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Video-conference platforms as a tool for online teaching at lower secondary school

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vlastnoruční podpis

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Content

List of abbreviations

ESL	–	English as a second language
RVP	–	Rámcový vzdělávací program – Framework educational program
MŠMT	–	Ministry of education and sport
RQ	–	research question
SQ	–	sub-research question
TAM	–	Technology acceptance model

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Abstract:

Video-conference platforms became essential tools for education during the pandemic. The research of this thesis focuses on comparing these platforms from the point of usefulness, ease of use and ability to accomplish educational objectives and goals. Thirty-two teachers of English as a second language at the lower secondary schools answered questions regarding Zoom, Microsoft Teams, Skype, and Google Meet since these were the primarily utilized platforms in 2020. The analysis of the obtained data revealed that the video-conference platforms, although evaluated as useful and easy to use, cannot fulfil the educational objectives and goals in the complex.

1 Introduction

The Ministry of Health closed schools in the Czech Republic for all pupils and students based on the exceptional resolution of the Ministry of Health on April 11th, 2020. Nobody knew how long this was going to last. The resolution to the worsening COVID-19 situation was valid until the Ministry of Health call-off (Vojtěch, a další, 2020).

The pupils stayed locked at home. There was number of weeks of no schooling, and the schools started looking for solutions to substitute on-ground education.

It is known that online teaching had been actively performed on various levels of education years before the coronavirus pandemic. Tiyar (Tiyar, a další, 2015) stated that online education has been active since the internet connection and personal ownership of computers, tablets, and smartphones happened to be standard accessories of people worldwide.

Nevertheless, the spring of 2020 changed the education world and introduced new possibilities to elementary schools. Suddenly online teaching became an everyday routine at schools worldwide.

The situation presented a challenge for teachers and students and a major decision for the school directors about choosing the right video-conference platform that would serve the user's needs and successfully fulfil the requirements in education.

Amelia, one of the former students, expressed herself on the situation in the article *Students, Parents and Teachers Tell Their Stories of Remote Learning (2020)*, as follows: *"My grades dropped a lot last year during remote learning. I went from having 90s to 70s. I'm not proud of it, but it's true. Schools did not have enough time to organize themselves for this. However, this year there is a noticeable difference: In every class, there is a Zoom call for live instruction, and I feel very much more productive because of it. Dominique Sollecito, 11th grade, Queens, N.Y"* (Nierenberg, Amelia, 2020).

Considering almost three years have passed since the first lockdown, it is an excellent time to evaluate teachers' experiences with the video-conference platforms and reveal if they think online teaching can substitute on-ground education.

The essential questions regarding the video-conference platform include affordability, security, and usability. The theoretical part will present all questions to some degree.

In contrast, usability, the meaning of effectiveness, efficiency, and user satisfaction level, is the main subject of the thesis.

This diploma thesis aims to answer the following research questions:

RQ 1: To what extent were video-conference platforms effective and easy to use in lower secondary schools to teach English as a second language (also called "ESL")?

RQ 2: Can teaching through video-conference platforms fulfil educational needs?

RQ 3: What video-conference platform accomplished the goals to the greatest extent?

The introduced research questions will be divided into hypotheses and sub-sections with sub-research questions.

The following hypotheses support research question **RQ 1**:

Hypothesis A:

Ha0 - The usefulness/effectivity of the video-conference platforms is the same.

Ha1 – The usefulness/effectivity of the video-conference platforms differs.

Hypothesis B:

Hb0 – The ease of use of the video-conference platforms is the same.

Hb1 – The ease of use of the vide-conference platforms differs.

Research sub-questions (also referred to as "SQ") dedicated to research question **RQ 2** are as follows:

Three-dimensional didactic objectives:

SQ1: Cognitive objectives in education can be accomplished using the video-conference platform.

SQ2: Psychomotor objectives in education can be accomplished using the video-conference platform.

SQ3: Affective objectives in education can be accomplished using the video-conference platform.

ESL goals:

SQ4: The educational goals of speaking can be accomplished using the video-conference platform.

SQ5: The educational goals of listening can be accomplished using the video-conference platform.

SQ6: The educational goals of reading can be accomplished using the video-conference platform.

SQ7: The educational goals of writing can be accomplished using the video-conference platform.

General question:

SQ8: The goals can be accomplished to the same level as during on-ground lessons.

The following hypotheses support research question **RQ 3**:

Hypothesis C:

Hc0 – The general educational goals – cognitive, affective, and psycho-motoric, was accomplished to the same level among all evaluated platforms.

Hc1 - The general educational goals – cognitive, affective, and psycho-motoric, was accomplished at different levels among all evaluated platforms.

Hypothesis D:

Hd0 – The ESL skills – speaking, listening, reading, and writing can be accomplished to the same level among all evaluated platforms.

Hd1 - The ESL skills – speaking, listening, reading, and writing cannot be accomplished at different levels among all evaluated platforms.

Hypothesis E:

He0 – The educational goals can be accomplished to the same level in the online lessons as in the on-ground lessons employing any video-conference platforms.

He1 – The educational goals cannot be accomplished to the same level in the online lessons as in the on-ground lessons employing any video-conference platforms. The level differs.

The research will follow the concurrent mixed methods design (Creswell, 2009).

The research tool for obtaining data will be a semi-structural questionnaire with closed- and open-ended questions. The closed-ended questions will ask the attendees to rate their agreement on the 7-point Likert scale. The quantitative data will be applied to measure the relation between the use of various platforms and the success of educational goals achievement.

The open-ended questions will be optional to gain additional qualitative data utilised in the interpretative analysis. The questionnaire will be constructed in google forms, and the survey will be performed online. Simultaneously, particular ESL teachers will be asked the same questions in a semi-structural interview. The information will be merged with other quantitative and qualitative data. The purpose of the interviews is to verify the qualitative data and vice versa.

The research analysis of the quantitative data will be conducted from the mean value, value deviation and median to reveal the single platform evaluation and extent. The best-evaluated platform will be marked with a point.

Hypotheses will be analysed by Chi-square test calculation to reveal the statistically significant difference.

A two-sided test will calculate the YES/NO questions, and the Chi-square test calculation will verify the numbers of positive and negative responses.

Qualitative data will be merged with quantitative data and used for their validation. The conclusion of each section will provide a summary interpretation of the results.

THEORETICAL PART

The theoretical part provides the basis for the research questions. The initial chapters will concentrate on the educational process and educational needs, also defined as educational goals. Then the video-conference platforms are introduced. The chapters provide a brief overview of security and affordability. Finally, the focus is paid to usability. The section starts with risks related to the video-conference platforms and advice provided by the video-conference platform's designers to create an excellent quality online lesson. It follows with the provision of statistical preferences of single video-conference platforms aiming to select the four mainly used ones. Finally, a public evaluation of the video-conference platforms is given.

2 Learning process

Understanding the answers to the research questions means understanding the educational process and its needs and goals. Successful online education means covering all requirements of "effective on-ground education" because the definitions and principles are equal (Rouleau, et al., 2021). Therefore, this chapter is dedicated to identifying the meaning and importance of educational needs, the learning process and application of methods, and the strategy for setting educational goals.

At the beginning of a learning process, there is a need. To better understand how to teach, it is necessary to understand what learning means and what is essential for creating a lesson that can fulfil all the set objectives.

The narrow definition of learning is obtaining and remembering new knowledge, especially at school. The broader meaning of the term describes learning as obtaining and fixing new experiences during the whole lifetime (Diderot, 1999). Vygotsky's theory suggests that learning builds on social and cultural experiences. A child whose social environment is filled with experienced people shows more dynamic growth of cognitive potential. That links to the claim of Petty (1993) that unconscious learning is the best way of knowledge acquisition. Therefore, the teacher should be an example for the children during the active learning process. During the lessons, examples should be often presented to ensure the understanding of all pupils is the same (Petty, 1993). Finally, the growing cognitive potential links directly with the ability to read, count and write (Cioni, a další, 2013). The systematic journey of the learning process is conducted from lessons which are in fact goal-oriented social events with pre-set attributes of time, place, schedule and attended by a group of children and a teacher. Learning process is secured by number of lessons. Penny Ur (2012) said: *" Lesson is a goal-oriented social event with the general objective of learning, and pre-set attributes such as a group of attending people formed by the teacher(s) and pupil(s), and the schedule of time and place."*

Teacher's roles

As defined earlier, the teacher is an example for children (Petty, 1993). However, the teacher's role has changed during the previous years from the 'narrator' to the more preferred 'facilitator.' During the process of facilitation, the teacher takes various roles including:

- *Instructor* who provides the essential information and explanations,

- *Activator* who prepares activities aiming at the set goals of the lesson,
- *Model* who pretends the prototype English speaker,
- *Provider of feedback* who appraises the correct answers as well as correct mistakes since the knowledge of correct use of language is essential for its progress,
- *Supporter and motivator* who constantly work on the persistence of the pupil's motivation persistence. Positive reinforcement raises the pupils' self-confidence and helps them work better, correct selection of a variety of activities which correspond with the pupils' interest and level of English makes the lesson fun and motivates them to further studying of the language,
- *Assessor* who reveals the pupils' progress,
- *Manager* who creates and leads the lesson well towards the set goals and accomplishment of his roles (Ur, 2012).

Pupil's roles

A pupil is a person under close supervision of his teacher or tutor teaching him any subject. Direct supervision is also needed to secure the pupil's safety as he is usually young. (admin, 2011)

Pupils' needs are the same as every other human being. Maslow, a humanistic psychologist, describes the needs in Maslow's hierarchy of needs (Figure 1). The primary, most important needs are the need to eat, drink or rest at the bottom of Maslow's pyramid, followed by the need to feel secure and safe. The third line covers the need for love and belonging, ensued by the need for esteem and ends with the need for self-actualization. The needs must be fulfilled from the bottom to the top. Therefore, the teacher should know how to motivate students by fulfilling their basic needs (Petty, 1993).

Pupils and teachers shall communicate in the educational process because it is a two-directional communication between pupils and teachers. The pupils should know what to expect and the reasons for the methods used. Since learning is a cognitive process and people tend to make mistakes, enough recalling aids, and opportunities to practice the previously obtained knowledge shall be available. Pupils also need the opportunity to ask questions and be provided with feedback and evaluation. To build a skill from the gained factual knowledge, they must have the opportunity to practice, be supervised, and corrected. The learning process should be systematic, which is the right time for setting objectives and goals (Petty, 1993).

2.1 Educational goals and objectives

As mentioned previously, the educational process is divided into certain number of lessons. Every lesson should be planned into individual lessons based on a long-term educational program. Mgr. Michaela Prášilová, PhD in *Tvorba vzdělávacího programu* (2006, p.17) defines the long-term educational program as *"a project of the educational process developed with a purpose to bridge the performance gap".* An educational program is a gap analysis between the student's knowledge and the desired status at the end of the lesson/school term/secondary school attendance. The objective is to fulfil the pupil's needs (Prášilová, 2006).

The educational goals are also known as objectives or outputs. In the Czech Republic, a group of experts sets them at the Ministry of Education Youth and Sports (further also as "MSMT"). (Prášilová, 2006) Together with plans and concepts of education, the objectives are provided in the curricular document called The Framework Educational Program (Rámcový Vzdělávací Program, also known as "RVP").

RVP introduces the initial phase of the educational process. The RVP provides a frame for long-term educational programs; the second project form is called the school educational program. The RVP provides general requirements, the number of available hours, and rules, and it is up to the schools to implement them (MSMT, 2021).

The concepts are transformed into syllabuses, educational programs, and standards in the second form. (Maňák, a další, 2008) School experts enter this phase with their experiences and adjust the concept according to the local school specifics, such as ideology, approach, and personnel possibilities (MSMT, 2021) .

The third – realization form represents the main teaching phase, including the methodological instructions, teaching preparations, and realization guidelines. The fourth form is established on the educational content gained during the education process. It mirrors the pupils' knowledge, learning content, and evaluation.

In the final – effective form, the reached level of education is revealed and used in real life. At this point, it is uncovered how the individuals can apply the gained knowledge and skills, and the personal attitudes are expressed (Maňák, et al., 2008).

RVP (MSMT, 2021) asks lower secondary schools to help pupils to fulfil their needs as follows:

"The basic education of the lower secondary schools helps pupils to gain knowledge, skills, and habits that enable them to self-study and form such values and attitudes that will lead them to a sophisticated and cultivated behaviour, to make responsible decisions and to respect rules and obligations of the citizen of our country and the European Union…" (p. 8)

In other words, RVP asks schools to build and strengthen the mentioned during the whole school process. Soft skills are considered the key competencies. Practical skills or factual knowledge the pupils shall own at the end of certain levels of education are referred to as hard skills. The key competencies shall be gained as a side effect of hard skills. The soft skills include competencies to study, solve problems, communicate, cooperate with others, work, use digital media, and act like a good person and a good citizen (MSMT, 2021).

RVP (MSMT, 2021), as well as authors of the Maňák and others in their publication (Maňák, a další, 2008), emphasize the fact that advancing soft skills is as important as hard skills. Soft skills are essential and shall be incorporated into every school learning program and individual classroom lessons (MSMT, 2021).

Therefore, setting a goal is a vital scenario in the educational process. It is established on the educational goal formed, in the broader sense, for the secondary schools by the politicians and other authorities. The educational need is covered by the teacher's performed educational process, which covers the knowledge and skills gap acquired and utilized by the pupil in real life.

The main help with setting the goals their accomplishment is the use of taxonomies.

2.1.1 Cognitive objectives

Benjamin Bloom, the American educational psychologist, was the founder and main representative of the taxonomy. Bloom created the taxonomy of goals based on the thinking order and supported learning in all three dimensions – cognitive, affective, and psychomotor. His taxonomy presents systematic learning where facts are transferred into skills (New_World_Encyclopedia_contributors, 2020).

Benjamin Bloom's *Taxonomy of Educational Objectives: Handbook I: Cognitive Domain* (Bloom, a další, 1956) categorized learning into 1. knowledge, 2. comprehension, 3. application, 4. analysis, 5. synthesis, and 6. evaluation created the bare stone for the creation

of any successful study program. Bloom's original taxonomy was slightly revised by Krathwohl and Anderson in their work *A Taxonomy for Learning, Teaching, and Assessing (2001).*

The revised version of the Bloom's taxonomy adjusted the levels as follows: 1. remember, 2. understand, 3. apply, 4. analyze, 5. evaluate, 6. create. The cognitive goals were set according to the level of complex thinking (Anderson, et al., 2001). The learning that covers all levels of taxonomy complies with the psychological side of effective teaching. The "lower-order cognitive skills" - theoretical information should be gained and transformed into the "higher-order cognitive skills" - practical skills (Rivas, et al., 2020).

Bloom's taxonomy represents the cognitive dimension.

2.1.2 Psychomotor objectives

Psychomotor skills form another essential part of education. Generally, a psychomotor skill means experimental manipulation with a tool or instrument (New_World_Encyclopedia_contributors, 2020).

Psychomotor skill means physical movement, coordination, and motor-skill areas. The success of psychomotor skills is *"measured in terms of speed, strength, endurance, coordination, precision, distance, procedures, or techniques in execution."* (2016) It is claimed that every subject uses some tools that need psychomotor skills to be included to master it. (Atkinson, 2014)

The prominent representatives of the psychomotor taxonomy are Simpson, Harrow, and Dave. Ravindra Dave was a member of Bloom's original team in 1950. Atkinson believes Dave's taxonomy best for vocational education. Dave categorizes competence into five levels: 1. Imitation, 2. Manipulation, 3. Precision, 4. Articulation, 5. Naturalization (Atkinson, 2014).

The psychomotor level supports higher-order cognitive skills. Achievement of cognitive and psychomotor objectives is essential for a pupil to master any topic (Rivas, et al., 2020).

2.1.3 Affective objectives

Affective skills are gained during the educational process and are of the same importance as cognitive objectives. In the RVP (MSMT, 2021), they are part of the competencies, also called soft skills. Objectives in this dimension conduct awareness and growth in attitudes, emotions, and feelings. The five levels of affective are divided as follows: 1. Receiving - the pupils should

listen respectfully and remember the facts.; 2. responding - active student participation. The main objective of the second level is to understand and know the safety rules and practice them. Motivation plays a prominent role in this level.; 3. Valuing - pupils attach value to the taught objects, phenomena, or behaviour. It varies from simple acceptance to a firm commitment. Students at this level should be able to solve problems, demonstrate their position towards
a specific object, phenomenon, or behaviour, and propose an improvement plan. 4. Organizing - the pupils to be able to prioritize, balance, and create a life plan and solve problems based on the comparison, relationships, and synthesis of their values, behaviour, and consequences for a particular behaviour. 5. Characterizing - this final level expects pupils to control their behaviour based on internalized values. The behaviour is typical and consistent for the pupil and visible across the personality. A pupil at this level can solve problems independently and work as a team worker. He respects others as they are and can re-evaluate his opinion based on new facts (New_World_Encyclopedia_contributors, 2020), (Krathwohl, 2001).

2.1.4 ESL goals

The objectives of the English lesson include teaching the pupils a certain level of skills of speaking and reading with the correct pronunciation, listening, reading comprehension, and writing, as well as applying the correct grammar. The main objectives have remained the same over the years. However, the change is in the significance of certain teaching methods. Ur (2012) believes that knowing about unique styles of English, acquiring substantial number of vocabularies, and learning to write in English are essentials nowadays.

RVP explains that to possess a second language means to understand and experience the world, which is out of the scope of their native language. It helps pupils to communicate and become part of an integrated Europe and the world. It extends their possibilities to travel, familiarize themselves with foreign cultures, and succeed professionally. It helps them to understand and tolerate other nationalities and cooperate in international projects. The general requirement of RVP is in line with the Common European Framework of Reference
for Languages (also known as "CEFR) and expects level A1 at the end of primary and A2 at the end of lower secondary school. RVP expresses pupils' interest in the subject, and connection with other taught subjects is crucial for its successful learning (MSMT, 2021).

RVP emphasizes oral communication and the preparation of elemental stones for future language learning. The CEFR definitions of the speaking and listening parts of levels A1.2 and A2.2 are explicitly translated in the RVP (MSMT, 2021).

CEFR's A2.2 level specifies the ESL goals as follows:

1. The speaking goals are accomplished if the pupils:
   - can speak about simple and routine tasks, including direct exchange of information on familiar or routine matters,
   - and can describe their surrounding in simple terms and sentences (TRACKTEST, 2022).

2. The listening goals are accomplished if the pupils:
   - understand frequently used expressions related to general topics such as family information, shopping, local geography, and employment (TRACKTEST, 2022),
   - and can catch the requested information in short, clear, simple listening parts (CEFR, 2021).

3. The reading goals are accomplished if the pupils:
   - can understand short, simple texts such as personal letters and simple reading texts,
   - and simple texts in daily use materials such as advertisements, menus, and timetables (CEFR, 2021).

4. The writing goals are accomplished if the pupils:
   - can write a simple personal letter including short, simple information about themselves,
   - and can describe their needs and surrounding events (Council_of_Europe, 2001).

All the objectives should align with the aimed level of the taught language. The pupils should pronounce well and use adequate vocabulary and grammar when speaking about familiar topics. Elementary mistakes that do not disturb understanding of the message are tolerated. Topics covered during primary school education should cover home, family, living, school, free time, culture, sport, health care, feelings and moods, eating habits, weather, nature and city, shopping and fashion, society and its problems, jobs, modern technologies, and media, travelling, realia of countries speaking the taught language (MSMT, 2021).

The above information details the learning requirements of pupils at the end of lower secondary schools. The description at TRACKTEST (2022) says at A1.2 level of English, the pupils "*can understand and use familiar everyday expressions and very basic phrases aimed at the satisfaction of needs of a concrete type. Can introduce themselves and others and can ask and answer questions about personal details such as where someone lives, people they know and things they have. Can interact in a simple way provided the other person talks slowly and clearly and is prepared to help.*"

It means that the pupils entering lower secondary schools should have already possessed elementary knowledge of the second language. The lower secondary school aims to extend the four ESL skills as well as the soft skills (MSMT, 2021).

2.1.5 Teaching methods

So far, setting the goals and defining the learning process, including the definition of the educational need, was introduced. Regarding the introduced facts, the learning should be systematic, practical, and touch the feelings and emotions of the pupils.

An effective goal can be reached if pupils are motivated to cooperate. It can be achieved by the teacher utilizing various methods to keep the students' motivation high. A motivated student learns to enjoy the subject. Therefore, choosing the correct method to fulfil the set goal is essential (Čapek, 2015).

The teaching method defined by Maňák, et al. (2008) wrote:

"Teaching method can be defined as a system of educative operations of the teacher and learning activities of pupils to fulfil the set goals" (p. 96).

Maňák, et al. (2008) in *"Kurikulum v současné škole"* put together instrumentation of methods, grouping them as follows:

a) Traditional teaching methods are divided into:
    a. Oral methods – narration, explanation, lecture, work with text, interview.
    b. Demonstration methods – impersonation and observation, work with a picture, briefing.
    c. Practical skills method – imitation, manipulation, laboratory and experimental work, creation of skills, production methods.

b) Activating methods educative – discussion, heuristics methods, problem-solving, situational, staging methods, and didactic games
c) Complex educative methods - frontal teaching, group and cooperative work, partner education, individual and individualized education, critical thinking, brainstorming, project education, theatrical education, open education, life-situations learning, TV education, PC-supported education, e-learning, suggestopedia, super learning, and hypnopaedia. (Maňák, a další, 2008) (Obst, 2016)

Čapek, on the other hand, explains that the terms "teaching method" and "teaching activity" are synonyms and does not feel the need to group the methods as other authors. He suggests combining a wide range of traditional and modern methods. He believes in an approach where the same method is not used twice within approximately two months. He guarantees this approach prevents pupils from misbehaviour and enables more pupils to succeed. It also supports a good classroom atmosphere and climate, significantly bolstered by positive reinforcement, quality communication, pupils' cooperation, and setting rules (Čapek, 2015).

Seiglová (2020) resonates with Čapek and based on her professional experience, states that developing soft skills is essential for pupils to succeed in professional life. She says that it is not a problem to find relevant information online. Therefore, the position of a teacher is to provide a space for the use of the found information, critical evaluation, and proper communication. She emphasizes that the chosen methods should help the pupils to search for the required sources effectively. They should be able to evaluate their reliability, connect them to the broader context, categorize the gained knowledge, analyze it, evaluate, and synthesize it. She asks the teachers to teach pupils to discuss the topics and present their opinions. (Sieglová, 2020)

Čapek (2015) and Seiglová (2020) name hundreds of different methods to be employed in modern education. However, it is out of this thesis's scope to name or evaluate methods. The critical fact is that the wide range of methods is essential for motivating lessons and, therefore, a successful learning process that fulfils educational needs.

English methodology

English is acquired intuitively and as a habit-formation in the same way as people learn their first language. More exposure to the language and drilling the language pattern helps the acquisition. Language involves a cognitive process because the understanding of

underlying rules is needed. Since language acquisition is a complex process, fluency and accuracy in English can only be mastered through practice (Ur, 2012).

Regarding the English methodology, the preferred one is the post-communicative approach which puts the main emphasis on speaking, such as the communicative approach. The approach is open to the explicit teaching of grammar, vocabulary, pronunciation, and spelling and does not forbid translations (Ur, 2012).

2.2 Conclusion

Every human has his needs. Maslow's hierarchy (Figure 1) demonstrates all human needs. RVP (MSMT, 2021) asks the schools and teachers to fulfil the set educational goals. Prášilová (2016) expresses that it is the teachers' job to estimate the gap that needs to be bridged and set educational goals accordingly.

All the mentioned authors agree (Ur, 2012; Seiglová, 2020; Čapek, 2015; Maňák, et al., 2015; Obst, 2016, Prášilová, 2016, Petty, 1993) in the point that the essentials to creating a quality educational program are well-set goals and the chosen approach of the teacher. A good lesson is conducted through various entertaining and exciting activities to fulfil the goal of the teacher and the pupil. The didactic methodology offers classic and modern methods. It is only the teachers' choice to decide the best approach and how the student's motivation level can be supported and extended.

Provided taxonomies help with goals application. Through their fulfilment, the requirements of didactic theory can be accomplished. They are complex and ensure pupils fulfil all three dimensions – cognitive, affective, and psychomotor. They are consistent. The lower levels precede the higher ones. They are controllable because the character of the goal setting enables the teacher to assess what he taught. They are appropriate to the pupils' level of knowledge (Ur, 2012; Seiglová, 2020; Čapek, 2015; Maňák, et al., 2015; Obst, 2016).

Furthermore, they are unambiguous, the goals of what is needed to know are clear to the teacher and the pupil, and therefore they both know the expectations and what the assessment should contain (Obst, 2016, Maňák, et al., 2015, Anderson, 2001; Atkinson, 2014; Bloom, 1956; Rivas, et al., 2020, Prášilová, 2016).

All provided authors agree that setting the goal is the starting point and key to the success of the learning process. In other words, it provides the attendees of the learning process with a tool to successfully fulfil their educational needs.

The specifics of English teaching (Ur, 2012; TRACKTEST, 2021; Council_of_Europe, 2001, MSMT, 2021) add unique goals to the general didactic goals (Obst, 2016, Maňák, et al., 2015, Anderson, 2001; Atkinson, 2014; Bloom, 1956; Rivas, et al., 2020, Prášilová, 2016) shall be part of the ESL lessons. Therefore, ESL teachers need to consider how to incorporate activities to develop pupils' cognitive, psychomotor, and affective dimensions and extend and strengthen their speaking, listening, reading, and writing skills, including new vocabulary and grammar. Additionally, to accomplish all objectives given by the RVP, school, and ESL requirements, the objectives must comply with pupils' personal needs and possibilities.

In summary, creating and implementing a good lesson plan that covers all the requirements and the pupils' needs is a product of a professional and accommodates an extensive amount of knowledge, experience, and ideas.

3 Video-conference platforms in education

The work of a teacher is extraordinarily complex. It is his job not only to create an entertaining and motivating lesson to teach the hard skills but also to provide the space for continuously strengthening the soft skills. In the previous chapter, the thesis focused on explanation of educational procedure including setting the goals.

When Covid-19 spread worldwide and closed everybody behind the door, the teachers' uneasy tasks expanded suddenly. One of them was to become experts in online video-conference platforms. The following chapters will uncover the issues the teachers faced and what rules are essential to follow for a successful learning process.

3.1 Implementation of the video-conference platforms

When the pandemic started in 2020, schools faced a new challenge. Some schools became helpless without seeing *"bright spots hidden in the chaos"*. On the contrary, some schools adapted to the new situation faster, searched for the best practical solutions to implement online education and provided meaningful online lessons. (Rouleau, a další, 2021)During the first month of the COVID-19 pandemic, the downloads of video conferencing platforms topped sixty-two million downloads. (Singh, a další, 2020) Virtual classrooms were created using available virtual learning tools such as Google Classroom and Zoom. All teachers had to learn how to facilitate the tools and create lessons online. Some of the teachers adapted quickly and created engaging, fun lessons (Class_Technologies_Inc., 2020).

Nowadays, there are many options for choosing a video-conference plat, including Skype, Slack, Google Meet, Zoom Meetings, Microsoft Teams, Google Hangouts, Houseparty, GoToMeeting, RingCentral Video, ClickMeeting, U Meeting, BigBlueButton, Bluejeans Meetings, Lifesize, Glip, Nextiva (Brandl, 2021).

However, Figure 9 shows that the top of the list remains the following four video platforms – ZOOM, Microsoft Teams, Google Meet, and Skype (Brandl, 2021). Therefore, the research will further concentrate on these four mainly used video platforms and evaluate which accommodated the educational needs best.

The following theory research provides information about security and affordability. However, it mainly focuses on the video-conference platform's usability. The revealed usability data will be compared to data obtained during the practical research.

3.2 Security

3.2.1 Zoom

The success of Zoom was linked to the security and privacy issues detected on this platform (Singh, and others 2020). Zoom security issues included sending unauthorized data to Facebook, hoarding user data, and insufficient *'end-to-end' encryption* (Iqbal, 2022). Marczak (2020) identified Zoom's security issues as follows:

"...easily-identifiable limitations in cryptography, security issues, and offshore servers located in China which handle meeting keys present a clear target to reasonably well-resourced nation-state attackers, ...,".

In easy words, it meant that information sent via Zoom was still recognizable by uninvited readers. That also included the problem with decoding the Room IDs and unauthorized admissions into the meeting rooms was called *"Zoombombing"* (Čížek, 2020).

The problems resulted in comprehensive suggestions to stop using Zoom in agencies that require strong privacy and confidentiality (Claburn, 2020). The platform was banned for official business in Canada and Taiwan, organizations SpaceX and Nasa and school boards in New York and Taiwan (Iqbal, 2022). Zoom was announced as an unsafe platform by National Cyber and Information Security Agency NÚKIB in the Czech Republic (Čížek, 2020).

Zoom took measures to strengthen its security (Claburn, 2020*)* and advised on its blog how to prevent disruption (Zoom, 2021). They can be divided into phases before and during the meeting.

1. Before the meeting:

a) Events held with unknown people should be performed on Zoom Webinars or Zoom Events instead of Zoom Meetings.

b) The Personal Meeting ID should not be shared publicly (Zoom, 2021).

c) Password protection is essential. Options for setting are available in the setting tab (Singh, et al., 2020).

d) The host provides access to the meeting room to the guests who signed in only. Unauthorized access can be ensured by generating a random meeting ID when scheduling the meeting together with a passcode (Zoom, 2021).

e) The host opens the waiting rooms and keeps random people from accessing the meeting room directly.
f) Rules and guidelines of the meeting are presented in the waiting room as a personalized message (Zoom, 2021).

2. During the meeting:
g) The host can lock the meeting rooms after guests enter by the available button on the screen.
h) The host can remove or mute unwanted or disruptive participants from the meeting.
i) The host can manage the activities. The host can disable the provided features as required.
j) The host can report users to Zoom's trust & safety team, who take necessary actions (Zoom, 2021).

3.2.2 Microsoft teams

Microsoft Teams are built on Office 365, an enterprise-grade cloud that provides users with advanced security. Two factors of authentication are required. The first is the single sign-on with an active directory, followed by data encryption in transit and at rest (Singh, et al., 2020). Office 365 changed to Microsoft 365 (Author's note).

3.2.3 Google Meet

The same robust commitments secure data protection on Google Meet as the rest of Google Cloud's enterprise services. Data are encrypted in transit by default. If the meeting is joined via telephone, the telephone carrier's network is used, and that data might not be encrypted. Google recordings are stored in Google Drive and encrypted at rest by default (Singh, et al., 2020).

3.2.4 Skype

All data sent in Skype-to-Skype forms, such as voice, video, files, and instant messages, are encrypted using AES, a system used by the US Government. The encryption prevents from any uninvited user listening to the users' conversation, attending meetings without invitation, and stealing other peoples' data (Singh, et al., 2020).

3.2.5 Conclusion

Security is a crucial element for the decision-makers, and it may be why Zoom was not the primary choice in the Czech Republic. Although there were issues with Zoom, they took measures to improve safety. There were no safety issues reported on the rest of the evaluated platforms.

3.3 Affordability

The providers of the video-conference platforms offered free options during the pandemic. The free versions remained, however the conditions usually changed.

3.3.1 Zoom

During the pandemic, Zoom offered a free account for education which meant 40 minutes of a group lesson on one log-in. Zoom also offered unlimited chats in one-to-one. (Hooker, 2020) That has changed and now all free users are limited to 40-minute calls using the free account. (Zoom, 2022) Details provided in Figure 2.

3.3.2 Microsoft teams

The free account is also for Microsoft 365 non-users. The paid version provides an extensive number of integrated applications for use. (Hooker, 2020) Details are given in Figure 3.

3.3.3 Google Meet

Google Meet is a free video-conference platform inside the G-Suite. However, a paid version of the G-Suite for business is essential. (Google, 2022) Details can be found in Figure 4.

3.3.4 Skype

Skype-to-Skype communication is accessible without any limits (Microsoft, 2022).

3.3.5 Conclusion

Affordability is critical in deciding on the ideal platform. Directors make such a decision. This thesis aims at the teachers' satisfaction levels with video-conference platforms. Therefore, the provided information is informative and is not used for further assessment.

3.4 Usability of the video-conference platforms

It is without discussion that the educational environment must be safe and affordable. However, these are concerns of the higher school management. The teachers are primarily interested in the usability of the selected video-conference platform.

The task of a teacher is to create motivating lessons that will fulfil all the set goals. There are favourite platforms used among the countries and schools. However, suggestions for implementing a quality lesson remain across all of them.

3.4.1 Key principles of online lessons

This chapter provides the suggestions that can be also called key principles to follow to create a quality online lesson.

Objectives and expectations

Consistency is the key to success. A consistent set of objectives and ways of communication brings stability to the lessons. The teacher's expectations shall be communicated clearly (Hooker, 2020). Their expectations shall be set at the beginning of the lesson to draw the class's attention. (Bennion, 2022) Everybody, including the parents, shall know their roles and tasks and the teachers' expectations (Hooker, 2020).

Used tools

The same rule applies to the learning management system (Bennion, 2022). Email and phone calls are the least essential tools when teaching online. Social media can be used to transfer the message to the parents. The selection of the communication tool shall be decided concerning the specific school environment (Hooker, 2020). The teacher's job is to become familiar with the functional features at their disposal and leverage them (Class_Technologies_Inc., 2020). The tools should be introduced at the beginning of the lesson to avoid any later interruption (Bennion, 2022). The teachers shall always consider what tools comply with the student's age (Hooker, 2020).

Regarding hardware, Hooker (Hooker, 2020) considers the room setup and lighting. If a quality lesson should be streamed, the teacher should get a decent quality microphone and camera and get acknowledged with their functions. (Class_Technologies_Inc., 2020) The rooms shall be small and quiet to prevent echoes and distract noises with no bright

backlight. Ideally, the walls should be plain, and the teacher should use the front lighting (Hooker, 2020).

Stability and security

The schedule shall be permanently set since pupils are used to having a fixed calendar, and again, it provides them with a feeling of stability (Hooker, 2020).

The students' feeling of stability and security can be supported by sending a list of topics ahead of the class and a self-evaluation test ahead of the test to plan it better. The teacher should help students feel good and heard as part of the lesson schedule. He can use the provided features to do so (Class_Technologies_Inc., 2020). The teacher should contribute to pupils at the end of the lesson, praise them, get feedback on the lesson, including the used educational activities and improve future lessons accordingly (Bennion, 2022). Feelings, ideas, or personal talents can be expressed in diverse ways. Bennion (2022) suggests using all possibilities, including the background. In comparison, Hooker (2020) believes that utilizing the polling applications for pupils' personalities or moods is sufficient, and the background should remain neutral to limit distraction. The option for the video background is to blur it (Class_Technologies_Inc., 2020). The look of the screen is an essential part of online teaching. The attendees shall be well dressed to bring the feeling of being at school (Hooker, 2020). Bennion (2022) requires keeping eye contact with students, making them laugh and having fun.

Any unexpected guests shall be considered not to disturb the lesson schedule (Hooker, 2020).

Timing

Teaching online should be shorter than on-ground lessons. The streaming videos should be at most ten minutes, and online lessons 60 minutes (Hooker, 2020).

Summary

In summary, from the words of the referenced authors (Bennion, 20022, Hooker, 2020, Class_Technologies_Inc., 2020), the online teaching principles introduced in chapter 2 remain the same to the on-ground lessons. Online teaching adds quality tools and focuses on the stability and security of the pupils.

3.4.2 Usability evaluation

3.4.2.1 Zoom

In 2020, Zoom was the most favourite video-conference platform in 44 countries. It was used chiefly in Albania, Argentina, Australia, Austria, Bangladesh, Belgium, Brazil, Canada, Chile, Colombia, the Democratic Republic of Congo, Costa Rica, Croatia, Cyprus, the Dominican Republic, Egypt, Estonia, Ethiopia, Finland, Germany, Ghana, Greece, Guatemala, Haiti, Hong Kong, Hungary, Ireland, Japan, Mexico, Netherlands, New Zealand, Norway, Portugal, Russia, Saudi Arabia, South Korea, Spain, Sweden, Switzerland, United Kingdom, United States, Vietnam, and Zimbabwe. The most significant market share of Zoom compared to other video-conference platforms was in Ireland, with 84,75%. The Czech Republic's share was 21,57%. Zoom has 300 million meeting sessions daily, making 75 million active users. (Brandl, 2021) In 2021, Zoom's revenue generated 4 billion dollars, a 53% increase yearly. The increase of participants during the past few years comes to 2900%. In February 2022, it counted 191 000 enterprise customers. Zoom was used in Over 90,000 schools in 20 countries during the peak time of the pandemic. (Iqbal, 2022)

Zooms' popularity may correlate with their ease of access, and the latency kept below 150 milliseconds which is the maximum delay in communication over a network before the conversation starts to feel unnatural (Iqbal, 2022).

Almost 41 000 users reviewed Zoom at G2.com (G2, 2022). They rated Zoom 9 points from 10 for Ease of Use, 8.6 points for Quality of Support, and 9 points for Ease of Setup. 1 770 users from the educational management rated Zoom with five stars (G2, 2022).

3.4.2.2 Microsoft Teams

Microsoft Teams was the preferred option in 41 countries. The most significant market share in 2020 was indicated in Afghanistan, Azerbaijan, Bahamas, Bahrain, Bosnia and Herzegovina, Botswana, Brunei, Bulgaria, Cape Verde, Czech Republic, El Salvador, Georgia, Israel, Jordan, Kazakhstan, Kuwait, Latvia, Lebanon, Lithuania, Luxembourg, Malta, Mauritius, Montenegro, Morocco, Mozambique, Namibia, Nepal, Nigeria, Pakistan, Panama, Paraguay, Poland, Serbia, Slovakia, Slovenia, South Africa, Sri Lanka, Thailand, Tunisia, and Turkey. The Czech Republic's share was 32,26% (Brandl, 2021).

The number of active users of Microsoft Teams raised from 20 million in 2019 to 270 million in 2022. The report says that 182 000 educational institutions used Microsoft Teams. (Curry, 2022)

Twelve thousand users at G2.com rated Microsoft Teams 8.7 points for their Ease of Use, 8.4 for Quality of support and 8.6 points for Ease of setup by over 12 000 users. Two hundred seventy-six users from the educational management rated Microsoft Teams with five stars. (G2, 2022)

3.4.2.3 Google Meet

Google Meet indicated the primary use in 21 countries – Belize, Cambodia, Denmark, Ecuador, Guyana, Honduras, India, Indonesia, Italy, Jamaica, Malaysia, Nicaragua, Oman, Peru, Philippines, Romania, Senegal, Singapore, Trinidad and Tobago, Venezuela, Zambia. The Czech Republic used this platform the least of the four, with 14,44% (Brandl, 2021).

Google Meet is evaluated as an integrated part of Google Classroom. The score is 8.9 points for their Ease of Use, 8.7 for Quality of support and 9.0 points for Ease of setup by over 1 207 users (G2, 2022).

3.4.2.4 Skype

Skype was the leading video conference platform in 12 countries – Angola, Belarus, Cameroon, France, Iceland, Libya, Madagascar, Moldova, Mongolia, Taiwan, Ukraine, and Uruguay. The most significant market share was in Madagascar. The Czech Republic used Skype for 21,57%, the same as Zoom (Brandl, 2021).

Skype users at G2.com scored 8.9 points for its Ease of Use, 8.2 for Quality of support and 8.8 points for Ease of setup by over 22 133 users. Compared to the overall review, it is slightly below average in all three points (G2, 2022).

3.4.3 Summary

The obtained data show that the increase in use of video-platforms during the pandemic was enormous across the providers. There were preferences in the choice of the video-platform worldwide. Nevertheless, the usability score is remarkably close. It ranged at EASE OF USE from 9 for Zoom, 8.9 for Google Meet and Skype and 8.7 for Microsoft Teams. Microsoft Teams was the mostly used platform in the Czech Republic.

4 Conclusion

The learning process has principles that must be followed in any educational form. The teachers are obliged to fulfil all objectives set by the country framework to meet the local pupils' defined needs. Video-conference platforms were used worldwide when the schools were closed to provide online education that substituted traditional on-ground education.

There were preferences in the use of online video-conference platforms. Regarding usability, the users of the four selected mainly used video-conference platforms were researched. The scores ranged at EASE OF USE from 9 for Zoom, 8.9 for Google Meet and Skype and 8.7 for Microsoft Teams. The value difference is not significant. Microsoft Teams received the lowest score. However, it is the leading video-conference platform in the Czech Republic.

The following part of this thesis aims to answer the questions about online ESL teaching from the ESL teachers' perspective.

PRACTICAL PART

The thesis's practical part concentrates on answering the main research questions:

RQ 1: To what extent were video-conference platforms effective and easy to use in lower secondary schools to teach English as a second language (also called "ESL")?

RQ 2: What video-conference platform accomplished the goals to the greatest extent?

RQ 3: Can video-conference platforms fulfil educational needs?

The questions' objective is to reveal the satisfaction and quality level of online teaching by ESL teachers working at lower secondary schools.

The video-conference platforms to evaluate were selected based on theoretical research. The four mainly used video-conference platforms were chosen - Zoom, Microsoft Teams, Google Meet, and Skype.

The definition of goals, pupils' needs, and motivating lessons were introduced in the theoretical part.

5 Methodology

The research questions are divided into sub-sections and assessed separately. The methodology is provided here.

5.1 Research questions

The thesis's practical part focuses on answering the main research questions:

RQ 1: To what extent were video-conference platforms effective and easy to use in lower secondary schools to teach English as a second language (also called "ESL")?

RQ 2: Can teaching through video-conference platforms fulfil educational needs?

RQ 3: What video-conference platform accomplished the goals to the greatest extent?

The research was performed using the keywords according to the PICO methodology:

Table 1: Pico literature review methodology

Population	Teachers Students	Secondary 11-15 years of age NOT primary NOT nursery/kindergarten NOT higher education/colleges/universities
Intervention	Online video-conference platforms Online teaching Online education	Microsoft Teams Zoom Google Meet Skype
Comparison	On-ground teaching Classic teaching Lessons at school	
Outcome	Usability level of the video-conference platforms Accomplished educational goals/objectives/aims Accomplished ESL skill	Bloom's taxonomy – cognitive Krathwohl's taxonomy – affective Dave's taxonomy Speaking; Listening; Reading ; Writing

The introduced research questions were divided into hypotheses and sub-sections with sub-research questions using the provided terms and aiming to answer the main research questions.

The following hypotheses support question **RQ 1**:

Hypothesis A:

Ha0 - The usefulness/effectivity of the video-conference platforms is the same.

Ha1 – The usefulness/effectivity of the video-conference platforms differs.

Hypothesis B:

Hb0 – The ease of use of the video-conference platforms is the same.

Hb1 – The ease of use of the vide-conference platforms differs.

Research sub-questions (also referred to as "SQ") dedicated to **RQ 2** are as follows:

Three-dimensional didactic objectives:

SQ1: Cognitive objectives in education can be accomplished using the video-conference platform.

SQ2: Psychomotor objectives in education can be accomplished using the video-conference platform.

SQ3: Affective objectives in education can be accomplished using the video-conference platform.

ESL goals:

SQ4: The educational goals of speaking can be accomplished using the video-conference platform.

SQ5: The educational goals of listening can be accomplished using the video-conference platform.

SQ6: The educational goals of reading can be accomplished using the video-conference platform.

SQ7: The educational goals of writing can be accomplished using the video-conference platform.

General question:

SQ8: The goals can be accomplished to the same level as during on-ground lessons.

The following hypotheses support question **RQ 3**:

Hypothesis C:

Hc0 – The general educational goals – cognitive, affective, and psycho-motoric, was accomplished to the same level among all evaluated platforms.

Hc1 - The general educational goals – cognitive, affective, and psycho-motoric, was accomplished at different levels among all evaluated platforms.

Hypothesis D:

Hd0 – The ESL skills – speaking, listening, reading, and writing can be accomplished to the same level among all evaluated platforms.

Hd1 - The ESL skills – speaking, listening, reading, and writing cannot be accomplished at different levels among all evaluated platforms.

Hypothesis E:

He0 – The educational goals can be accomplished to the same level in the online lessons as in the on-ground lessons employing any video-conference platforms.

He1 – The educational goals cannot be accomplished to the same level in the online lessons as in the on-ground lessons employing any video-conference platforms. The level differs.

5.2 Research tools

The research follows the concurrent mixed methods design (Creswell, 2009).

The research tool for obtaining data was a semi-structural questionnaire with closed- and open-ended questions. The closed-ended questions asked the attendees to rate their agreement on the 7-point Likert scale. The quantitative data were applied to measure the relation between the use of various platforms and the success of educational goals achievement.

The open-ended questions were optional to gain additional qualitative data utilised in the interpretative analysis. The questionnaire was constructed in google forms, and the survey was performed online. English teachers known to the writer of this thesis and English teachers using the English-dedicated social network pages on Facebook were asked to answer the questions.

Simultaneously, three ESL teachers were interviewed using the same questions in a semi-structural interview. The obtained information was merged with other quantitative and qualitative data. The purpose of the interviews was to verify the qualitative data and vice versa.

5.2.1 Questionnaire

The questionnaire structure was divided into two parts.

The first part was dedicated to the video-conference platforms' Usefulness and Ease of Use.

The second part concentrates on the set goals and the judgment of the achieved level in online education.

The 7-point Likert scale was incorporated to measure quantitative questions. The scale of 1 = strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = neither agree nor disagree, 5 = somewhat agree, 6 = agree, and 7 = strongly agree.

The qualitative questions are open-questions and optional for the attendee. They are used more for discussion during interviews.

The first part of the questionnaire was established on the Technology Acceptance Methodology (also referred to as *"TAM"*) methodology introduced by Fred D. Davis. TAM has been widely used to evaluate the *"Perceived Usefulness and Perceived Ease of Use of the technology"* (Davis, 1986).

TAM had been developed to measure the users' motivation and willingness to use the technology in the future. The original questions prepared by Davis (1986) provided in *Overview of the Technology Acceptance Model: Origins, Developments and Future Directions* (Chuttur, 2009) were as follows:

1. *"Using [technology] in my job would enable me to accomplish tasks more quickly.*
2. *Using [technology] would improve my job performance.*
3. *Using [technology] in my job would increase my productivity.*
4. *Using [technology] would enhance my effectiveness on the job.*
5. *Using [technology] would make it easier to do my job.*
6. *I would find [technology] useful in my job.*

1. *Learning to operate [technology] would be easy for me.*
2. *I would find it easy to get [technology] to do what I want to do.*
3. *My interaction with [technology] would be clear and understandable.*
4. *I would find [technology] flexible to interact with.*
5. *It would be easy for me to become skilful at using [technology].*
6. *I would find [technology] easy to use"* (Chuttur, 2009).

At the time of the research, the video-conference platforms were existing technologies. The ESL teachers had experienced them before this research was performed. The original questions aimed to measure a satisfactory level of technology under development; therefore, they were changed to past tense. The modified questions were added with sub-questions to clarify their meaning in education.

5.3 Research Analysis

RQ 1 research analysis methodology:

The research analysis of the quantitative data will be conducted from the mean value, value deviation and median to reveal the single platform evaluation and extent. The best-evaluated platform will be marked with a point.

Points will be distributed in sections one and two to reveal what platform got the highest score and fulfilled the objectives the best.

Hypotheses will be analysed by Chi-square test calculation to reveal the statistically significant difference. The provided hypothesis

The hypothesis A and B will be calculated using the Chi-square test using the formula:

$$the\ x^2 = \sum \frac{(p-o)^2}{o}$$

With the level of freedom 3 which is the number of independent variables. – Microsoft Teams, Google Meet, Skype and Zoom and p-value of 0,05 significant difference level as the traditional threshold meaning that there is 5% change that the received results are different from the reality. The number the results will be compared with is $X^2_{0,05}(3) = 7.815$. If the obtained number will be lower than 7.815, the null hypothesis cannot be denied and must be accepted as valid. (Chráska, 2007)

RQ 2 research analysis methodology:

A two-sided test will calculate the YES/NO questions, and the Chi-square test calculation will verify the numbers of positive and negative responses.

This sub-questions SQ1 - SQ8 were analysed using two-sided test, which is a = b or a < b, alternatively a > b, where a is the number of ESL teachers who disagree, and b are the ESL teachers who agree with the provided statement. Teachers who neither agree, nor disagree will be excluded from the counting.

To prove that there is a statistically significant difference between the number of YES and NO respondents, the research question will be verified by calculation utilizing the Chi-square test with formula:

$$the\ x^2 = \sum \frac{(p-o)^2}{o}$$

The comparison is based on critical value with deviation score of 0,05 and level of freedom 1 as there is one variable. The comparison value is therefore "$X^2_{0,05}(3) = 3,841$" (Chráska, 2007).

RQ 3 research analysis methodology:

The research analysis methodology will be identical to RQ1. Only no points will be given to the specific video-conference platforms as the aim of this research question is to evaluate the extent of goal achievement by means of teaching by the video-conference platforms rather than the best platform.

Interviews:

The qualitative data obtained during the interview are provided in an interpretative form to verify the obtained qualitative data. The analytical discussion/comparison will be provided after each section.

6 Results and discussion

This section will assess the questionnaire and interviews based on the earlier described methodology. The complete questionnaire is available as Appendix 1 of this thesis.

Thirty-two responders completed the questionnaires (Microsoft Teams = 11; Google Meet = 11; Zoom = 5; Skype = 5). All respondents experienced more than the evaluated platform.

The interview was performed with four people. Two teachers (further referred to as T1 and T2) provided answers on Microsoft Teams, one responder used Google Meet (further referred to as T3), and one used Skype. All teachers teach at a secondary school. However, the one using Skype uses this platform as a private English teacher (further referred to as T4).

The aim was to look back at the time the teachers had to use video-conference platforms full-time. However, the overlap with the current time is discussed, too.

6.1 Research of RQ1

RQ 1: To what extent were video-conference platforms effective and easy to use in lower secondary schools to teach English as a second language (also called "ESL")?

6.1.1 Usefulness

This section provides results on the video-conference platform's usefulness. First, questions 1-6 will be evaluated. Then the hypothesis Ha will be verified, and a conclusion about the general usefulness and usefulness of the selected video-conference platforms will be given.

Question 1: *Using the video-conference platform in my job enabled me to accomplish tasks more quickly. Applications/features/tools integrated with the online video-conference platform are sufficient to provide motivating lessons.*

Table 2: Evaluation of Question 1

	Google Meet	Microsoft Teams	Skype	Zoom
Mean value:	3,45	5,36	3,2	5,6
Deviation score	1,63	1,29	1,71	1,14
Median	4	5	3,5	6
Evaluation points:				2

Creating a motivating lesson is the key to achieving the set educational goals. Video-conference platforms include features/tools/applications that can ease teachers' jobs. Zoom users find the applications/features/tools the most satisfying – level 6. Microsoft Teams is on score 5; Google Meet is on level 4, and Skype is below slightly above 3. The deviation score shows that the level varies slightly. Complex numbers are provided in Diagram 1: Graph - Q1: Using the video-conference platform in my job enables me to accomplish tasks more quickly.

By transferring the median number into words, teachers' reaction to the statement is:

1. Zoom agree,
2. Microsoft Teams somewhat agree,
3. Google Meet neither agree nor disagree,
4. Skype is in negative numbers, and the responders somewhat disagree.

The summary video-conference platform median comes to 4,5 – neutral to somewhat agree.

Question 2: *Using the selected video-conference platform improves my job performance. I am successful in reaching the set educational goals.*

Table 3: Evaluation of Question 2

	Google Meet	Microsoft Teams	Skype	Zoom
Mean value:	5	6	4,4	5,4
Deviation score	1	0,632	1,673	1,342
Median	5	6	4	6
Evaluation points:		2		1

Microsoft Teams improves the teachers' job performance and makes them successful in reaching the set educational goals. Microsoft Teams was evaluated as the best in all three parts having the slightest deviation. Zoom has the same median as Microsoft Teams. However, the mean value is significantly lower because of its higher value deviation score. Complex numbers are provided in Diagram 1: Graph - Q1: Using the video-conference platform in my job enables me to accomplish tasks more quickly.

Changing median into statements, the teachers using:

1. Zoom agree,
2. Microsoft Teams agree,
3. Google Meet somewhat agree,
4. Skype neither agree nor disagree.

The total median of all platforms is 5,5 – somewhat agree to agree.

Question 3: *Using the video-conference platform increases my productivity. The set educational goals are reached faster with use of this video-conference platform.*

Table 4: Evaluation of Question 3

	Google Meet	Microsoft Teams	Skype	Zoom
Mean value:	4,636	5	3,6	5,2
Deviation score	1,690	1,183	1,817	2,049
Median	5	5	4	6
Evaluation points:				2

Responders using Zoom say that using the video-conference platform increases their productivity. The set educational goals are reached faster. However, the deviation score of Zoom is also the highest, probably given by the small number of responders.

Details about the numbers are provided in Diagram 3: Graph - Q3: Using the video-conference platform increases my productivity.

Transferring numbers into statements, teachers of:

1. Zoom agree,
2. Microsoft Teams somewhat agree,
3. Google Meet somewhat agree,
4. Skype neither agree nor disagree.

In terms of mean value, users of Google Meet are only slightly in the positive values, and the users of Skype are getting into the negative values.

The summary median is 5 – somewhat agree.

Question 4: *Using this video-conference platform enhances my effectivity on the job. The implemented features (for example option to share the screen, incorporated storage, break-out rooms) help me to reach the set educational goals more effectively.*

Table 5: Evaluation of Question 4

	Google Meet	Microsoft Teams	Skype	Zoom
Mean value:	4,55	5,55	3,6	5
Deviation score	1,51	0,93	1,14	1,58
Median	5	5	4	5
Evaluation points:	1	2		1

Microsoft Teams led the table in this question. Its mean value is above 5, with the lowest deviation score. The median of Microsoft Teams is identical to Google Meet and ZOOM. Skype received the lowest evaluation. Details about the numbers are provided in Diagram 4: Graph - Q4: Using this video-conference platform enhances my effectivity on the job.

Transferring numbers into statements, teachers of:

1. Microsoft Teams - agree,
2. Google Meet - agree,
3. Zoom - agree,
4. Skype - neither agree nor disagree.

In terms of mean value, users of Google Meet almost in neither agree nor disagree. Skype is even below that value in a more negative rank. It may be given by the fact that Skype has few integrated features. Google provides all applications separately.

Using any platform confirms the statements with a median of 5 – somewhat agree.

Question 5: *Using this video-conference platform makes it easier to do my job. The implemented features (for example option for scheduling the lessons, forms for polling, option for waiting rooms) make it easier to do my job.*

Table 6: Evaluation of Question 5

	Google Meet	Microsoft Teams	Skype	Zoom
Mean value:	4,45	5,45	3,8	5,09
Deviation score	1,69	1,13	1,10	1,38
Median	4	6	4	5
Evaluation points:		2		

Microsoft Teams is the best in terms of mean value and median. Zoom received one point less than Microsoft Teams. Skype and Google Meet received the lowest mean value and median. Google Meet, as well as Zoom and Microsoft Teams, got the highest score from two responders. However, the high deviation score decreased their mean value significantly. In comparison, the maximal evaluation of Skype was five. Details about the numbers are provided in Diagram 5: Graph - Q5: Using this video-conference platform makes it easier to do my job.

Transferring numbers into statements, users of:

1. Microsoft Teams agree,
2. Zoom users somewhat agree,
3. Google Meet neither agree nor disagree,
4. Skype neither agree nor disagree.

Using any platform confirms the statements with a median of 5 – somewhat agree.

Question 6: *I found this video-conference platform useful in my job.*

Table 7: Evaluation of Question 6

	Google Meet	Microsoft Teams	Skype	Zoom
Mean value:	5,09	6,66	5	5,6
Deviation score	1,38	0,67	2,12	2,61
Median	5	7	5	7
Evaluation points:		2		1

The median of Microsoft Teams and Zoom is at seven, which is the highest value on the provided Likert scale. Google Meet and Skype reached a median of five. The deviation score of Microsoft Teams is the lowest. Complex numbers are given in Diagram 6: Graph - Q6: I found this video-conference platform useful in my job.

Transferring numbers into statements, users of:

1. Microsoft Teams strongly agree,
2. Zoom strongly agree,
3. Google Meet somewhat agree,
4. Skype somewhat agrees.

Using any platform confirms the statements with a median 6 – agree.

Hypothesis A

H_a0 - The usefulness/effectivity of the video-conference platforms is the same.

H_a1 – The usefulness/effectivity of the video-conference platforms differs.

Table 8: Evaluation of the hypothesis H_a

	Received frequency (P)	Expected frequency (O)	(P-O)	$(P-O)^2$	$\frac{(P-O)^2}{O}$
Google Meet	34	29,29545	4,704545	22,13275	0,755501
Microsoft Teams	32,4	29,29545	3,104545	9,638202	0,329
Skype	27,18182	29,29545	-2,11364	4,467459	0,152497
Zoom	23,6	29,29545	-5,69545	32,4382	1,107278
Σ:	117,1818	117,1818			2,344275

The mean values of the first six questions were compared among the platforms to reveal if there is a statistical difference in the usefulness of the evaluated video-conference platforms. The sum value (x2) rounded to three decimals is 2.344. The comparison value is *7.815*. The calculated number is lower than the comparator. The statistical difference is insignificant. The null hypothesis cannot be denied.

The usefulness/effectivity of the video-conference platforms is the same.

The total value calculation is 5,167 = The users somewhat agree that the video-conference platforms are useful/effective.

Teachers' opinions

T1 says that using Microsoft Teams was extremely useful. She could compare it with her previous school. She used to use Messenger and WhatsApp at school and had some experience with Skype and Google Meet, which she used for private lessons. No online video-conference platform was implemented at her previous school. It was at the beginning of the pandemic's spread. At that time, the teachers decided on some communication platform to continue teaching their pupils. Messenger and WhatsApp were the options for teaching because the pupils' parents had already installed these applications, and it was better than nothing.

T1 expressed that she was satisfied with the Microsoft Teams functionality. They managed to complete all the planned materials. All the set educational goals were fulfilled, mainly with the students who wanted to learn. The productivity of the focused children was high but kept decreasing over time. Regarding her productivity, it was challenging to answer. She got used to the feature provided by the platform from the beginning. Nevertheless, she did not have the time and willingness to search for updates integrated into the platform.

During her lessons, T1 appreciated having the option of scheduling the lessons, integrated storage, word, excel and PowerPoint, permanent chat with history, testing applications, and option for break-out rooms and screen-sharing.

However, she used lots of extra activities to create an interactive lesson. Among her favourites belong *Quizlet* for practising writing, listening, and vocabulary. However, she admitted that not all children were focused enough to do it alone. Then she enjoyed utilizing *ESL games online*, an application ideal for listening and grammar. She worked with pictures, *Wordwall*, and *Worksheets* which she usually recycled because there had been plenty of great already prepared and, after initial control, ready for use. Then she liked *learning chocolate* and *YouTube.com*.

At the school T1 teaches, Microsoft Teams has been continuously used. T1 uses it for sending a weekly review to their students as well as for additional information when needed.

T2 stated that Microsoft Teams was particularly useful. She had some experience with Skype and Zoom, which she used on her initiative. She admits that the platform helped her a lot in being effective during her lessons. She used a lot of integrated features and applications. From the integrated platforms, she utilized *Kahoot!* for playing and pre-testing the children to know if they were ready for the actual testing.

Further, she employed *Quizlet* for practising vocabulary and phrases, *YouTube.com*, *Forms*, *Break-out rooms*, *and Screen-sharing*, including pupils' ability to share their screen and *Whiteboard*. She appreciated the option for automatic evaluation of forms. Moreover, she liked the option of recording the lessons. She used the waiting room for people from outside the team, never for the classroom. However, she admits that at Zoom, it was necessary to prevent strangers from entering the room.

T2 frequently worked with external applications such as *Mentimeter* for getting the children's opinions or feedback, *Nearpod*, and *LiveWorkSheets*. These applications were found as integrated into Microsoft Teams, but she was used to sending external links. She liked *Nearpod* because children could work at their speed, and she could see their progress. Additionally, she wrote a blog for her students.

T2 regretted that her school refused to continue using Microsoft Teams for sharing school information as she believed it would be useful. She was looking forward to getting tablets to schools and using the good things from the online world in the class.

T3 as a user of Google Meet, could compare her experience with Zoom, Microsoft Teams, and Skype. She said it helped her partly increase her productivity, but only in times of lockdown. She does not continue using it anymore and does not wish to do so. Break-out rooms are not available at Google Meet, which she missed. Other drawbacks of the platform are that the chat disappears at the end of the meeting, and videos and sounds must be uploaded online to share them. T3, however, said that it is well-organized compared to Microsoft Teams. Nevertheless, she would prefer Zoom.

Because of the unavailable features mentioned earlier, she extremely disagrees that Google Meet offers enough features, tools, and applications. As a part of the integrated applications, she used *Jamboard*.

Other teachers added that they used additional applications such as *Classkick*, *Jamovi*, *WindowSwap*, *Canva*, *Jamboard*, *Quizziz*, *Bamboozle*, and *Jeopardy lab*.

Most of the responders and the interviewed teachers replied that they had to add something extra to what the video-conference platforms integrated – 21 responders. Furthermore, they agree that there are enough exciting applications online to create a motivating lesson – 27 responders. The only exception in adding extra activities was Skype, with a mean value below 4. The reason for that is unknown, and the tested sample of people is small, so it may not be relevant.

6.1.2 Ease of Use

Questions 7 - 12 focus on the EASE OF USE. In other words, easy interaction with the user interface and their intuitiveness.

Question 7: *Learning to operate this video-conference platform was easy for me. The video-conference platform was intuitive = extremely agree, or you had to read instructions for use or attend training.*

Table 9: Evaluation of Question 7

	Google Meet	Microsoft Teams	Skype	Zoom
Mean value:	5,818181818	5,636363636	5,6	6,4
Deviation score	1,167748416	1,747725795	1,140175425	1,341640786
Median	6	6	6	7
Evaluation points:				2

The users generally agreed with the questions dedicated to the ease of learning. Google Meet, Microsoft Teams, and Skype received a value of 6 and Zoom was valued at a median of 7. The evaluation showed that users could use the platforms intuitively without long hours of training. The deviation score is similar on all platforms. Complex numbers are provided in Diagram 7: Graph - Q7: Learning to operate this video-conference platform was easy for me.

Transferring the median number into statements, teachers using:

1. Zoom strongly agree
2. Google Meet agree
3. Microsoft Teams agree
4. Skype agrees

Using any platform confirms the statements with median 6 – agree.

Question 8: *I found it easy to get this video-conference platform to do what I want. There were no issues with any features, sound, connection = extremely agree.*

Table 10: Evaluation of Question 2

	Google Meet	Microsoft Teams	Skype	Zoom
Mean value:	4,727272727	5,727272727	5,4	6,4
Deviation score	1,420627262	1,420627262	1,140175425	0,894427191
Median	4	6	5	7
Evaluation points:				2

Based on the numbers, Zoom is the best evaluated platform in terms of interaction. It does what the users want to the highest level, Microsoft Teams follows with level 6, Skype with 5 and Google Meet with 4. In the graph (Diagram 8: Graph - Q8: I found it easy to get this video-conference platform to do what I want.), Microsoft Teams received a similar evaluation as Zoom. Based on the numbers, Zoom is the best-evaluated platform in terms of interaction. It does what the users want to the highest level; Microsoft Teams follows with level 6, Skype with 5 and Google Meet with 4. However, the higher number of responders lowered the median to 6. The users of Google Meet seem the least satisfied with the response of the video-platform.

Transferring numbers into statements, users of:

1. Zoom strongly agree,
2. Microsoft Teams agree,
3. Skype somewhat agree,
4. Google Meet neither agree neither disagree.

Using any platform confirms the statements with a median 6 – agree.

Question 9: *My interaction with the video-conference platform was clear and understandable. Using the platform, I always knew what to do and how to use it together with other applications when needed.*

Table 11: Evaluation of Question 9

	Google Meet	Microsoft Teams	Skype	ZOOM
Mean value:	5,272727273	6	5,6	6,6
Deviation score	1,555050423	1,483239697	1,673320053	0,894427191
Median	5	6	6	7
Evaluation points:				2

The evaluation of these questions is equal among the platforms. However, the values may need to be more accurate due to the different numbers of respondents from the numbers provided in Diagram 9: Graph - Q9: My interaction with the video-conference platform was clear and understandable. The median of Zoom is 7, Microsoft Teams and Skype 6 and Google Meet 5. For better accuracy, the mean value is also considered.

Transferring numbers into statements, users of:

1. Zoom strongly agree,
2. Microsoft Teams agree,
3. Skype agree,
4. Google Meet somewhat agree.

Using any platform confirms the statements with a median 6 – agree.

Question 10: *I found this video-conference platform to be flexible to interact with.*

Table 12: Evaluation of Question 10

	Google Meet	Microsoft Teams	Skype	Zoom
Mean value:	4,55	6,36	5,6	6,2
Deviation score	1,69	0,50	1,34	0,84
Median	5	6	5	6
Evaluation points:		2		1

Microsoft Teams and Zoom were evaluated with the same median – of 6. However, the mean value is slightly higher at Microsoft Teams, with a minimal deviation score. Skype followed, and Google Meet received the least score. Details are provided in Diagram 10: Graph – Q10: I found this video-conference platform to be flexible to interact with

Transferring numbers into statements, teachers' using:

1. Microsoft Teams – agree,
2. Zoom - agree,
3. Skype – somewhat agree/agree*
4. Google Meet – somewhat agree

*Mean value is considered

Using any platform confirms the statements with a median 6 – agree.

Question 11: *It was easy for me to become skillful in using this platform.*

Table 13: Evaluation of Question 11

	Google Meet	Microsoft Teams	Skype	Zoom
Mean value:	5,545454545	6,363636364	5,8	6,8
Deviation score	1,507556723	0,674199862	1,788854382	0,447213595
Median	5	6	7	7
Evaluation points:			1	2

The score reached similar numbers to the previous questions. However, this question is the first one evaluated, with a median of 7 for Skype. However, its deviation score is high. It received most of the scoring 7 but also scored 5 and 3. Detailed values are provided in Diagram 11: Graph – Q11: It was easy for me to become skillful in using this platform.

Transferring numbers into statements, users of:

1. Zoom – strongly agree,
2. Skype – strongly agree/agree*
3. Microsoft Teams – agree
4. Google Meet – somewhat agree

*Mean value is considered

Using any platform confirms the statements with median 7 – strongly agree.

Question 12: *I found this video-conference platform easy to use.*

Table 14: Evaluation of Question 12

	Google Meet	Microsoft Teams	Skype	ZOOM
Mean value:	6	6,545454545	6,2	6,8
Deviation score	1,183215957	0,687551651	1,303840481	0,447213595
Median	6	7	7	7
Evaluation points:		1	1	2

Zoom, Skype and Microsoft Teams were evaluated with a median of 7, and Google Meet with 6. The deviation score of Zoom is the lowest, which is reflected by the highest mean value. Complex numbers are given in Diagram 12: Graph - Q12: I found this video-conference platform easy to use.

Users of all platforms either strongly agree or agree with the statement.

Transferring numbers into statements, users of:

1. Zoom – strongly agree,
2. Microsoft Teams – strongly agree*,
3. Skype – strongly agree*,
4. Google Meet – agree*.

*Mean value is considered

Using any platform confirms the statements with a median of 7 – strongly agree.

Hypothesis B:

H_b0 – The ease of use of the video-conference platforms is the same.

H_b1 – The ease of use of the vide-conference platforms differs.

Table 15: Evaluation of the hypothesis H_b

	Received frequency (P)	Expected frequency (O)	(P-O)	$(P-O)^2$	$\frac{(P-O)^2}{O}$
Google Meet	36,63636	35,48636	1,15	1,3225	0,037268
Microsoft Teams	39,2	35,48636	3,713636	13,7911	0,388631
Skype	31,90909	35,48636	-3,57727	12,79688	0,360614
Zoom	34,2	35,48636	-1,28636	1,654731	0,04663
Σ:	141,9455	141,9455			0,833143

The mean values of the second six questions were compared among the platforms to reveal if there is a statistical difference in the ease of use of the evaluated video-conference platforms. The sum value (x^2) rounded to three decimals is 2.344. The comparison value is $X^2_{0,05}(3) = 7,815$. The calculated number is lower than the comparator.

The statistical difference is insignificant. The null hypothesis cannot be denied.

<u>The ease of use of the video-conference platforms is the same.</u>

The total value calculation is 6,333 = <u>The users agree that the video-conference evaluated platforms are easy to use.</u>

Teachers' opinions

T1 and T2 evaluated Microsoft Teams as Ease to use video-conference platform. T1 admitted that she had read the instructions before her initial use. Nevertheless, she stated that Microsoft Teams is a very intuitive platform. In comparison, T2 attended training but had some experience with the online world. Until others logged in, she had already been discovering the specific features. T1 then appreciated that they shared their knowledge with their school colleagues.

T3 agrees that Google Meet was easy to use. However, sharing is difficult because everything must be online. There were few features with no development in time as a reaction to teachers' demands. She became skilful in using it because it offered little.

In terms of problems, T1 admits having occasional problems with sharing the books and videos, including the sound transfer. She shared something with her pupils, and they could not see it well. Then she struggled when the system was updated and had to search for the way to something she had used before. Sometimes the updated versions could have worked better. Then there was a problem with the connection. When the children had a weak signal, the cameras had to stay switched off. Occasionally, children played with changing the muting of microphones. The mode setting that prevented children from changing anything was helpful. T2 referred to similar problems as T1. T2 also experienced problems with updated versions, but it was not dramatic.

Generally, the problems of all teachers, as received by the questionnaire, correlate with the interviewed teachers. They include the need for a stable connection. Specific problems with Google Meet are repeated with sound sharing and chat history. That is also valid for the free version of ZOOM. If ZOOM is used in the free version, the lessons are limited to 40 minutes. Microsoft Teams decreases the quality of transferred videos and pictures. The shared storage is related to the risk of anybody being able to delete the documents, and Whiteboard did not work correctly. Skype users refer to the troubles with sharing the screen, sound disappearance during playing videos and connection problems that disturb the students.

In terms of becoming a master in using the selected video-conference platform, T1 replied that she did not feel like a master. However, it provided her with what she needed. T2 was satisfied with the platform's functionality since she and her students understood how to use it. They got used to it quickly and were able to use it sufficiently.

T1 and T2 think that Microsoft Teams was an excellent choice. Based on their experience with other platforms, they disagree that having a different platform would provide them with more manageable and valuable tools. T3 would prefer to have the choice of using paid Zoom. She is glad that the online teaching is over and does not use Google Meet anymore. She continuously uses Google Classroom.

All teachers admit to using the additional applications even in the on-ground classroom.

6.1.3 Summary

In conclusion, video-conference platforms are effective and easy to use in lower secondary schools to teach English as a second language. The calculation of statistically significant differences proved that the usefulness and ease of use levels are the same across the evaluated video-conference platforms.

The ESL teachers somewhat agree that the video-conference platforms are useful, with a mean value of 5 and agree that they are easy to use, with a mean value of 6.

Zoom was evaluated as the top video-conference platform. It received an overall of 18 points, including 7 points for usefulness and 11 points for ease of use. Second in the row is Microsoft Teams, with a total of 11 points, 8 points for usefulness and 3 for ease of use. Unfortunately, there needs to be qualitative data from interviews for Zoom to verify these numbers. Also, the number of people evaluating Zoom is low.

Considering the integrated applications/features/tools, Microsoft Teams provides the most comprehensive selection. From the basic ones, it is screen-sharing, break-out rooms, and chat, to the more sophisticated such as *word, excel, PowerPoint, Kahoot!, YouTube.com or Quizlet.*

Nevertheless, the number of integrated applications/features/tools did not significantly affect the usefulness rating. The interviewed teachers revealed that they often provided external links to their students, which correlates to the qualitative data received via the questionnaire.

Regarding the problems, the obtained qualitative data refer to the internet stability connection that secures the correct functionality of the video-conference platforms.

Generally, the teachers appreciated having video-conference platforms available during the lockdown. The platforms were useful tools and easy to use for them as well as for their pupils.

6.2 Research of RQ2

RQ 2: *Can teaching through video-conference platforms fulfil educational needs?*

6.2.1 Three-dimensional objectives

This chapter focuses on answering whether the cognitive, psychomotor, and affective objectives can be fulfilled using video-conference platforms for online teaching.

6.2.1.1 Cognitive dimension

SQ1: *Cognitive objectives in education can be accomplished using the video-conference platform.*

The number of teachers replying extremely agree, agree, and somewhat agree is 24.

The number of teachers replying extremely disagree, disagree, and somewhat disagree is 3.

If a < b is valid that the null hypothesis cannot be denied. By completing the formula where a=8 < b=21. The research question is confirmed.

Table 16: The educational goals – Cognitive dimension

	Received frequency (P)	Expected frequency (O)	(P-O)	$(P-O)^2$	$\frac{(P-O)^2}{O}$
YES	21	14,5	6,5	42,25	2,913793
NO	8	14,5	-6,5	42,25	2,913793
	29	29			5,827586

The result of statistically significant difference between the use of the video-conference platforms and their impact on the goal accomplishment, which is x_2= 5,83 and the comparable value $X^2_{0,05}(1) = 3{,}841$. The statistical difference is significant. The research question is verified.

The cognitive objective in education can be accomplished by means of the using the video-conference platform.

6.2.1.2 Psychomotor dimension

SQ2: *Psychomotor objectives in education can be accomplished using the video-conference platform.*

The number of teachers replying extremely agree, agree, and somewhat agree is 9.

The number of teachers replying extremely disagree, disagree, and somewhat disagree is 15.

If a < b or a > b is not valid that the null hypothesis cannot be denied. By completing the formula where a=15 > b=9. The results are in negative numbers. The question must be changed to: *"The educational goals set in psychomotor dimension cannot be fulfilled by means of the video-conference platform."*

Table 17: The educational goals – Psychomotor skills

	Received frequency (P)	Expected frequency (O)	(P-O)	$(P-O)^2$	$\frac{(P-O)^2}{O}$
YES	9	12	-3	9	0,75
NO	15	12	3	9	0,75
	24	24			1,5

The result of statistically significant difference between the use of the video-conference platforms and their impact on the goal accomplishment, which is x_2= 1,5 and the comparable value $X^2_{0,05}(1) = 3{,}841$. The statistical difference is insignificant. The research question cannot be denied nor accepted.

It cannot be confirmed that the educational goals set in psychomotor dimension cannot be fulfilled by means of the video-conference platform.

6.2.1.3 Affective dimension

SQ3: *Affective objectives in education can be accomplished using the video-conference platform.*

The number of teachers replying extremely agree, agree, and somewhat agree is 16.

The number of teachers replying extremely disagree, disagree, and somewhat disagree is 8.

If a < b is valid that the null hypothesis cannot be denied. By completing the formula where a=8 < b=16. The research question is confirmed.

Table 18: The educational goals - Speaking

	Received frequency (P)	Expected frequency (O)	(P-O)	$(P-O)^2$	$\frac{(P-O)^2}{O}$
YES	16	12	4	16	1,333333
NO	8	12	-4	16	1,333333
	24	24			2,666667

The result of statistically significant difference between the use of the video-conference platforms and their impact on the goal accomplishment, which is x_2= 2,67 and the comparable value $X^2_{0,05}(1) = 3{,}841$. The statistical difference is insignificant. The research question cannot be denied nor accepted.

It cannot be confirmed that affective objectives in education can be accomplished using the video-conference platform.

Teachers' opinions

T1 used the scales without much of comments. She only expressed that fulfilling the psychomotor dimension is the worse, with which T2 and a T3 agreed. T2 added that English could be practised in the classroom using real situations, such as going to a restaurant. T3 completed that even teaching pronunciation counted as a psychomotor skill is difficult because of the sound transfer.

By all teachers, the cognitive was possible to cover the best. However, T2 mentioned that there were so many disturbing elements at home that it was hard for the children to concentrate.

In terms of the affective dimension, T2 said that because she prepared fun lessons, it was easier to accomplish this goal. On the contrary, T3 was not convinced since the cooperation skill was limited. In her opinion, online platforms are not constructed for cooperative schoolwork. If pupils were divided into break-out rooms, keeping them on the subject was challenging. Constant visiting of the break-out rooms was essential but hard to manage.

6.2.2 ESL goals

6.2.2.1 Speaking

SQ4: *The educational goals of speaking can be accomplished using the video-conference platform.*

The number of teachers replying extremely agree, agree, and somewhat agree is 21.

The number of teachers replying extremely disagree, disagree, and somewhat disagree is 7.

If a < b is valid that the null hypothesis cannot be denied. By completing the formula where a=7 < b=21. The research question is confirmed.

Calculation of the statistically significant difference:

Table 19: The educational goal of speaking – accomplishment ability

	Received frequency (P)	Expected frequency (O)	(P-O)	$(P-O)^2$	$\frac{(P-O)^2}{O}$
YES	21	14	7	49	3,5
NO	7	14	-7	49	3,5
	28	28			7

The result of statistically significant difference between the use of the video-conference platforms and their impact on the goal accomplishment, which is $x^2= 7$ and the comparable value $X^2_{0,05}(1) = 3,841$. The statistical difference is significant. The research question is verified.

The educational goal of speaking can be accomplished by means of the using the video-conference platform.

6.2.2.2 Listening

SQ5: *The educational goals of listening can be accomplished using the video-conference platform.*

The number of teachers replying extremely agree, agree, and somewhat agree is 24.

The number of teachers replying extremely disagree, disagree, and somewhat disagree is 3.

If a < b is valid that the null hypothesis cannot be denied. By completing the formula where a= 3< b=24. The research question is confirmed.

Calculation of the statistically significant difference:

Table 20: The educational goals of listening accomplishment ability

	Received frequency (P)	Expected frequency (O)	(P-O)	$(P-O)^2$	$\frac{(P-O)^2}{O}$
YES	24	13,5	10,5	110,25	8,166667
NO	3	13,5	-10,5	110,25	8,166667
	27	27			16,33333

The result of statistically significant difference between the use of the video-conference platforms and their impact on the goal accomplishment, which is x_2= 16,33 and the comparable value $X^2_{0,05}(1) = 3{,}841$. The statistical difference is significant. The research question is verified.

The educational goal of listening can be accomplished by means of the using the video-conference platform.

6.2.2.3 Reading

SQ6: *The educational goals of reading can be accomplished using the video-conference platform.*

The number of teachers replying extremely agree, agree, and somewhat agree is 23.

The number of teachers replying extremely disagree, disagree, and somewhat disagree is 4.

If a < b is valid that the null hypothesis cannot be denied. By completing the formula where a=4 < b=23. The statistical difference is significant. The research question is confirmed.

Calculation of the statistically significant difference:

Table 21: The educational goals of reading accomplishment ability

	Received frequency (P)	Expected frequency (O)	(P-O)	$(P-O)^2$	$\frac{(P-O)^2}{O}$
YES	23	13,5	9,5	90,25	6,685185
NO	4	13,5	-9,5	90,25	6,685185
	27	27			13,37037

The result of statistically significant difference between the use of the video-conference platforms and their impact on the goal accomplishment, which is x_2= 13,3733 and the comparable value $X^2_{0,05}(1) = 3,841$. The research question is verified.

The educational goals of reading can be accomplished by means of the using the video-conference platform.

6.2.2.4 Writing

SQ7: *The educational goals of writing can be accomplished using the video-conference platform.*

The number of teachers replying extremely agree, agree, and somewhat agree is 19.

The number of teachers replying extremely disagree, disagree, and somewhat disagree is 7.

If a < b is valid that the null hypothesis cannot be denied. By completing the formula where a=7 < b=19. The statistical difference is significant. The research question is confirmed.

Calculation of the statistically significant difference:

Table 22: Speaking – calculation of the statistically significant difference

	Received frequency (P)	Expected frequency (O)	(P-O)	$(P-O)^2$	$\frac{(P-O)^2}{O}$
YES	19	13	6	36	2,769231
NO	7	13	-6	36	2,769231
	26	26			5,538462

Providing additional calculation to see if there is statistically significant difference between the use of the video-conference platforms and their impact on the goal accomplishment, by receiving the lowest difference so far of x_2= 5,54 and the comparable value remains $X^2_{0,05}(1) = 3,841$. The statistical difference is significant. The research question is verified.

The educational goals of writing can be accomplished using the video-conference platform.

Teachers' opinions

T1 said that the shy children improved in speaking and listening immensely, as, during the on-ground lessons, they were shy to speak in front of the class. The online lesson was more anonymous than speaking in front of the class. In comparison, T2 says there was not enough time to practice speaking but she believes that children improved in listening. T2 somewhat disagrees with pupils improving in reading as there was little time to practice but somewhat agrees that they improved in writing. There was enormous pressure from the school management on written exercises from students to function as proof of their work during online education.

Listening exercises took excessive effort because the shared sound needed high connection quality. However, she did not see any limits in practicing reading and writing. On the contrary, T3 disagrees with the statement that children improved their speaking because correcting their pronunciation was ineffective.

6.2.3 Online education

SQ8: *The goals can be accomplished to the same level as during on-ground lessons.*

Table 23: The educational goals online versus on-ground achievement ability

	Received frequency (P)	Expected frequency (O)	(P-O)	$(P-O)^2$	$\frac{(P-O)^2}{O}$
YES	17	12	5	25	2,083333
NO	7	12	-5	25	2,083333
	24	24			4,166667

The result of statistically significant difference between the use of the video-conference platforms and their impact on the goal accomplishment, which is x_2= 4,167 and the comparable value is $X^2_{0,05}(1) = 3,841$. The statistical difference is significant. The research question is verified.

The educational goals can be accomplished to the same level as the on-ground lessons.

Teachers' opinions

T1 admitted that teaching online is only for some. It was great for the children who are shy at school. They gained the most from online education.

T2 agreed that teaching online can fulfil the goals to the same level as on-ground teaching. She explained that there were some activities she could not do online and the other way around. For example, she described the situations that worked great during home-schooling. *"During online lessons, it is great to use the life things you have at home. For example, I can show my dog at home and describe it. It was fun because we had the stuff at home. With vegetables, I could show everything I had at home. That was great during the online teaching. It is not possible the same way at school. So, in some way, I preferred the online to the on-ground education."* She also liked that disturbing misbehaviour was easier to handle by muting the children if needed. She also liked the option to record the lesson, which could be viewed by children who could not attend the live lesson.

T3 prefers the on-ground lessons. She said that cooperation between children could never be done the same way online. Listening activities are better in the class since connection problems occur. Pronunciation can never be taught online to the same level since the children need to see the teacher speaking. *"We managed during the pandemic, but I think that especially for children, they must experience the teacher as a real person. In my opinion, children already spend far too much time at computer screens. The on-ground lessons will always be my first choice in teaching."*

6.2.4 Summary

In summary, it cannot be verified that teaching through video-conference platforms can fulfil educational needs in the complex. The reason is that the research questions concerning the psychomotor and affective dimensions could not be confirmed. The statements of the interviewed teachers comply with the quantitative data.

6.3 Research of RQ3

The following hypotheses support question **RQ 3**:

RQ 2: What video-conference platform accomplished the goals to the greatest extent?

6.3.1 Three-dimensional objectives

This chapter focuses on cognitive, psychomotor, and affective didactical objectives. It provides data on their agreed achievability extent and level of comparison among the selected platforms.

Table 24: Evaluation of the three-dimensional objectives

	Cognitive	**Psychomotor**	**Affective**	**Total**	**Points**
Google Meet	4,36	3,36	3,9	3,88	
Microsoft Teams	5,27	4,18	5,09	**4,85**	**1**
Skype	5	3	5	4,33	
Zoom	4	3,2	3	3,4	
Total	4,65	3,435	4,248	4,115	

The numbers received on accomplishing the three-dimensional objectives through the online study could be more convincing. The data are analyzed in more detail show that most teachers neither agree nor disagree that three-dimensional goals can be reached through online teaching. The total median of the fulfilment of the cognitive goals is on a somewhat agreeable level (rounded to 0 decimals = 5). The affective dimension inclines slightly to the positive, whereas the psychomotor dimension to the negative. Three teachers even strongly disagree that the psychomotor objective can be fulfilled online. The overall median 4 shows that the responders do not agree or disagree that the three-dimensional goals can be achieved by teaching using video-conference platforms. Only the cognitive dimension is an exception from the evaluation, which received a median of 5 - somewhat agreed. The conclude, the believe of teachers in online education is not convincing.

Microsoft Teams was scored the highest in terms of total means value and therefore, it would be considered the platform that fulfils the objectives to the greatest extent.

Detailed numbers are provided in Diagram 13: Three-dimensional goals - Graph and table of value.

Hypothesis C:

Hc0 – The general educational goals – cognitive, affective, and psycho-motoric, was accomplished to the same level among all evaluated platforms.

Hc1 - The general educational goals – cognitive, affective, and psycho-motoric, was accomplished at different levels among all evaluated platforms.

Table 25: Hypothesis Hc calculation

	Received frequency (P)	Expected frequency (O)	(P-O)	$(P-O)^2$	$\frac{(P-O)^2}{O}$
Google Meet	14,54545	12,34545	2,2	4,84	0,392047
Microsoft Teams	10,2	12,34545	-2,14545	4,602975	0,372848
Skype	11,63636	12,34545	-0,70909	0,50281	0,040728
Zoom	13	12,34545	0,654545	0,42843	0,034703
Σ:	49,38182	49,38182			0,840327

Calculating the statistically significant difference between the variables of different platforms provided the following result. The three-dimensional educational goals were evaluated with a result (x^2) rounded to three decimals is 0,84 and compared to the value $X^2_{0,05}(3) = 7.815$. The received number is much lower. The statistical difference is insignificant. The null hypothesis cannot be denied.

The general educational goals – cognitive, affective, and psycho-motoric, were accomplished to the same level among all evaluated platforms.

6.3.2 ESL Skills

This chapter is dedicated to ESL skills (speaking, listening, reading, writing), the agreed extent of goal achievement via online education using various platforms and their comparison.

Table 26: Evaluation of the ESL skills – different platforms

	Speaking	Listening	Reading	Writing	Total	
Google Meet	4,18	What4,64	5	4,64	4,61	
Microsoft Teams	5,18	5,55	5,09	4,55	5,09	
Skype	6,2	6	5,8	5,6	5,9	**1**
Zoom	4,8	4,8	4,6	3,6	4,45	
Total	5,09	5,248	5,123	4,6	5,013	

The provided results indicate that ESL educational goals can be achieved by employing a video-conference platform for teaching English.

The total means values for all video-conference platforms show that the goals can be achieved to the level *"5 - somewhat agree"* through any platform.

The teachers somewhat agree that speaking, listening, and reading goals can be achieved. They are in a neutral position about teaching reading goals achievement.

The teachers utilizing Skype believe this platform can best fulfil their goals. The ones using Microsoft Teams are in the second position.

The detailed numbers are provided in Table 29: ESL skills - detailed values.

Hypothesis D:

Hd0 – The ESL skills – speaking, listening, reading, and writing can be accomplished to the same level among all evaluated platforms.

Hd1 - The ESL skills – speaking, listening, reading, and writing cannot be accomplished at different levels among all evaluated platforms.

Table 27: Hypothesis Hd calculation – different platforms

	Received frequency (P)	Expected frequency (O)	(P-O)	$(P-O)^2$	$\frac{(P-O)^2}{O}$
Google Meet	20,36364	20,05455	0,309091	0,095537	0,004764
Microsoft Teams	17,8	20,05455	-2,25455	5,082975	0,253458
Skype	18,45455	20,05455	-1,6	2,56	0,127652
Zoom	23,6	20,05455	3,545455	12,57025	0,626803
Σ:	80,21818	80,21818			**1,012676**

The educational goals for ESL skills calculation with a result (x^2) rounded to three decimals is 1,013 was compared to the value of $X^2_{0,05}(3) = 7{,}815$. The calculated result is much lower than the comparison. The statistical difference is insignificant. Therefore, the null hypothesis cannot be denied.

Speaking, listening, reading, and writing can be accomplished to the same level among all evaluated platforms.

6.3.3 Online education

This chapter concentrates on the overall teachers' opinions on teaching online compared to classic on-ground teaching and their beliefs in overall goal achievement utilizing the selected platforms.

Table 28: The educational goals online versus on-ground – different platforms

	Google Meet	Microsoft Teams	Skype	Zoom
Mean value:	4	5	4	5,8
Deviation score	1,673	1,095	1,732	0,837
Median	4	5	4	6

These data are interesting because what it says is that the users of Zoom agree that their goals would be reached to the same level by means of video-conference platform as on-ground lesson, but their level of goal achievement was between 3 and 4,5. That would mean that teaching whatever way, they are not able to reach their set goals. In contrary, the level of achievement from users of Microsoft Teams is on the level "somewhat agree" constantly. The rest of the users seem unsure if the level would be the same teaching on-ground as online.

Zoom users believe this platform can substitute on-ground teaching the best.

The obtained data are fascinating since the Zoom users declare that by teaching online, their level of achievement is the same as the teaching on-ground. However, their level of goal achievement was between 3 and 4,5. That would mean that teaching whatever way they cannot reach their goals.

On the contrary, the level of achievement from users of Microsoft Teams is on the level "somewhat agree" constantly. The users of Google Meet and Skype neither agree nor disagree with the statement that the forms of teaching are equal.

Hypothesis E:

He0 – The educational goals can be accomplished to the same level in the online lessons as in the on-ground lessons employing any video-conference platforms.

He1 – The educational goals cannot be accomplished to the same level in the online lessons as in the on-ground lessons employing any video-conference platforms. The level differs.

Table 29: Hypothesis He calculation

	Received frequency (P)	Expected frequency (O)	(P-O)	$(P-O)^2$	$\frac{(P-O)^2}{O}$
Google Meet	5	4,7	0,3	0,09	0,019149
Microsoft Teams	5,8	4,7	1,1	1,21	0,257447
Skype	4	4,7	-0,7	0,49	0,104255
Zoom	4	4,7	-0,7	0,49	0,104255
Σ:	18,8	18,8			0,485106

Providing additional calculation to see if there is statistical different between the use of the video-conference platforms and their impact on the goal accomplishment, by receiving the lowest difference so far of x^2= 0,485 and the comparable value remains $X^2_{0,05}(3) = 7{,}815$. The null hypothesis was approved.

The set educational goals can be reached to the same level as on-ground goals using any video-conference platform.

6.3.4 Summary

To sum up, all video-conference platforms accomplish the goals to the same extent. The calculations of provided hypotheses were confirmed. The mean values of the three-dimensional goals are around the neutral score - teachers neither agree nor disagree. The teachers "somewhat agreed" on whether the goals of ESL skills can be fulfilled.

7 Conclusion

The theoretical part of the thesis revealed the importance of well-set goals and objectives to help fulfil the educational process's needs. The educational process should cover cognitive, psychomotor, and affective objectives. English teaching should also cover ESL goals, including speaking, listening, reading, and writing.

The video-conference platforms selected for this research were based on the theoretical research Zoom, Microsoft Teams, Google Meet and Skype. The statistical data provided online showed that the general usability of the platforms is similar.

This thesis aimed to answer the research questions:

RQ 1: To what extent were video-conference platforms effective and easy to use in lower secondary schools to teach English as a second language (also called "ESL")?

RQ 2: Can teaching through video-conference platforms fulfil educational needs?

RQ 3: What video-conference platform accomplished the goals to the greatest extent?

Teachers agreed with the hypothesis that evaluated video-conference platforms were effective/useful (mean value 5 - somewhat agree) and easy to use (mean value 6 - agree). Zoom and Microsoft Teams were scored as the leading platforms in Usefulness and Ease of use. The statistically insignificant difference results in the statement that the responders will likely use the same platform as they evaluated in the future.

The interviewed teachers approved that the video-conference platforms were intuitive and easy to use for them as well as for the pupils. They expressed that the video-conference platforms were beneficial during lockdown when online education was the only option.

The accomplishment of the educational goals provided mixed results. They *"somewhat agreed"* that online education can fulfil the goals to the same level as on-ground education without significant differences in the choice of the video-conference platform.

Regarding the specific goals and objectives, the teachers *"somewhat agree"* that all ESL goals are achievable by online teaching. The positive responses to the statements about whether the set ESL goals were achieved significantly exceeded the negative answers. Consequently, whether ESL goals can be achieved by teaching online can be confirmed.

The replies on the three-dimensional objectives could have been more convincing. The extent of fulfilment during online education on all three objectives was around the neutral level - "*neither agree nor disagree*". Calculating positive/negative answers proved only cognitive dimension ability in achievement. Psychomotor and affective objectives did not provide enough respondents with positive or negative answers with statistically significant differences. Therefore, it cannot be confirmed that these two objectives can be fulfilled by teaching online.

There is no statistically significant difference among the researched video-conference platforms. The teachers admit that they had to use additional applications to provide motivating lessons across the platforms. The general problem they reported was the connection. Generally, the interviewed teachers complied with the obtained quantitative data.

There are some gaps in this study because of the small number of responders. Nevertheless, the received statistical numbers correlate with the teachers' answers and the usability results correspond with the users' evaluation provided in the theoretical part of this thesis. Therefore, they are claimed to be valid.

In conclusion, online video-conference platforms are useful and easy-to-use tools in education. They can fulfil most ESL educational goals and cognitive objectives to some extent. However, the provided research revealed that teaching utilizing video-conference platforms at lower secondary schools for permanent education could be better. The reason is that accomplishing all requested goals and objectives, also known as the educational need, cannot be guaranteed in the complex.

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Appendix 1: Referenced figures

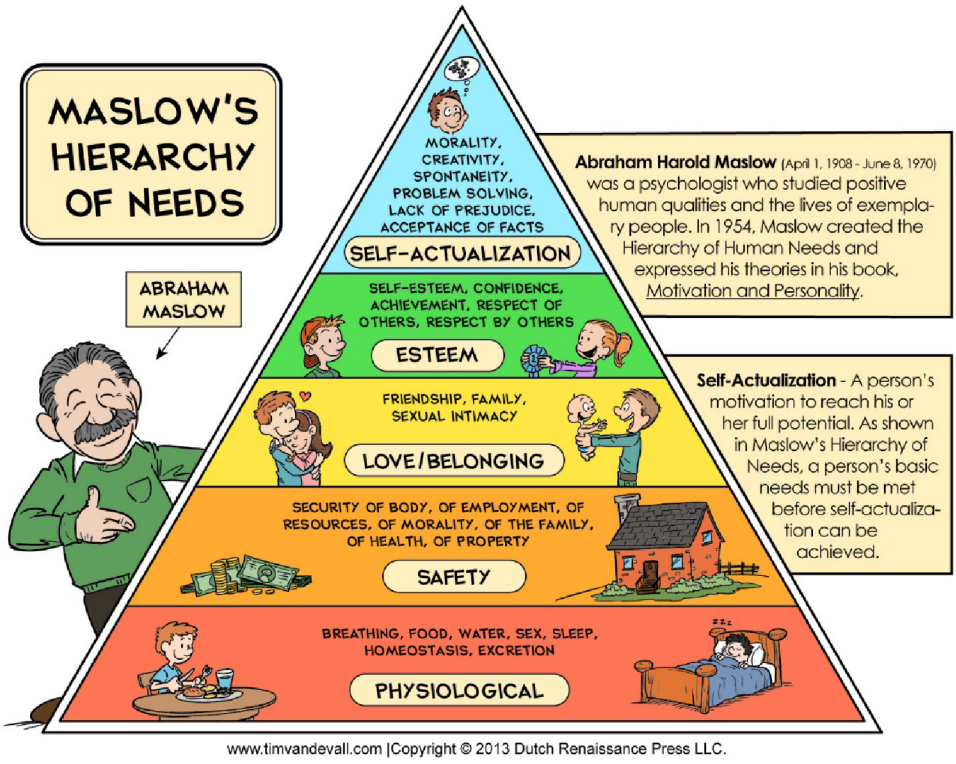

Figure 1: Maslow's hierarchy of needs (admin, 2015)

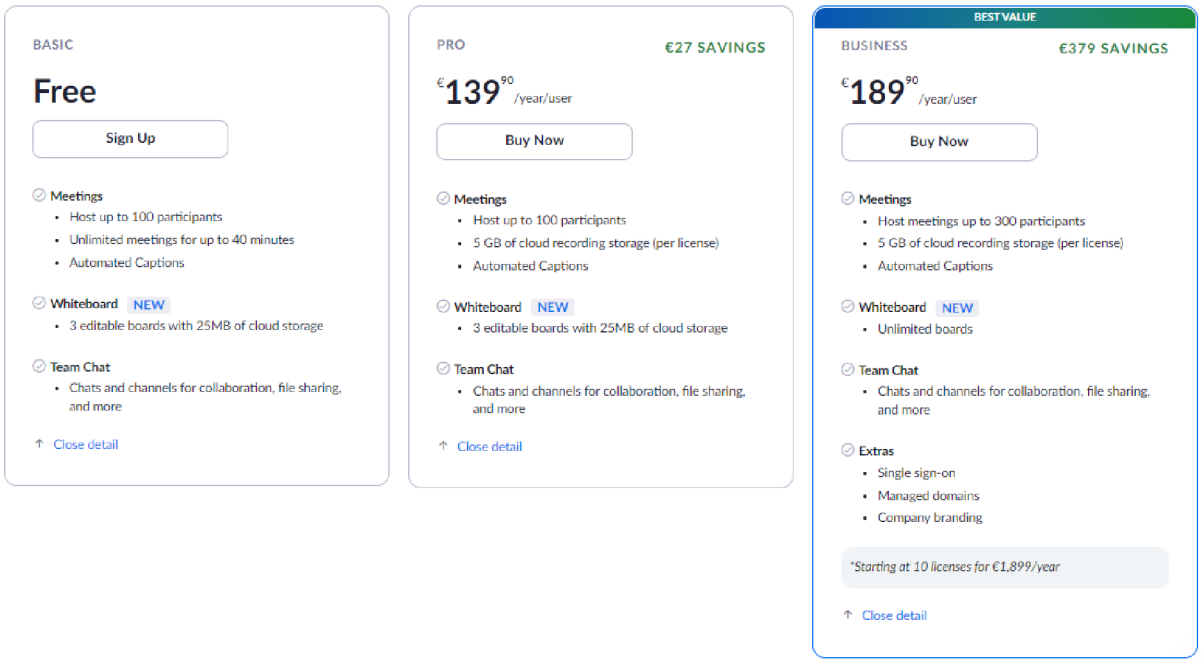

Figure 2: Zoom Price list (source: https://Zoom.us/pricing)

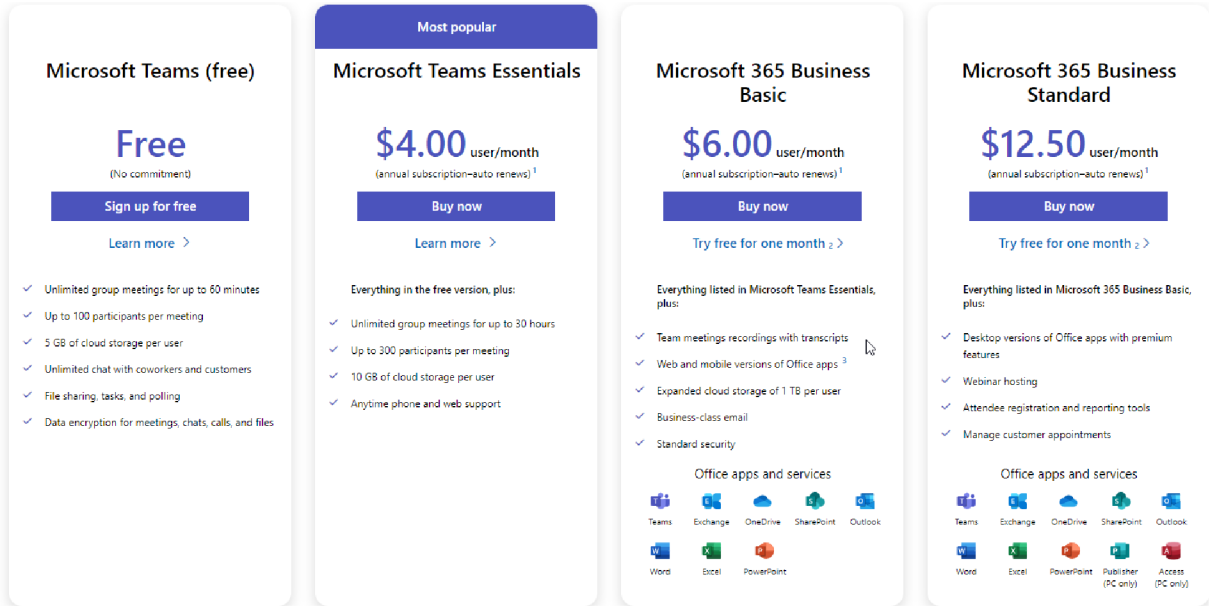

Figure 3: Microsoft teams - price list (source: https://www.microsoft.com/en-us/microsoft-teams/compare-microsoft-teams-options?activetab=pivot:primaryr2)

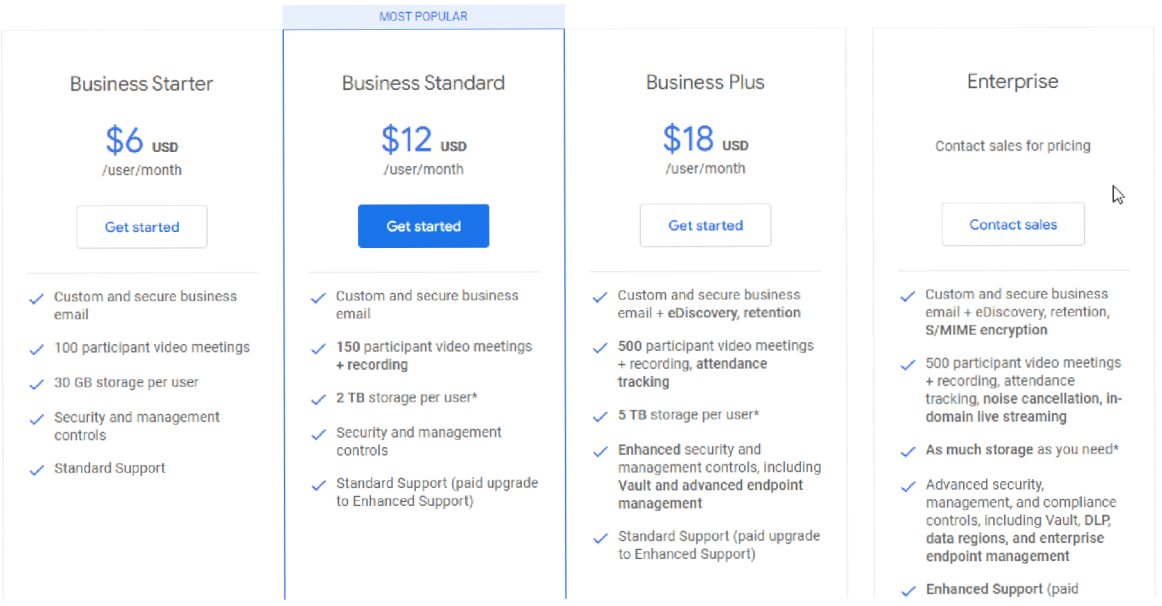

Figure 4: Google Meet - Price list (source: https://workspace.google.com/intl/en/pricing.html)

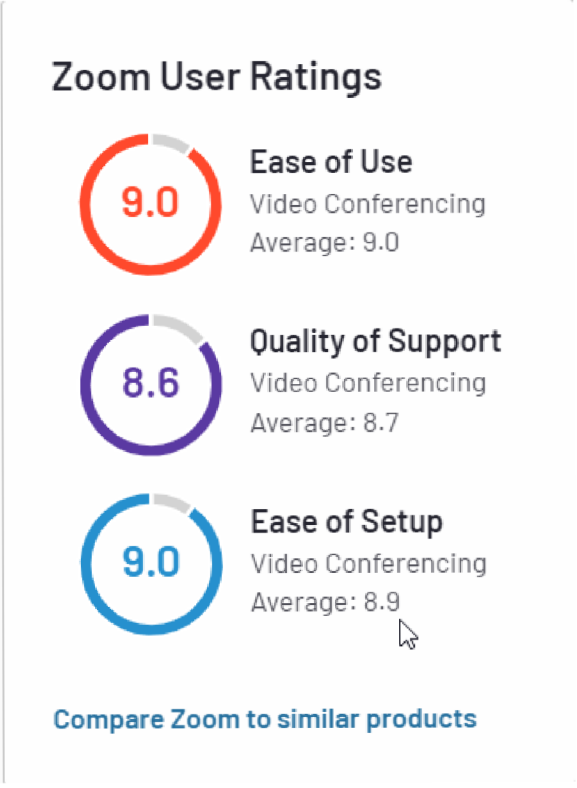

Figure 5: Users' review of Zoom (source: https://www.g2.com/products/Zoom/reviews)

Figure 6: Users' review of Microsoft Teams (source: https://www.g2.com/products/microsoft-teams/reviews)

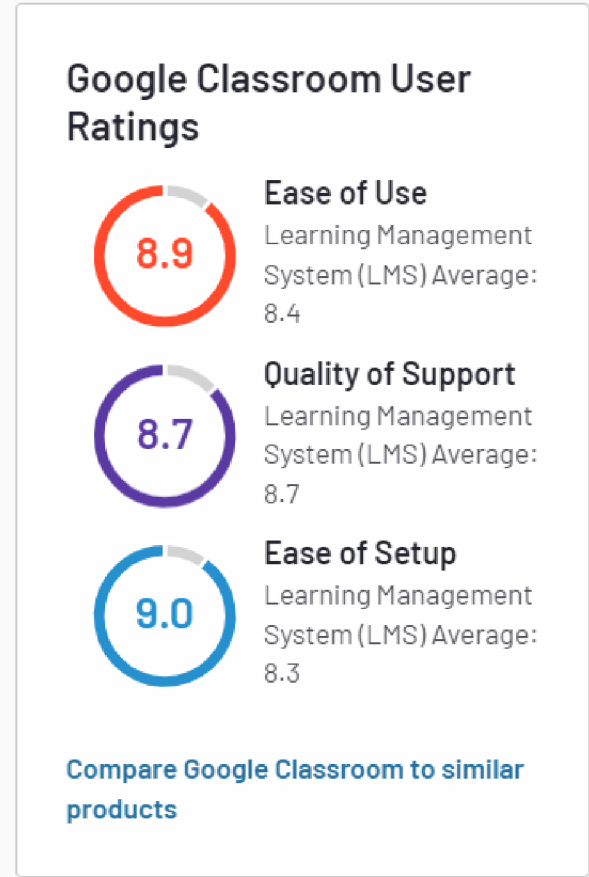

Figure 7: Users' review of Google Classroom (source: https://www.g2.com/products/google-classroom/reviews#survey-response-5179834)

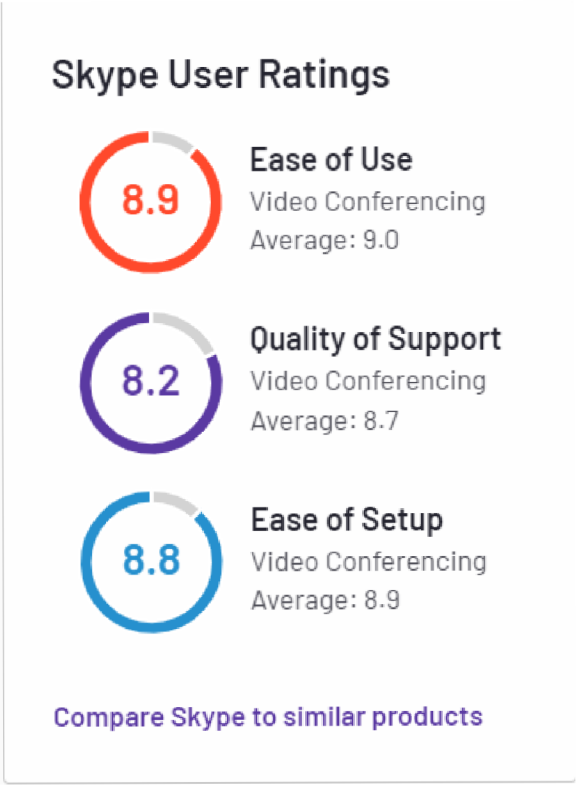

Figure 8: Users' review of Skype (source: https://www.g2.com/products/skype/reviews)

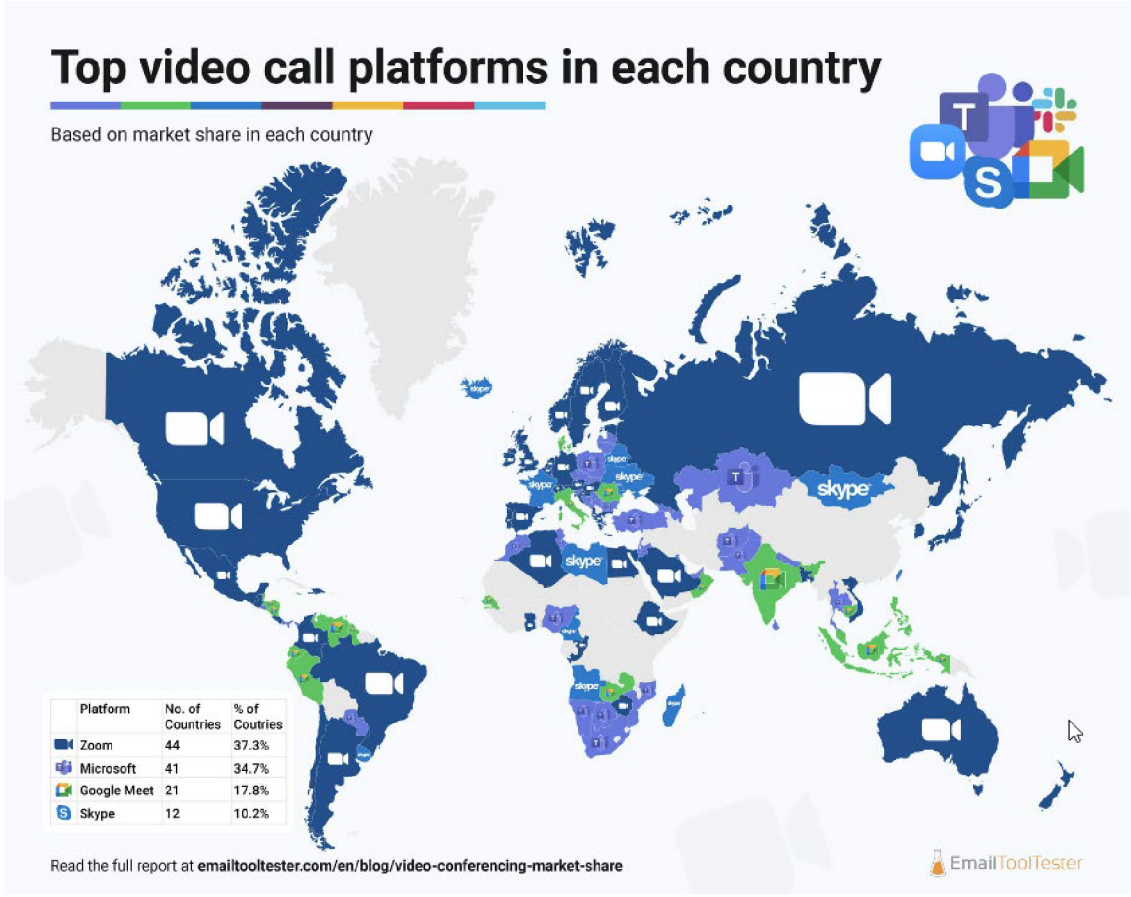

Figure 9: The most popular online video-conference platforms worldwide (Brandl, 2021)

Figure 10: Video-conference market share in 2020 vs. 2021 (Brandl, 2021)

Microsoft Teams users

Year	Users
2017	2 million
2018	8 million
2019	20 million
Q2 2020	75 million
Q4 2020	115 million
Q2 2021	145 million

Note: Microsoft switched to monthly active users in Q3 2021. It has 250 million as of July 2021

Source: Microsoft

Figure 11: Number of Microsoft Teams users (Curry, 2022)

Appendix 2: Referenced diagrams

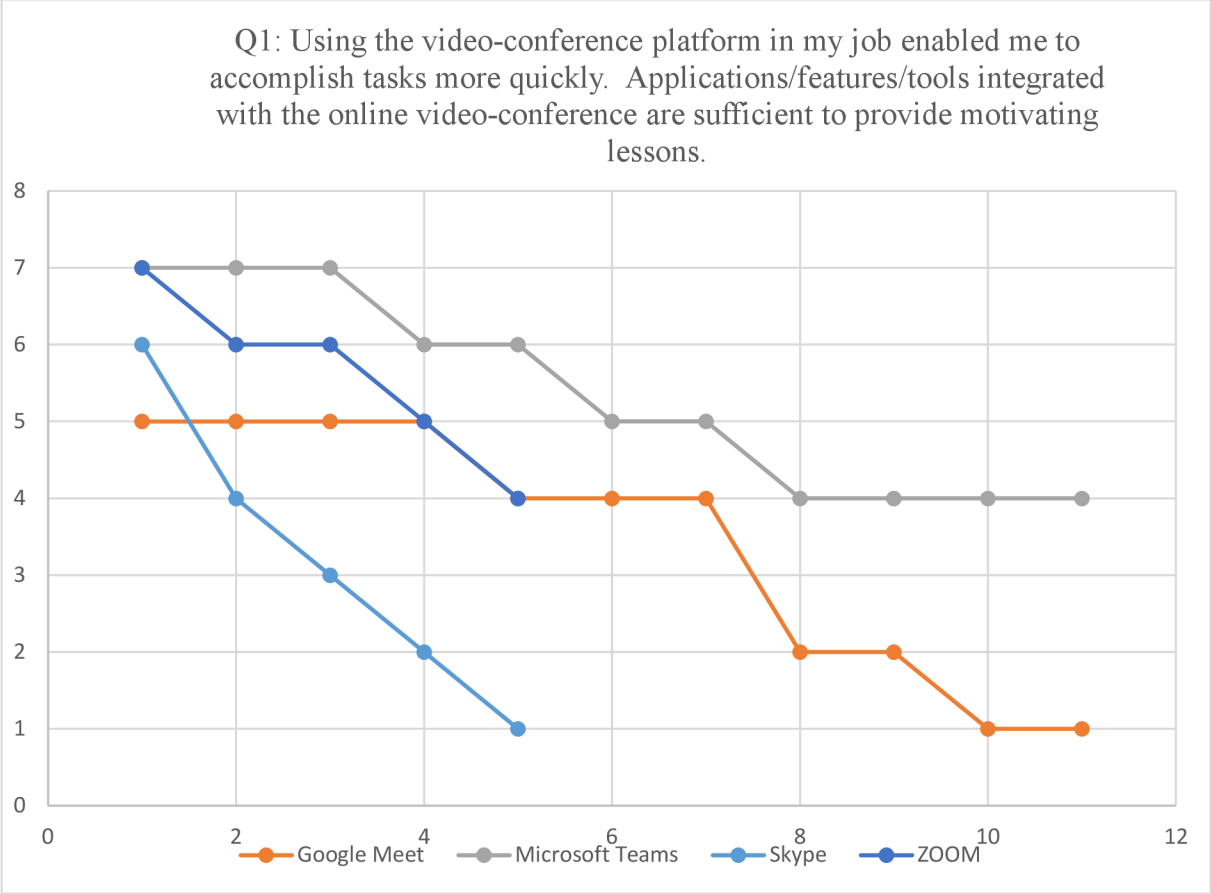

Diagram 1: Graph - Q1: Using the video-conference platform in my job enables me to accomplish tasks more quickly.

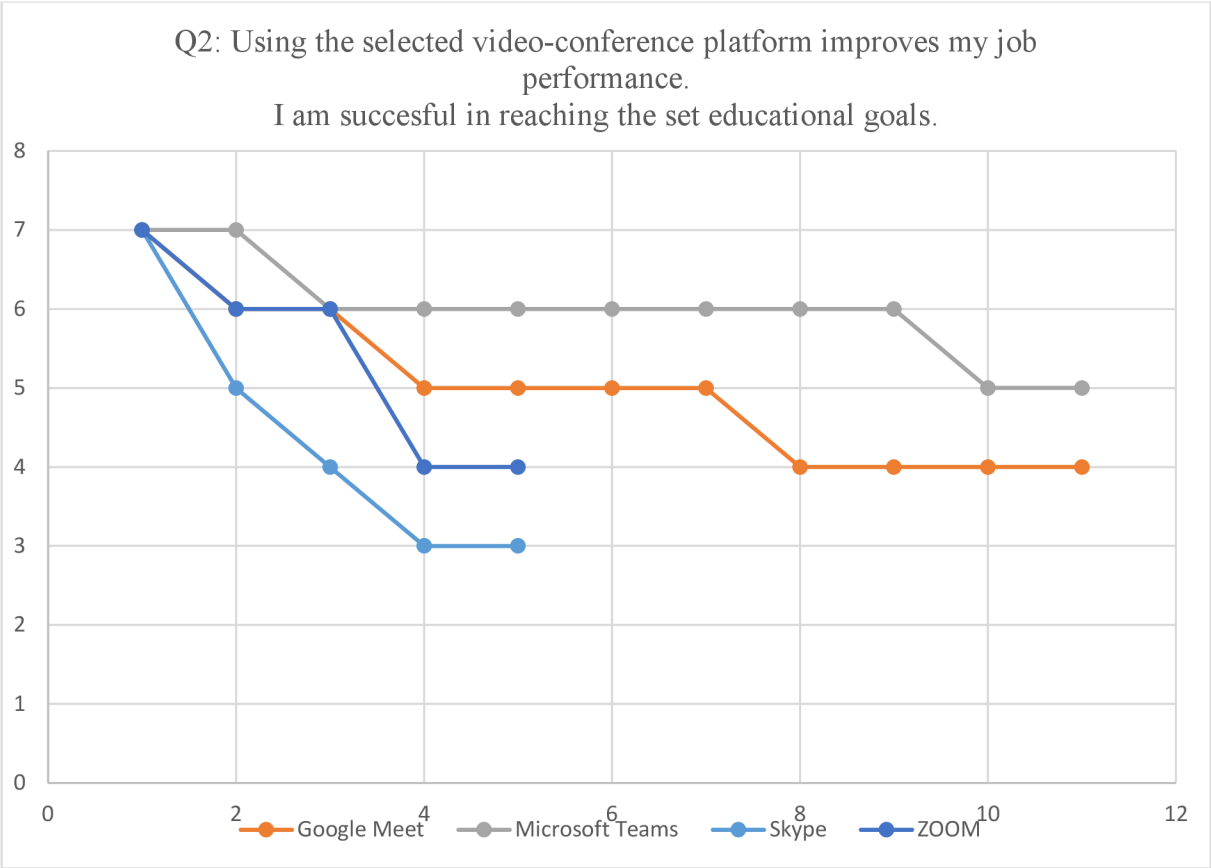

Diagram 2: Graph - Q2: Using the selected video-conference platform improves my job performance.

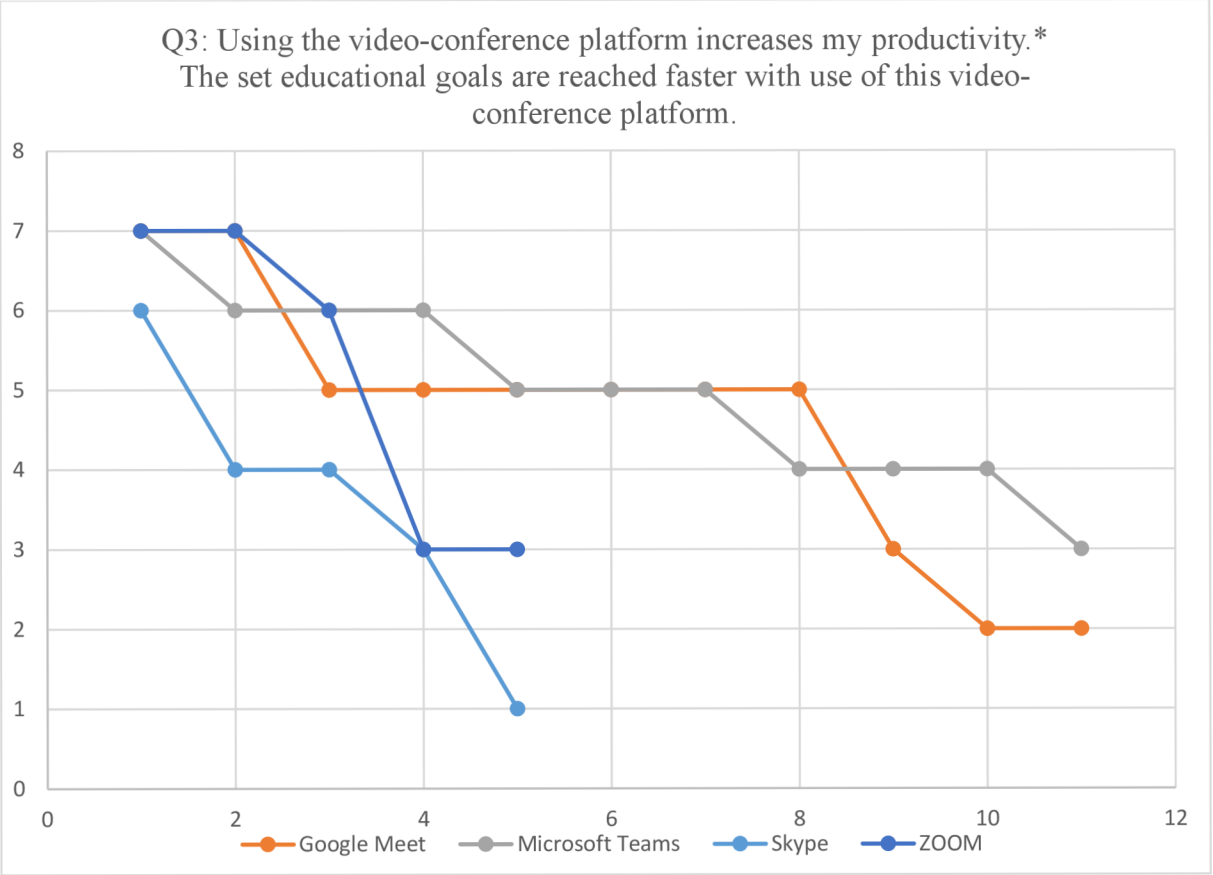

Diagram 3:Graph - Q3: Using the video-conference platform increases my productivity.

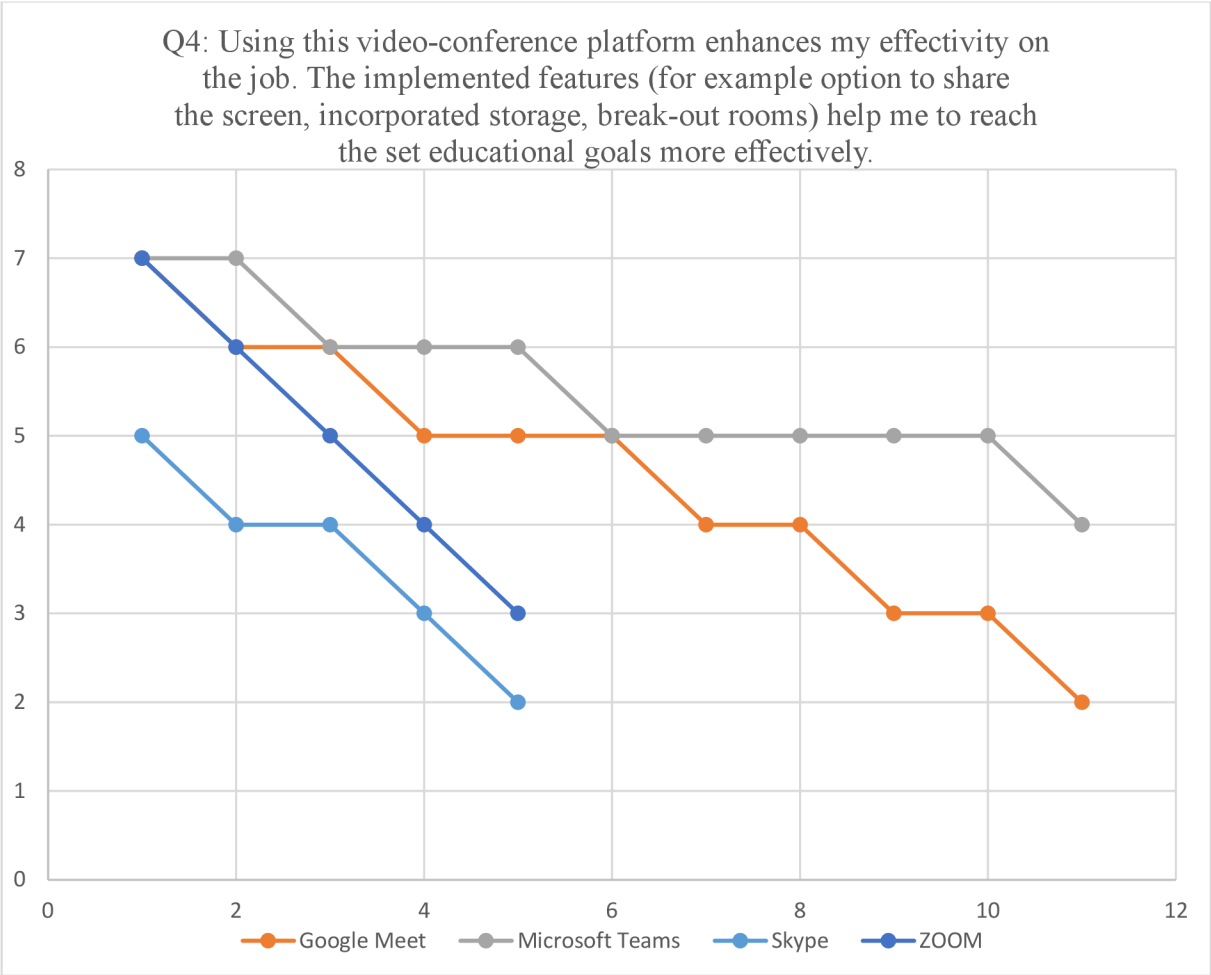

Diagram 4: Graph - Q4: Using this video-conference platform enhances my effectivity on the job.

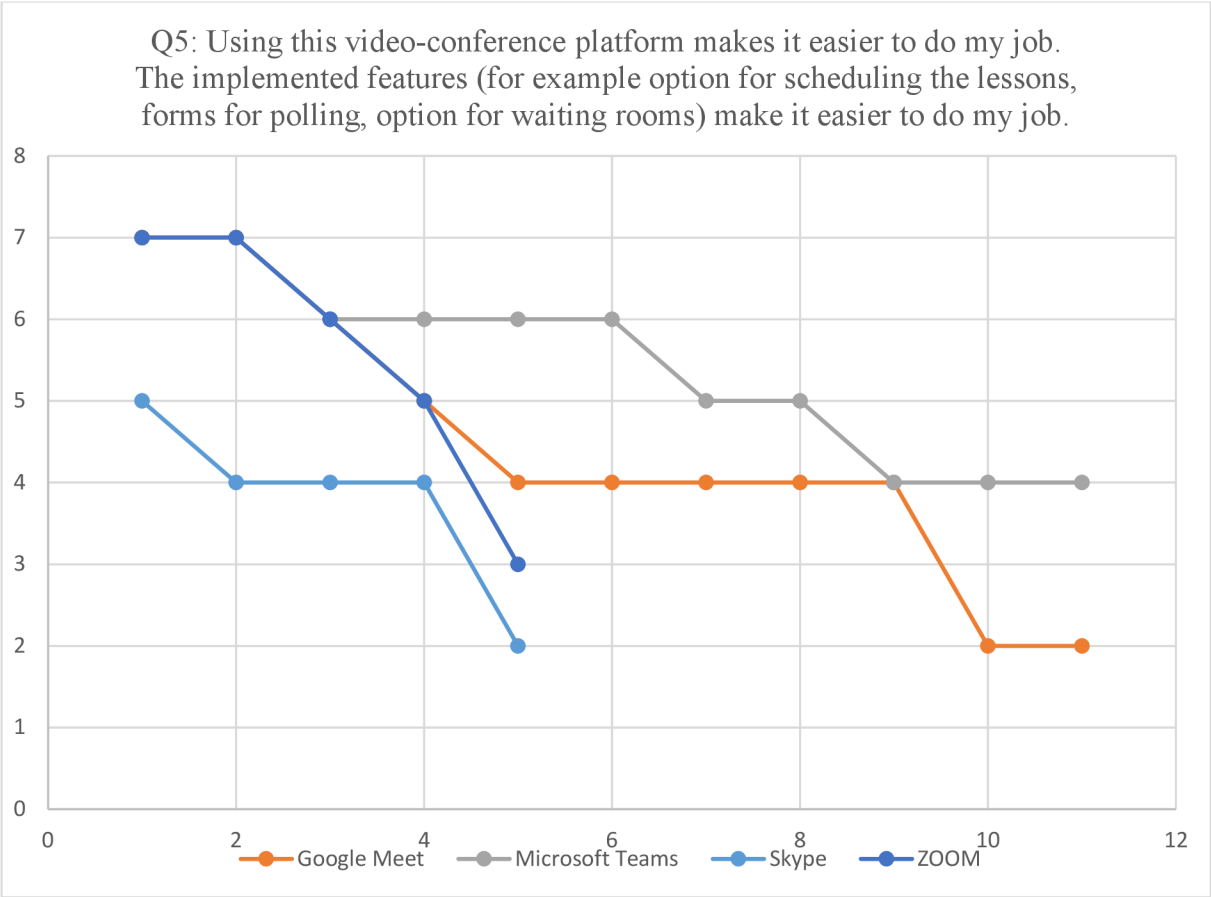

Diagram 5: Graph - Q5: Using this video-conference platform makes it easier to do my job.

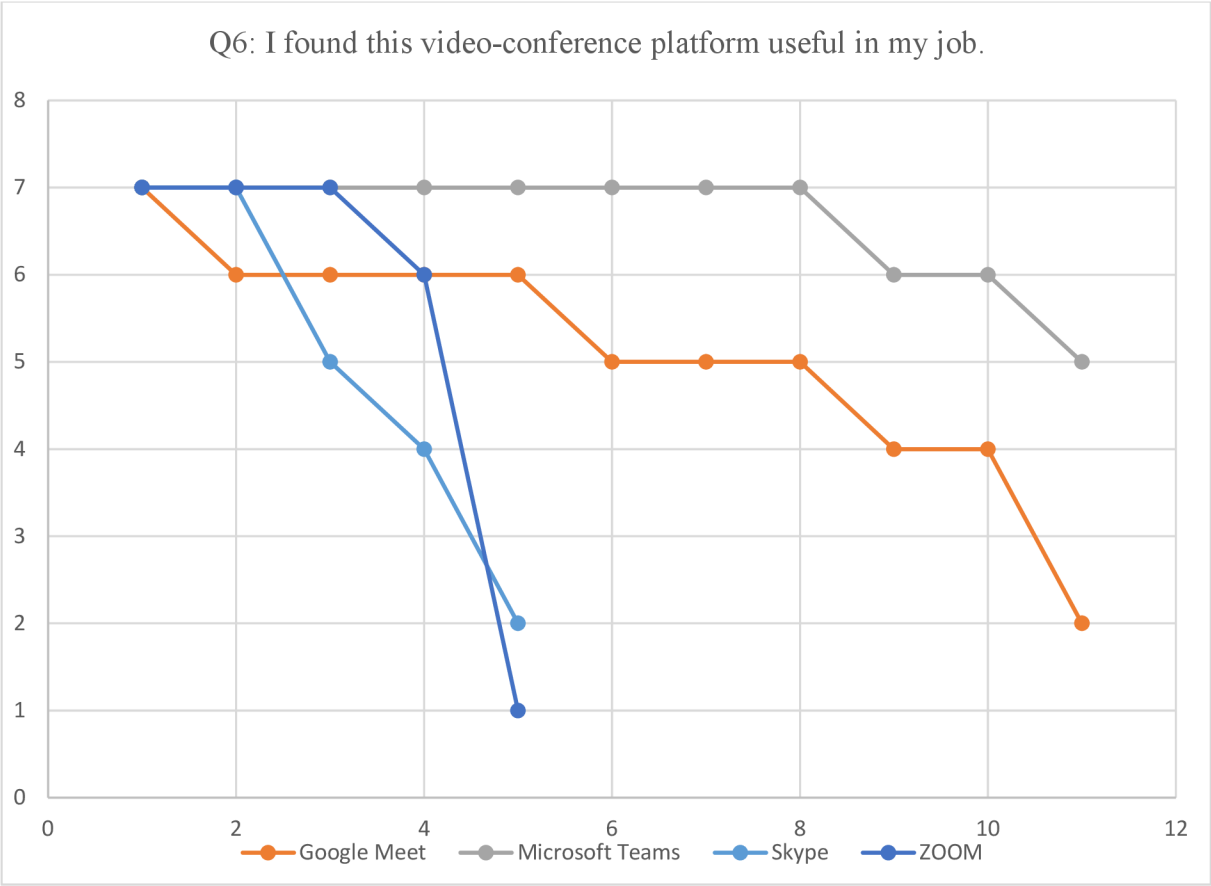

Diagram 6: Graph - Q6: I found this video-conference platform useful in my job.

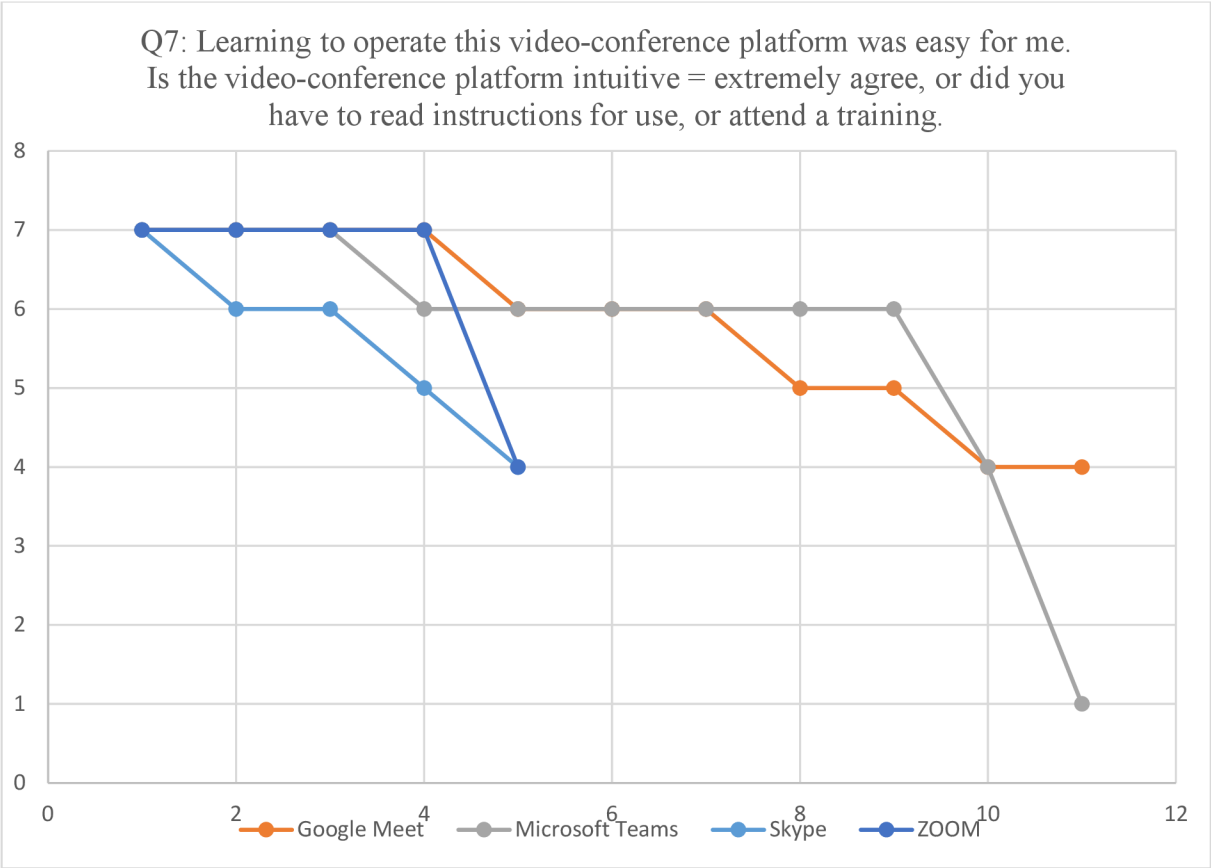

Diagram 7: Graph - Q7: Learning to operate this video-conference platform was easy for me.

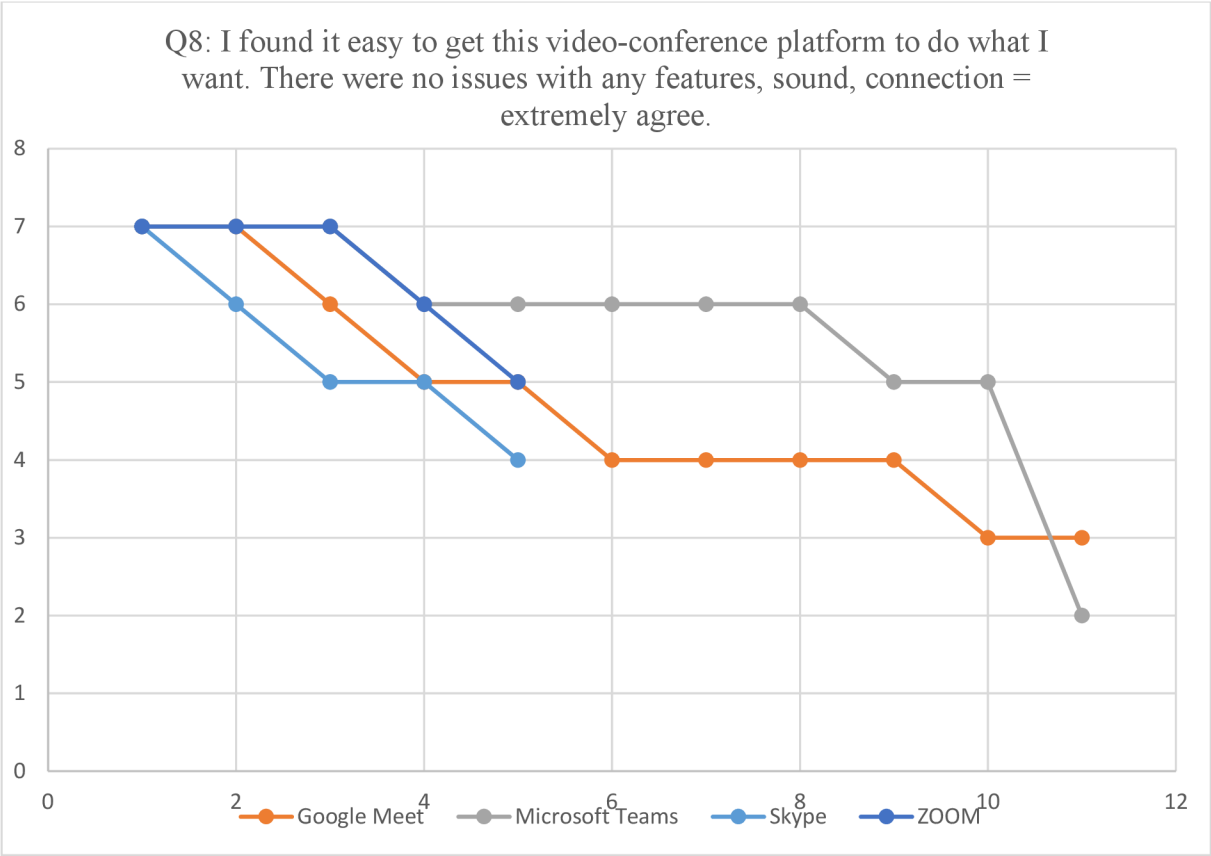

Diagram 8: Graph - Q8: I found it easy to get this video-conference platform to do what I want.

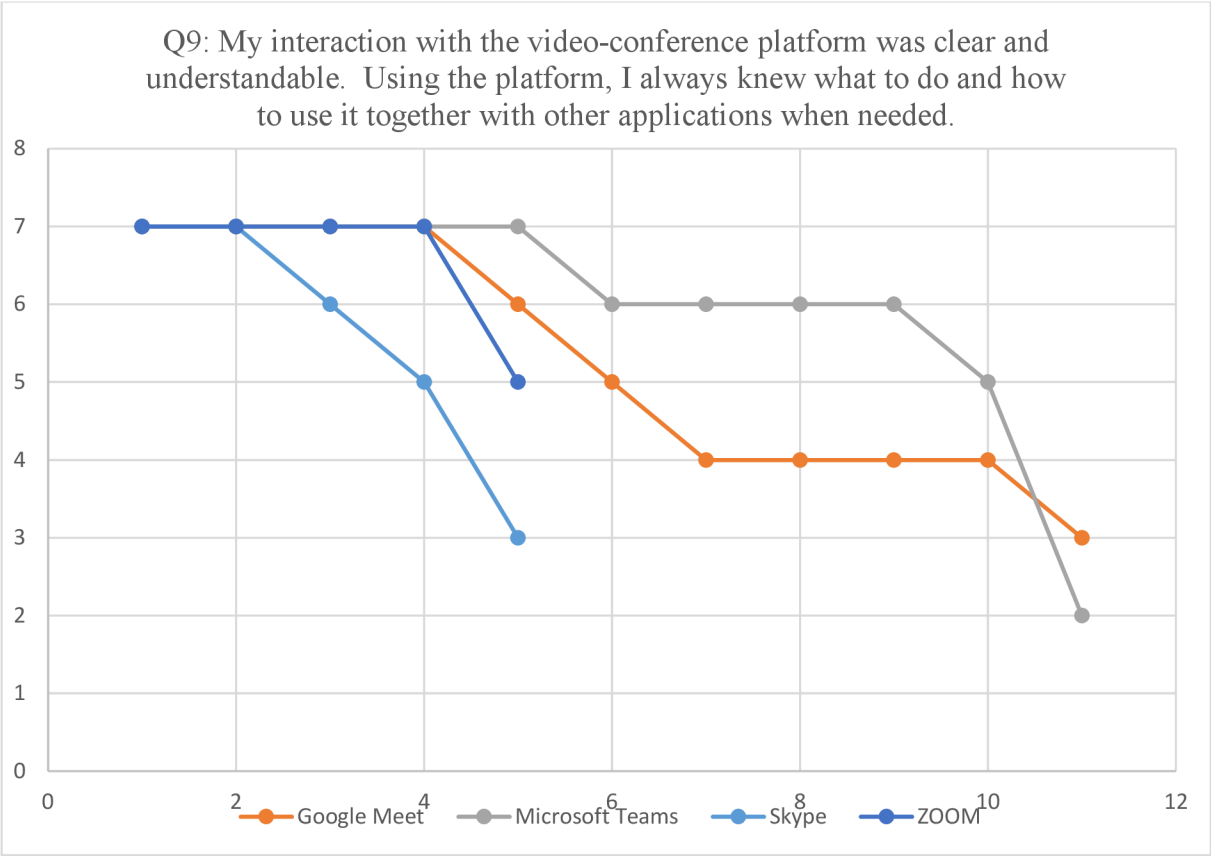

Diagram 9: Graph - Q9: My interaction with the video-conference platform was clear and understandable

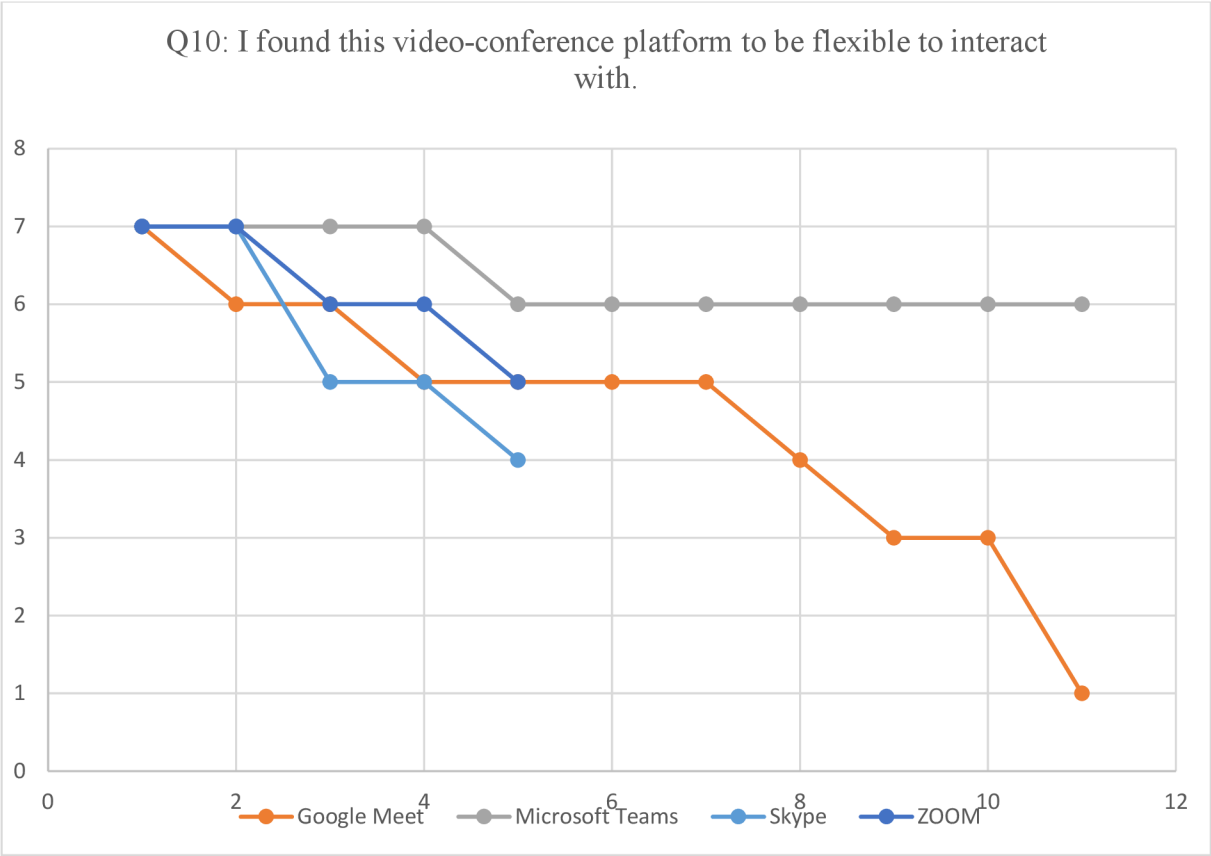

Diagram 10: Graph – Q10: I found this video-conference platform to be flexible to interact with

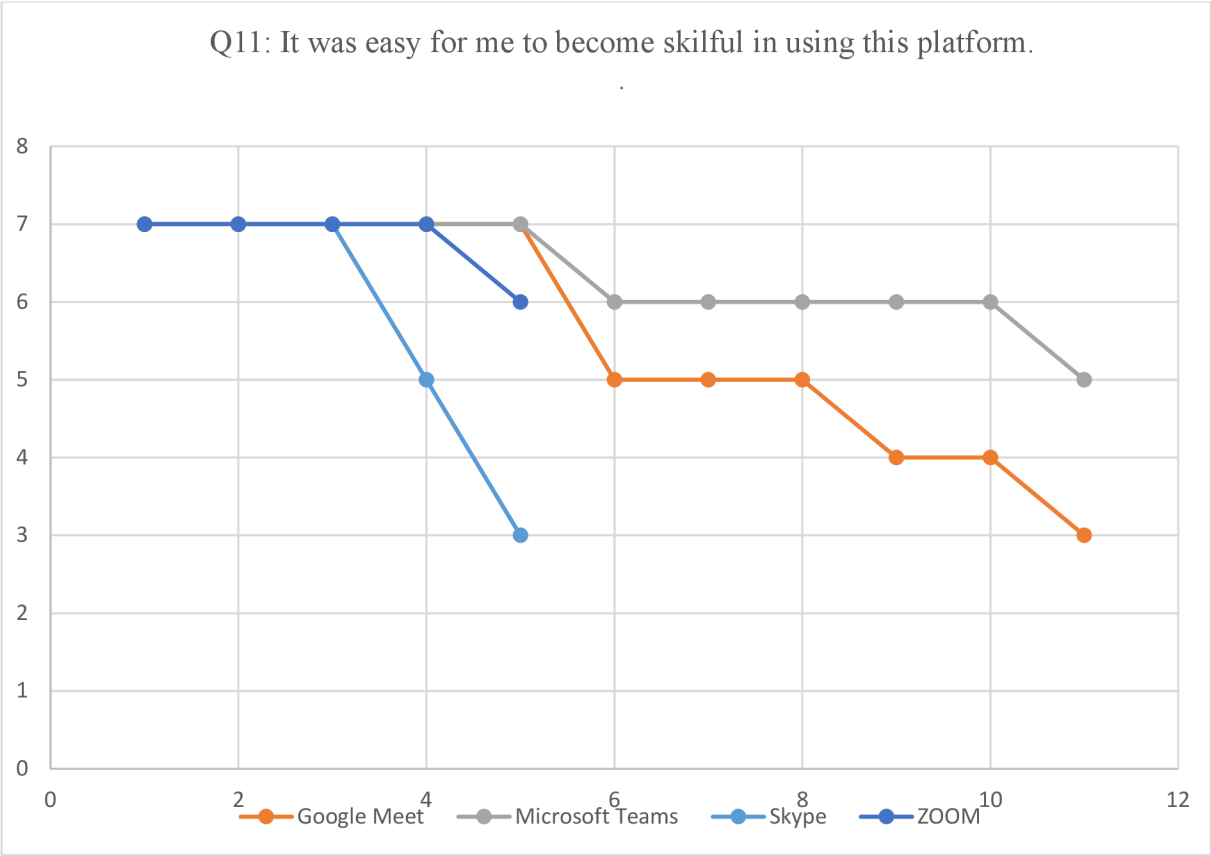

Diagram 11: Graph – Q11: It was easy for me to become skillful in using this platform

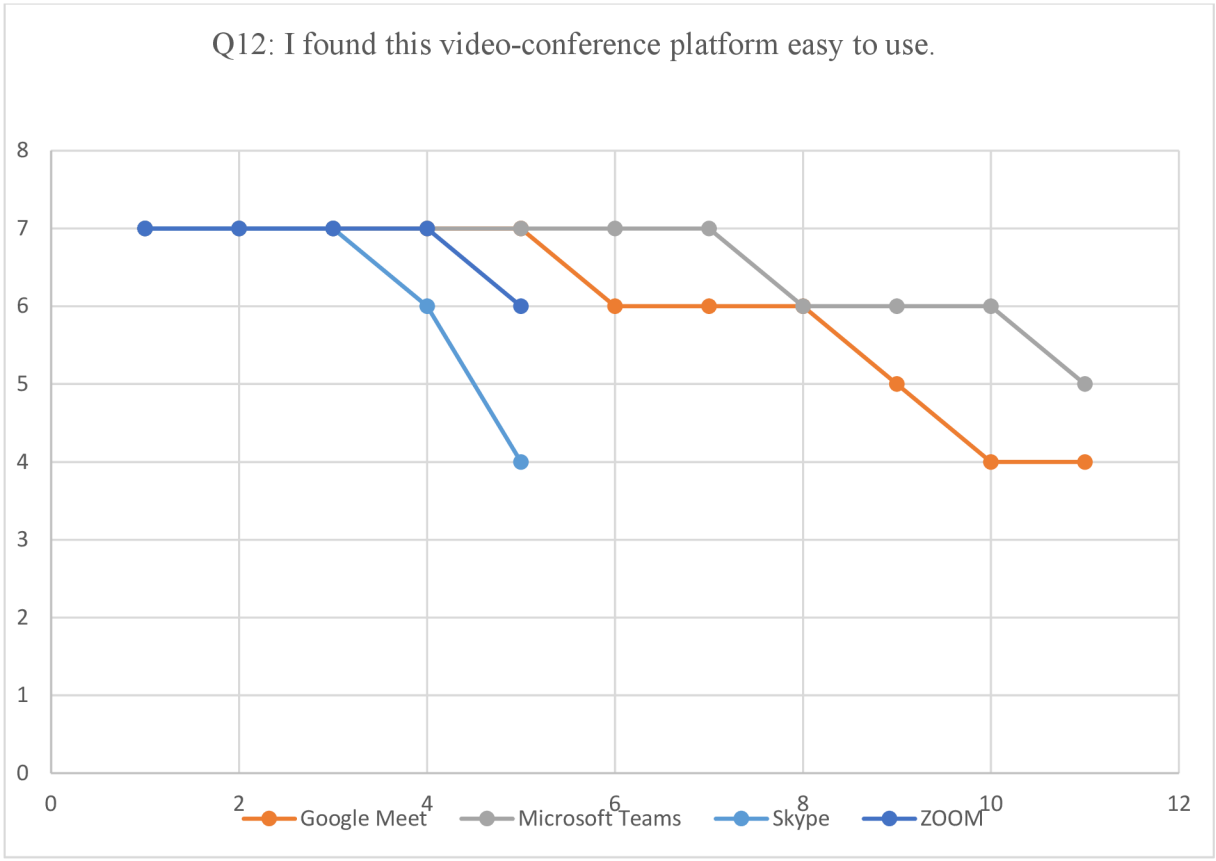

Diagram 12: Graph - Q12: I found this video-conference platform easy to use

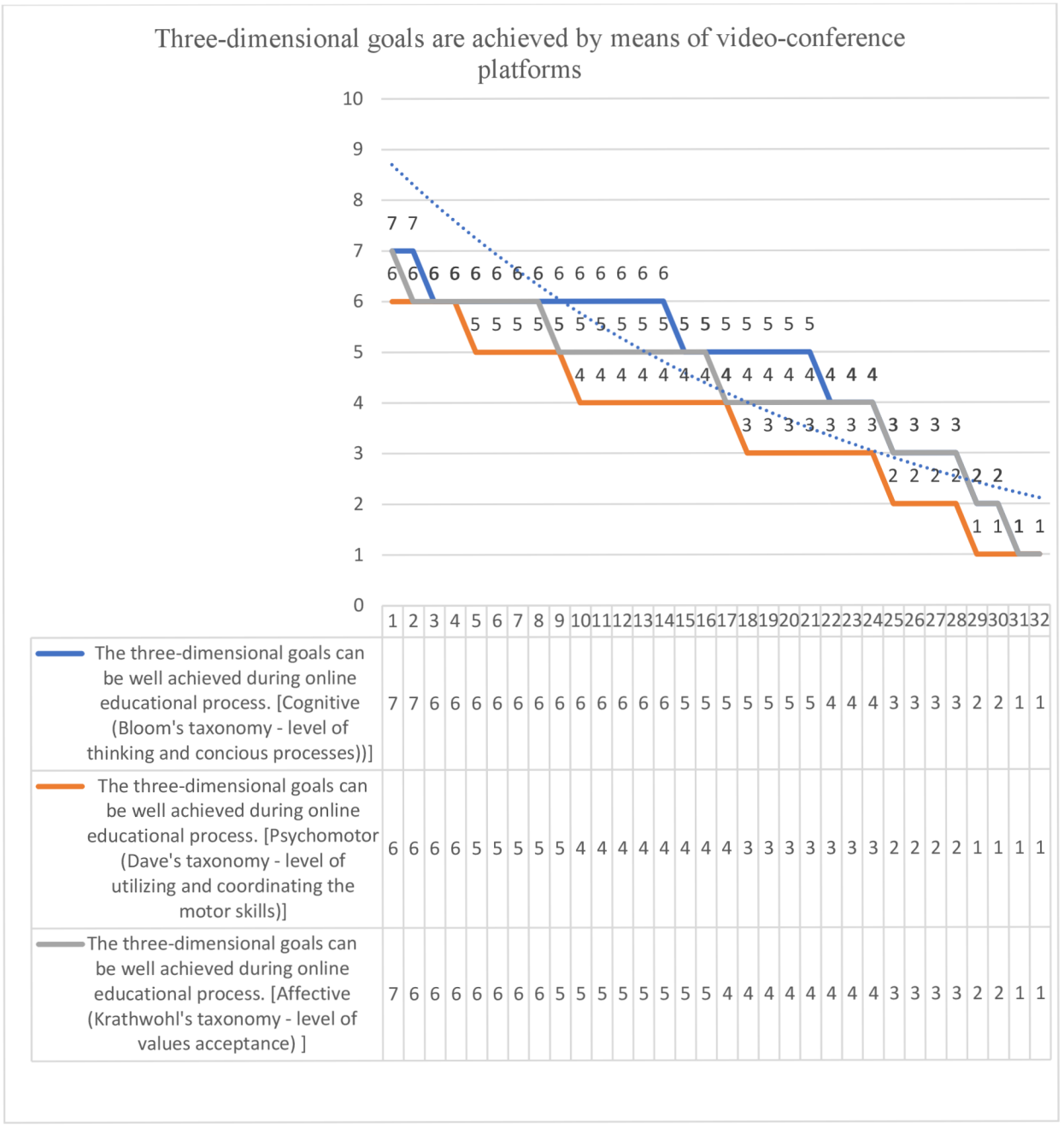

Diagram 13: Three-dimensional goals - Graph and table of value

Appendix 3: Referenced tables

Table 30: ESL skills - detailed values

	Students' objectives were accomplished in all the skills. [Speaking]	Students' objectives were accomplished in all the skills. [Listening]	Students' objectives were accomplished in all the skills. [Reading]	Students' objectives were accomplished in all the skills. [Writing]
Google Meet	7	6	7	7
	7	6	6	6
	5	6	6	5
	5	6	6	5
	5	5	5	5
	5	5	5	5
	3	5	5	5
	3	5	5	4
	2	4	5	4
	2	2	3	3
	2	1	2	2
Microsoft Teams	7	7	6	6
	6	6	6	6
	6	6	6	6
	6	6	6	5
	6	6	6	5
	6	6	5	5
	5	5	5	4
	5	5	5	4
	4	5	4	3
	4	5	4	3
	2	4	3	3
Skype	7	7	7	7
	7	7	7	7

	7	6	6	5
	6	6	5	5
	4	4	4	4
Zoom	7	7	7	5
	5	6	5	5
	5	4	4	4
	4	4	4	3
	3	3	3	1
Mean value:	4,9375	5,1875	5,09375	4,59375
Deviation score	1,664380152	1,401324258	1,279096834	1,411002275
Median	5	5,5	5	5
Total Mean value:		4,953125		
Total Deviation score:		1,446469364		
Total Median:		5		

Appendix 4: Questionnaire

How well can the video-conference platforms fulfill the educational goals at lower secondary schools?

Dear teachers,

thank you for your participation in this research to reveal how well the available video-platforms fulfill the educational goals. The first part is dedicated to usefullness and easy of use of the products themselves with standardized questions using the "TAM" methodology. The second part of the questionnaire is dedicated more to the methodology of EFL lessons how well they can be implemented using the selected video-conference platform.

This research is going to serve as a basis for my diploma thesis only.

*Required

1. What video-conference platforms have you tried in your educational carrier? *

   Please write all vide-conference platforms you have used for online education.

   Tick all that apply.

   - [ ] Zoom
   - [ ] Microsoft teams
   - [ ] Google meet
   - [ ] Skype
   - [ ] Other: _____

2. What video-conference platform do/did you use for online education and is the subject to further evaluation? *

   Please choose the online-video conference platform you have the most experience with/you liked the most.

   Tick all that apply.

   - [ ] Zoom
   - [ ] Microsoft teams
   - [ ] Google meet
   - [ ] Skype
   - [ ] Other: _____

3. 1. Using the video-conference platform in my job enabled me to accomplish tasks more quickly. *

Applications/features/tools integrated with the online video-conference are sufficient to provide motivating lessons.
Motivating lesson = a lesson with variation of activities that are fun for student and fulfill the set goals. Applications/features/tools integrated with the online video-conference platform = tools provided by the video-conference platform.

Mark only one oval.

Extremely disagree

1 ◯

2 ◯

3 ◯

4 ◯

5 ◯

6 ◯

7 ◯

Extremely agree

4. 2. Using the selected video-conference platform improves my job performance. *

I am succesful in reaching the set educational goals.

Mark only one oval.

Extremely disagree

1 ◯

2 ◯

3 ◯

4 ◯

5 ◯

6 ◯

7 ◯

Extremely agree

5. 3. Using the video-conference platform increases my productivity. *

The set educational goals are reached faster with use of this video-conference platform.

Mark only one oval.

Extremely disagree

1 ◯

2 ◯

3 ◯

4 ◯

5 ◯

6 ◯

7 ◯

Extremely agree

6. 4. Using this video-conference platform enhances my effectivity on the job. *

The implemented features (for example option to share the screen, incorporated storage, break-out rooms) help me to reach the set educational goals more effectively.

Mark only one oval.

Extremely disagree

1
2
3
4
5
6
7

Extremely agree

7. 5. Using this video-conference platform makes it easier to do my job. *

The implemented features (for example option for scheduling the lessons, forms for polling, option for waiting rooms) make it easier to do my job.

Mark only one oval.

Extremely disagree

1 ◯

2 ◯

3 ◯

4 ◯

5 ◯

6 ◯

7 ◯

Extremely agree

8. 6. I found this video-conference platform useful in my job. *

Mark only one oval.

Extremely disagree

1
2
3
4
5
6
7

Extremely agree

9. 7. Learning to operate this video-conference platform was easy for me. *

Is the video-conference platform intuitive = extremely agree, or did you have to read instructions for use, or attend a training.

Mark only one oval.

Extremely disagree

1 ◯

2 ◯

3 ◯

4 ◯

5 ◯

6 ◯

7 ◯

Extremely agreer

10. 8. I found it easy to get this video-conference platform to do what I want. *

There were no issues with any features, sound, connection = extremely agree.

Mark only one oval.

Extremely disagree

1
2
3
4
5
6
7

Extremely agree

11. 9. My interaction with the video-conference platform was clear and understandable. *

Using the platform, I always knew what to do and how to use it together with other applications when needed.

Mark only one oval.

Extremely disagree

1 ◯

2 ◯

3 ◯

4 ◯

5 ◯

6 ◯

7 ◯

Extremely agree

12. 10. I found this video-conference platform to be flexible to interact with. *

Mark only one oval.

Extremely disagree

1 ◯

2 ◯

3 ◯

4 ◯

5 ◯

6 ◯

7 ◯

Extremely agree

13. 11. It was easy for me to become skilful in using this platform. *

Mark only one oval.

Extremely disagree

1 ◯

2 ◯

3 ◯

4 ◯

5 ◯

6 ◯

7 ◯

Extremely agree

14. 12. I found this video-conference platform easy to use. *

Mark only one oval.

Extremely disagree

1
2
3
4
5
6
7

Extremely agree

15. What features/applications/tools integrated with the online video-conference platform were essential for your work? (optional)

features/applications/tools = all tools used for education (for example, screen sharing, breat-out rooms, waiting rooms). Name all (or the most used ones) you can/could not imagine the education without.

16. Did you experience any problems with your online video-conference platform? (optional)

Problems may include problem with connection, sound sharing, etc.

17. Many additional applications/features/tools have to be used to provide motivating lessons. *

Additional applications/features/tools = tools which are not part of the video-conference platform (for example Kahoot! Wordwall, Quizziz, Bamboozle, etc.)

Mark only one oval.

	Extremely disagree
1	
2	
3	
4	
5	
6	
7	
	Extremely agree

18. The range of additional applications/features/tools for online education is wide enough to prepare motivating lessons full of different activities. *

Mark only one oval.

Exremely disagree

1
2
3
4
5
6
7

Extremely agree

19. Can you name some of your favourite applications and what skill they were intended for? (optional)

20. My online lessons accomplished all objectives to the same level as on-ground lessons. *

Mark only one oval.

Extremely disagree

1 ◯

2 ◯

3 ◯

4 ◯

5 ◯

6 ◯

7 ◯

Extremely agree

21. Students' objectives were accomplished in all the skills. *

Tick all that apply.

	Extremely disagree	Disagree	Somewhat disagree	Neither agree or disagree	Somewhat agree	Agree	Extremely agree
Speaking	☐	☐	☐	☐	☐	☐	☐
Listening	☐	☐	☐	☐	☐	☐	☐
Reading	☐	☐	☐	☐	☐	☐	☐
Writing	☐	☐	☐	☐	☐	☐	☐

22. The three-dimensional goals can be well achieved during online educational process. *

Tick all that apply.

	Extremely disagree	Disagree	Somewhat disagree	Neither agree or disagree	Somewhat agree	Agree	Extrem agre
Cognitive (Bloom's taxonomy - level of thinking and concious processes))	☐	☐	☐	☐	☐	☐	☐
Psychomotor (Dave's taxonomy - level of utilizing and coordinating the motor skills)	☐	☐	☐	☐	☐	☐	☐
Affective (Krathwohl's taxonomy - level of values acceptance)	☐	☐	☐	☐	☐	☐	☐

23. The level of quality of my lessons would be the same if I used different video-conference platform. *

Mark only one oval.

Extremely disagree

1 ◯

2 ◯

3 ◯

4 ◯

5 ◯

6 ◯

7 ◯

Extremely agree

Appendix 5: Links to the interviews

https://drive.google.com/drive/folders/1fwXAaQ3FwbnccrAM1iPmvei4bSr190dn

Resumé

Diplomová práce se zabývala video-konferenčními platformami použitými pro vzdělávání na 2. stupni základních škol. Výzkum se specializoval na vzdělávání anglického jazyka v českých školách.

Teoretická část blíže popisuje principy vzdělávacího procesu, role učitele a žáka, tvorbu vzdělávacího programu. Především se soustředí na specifikaci a potřebu nastavení cílů ve vzdělávání, a způsob dosažení v klasickém vzdělávání. Druhá část teorie se zabývá video-konferenčními platformami, a požadavky, které musely splňovat ve vzdělávání – bezpečnost, dostupnost a použitelnost. Použitelnost byla dále předmětem praktické části.

Průzkum pomocí semi-strukturovaného dotazníku zjišťoval informace od učitelů anglického jazyka. Dotazník obsahoval kvantitativní otázky hodnocené pomocí 7 stupňů Likertovy škály a několik kvalitativních dotazů. Dotazník byl také použit pro rozhovory s učiteli anglického jazyka. Všechna data byla následně analyzována pro zjištění statistických rozdílů mezi video-konferenčními platformami a jejich schopností pro naplnění stanovených cílů ve vzdělávání.

Annotation

Jméno a příjmení:	Bc. Petra Cihlářová
Katedra:	Katedra anglického jazyka
Vedoucí práce:	Mgr. Ondřej Duda
Rok Obhajoby	2023

Název práce:	Video-konferenční platformy jako nástroj pro online vzdělávání na 2. stupni základní školy
Název v angličtině:	Video-conference platforms as a tool for online teaching at lower secondary school
Anotace práce:	Diplomová práce se zabývá analýzou čtyř nejpoužívanějších video-konferenčních platforem a jejich možností naplnění cílů ve vzdělávání, konkrétně výuce anglického jazyka na druhém stupni základních škol v České republice. Teoretická část popisuje principy vzdělávacího procesu a nastavení cílů v klasickém vzdělávání a průzkumem dat video-konferenčních platformách. Praktická část pak blíže zkoumá schopnost naplnění vzdělávacích cílů ve výuce anglického jazyka a srovnání jednotlivých platforem.
Klíčová slova:	Učitelé, žáci, druhý stupeň základních škol, online video-konferenční platforma, online vzdělávání, vzdělávací cíle, použitelnost, ESL dovednosti, ESL cíle
Anotace v angličtině:	The diploma thesis focuses on analysing the four mainly used video-conference platforms and their ability to fulfil the educational goals, specifically in English language teaching at lower secondary schools in the Czech Republic. The theoretical part describes learning process principles and setting the educational goals in the traditional education and video-conference platforms data research. The practical part then researches the achievement ability of the educational goals in the English language teaching and comparison of the selected platforms.
Klíčová slova v angličtině:	Teachers, pupils, lower secondary schools, online video-conference platform, online education, educational goals, usability, ESL skills, ESL goals
Rozsah práce:	124 stran
Jazyk práce:	Anglický