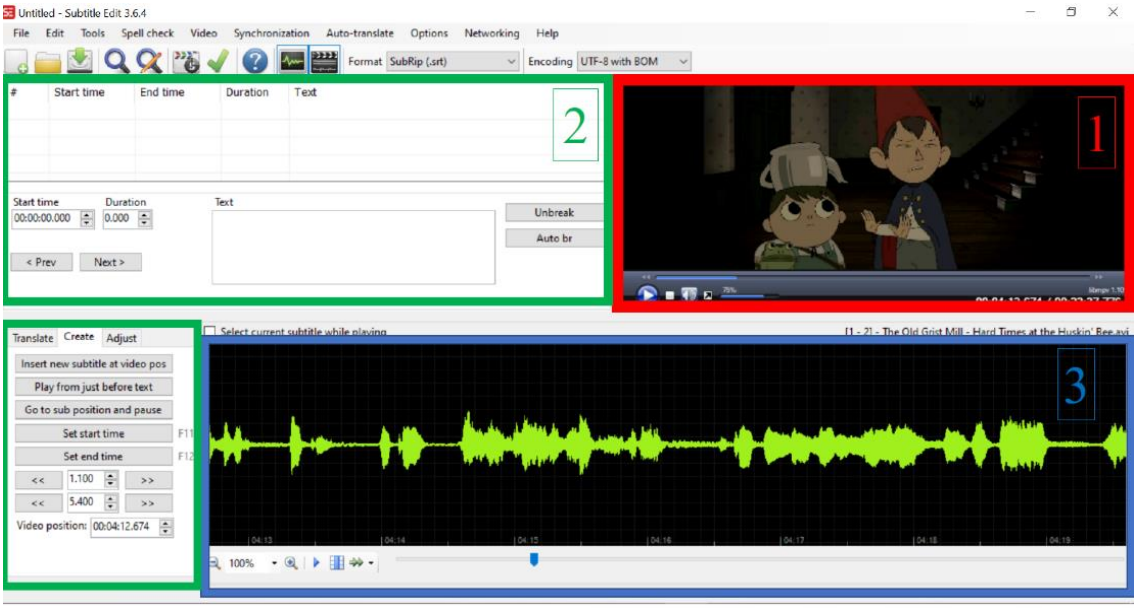

Figure 2. Subtitle Edit interface (1 - video player; 2 - subtitle editor; 3 - waveform)

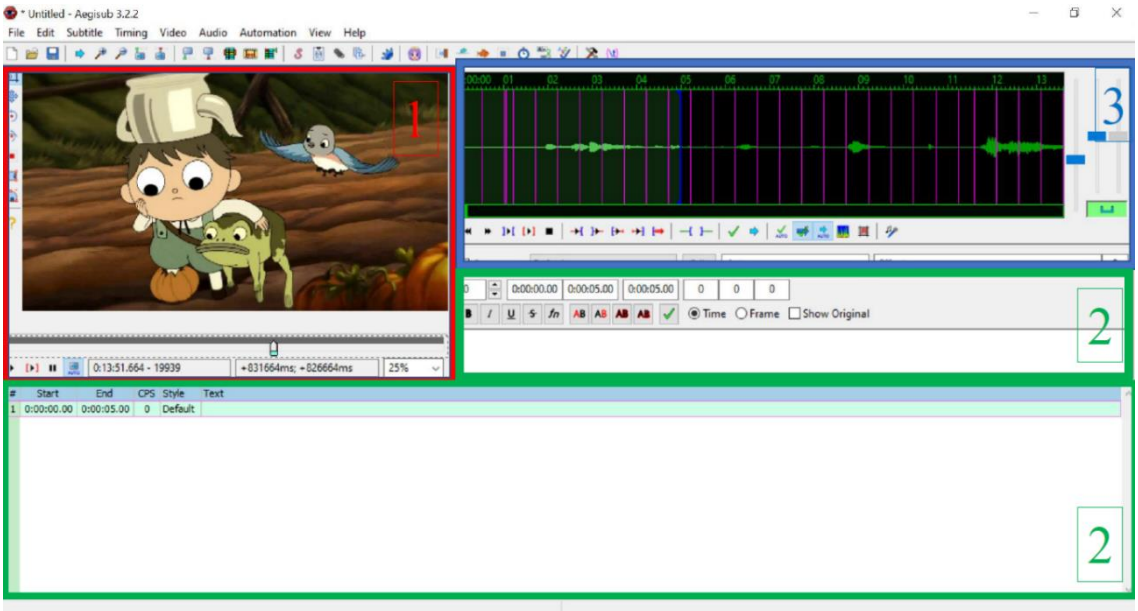

Figure 3. Aegisub interface (1 - video player; 2 - subtitle editor; 3 - waveform)

Subtitle Workshop, Subtitle Edit and Aegisub[2] are open-source, desktop-based software solutions for the creation, editing and conversion of subtitles. They contain very similar tools and functionalities with few differences. The installation packages are available on their official websites. They support many subtitle formats and have customisable interfaces with shortcuts, tools and functions that can be tailored to the user's preferences. In all three solutions, the video file must be uploaded from the device storage. There is a section for the display of the subtitle text, in- and out-times, and the duration. Although differences are few, they do exist; Aegisub and Subtitle Edit offer the waveform or spectrogram feature, which displays the audio patterns of the video file and facilitates spotting, while Subtitle Workshop does not. Furthermore, in order for the waveform and shot-change detection to function in Subtitle Edit, VLC has to be installed on the device and hardcoding is possible only in Subtitle Edit with the FFmpeg tool. They all offer some type of Autosave feature.

1.3. The cloud and cloud-based subtitling software

Cloud technology refers to servers that can be accessed over the Internet from any location and the software that runs on them. The cloud is an on-demand self-service which requires a network to be accessed from a device. The users share resources pooled according to the principle of multitenancy, the provision of the functionalities is flexible, and the system controls and optimizes resource use (Mell and Grance 2011). The capabilities of cloud computing can be provided to the consumer in three ways: software as a service (SaaS), platform as a service (PaaS) and infrastructure as a service (IaaS) (Mell and Grance 2011). Cloud computing is often praised for enhancing productivity, time- and cost-effectiveness (Bolaños-García-Escribano et al. 2021; Gambier 2016). It allows the user to delocalise data and store them on the cloud in order to be able to reach them from any device connected to a network, and alleviate the costs and pressures on the hardware (Bolaños-García-Escribano 2020).

Cloud-based translation tools in AVT allow consumers to conduct translation projects completely online (Díaz-Cintas 2014). Cloud solutions are being

[2] Information regarding Subtitle Workshop, Aegisub and Subtitle Edit was taken from the official websites, blog pages or from the software solutions themselves.

implemented in many areas of the translation industry outside AVT, with various TM (e.g., MemoQ Cloud, Smartcat, SDL Online Editor), MT (e.g., DeepL, Systran, KantanMT) and PM (e.g., XTM Cloud, Transifex) tools (Bolaños-García-Escribano 2020). Translation systems in AVT are continuously being developed to keep up with the changing translation market demands and workflows. Significant inroads have been made in the development of cloud-based software designed for subtitling.

As with any other cloud tool, cloud subtitling software in an online environment can be accessed by anyone, from any location or device, with a stable Internet connection (Bolaños-García-Escribano et al. 2021). These platforms offer tools for subtitle editing that allow translators to carry out basic subtitling tasks, including spotting, translating and reviewing, with added digital functionalities such as shot-change detection and waveform formation, which further speed up the subtitling process. The platforms include quality control features. Depending on the parameters set for the AVT project, the quality control checks can correct errors regarding maximum display rates, reading speed, the maximum number of characters, overlapping or empty subtitles, shot changes, linguistic mistakes and others. They often include tools for converting and hardcoding subtitles onto the video (Bolaños-García-Escribano et al. 2021).

Cloud-based solutions allow users to work on translation projects in a professional, online and collaborative environment. Online subtitling environments allow for closer cooperation, which creates a more interactive and collaborative workflow (Bolaños-García-Escribano 2020). The introduction of online classes and distance learning during the COVID-19 pandemic has emphasised the importance of this collaborative, long-distance aspect of cloud technology. By allowing users to work on the same material or with the same templates, the software increases productivity and harmonisation (Bolaños-García-Escribano 2020). Software developers are often open to feedback and are ready to react promptly to improve the experiences of consumers with their product (Bolaños-García-Escribano 2020). Due to the security, productivity and flexibility aspects, cloud platforms have become "the ultimate virtual workspace" (Bolaños-García-Escribano et al. 2021, 5).

Online cloud-based subtitling tools can be free (e.g., YouTube Studio, Amara, Dotsub), paid (e.g., Subtitle Horse SHIRE, CaptionHub) or proprietary (e.g., Netflix

Originator, Plint, iMediaTrans), with OOONA Tools being one of the most prominent paid subtitling editors on the market (Bolaños-García-Escribano 2020; Baños 2018).

1.3.1 OOONA

OOONA Ltd[3] is a company founded in 2012 which develops management and production tools for the localisation industry. It offers different packages, such as OOONA Manager, OOONA Tools or OOONA Cloud, but the package the study was focused on is OOONA EDU, a cloud-based platform designed for subtitling training, because one of the groups participating in this study was provided with temporary licences for the OOONA EDU PRO package. OOONA EDU is a paid SaaS solution that allows access to the tools from any location and requires a stable Internet connection. It is supported on the Windows and Mac operating systems and provides online backup functionalities.

The OOONA Agent is a plugin for analysing video files uploaded from local storage, generating the waveform, detecting shot changes, and video rendering in Burn & Encode. At the time of the study, the OOONA Agent plugin had to be installed on the user's device, but it has since been made virtual.

Six tools are included in the OOONA EDU PRO package: Create PRO, Translate PRO, Review PRO, Closed Captions, Transcribe and Burn & Encode (Figure 4). The following is an overview of the tools relevant to the study.

[3] Information regarding OOONA as a company, its products, tools and features has been taken from their official websites.

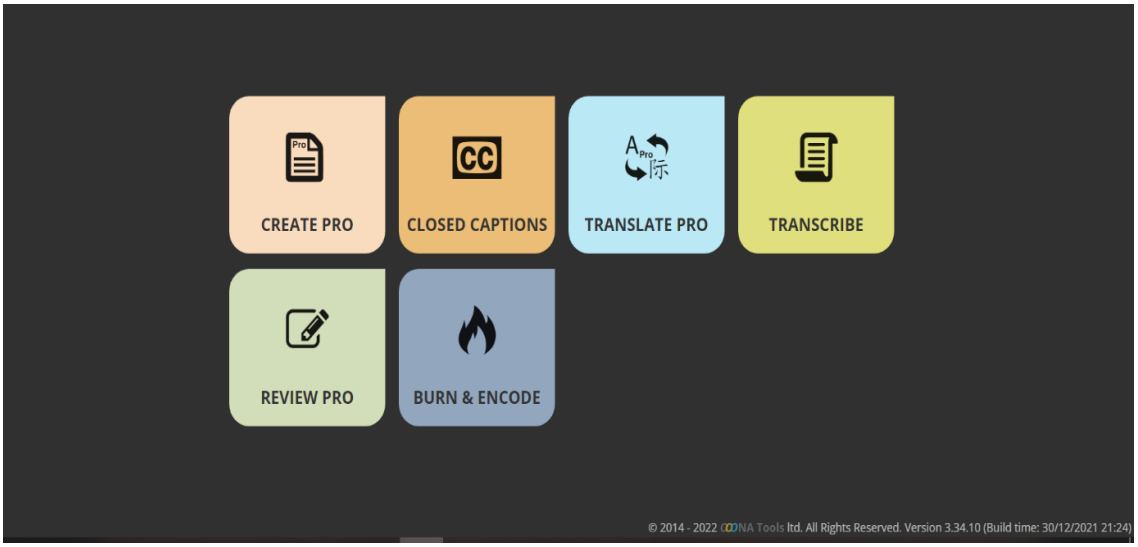

Figure 4. OOONA EDU tool menu

Both Create, which is in the standard version, and Create PRO are tools for creating subtitles from scratch, i.e., timing text from a video file by manually inputting the timecodes (Figure 5). They consist of a subtitle editor with text formatting options and information regarding each subtitle, such as the timecode, duration, number of characters and reading speed. Translate (PRO) is a tool for the translation of pre-timed subtitle templates (Figure 6). The text editor consists of two columns, one for the source text and one for the translation. The tools offer the option of splitting and merging subtitles. The video player allows for a preview of videos with the created subtitles. The timeline presents the subtitles as blue boxes, which can be dragged, prolonged or shortened. Each subtitle is accompanied by a bar that measures the reading speed and alerts the translator if it is inappropriate in relation to the project settings, which can be adjusted. Create PRO can also be used for the production of templates. The professional versions of the tools also offer the waveform functionality, shot-change detection (indicated as yellow lines), and custom QC checks, which are only functional with the OOONA Agent. This is also the case in the Review PRO tool.

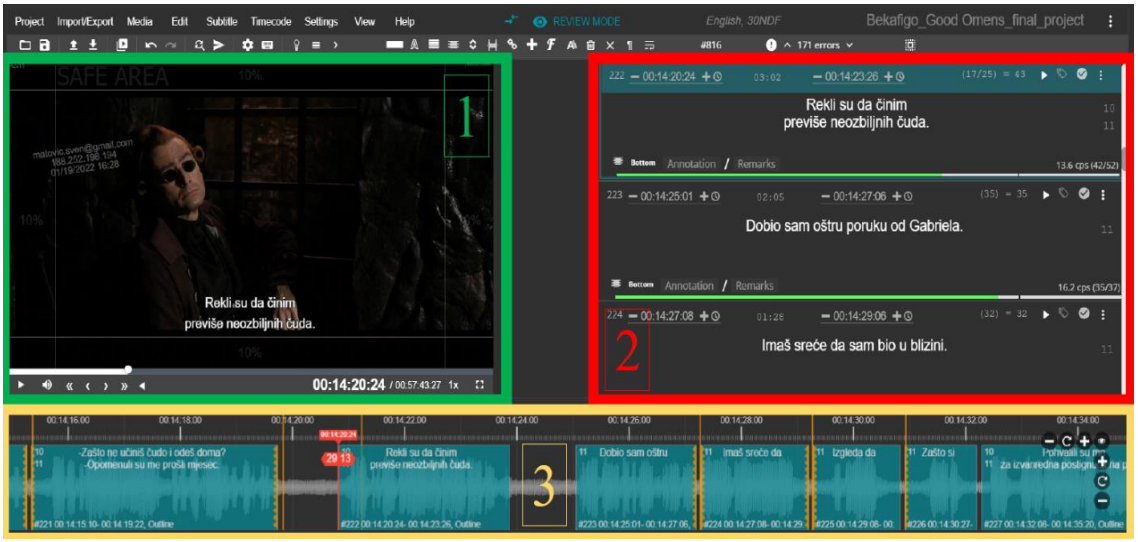

Figure 5. Create PRO (1 – video player; 2 – subtitle editor; 3 – waveform)

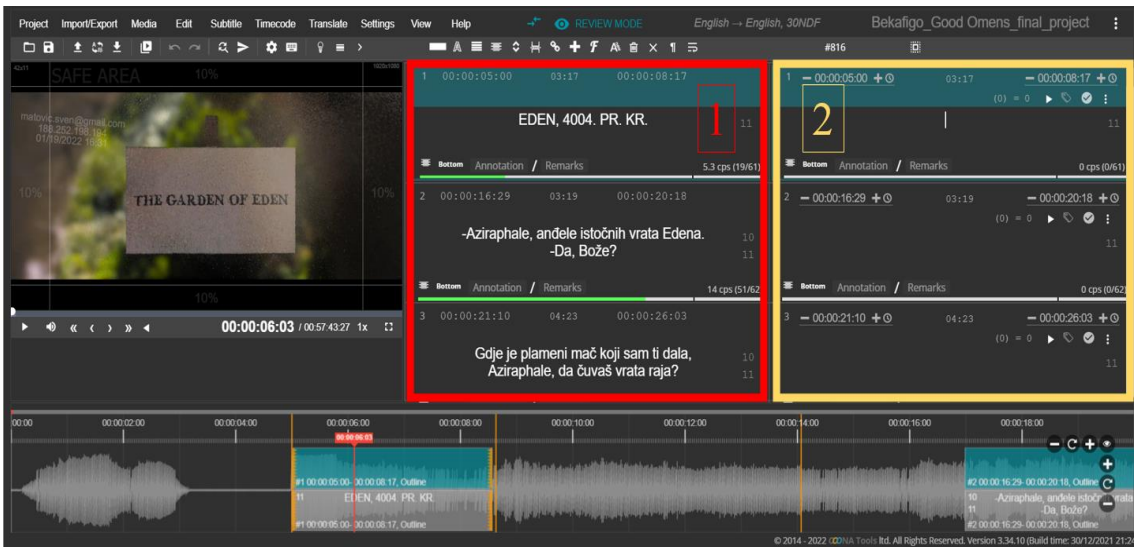

Figure 6. Translate PRO (1 – source text column; 2 – translation column)

Review (PRO) allows the user to revise or review subtitles by other subtitlers, QC subtitles or send subtitles for online reviewing (Figure 7). Subtitlers, students and teachers can leave annotations, include remarks, and track their changes. The subtitles are presented in two columns, one with the original subtitles and the other with the revised version.

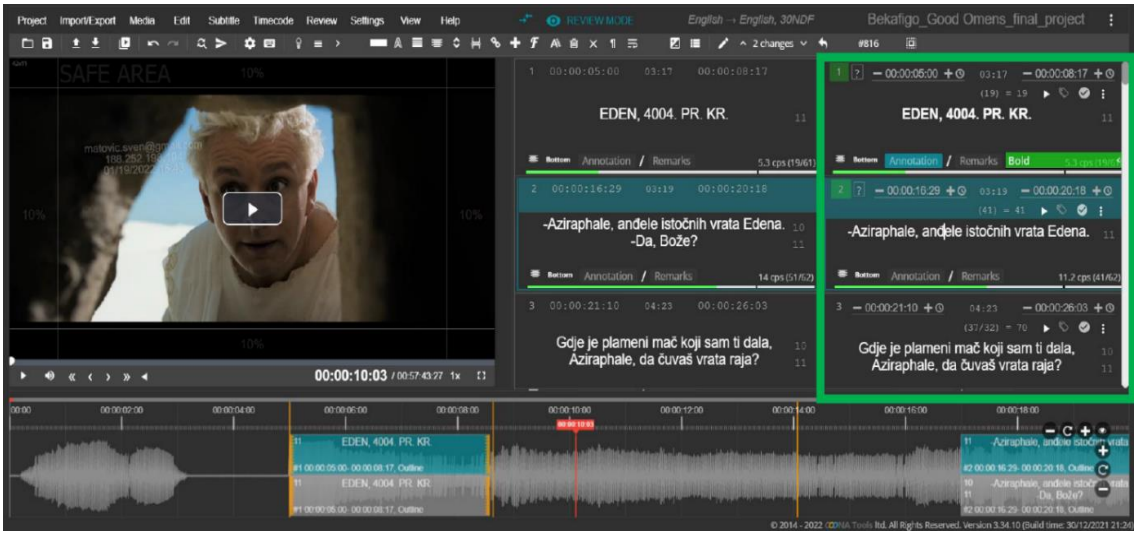

Figure 7. Review PRO (the revised version marked by the green square)

Burn & Encode allows the subtitler to burn, render or hardcode subtitles onto the video using various subtitle files (Figure 8). Subtitles are then rendered in the same resolution and frame rate, and there is an option to trim the video within the tool. This tool requires the OOONA Agent plugin.

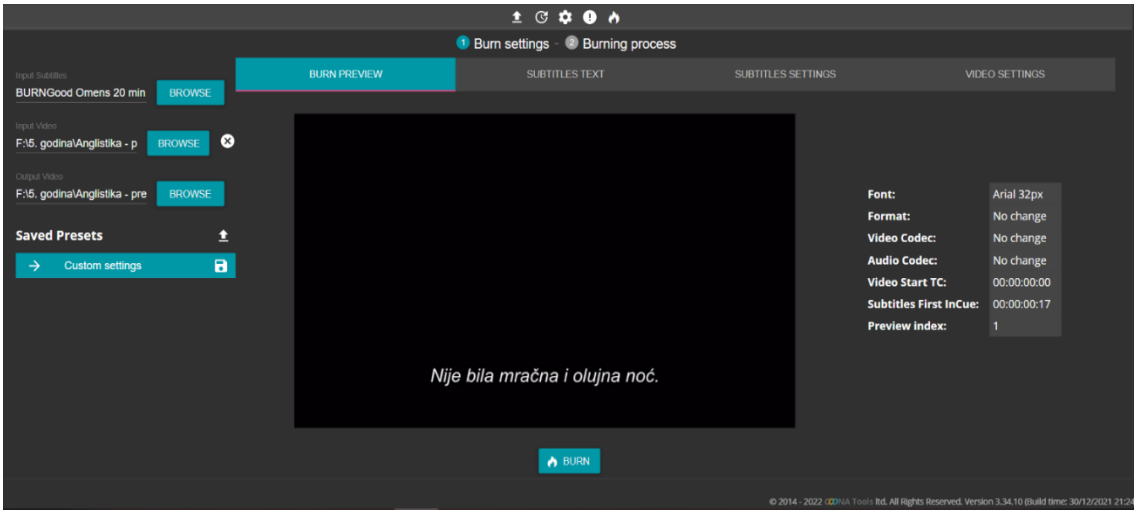

Figure 8. Burn & Encode

2. Aims and hypotheses

The main aims of this study are to assess and compare the educational potential of professional cloud-based and free desktop-based subtitling software, to determine

whether they offer significantly different didactic possibilities and to provide companies with feedback to improve their software.

Two main hypotheses have been established based on these aims and previous research (Bolaños-García-Escribano 2020; Bolaños-García-Escribano et al. 2021; Bolaños-García-Escribano 2018):

- Professional cloud-based systems, such as OOONA, offer a greater educational potential in subtitling education at university level with regard to the current translation market if compared to free desktop-based systems.
- The tools the students were provided with as part of the software were sufficient for their needs at this level of education.

3. Methodology

The data was collected through a questionnaire created on Google Forms and distributed among second-year graduate students of the translation track at the Department of English Language and Literature at the Faculty of Humanities and Social Sciences at the University of Zagreb, who attended the Areas of the Translation Profession course divided into three groups with two different teachers in the third semester of their graduate studies, in the academic year 2020/21. The course lasted one semester and the teachers decided on the general type of software used in the course. The students who used desktop-based software chose a programme that worked best on their devices, while the students who used cloud-based software only used OOONA with temporary licences. The method of teaching was equal and adapted to the same syllabus, possibly with different emphasis on certain elements and subtitling material. The questionnaire and the responses were in English. The sample included in the study was quite small and restricted, consisting of the entire three groups, i.e., all of the students who attended the course that semester, which did not allow for useful statistical results. The sample is asymmetrical, with 18 students who used free desktop-based software and seven students who used professional cloud-based subtitling software. The important distinction in the study is between free (desktop-based) and professional (cloud-based) software. In the Results section, the groups are referred to as "the desktop-based group" (DB) and "the cloud-based group" (CB) respectively.

The questionnaire (see Appendix) consisted of closed-ended questions, including dichotomous (Yes/No), multiple-choice, Likert-scale and matrix questions, as well as open-ended questions which allowed the students to elaborate on their opinions and experiences. The first section of the questionnaire consisted of demographic questions regarding personal information and education. The last question in the section divided the students into two sub-sections depending on the type of software they used. Both the DB and CB sections contained a question regarding the general satisfaction with the software. The impact of interfering variables was assessed through questions regarding the installation process, the Internet connection and the operating system. The key part of the questionnaire was a matrix question regarding the perceived development of specific subtitling skills, including spotting, working with shot changes, reading speed, dialogue reduction, working with a waveform, templates, as well as reviewing translations and providing feedback. The skills were chosen based on the teachers' specific focus in the course and the relevant literature on translation competences (Hurtado-Albir 2015; Cerezo Merchán 2018). The dependent variable was the educational potential of subtitling software, operationalised using the perceived acquisition of specific subtitling skills during the course.

4. Results

The questionnaire was completed by 25 respondents, with 18 students in the DB group and seven students in the CB group. Of the 18 students in the DB group, six only used Subtitle Workshop, three switched from Subtitle Workshop to Subtitle Edit and one to Aegisub, seven used Subtitle Edit and one used Aegisub. Since the difference in the number of participants belonging to the two groups is numerically incomparable and small, the results of the separate groups will have to be expressed in the number of respondents (absolute frequency) rather than a percentage (relative frequency). Percentages could prove to be markedly misleading in this case.

The first question in the separate groups of the questionnaire examined the satisfaction the students felt with the type of software they used. They were required to indicate their satisfaction on a scale of 1 to 5, with 1 being "Not satisfied" and 5 "Very satisfied". Not a single student was completely dissatisfied

with the software used in the course. In the DB group, two were moderately dissatisfied or neutral (Figure 9). Half of them claimed to be fairly satisfied, while five were completely satisfied. The most common answer in both groups was 4 and the CB group had no scores lower than 4. Even though the sample is considerably smaller and concerns only OOONA, all of the respondents were at least quite satisfied (Figure 10).

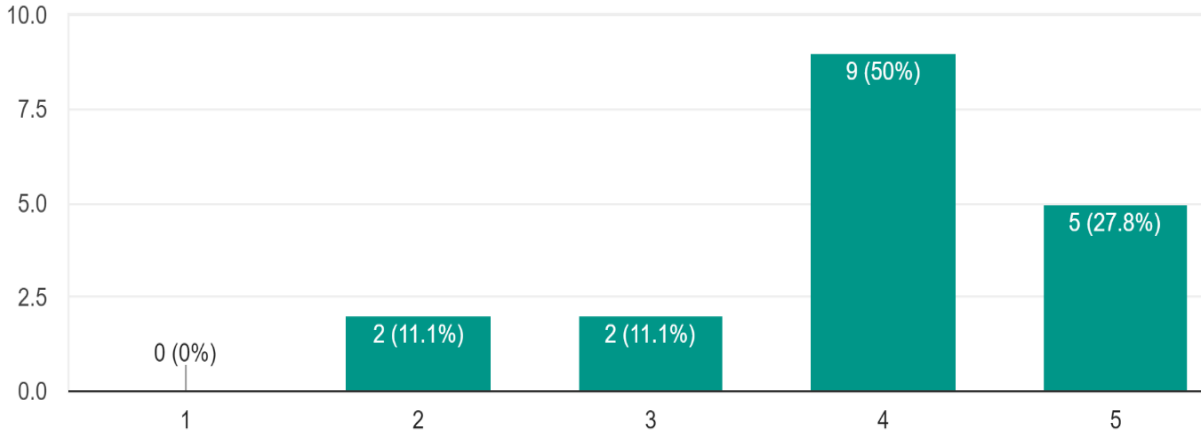

Figure 9. Q1: Please indicate how generally satisfied you are with the software you used during the course.

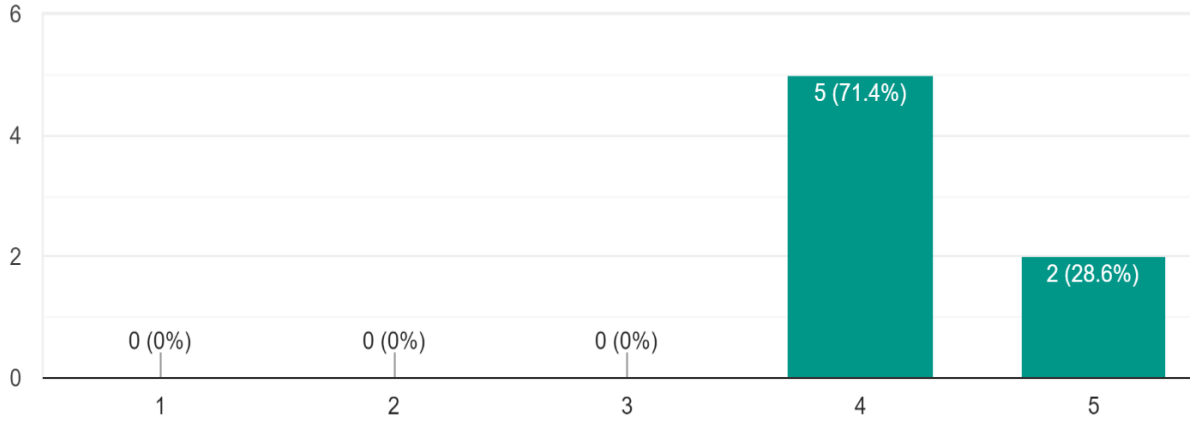

Figure 10. Q2: How satisfied are you with the overall performance of OOONA on a scale of 1 to 5?

Possible interfering variables were also taken into account to determine the factors that could have affected the skill acquisition and satisfaction with the

software solutions. The interfering variables included issues with the installation of the desktop-based software, the operating system, the Internet connection, and the installation of the OOONA Agent. Of the 18 respondents who used desktop-based software, 14 encountered no issues with the installation. As for the operating system, 24 respondents used Windows, while only two respondents used Mac, with one person who reportedly used both. All of the respondents in the CB group used Windows. Almost a third of the respondents faced issues with their Internet connection, which may have contributed to their general satisfaction. All of the respondents who used cloud-based software installed the OOONA Agent with no issues.

One of the main questions required the students to gauge to which level they had acquired specific subtitling skills. The skills included:

1. spotting subtitles and working with timecodes
2. working with a waveform
3. adjusting and respecting the reading speed and understanding its significance for the audience
4. using templates
5. reviewing the work of other translators and providing feedback
6. converting subtitle files
7. creating burnt-in subtitles or hardcoding them onto the video
8. working with and adjusting shot changes
9. adapting and reducing the original dialogue
10. general translation skills.

When the skills are compared individually between the two groups, working with a waveform, using templates, converting, hardcoding and working with shot changes present a substantial difference (Figure 15).

The majority of respondents (13 in DB and all 7 in CB) claimed to have mastered spotting subtitles and working with timecodes to a great extent or completely. The difference between the mean value for the two groups is not

substantially different, with 4 for the DB respondents and 4.6 for the CB group. All of the respondents indicated acquiring this skill at least slightly or moderately.

One third of the DB group did not learn how to use a waveform at all, while five have completely. All seven respondents in the CB sample acquired the skill to some extent, with five of them mastering it fully. This is one of the skills for which the mean values exhibited one of the major differences between the two groups (DB = 2.9; CB = 4.6).

The mean values for the skill of adjusting the reading speed and understanding its significance for the audience are fairly similar. All of the students acquired this skill to some extent, with 12 respondents choosing the highest score.

As is visible in Figures 11 and 12, using and adjusting templates elicited substantially different responses among the two groups. Eleven students that used desktop-based software did not acquire the skill at all and none of them chose the highest option. The two most frequent choices in this group were numbers 1 and 3, which corresponded to moderately mastering the skill. The mean value for this skill in the DB sample is 1.8. The CB group's choices were, once again, limited to scores 4 and 5, indicating "to a great extent" and "to the greatest possible extent", respectively. The second group's mean value amounts to 4.1.

Reviewing colleagues' work and providing feedback elicited mixed responses in both groups. Neither the difference between the mean values nor the response distribution (Figure 11 and 12), indicated an important difference in skill acquisition. The most frequent response in the DB sample was "to a great extent" (6 responses), while it was "to the greatest possible extent" (3 responses) in the CB sample. Only the DB responses contain the two lowest scores, indicating that two people had not developed the skill.

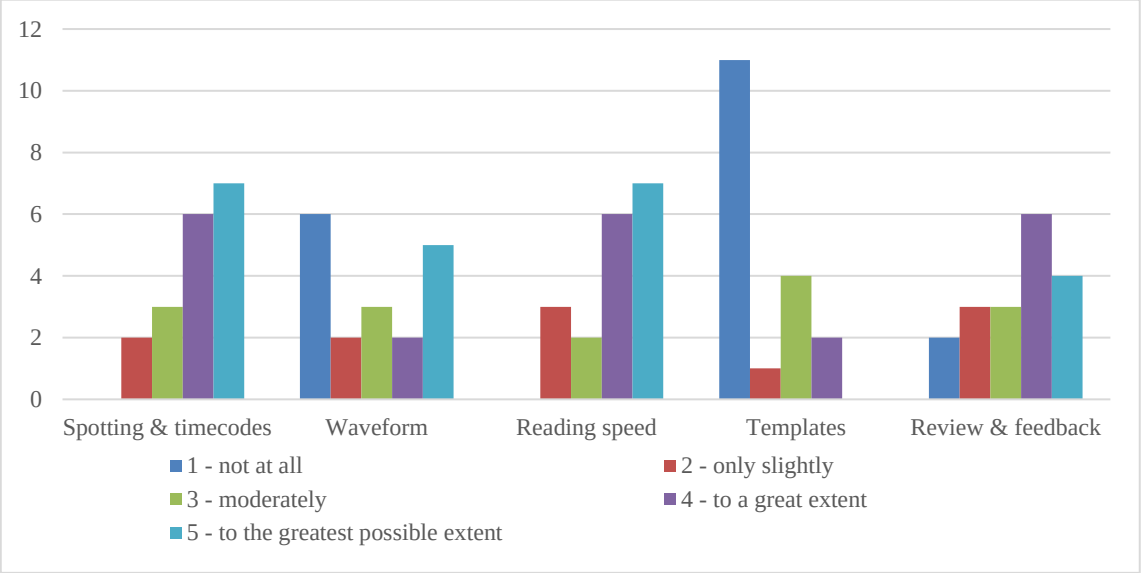

Figure 11. Scores for the First Five Skills of the DB Group

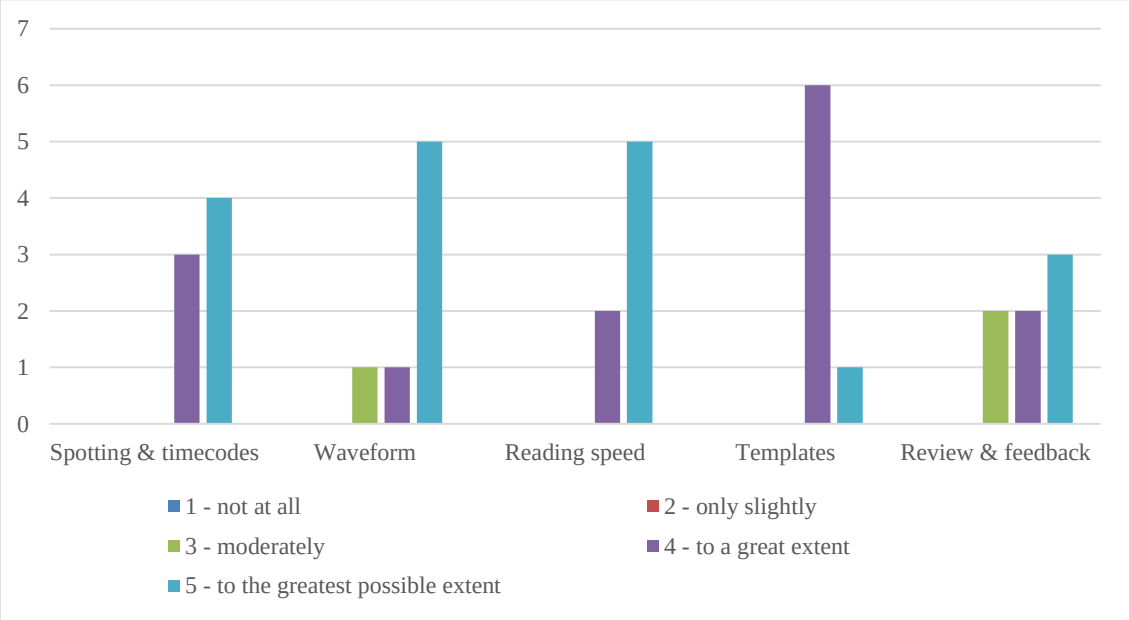

Figure 12. Scores for the First Five Skills of the CB Group

The responses in the DB sample vary greatly for converting video and subtitle file formats, resulting in the mean value of 3. With the mean value of the CB sample for this skill amounting to 4.4, the difference is not major, although the highest score is the most frequent in this sample.

Hardcoding or creating burnt-in subtitles is one of the skills with the biggest differences between the two groups, with a mean value of 1.3 in the DB and 3.9 in

the CB group. Fifteen students in the DB group did not develop that skill. Although the tool for creating burnt-in subtitles was available in OOONA, their mean value was not much higher, at 3.9.

The mean values for working with shot changes, which equal 3 in the DB group and 5 in the CB one, suggest quite a pronounced difference, which is also reflected in the visual representation of the results in the charts (Figures 13 and 14). The responses in the DB group are fairly equally distributed, with the most frequent choices being 2 ("only slightly") and 5 ("to the greatest possible extent"). All of the respondents in the CB sample, on the other hand, are of the opinion that they have managed to grasp the concept and the rules of shot changes to the greatest possible extent.

Lastly, dialogue adaptation and reduction, as well as the more general linguistic skill of translation and language transfer elicited the same response distribution in both groups. The difference between the mean values is equal with 4.3 in the DB sample and 4.6 in the CB sample for both skillsets. It is a minor distinction, indicating that the skills are acquired to a very similar degree regardless of the type of software. The most frequent responses in both groups were scores 4 and 5, even though two students in the DB sample indicated developing these skills only slightly (2).

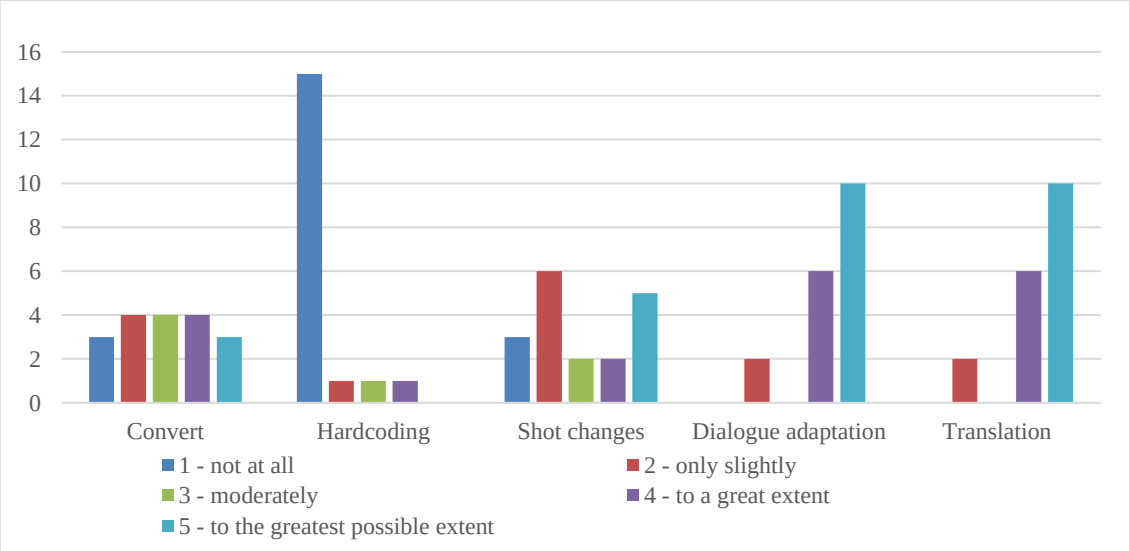

Figure 13. Scores for the Second Five Skills of the DB Group

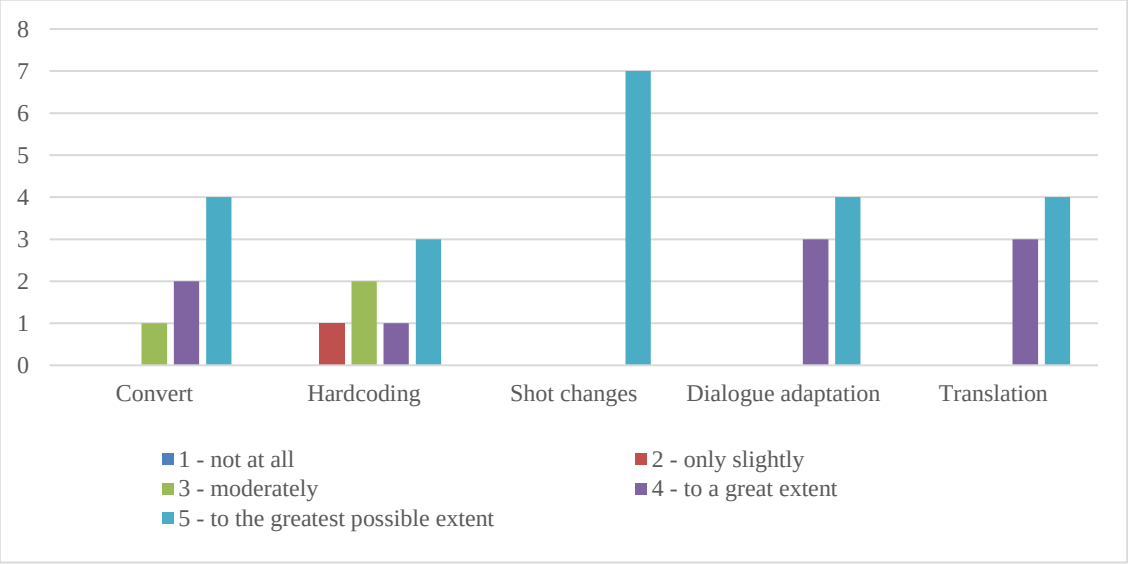

Figure 14. Scores for the Second Five Skills of the CB Group

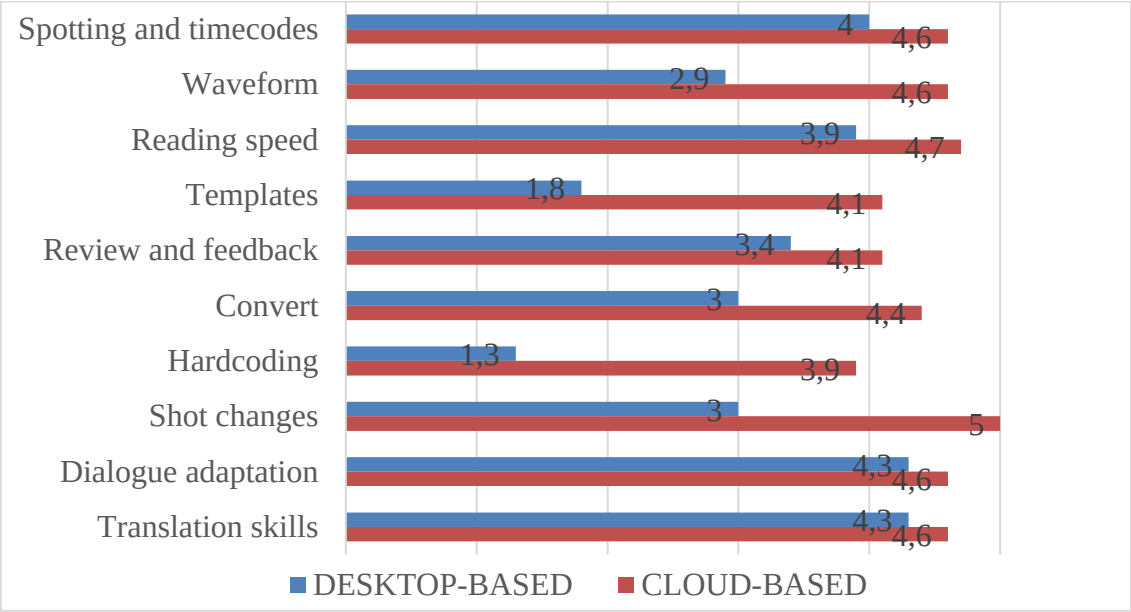

Figure 15. The Mean Values of the Acquired Subtitling Skills

The CB group was asked a few questions specifically about the functionalities of OOONA EDU. The respondents were asked to indicate their level of satisfaction with each of the tools in the OOONA EDU package. Two of the tools, Closed Captions and Transcribe, were not used at all by any of the students (Figure 16). The three tools used the most, i.e., Create Pro, Translate Pro and Review Pro, elicited the same number of responses for the same scores, with the most common score in each category, with four responses, being 4 ("satisfied"). Since "no opinion" was chosen

once in each of those categories, two of the students most probably used Create Pro instead of Translate Pro or vice versa, while the respondent who had no opinion on the Review Pro tool most likely did not use it in providing feedback to their colleagues. Burn & Encode was the only feature that received mixed and mediocre responses, with five students having no opinion about the tool and two of them being satisfied.

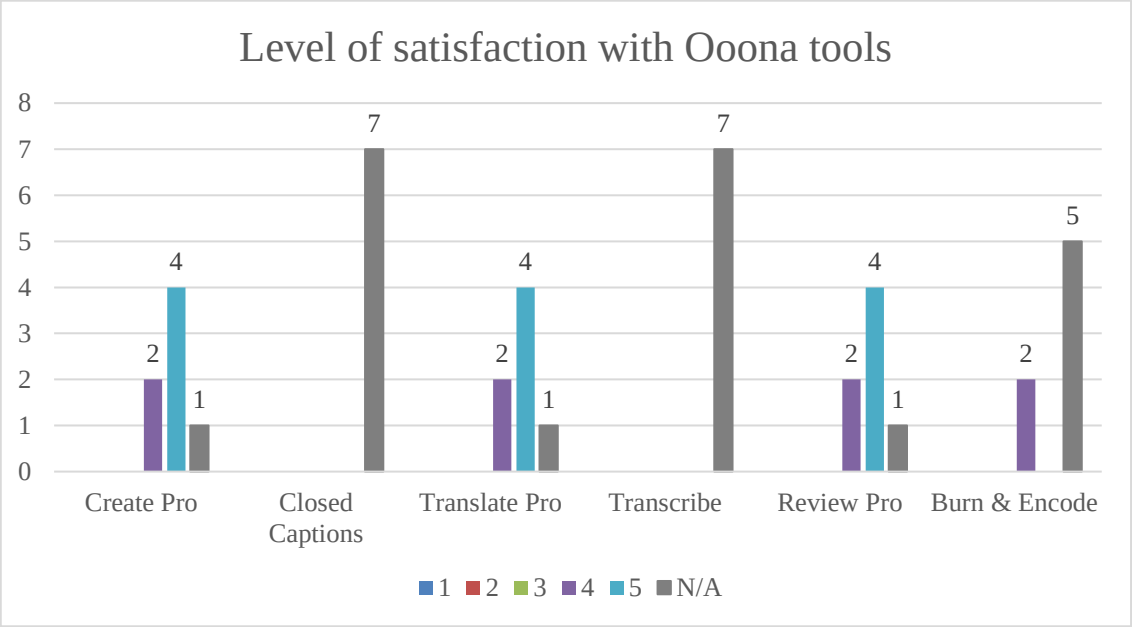

Figure 16. Level of Satisfaction with the OOONA Tools Offered in the OOONA EDU Package

More than half of the respondents (4) from the CB group used the Create Pro feature most often, while the others (3) mostly used Translate Pro.

When asked whether they would consider buying a license for OOONA upon finishing the course and beginning their professional career, nearly all of the students (6) who used OOONA in their subtitling education responded positively, while one student was not certain.

Both groups were asked to indicate whether they ever used the other type of software. None of the students who used desktop-based software in their subtitling education had ever used cloud-based subtitling software. On the other hand, four of the students in the CB sample have used desktop-based software before. When asked which type of software they preferred if they did have experience with both, four of the DB sample that responded to this question prefer any other desktop-

based software solution other than Subtitle Workshop, one student prefers Subtitle Workshop, while three students indicated indifference (Figure 17). It is important to note that, even though none of the students in the DB sample had experience with cloud-based software, eight of them still responded. In the CB sample all six respondents who had used both types of software before preferred OOONA to other subtitling software solutions.

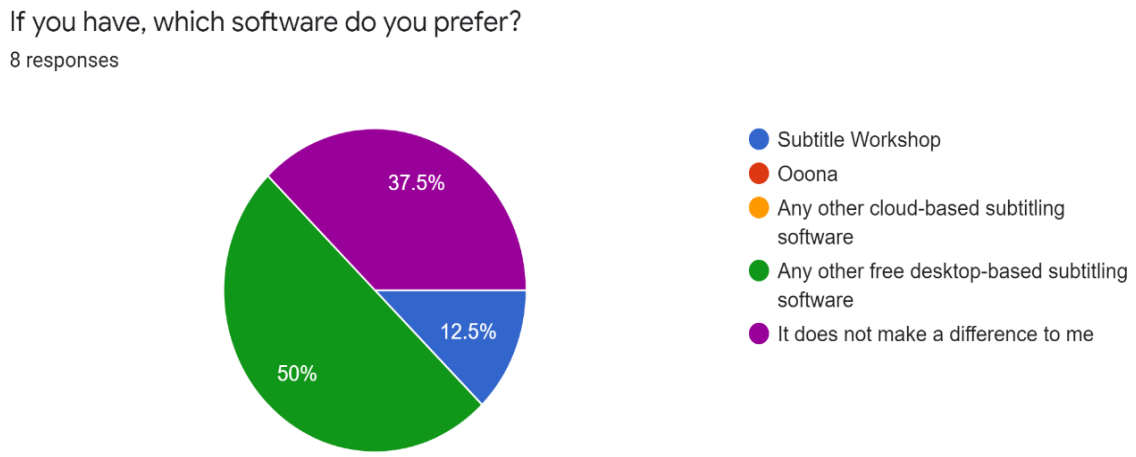

Figure 17. Question Regarding Software Preference if Both Types Were Used (DB Group)

4.1. Open-ended questions

The questionnaires in both groups were concluded with an optional open-ended question that allowed them to elaborate on any aspects of the software that were not discussed in the questionnaire.

There are 23 longer answers in total. The DB replies have been divided into seven main categories, Negative and Positive Subtitle Workshop, Negative and Positive Subtitle Edit, Negative and Positive Aegisub and Neutral. Some of the replies were attributed to more than one category if they contained variable opinions. Taking into account the overall greater number of respondents in the DB group and the different software solutions they used within the group, it was expected that the responses would be more varied.

4.1.1. Negative Subtitle Workshop

The replies in this category mainly focused on the interface, reliability, issues with opening video files and general installation issues. Most of the respondents focused on the unreliable nature of this software, prompted by the constant need to save the project, even when the auto-save feature was enabled. One respondent phrased this complaint as having developed a "habit of obsessively pressing the Save button", which also prolonged the subtitling process. The interface was at one point simply referred to as "bad", with other opinions lining up with that description, admitting that it is difficult to use, not user-friendly, counterintuitive and frustrating. Concerning the interface, many of the respondents indicated the lack of a waveform as a hindrance making their subtitling process slower. Other recurring complaints included issues such as errors popping up when they should not or not showing up when they should, as well as technical issues experienced during installation and when uploading video files, despite having installed various codecs. The seven students who attempted to use Subtitle Workshop and experienced issues with it, but switched to Subtitle Edit after some time compared those two solutions. Interestingly, a student emphasised that neither software was adapted for visually impaired students.

4.1.2. Positive Subtitle Workshop

Six responses contained positive opinions about Subtitle Workshop, which focused mainly on the interface, shortcuts and installation. Students emphasised how intuitive and simple Subtitle Workshop is to use. In contrast to the previous section, the respondents deemed it easy and useful for beginners, with keyboard shortcuts facilitating the subtitling process. The system was once referred to as user-friendly and easy to install. The respondents exhibited greatly varying opinions, with more of them gravitating towards the negative aspects than the positive and many of them being in contradiction.

4.1.3. Negative Subtitle Edit

One response was attributed to this category. It contained a comparison of Subtitle Workshop and Subtitle Edit and highlighted the pros and cons of both. The student

criticised the waveform in Subtitle Edit for not being precise enough and the interface for not being adapted for visually impaired students.

4.1.4. Positive Subtitle Edit

The Positive Subtitle Edit category contains opinions on the interface, the waveform and the shortcuts. As mentioned above in the Negative Subtitle Workshop category, many of the responses in this group refer to the comparisons made by students who switched from Subtitle Workshop to Subtitle Edit. The pros are therefore often aspects that Subtitle Workshop lacks or functions that are difficult to use in contrast to Subtitle Edit. Many of the respondents emphasised the importance and benefits of subtitling with the help of a waveform which is offered in Subtitle Edit, but not in Subtitle Workshop. Subtitle Edit has been described as user-friendly, easy to use and intuitive, prompting one respondent to claim that "after a whole semester of working with Subtitle Edit, I felt as if I truly 'mastered' the art of making subtitles".

4.1.5. Negative Aegisub and Positive Aegisub

There were two negative opinions and a positive one for Aegisub. The complaints are relatively general and nonspecific, indicating that Aegisub is less user-friendly than Subtitle Workshop and that the interface has not been updated in a long time. On the other hand, Aegisub did not seem to cause many issues and the software was easy to use, which was amplified by the presence of a waveform.

4.1.6. Neutral

One response could not be attributed to any of the categories, requiring its own "Neutral" designation. The respondent[4] opted for a diplomatic conclusion, finding pros and cons in both Subtitle Workshop and Subtitle Edit and following up with a personal comment on the adaptability of future translators: "Both software [sic] have advantages and disadvantages, there is no perfect software. Also, I think that translators should be flexible and know how to use both."

[4] This was a response to the question on software preference. In the final open-ended question of the questionnaire, this respondent also indicated certain negative and positive aspects of Subtitle Workshop and Subtitle Edit that were included in the qualitative analysis.

4.1.7. OOONA

Respondents in the CB group left seven longer responses. The responses mainly focused on six broader topics: accessibility, the Review tool and annotation, the interface, shot changes, company responsiveness and overall usage. Only one comment was negative and it referred to problems a user encountered related to shot-change detection in contexts where scenes in a video file were set in the dark, making it difficult for the software to recognise cuts. This is, however, not strictly related to this specific software as it poses a problem to subtitling software in general. One of the most frequently mentioned positive aspects was the accessibility enabled by the cloud-platform, allowing students to subtitle on multiple devices. Two respondents emphasised the degree to which the Review feature helped them provide feedback on their colleagues' subtitles and annotate their own. Another respondent expressed great satisfaction with the software's functionality of identifying shot changes: "The OOONA Agent is a God-given piece of software when it comes to creating shot changes." Another important aspect of the platform and its developers highlighted in a longer response is their quickness to respond to queries from the users, indicating their openness to feedback and readiness to help. The students found the platform easy to use, interesting and entertaining.

5. Limitations of the study

The asymmetricity of the sample has been a limitation of the study, with only a third of the students using the OOONA EDU PRO package. It is crucial to keep in mind that all responses were based on the respondents' subjective assessment of the skills and software solutions. The conclusions are, therefore, also based on the students' experiences, not objective facts, while some of the notes and comments are given by the author, who was originally part of the CB group. Skill acquisition largely depended on the way a feature is incorporated into the software and whether the software supports it at all, the focus the teacher put on the skill, the material they worked on and the guidelines they followed.

6. Discussion

All respondents were at least slightly satisfied with the software they used. The mean value of the DB group reflects the range of opinions that span both extremes due to the use of multiple software solutions and various interfering variables.

Almost a third of the respondents had issues with their Internet connection which may have contributed to their general satisfaction response, primarily in the CB group, since cloud solutions require an uninterrupted Internet connection. If the connection falters, OOONA may crash, but the built-in auto-save feature makes sure the work is not lost, with the system also prompting the user to download their project in case of an unstable connection. The responses showed no link, with respondents who did have a problematic connection indicating a high level of satisfaction. Only a loose link was established in the CB group, where it would be more expected.

The results of those who are least satisfied and those who are most satisfied with the desktop-based software show almost no connection. A single factor may form a pattern – all the lowest scores used Subtitle Workshop in the course, while the highest scores either only used Subtitle Edit or replaced Subtitle Workshop with Subtitle Edit. The respondents in the CB group were all very satisfied with the software they used.

Students experienced no issues with the OOONA Agent and the potential installation problems were far outweighed by the advantages it provided (e.g., waveform, shot-change detection, hardcoding).

The skills that were acquired to a similar degree in both groups included spotting and working with timecodes, adjusting the reading speed, reviewing the work of other translators and providing feedback, adapting and reducing the original dialogue and general translation skills.

Spotting and working with timecodes constitute the basics of any subtitling practice and the minimum of any subtitling course, so they could only have been facilitated by certain features of the software, such as the waveform. All of the students acquired this skill at least to a small degree. The lower scores are mostly tied to the use of Subtitle Workshop, which does not include a waveform.

The same is valid for adjusting and respecting the reading speed, one of the key concepts within subtitling. This skill had the highest mean value in the CB group (4.7).

Dialogue adaptation and reduction and the general linguistic skill of translation, which are skills that both teachers focused on equally, were acquired to a very similar degree. These skills received the highest values in that group. They are not dependent on the type of software used, but on the overall teaching method, the choice of materials, types of assignments, previous knowledge, adaptability and other factors.

Reviewing the work of other translators and providing feedback received mixed responses. This skill is not central to the narrower task of subtitling, nor is it purely technical or straightforward to acquire. It is an important process in the AVT industry, either for quality control or for reviewing your own work, but it is not a crucial component of a subtitling course. In OOONA, emphasis is put on this subtitling phase with the Review PRO tool. Ultimately, the degree to which this skill is acquired does not speak strictly to the educational potential of the software, but certain tools may facilitate it.

A considerable difference in the mean values between the groups was found for five out of ten skills: working with a waveform, using templates, converting subtitle files, hardcoding and working with shot changes.

With both extremes present in the DB sample, the skill of working with a waveform depended on the specific standalone software solutions used, since Subtitle Workshop does not contain a waveform. All respondents who indicated acquiring the skill to a high extent used Subtitle Edit. The six lowest scores came from respondents who used Subtitle Workshop, which does not provide the user with that feature. The students in the CB group claimed to have acquired the skill to some extent, with five respondents choosing the highest score. Considering that they all used the same software with the same waveform functionality, the skill depended on individual understanding and preference. In the open-ended responses, the waveform was referred to as a helpful feature that made subtitling faster, easier and efficient and without which work proved frustrating and imprecise.

Since templates enable an efficient subtitling process, standardisation, quality assurance, the reduction of turnaround times and costs, they have become increasingly demanded in the AVT market (Oziemblewska and Szarkowska 2020, 433; Nikolić 2015). In the study, they elicited markedly differing responses. The acquisition of this skill was linked to the students' preferences and individual usage of this feature. Students in the CB group learned how to use templates if they used the Translate PRO tool more than Create PRO.

The three skills that were seemingly acquired most differently were converting subtitle files, hardcoding and working with shot changes. Converting subtitle files does not necessarily speak to the features of subtitling solutions specifically, but mostly the students' ability to find substitute solutions, IT literacy and prior knowledge. This skill received some of the lowest scores in the CB group, keeping in mind that this package of OOONA EDU does not include the Convert PRO.

Hardcoding is one of the skills with the biggest differences, which depended on features available in the software, individual preference and resourcefulness. The mean values (1.3 and 3.9) also indicate a lighter focus that was placed on this phase of the subtitling process. Since many of the desktop-based solutions do not have the option to create burnt-in subtitles, but require another software to hardcode them, the students using them did not develop that skill. More than 80% of the DB group did not develop this skill. Although a tool dedicated to hardcoding was included in the OOONA package and the students did not have to use external solutions, their mean value was not much higher since the focus in the course was largely on the central phases of subtitling and hardcoding was not strictly necessary.

Working with and respecting shot changes is facilitated by software functionalities and new and improving subtitling programmes. Subtitle Workshop contains no feature that helps identify shot changes. Subtitle Edit and Aegisub require additional setup. In order to make automatic shot-change detection, waveform generation and hardcoding possible in OOONA, the user had to install the OOONA Agent. The mean values differ significantly, with all the respondents in the CB group considering to have mastered this skill. The responses in the DB group are quite mixed and subjective. The only relatively consistent link is that the students who used Subtitle Workshop opted for lower scores, which is

understandable due to it lacking the feature. The higher scores, i.e., 4 and 5, were limited to Subtitle Edit. None of the respondents in the DB group referred to shot changes in the open-ended questions. Since numerous respondents in that group mentioned the waveform, it is possible that they were referring to the waveform section of the interface, including the shot changes. In that way, it would make more sense that they found the shot-change detection "imprecise". The CB group referred to shot changes directly, possibly because of the emphasis placed on them in the lectures and the interface.

Although some skills may not directly speak to the educational potential of various software solutions, the fact that students claimed to have acquired the skill in question owing to a feature within the software may also strengthen its potential. Some skills, regardless of centrality in the subtitling process, depend on many different external factors, one of which is always, at least indirectly, the software the students learn in.

The students were required to indicate whether they had ever used the other type of software. Although none of the respondents in the DB group had experience with cloud-based software, eight of the 18 still responded to the question. Six students in the CB group, four of whom have used both types, prefer OOONA. Half of the students in the DB sample who replied to this question prefer any desktop-based solution other than Subtitle Workshop, due to the overall negative experience the students had with that software. One student prefers Subtitle Workshop. More than a third of the DB group does not have a software preference.

Only two respondents in the DB group indicated that they had not become more interested in the practice of subtitling upon the completion of the course. Both of those students only used Subtitle Workshop, without switching to another software solution and they both had issues with the installation. Although the other variables did not correlate, they both had an overall negative experience with a single software solution, Subtitle Workshop. Everyone else was either positively interested in subtitling or replied with "Maybe".

This is connected with Bolaños-García-Escribano's (2020, 255) conclusion that students are more likely to continue learning to subtitle if they have a better understanding of subtitling practice and software features. This is also visible from the current questionnaire, where the students' interest in subtitling goes hand in

hand with their satisfaction with the software they used and the level to which they acquired the various skills. Since he did not include desktop-based software solutions in his dissertation, only the responses based on cloud software are compared. As regards OOONA, Bolaños-García-Escribano's (2020) respondents found some difficulties in learning how to use its functionalities. They mentioned difficulties finding their place in the video, which speaks to the software interface, they found it difficult to log into, difficult to export from and complicated to save files in. When asked whether they would consider using OOONA Tools in the future, the respondents expressed a positive disposition, with 83% replying positively, while only 13% remained doubtful (Bolaños-García-Escribano 2020). Although it is difficult to compare the results due to the difference in the number of participants, 85.7% of the CB students from the current study expressed a willingness to purchase an OOONA license in the future and none of them replied negatively.

Interestingly, when analysing the problems with OOONA that were enumerated by his respondents, Bolaños-García-Escribano (2020) speculated that they could have arisen either due to the tool's deficiencies or the lack of sufficient training. In the current study, the students had an entire semester to become versed in using these programmes. Therefore, with the students having had enough time to become acquainted with the features, the problems they encountered have a higher chance of being related to the tool's deficiencies.

Overall, the first hypothesis was partially confirmed. The cloud-based system included in this study did elicit more positive responses when compared to the desktop-based system, keeping in mind the significantly smaller number of students who used it, allowing for less varied responses. However, the differences in the acquired skills were not that noticeable when it comes to the central subtitling phases. Skills that made use of the key software parts that both the cloud- and desktop-based solutions contained, were equally acquired by both groups. Thus, it seems that the difference in the response distribution might have to do with the proprietary vs. free dichotomy and the features provided in the system. The cloud-based nature of OOONA is not connected to the educational potential of the software, but to logistical issues, such as working from home, taking online classes, sharing materials, feedback and keeping the files safe in an online environment. Therefore, the cloud-based nature is not directly reflected in

the educational potential of the software, but in certain practical, logistic considerations. The second hypothesis was confirmed with some of the features that OOONA offered as part of its package proving to be superfluous for the students' needs.

7. Conclusion and implications

Contrary to the main hypothesis, the professional cloud-based system, OOONA, and two of the free desktop-based systems, Subtitle Edit and, to a lesser extent, Aegisub, proved to be similarly useful in subtitling education at university level, when operationalised via the students' subjective assessment of their skills. Although OOONA EDU offered a more systematised and approachable interface, it served almost the exact same purpose in teaching the aforementioned skills.

Considering that these differences in the response distribution had almost everything to do with some crucial features each of the free desktop-based software lacked, it was almost exclusively dependent on whether the software is proprietary or free. Keeping in mind that the cloud is becoming increasingly present in the translation market, which would make cloud-based subtitling tools educationally more appropriate to the current market, both the proprietary cloud-based solution and the free desktop-based programmes managed to prepare these students for the practice of subtitling to a satisfactory extent. The cloud-based nature of OOONA and similar solutions has more logistical implications, which were very evident in the COVID pandemic with the introduction of completely online classes. Ultimately, the choice between types of software should depend on factors such as the type of education, departmental budget and course priorities. For an introductory, less intensive course on AVT or subtitling, where the aim is to provide an introduction into the main phases, carefully chosen free desktop-based software may be perfectly sufficient to provide students with the tools to acquire the skills they need. Nevertheless, it might be a good idea for more specialised courses to allocate a part of the departmental budget to acquiring licenses for commercial cloud-based subtitling software. The study of cloud technologies is relatively new in translation studies, and AVT in particular, so further research might come to new conclusions and provide new insights into this topic. Nonetheless, the AVT market requires students to be flexible and adaptable and to have a stable understanding

of basic skills, which can be acquired regardless of whether the subtitling software is free or proprietary, desktop- or cloud-based.

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USPOREDBA OBRAZOVNOG POTENCIJALA PROFESIONALNIH SUSTAVA ZA PODSLOVLJAVANJE U OBLAKU I BESPLATNIH SAMOSTALNIH SUSTAVA ZA PODSLOVLJAVANJE

Sažetak

Na tržištu postoje dvije osnovne vrste sustava za podslovljavanje: samostalni sustavi za osobna računala i profesionalni sustavi u oblaku. Mogu biti besplatni i profesionalni. Tehnologija u oblaku nedavno se počela koristiti u edukacijske svrhe, pri čemu se neprofesionalni samostalni sustavi često koriste jer su uglavnom besplatni, a nude slične funkcije. U radu se istražuje obrazovni potencijal navedenih sustava kako bi se pokazalo postoji li značajna razlika u njihovoj funkciji u edukaciji podslovljavanja na sveučilišnoj razini. Proveden je upitnik na dvjema skupinama studenata koje su koristile jedan od navedenih sustava. Primarno se ispitivala percipirana razina usvajanja vještina podslovljavanja te zadovoljstvo pojedinim funkcijama programa. Samostalni sustavi i sustavi u oblaku pokazali su se podjednako učinkovitima u edukaciji podslovljavanja uz vrlo male razlike u usvajanju vještina, koje ovise o tome je li sustav besplatan ili profesionalan. Na temelju rezultata razmatraju se pitanja vezana uz obrazovanje.

Ključne riječi: podslovljavanje, softver za osobna računala, softver u oblaku, audiovizualno prevođenje, tehnologija