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INSTRUCTIONAL DESIGN APPROACH TO THE CREATION OF EDUCATIONAL MATERIALS

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ABSTRACT

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The thesis, carried out at Oulu University of Applied Sciences, describes the influence of instructional design on the creation of successful educational films. It explores how the arrangement and display of multimedia components in educational materials impact the cognitive functions and educational achievements of learners. The author contributed to a Latvian government initiative aimed at developing instructional materials presented on the platform www.tavaklase.lv. The study evaluates the educational and cognitive effects of produced films using a diary-based technique and a theoretical framework.

The theoretical framework incorporates contributions from the fields of behaviourism, cognitive theory, and experiential learning. This analysis examines these theories within the framework of multimedia learning, providing a comprehension of how they influence the development of instructional materials. Cognitive theory of multimedia learning, which functions as the foundation for assessing how learners comprehend audio-visual elements, is central to this project.

The study discovered that educational films enhanced by basic learning principles had a substantial impact on learners' cognitive processes and results. Effective instructional design entails integrating verbal and nonverbal components, promoting active cognitive engagement.

The thesis proposes that educators may improve the efficiency of instructional films by concentrating on components such as cognitive load management, student engagement, and the optimum design and presentation of multimedia features. These ideas are essential for creating multimedia learning resources in educational settings.

Key words: instructional design, educational videos, multimedia learning

CONTENTS

1 INTRODUCTION

Online video has significantly grown as a platform since its creation for entertainment purposes. Its instructional potential was immediately acknowledged, leading to a significant number of users now frequenting video-sharing platforms like YouTube and TikTok to access instructive material. Independent artists and educational organisations teach a wide range of disciplines and freely share their instructional resources for public learning. (Wojcicki, 2018.) However, the effectiveness of technology in using instructional video content will rely on whether it aligns with the human cognitive learning process. Furthermore, successful e-learning instructional materials should include instructional methods that are connected to multimedia learning, which aid rather than obstruct the human learning process. (Clark & Mayer, 2011.)

Educational videos have acquired significant importance not only in basic education, but also in higher education, especially, in online, blended, and flipped classes, where they serve as an essential medium for delivering content. It is suggested that instructors can ameliorate the effectiveness of videos as an educational tool by focusing on three major elements, such as managing cognitive load, enhancing student engagement, and promoting active learning. (Brame, 2016.) Utilising various forms of information presentation, including verbal and nonverbal, in instructional material has been proven to enhance learners' comprehension, memory, and application of knowledge (Clark & Paivo, 1991.)

The optimal design and presentation of multimedia features in instructional materials continue to provide a problem, and there are still uncertainties concerning how to effectively utilise multimedia learning to enhance learning outcomes. This thesis aims to investigate how the design and presentation of multimedia elements in instructional materials impact learners' cognitive processes and learning outcomes. It also seeks to explore how instructional designers and educators can enhance the use of multimedia elements to improve learning effectiveness. Additionally, it aims to offer insights and ideas to enhance the design and implementation of multimedia learning in various educational and training settings.

When getting a chance to participate in the Latvian government’s proposed project to create educational materials to support educators and pupils in the time of COVID pandemic, which resulted in online education, the author of thesis took part in producing such instructional materials.

Therefore, the exploration of whether educational material that is based on an understanding of learning theories is more efficient than video material that has not been created based on any research is highly topical.

Research questions:

- How does the design and presentation of multimedia elements in instructional materials affect learners' cognitive processes and learning outcomes?
- How can educators optimise the use of multimedia elements to promote effective learning?

The thesis delves into the significance of instructional films and their design. The author describes the created videos via a diary-based approach, backed by a theoretical framework. The current study aims to explore the intricacies of producing instructional films and communicate their alignment with established pedagogical concepts. The thesis outlines the decision-making process and factors necessary for developing high-quality instructional content using a diary-style format. The impact on learners is studied via student feedback that is gained from qualitative research.

2 DESCRIPTION OF THE CURRENT STATE AND THEORETICAL FRAMEWORK

In this section, an account of the current state is provided. Initially, the employer's company and work environment are introduced. Next, the various stakeholders associated with the company are outlined, along with a delineation of their respective interests. Moving on, a description is given regarding the competence requirements relevant to both the organisation and the author's assigned tasks. Additionally, the author's present stage of professional development is explained, and specific development needs are identified. Lastly, the chosen topic is expounded upon, accompanied by an explanation of the selected theoretical framework that underlies the discussion.

2.1 Introducing the employer's company and work environment

Tavaklase.lv serves as an educational platform tailored for both educators and students. This online resource offers a comprehensive collection of instructional videos covering fundamental subjects in primary and secondary education, including coursework in minority languages, spanning grades 1 through 9. The diverse content encompasses seven subject areas, encompassing over 1,000 topics, and is meticulously crafted by experts and practicing teachers from across Latvia. (Tava Klase, n.d.)

An initiative spearheaded by the Ministry of Education and Sciene, Tavaklase.lv is powered by the collaborative efforts of the National Centre for Education of the Republic of Latvia, operating under the European Social Fund (ESF) project named 'Competence Approach in Curriculum' (School2030). The project began during the COVID-19 pandemic, and educational films were continuously produced until spring 2023 to cover all the educational objectives mentioned in the syllabus of the Latvian state. (Tava Klase, n.d.)

Tavaklase.lv aims to construct a robust, contemporary, and easily comprehensible repository of educational videos. Developed in collaboration with practitioners and industry specialists, these videos serve as valuable tools for educators and students throughout the learning process. Educators use these resources to introduce topics, engage students with the study material, reinforce information, demonstrate skills, and enhance overall awareness. Students can also utilise

these videos as supplementary resources for in-depth understanding, exam preparation, and reinforcement of subject matter. (Tava Klase, n.d.)

The flexibility of Tavaklase.lv, allowing online streaming and offline downloading, facilitates seamless integration into educators' practices. This adaptability aligns with the vision of cultivating a modern, digitally enriched, and engaging learning environment tailored to the needs of contemporary students.

Initially conceived to support distance learning in 2020 during the COVID recogniz-19 pandemic, Tavaklase.lv quickly evolved into a prominent educational solution. In response to the Ministry of Education and Culture's proposal and the initiative by Parents for Better Education, the government allocated €365,208 on March 31, 2020, for the creation and broadcast of original audio-visual content across free-to-air television platforms and websites. (Tava Klase, n.d.)

Recognized by the Organization for Economic Cooperation and Development (OECD) for its excellence in providing education during the pandemic, Tavaklase.lv garnered global attention. On its first day, the platform's educational content reached viewers in 50 countries, with over 50,000 unique visitors to the website. (Tava Klase, n.d.)

2.2 Company's stakeholders and their interests

The objective of the initiative known as the "Competence Approach to Curriculum" (School2030), which oversees the creation of the TavaKlase project, led by the Ministry National Centre for Education Republic of Latvia, is to systematically formulate, endorse, and progressively implement comprehensive content and pedagogical strategies for general education in Latvia. This endeavour aims to equip students, spanning from early childhood through high school, with the knowledge, contemporary skills, and positive attitudes essential for navigating the demands of 21st century life. (Tava Klase, n.d.)

Stakeholders in an educational initiative Skola2030 include a range of individuals, organizations, and entities involved or affected by the project:

1. **Government and Educational Authorities:** The Ministry of Education and Science of the Republic of Latvia and National Centre for Education of the Republic of Latvia.

2. **Educational Institutions:** Schools and pre-schools.
3. **Teachers and Educational Staff:** Those directly involved in implementing and delivering educational programs and content.
4. **Students and Parents:** Students who are the direct beneficiaries of the educational initiatives and their parents or guardians.
5. **Media and Public:** The wider public, including media outlets, that may influence or be influenced by the project. (Tava Klase, n.d.)

The most important stakeholders are the teachers – to cater to their needs, therefore, creating valuable educational materials for teachers to incorporate them and use in the lessons (Tava Klase, n.d.).

2.3 Author's task, competence requirements, author's stage of professional development and development needs

The educational videos that were created are related to the acquisition of English Language. Author's task during the filming of the following 5 educational materials for TavaKlase was to:

- Analyse the educational curriculum and learning approach that is proposed by the Ministry of Education and Science of the Republic of Latvia.
- Select and outline curriculum goals for the videos that will be produced.
- Based on the guidelines create scenarios (including visual and additional audio components) for educational videos.
- Film the videos.

It's vital to highlight that the level of professional expertise and corresponding developmental needs are key in meeting the essential skills and competencies for effective involvement with Skola2030. As a state-run entity, Skola2030 requires a deep grasp of the educational field, demanding that individuals have an educational qualification, a requirement that the author meets. In addition, hands-on experience in educational environments is a prerequisite and is crucial for successfully managing the expectations of educators, which in turn enhances the author's confidence when producing educational videos. Adhering to the Skola2030 team's established policies and frameworks is essential when devising scenarios and shooting educational content. These teaching videos are created within the structure of Gagne's instructional events (1965), underscoring the importance of sticking to this specified method throughout the video-making process.

The bilingual English - Latvian videos cover topics of:

- Present Simple versus Present Perfect (Video I)
- Passive Voice (Video II)
- Compound Nouns (Video II)
- The use of dictionary (Video IV)
- Comparison of different Languages (Video V)

2.4 Describing the chosen topic and relevant theoretical background

In response to the COVID-19 pandemic and the subsequent surge in demand for online educational resources, the author was motivated to enhance their lesson creation capabilities by planning video scenarios and engaging in the filming process. By dedicating time to the TavaKlase initiative, the author has made a significant impact in the realm of Latvian education.

Although the video format is a useful tool, understanding that people are visual and observational learners does not necessarily mean that merely showing or watching a video will result in the most impactful educational delivery. Efficient e-learning material can be considered such when it helps to develop conceptual thinking, problem-solving expertise, and reflection. (Burns & Koskinen, 2020.) Furthermore, the results of e-learning are often unclear or stagnant if not substantiated by clear evidence. One of the principles of creating educational content and choosing media for educational purposes is to ensure that it supports cognitive learning. (Mayer, 2005.)

2.4.1 Processes and principles of learning

When thinking about the learning process as such, authors Clark and Mayer (2011) detect that the view of knowledge construction consists of three principles (in cognitive science). The knowledge construction view is based on three principles from research in cognitive science:

- Dual channels: Individuals have distinct channels for handling information that is presented visually or in the form of pictures and for information that is presented verbally or through sound.
- Limited capacity: people can manage and work on only limited parts of given information in individual channels at once.

- Active processing— Learning happens when individuals participate in suitable cognitive activities while learning, such as focusing on pertinent information, arranging the information into a logical framework, and merging it with their existing knowledge. (Clark & Mayer, 2011.)

Figure 1 illustrates the learning process of learners using multimedia classes. The concept of dual channel is illustrated through two rows, with the top row depicting text processing and the bottom row depicting picture processing. The working memory box illustrates the concept of limited capacity by displaying the composition of information. The active processing notion is illustrated by five arrows. When a student concentrates on verbal and visual material in a lecture or presentation, examines it critically, this process initiates the construction of long-term memory. Integrating existing knowledge with new information leads to the reappearance of previous learnings and a personal comprehension of the most recent content given. (Clark & Mayer, 2011.)

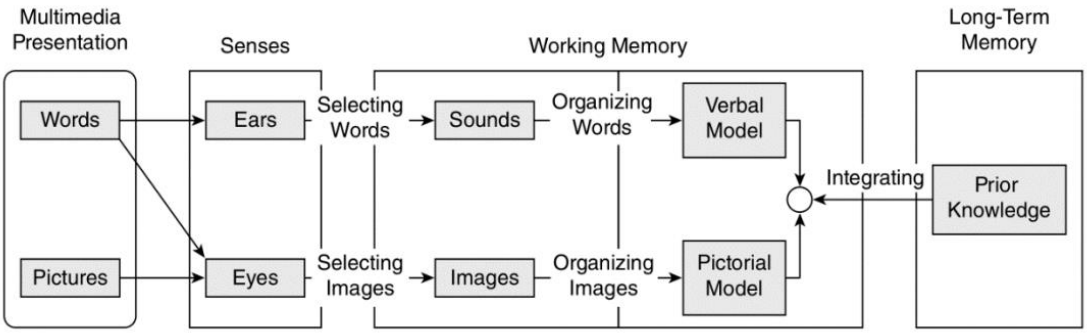

Figure 1: Cognitive Theory of Multimedia Learning (Clark & Mayer, 2011)

The author Gagne (1965) has detected nine instructional events that promote effective learning. It can be seen in Figure 2.

Figure 2: Gagne's Nine Events of Instruction (1965)

Gagne's learning ideas are beneficial for developing instructive videos. The principles detail a series of steps that enhance efficient learning, such as capturing attention, informing learners of objectives, triggering recall of previous knowledge, introducing new material, offering guidance, prompting performance, giving feedback, and evaluating learning outcomes. When making educational videos, it is important to engage learners early, clarify learning goals, activate existing knowledge, break down complex concepts, provide clear instructions, encourage practice, offer feedback, and evaluate progress. Educators may improve the impact of instructional films and encourage better learning outcomes for students by implementing these concepts.

The upcoming chapters explore the foundational theories of learning, each contributing uniquely to our understanding of the acquisition and development of knowledge.

2.4.1.1 Cognitive theory

Schunk (2012) describes cognitive learning theory as focusing on the "mental processes involved in learning, such as perception, attention, memory, and problem solving" (p. 157). He notes that cognitive theory posits that learners construct knowledge by actively processing information and integrating it with existing knowledge structures or "schemas" (Schunk, 2012).

Schunk highlights the importance of working memory and long-term memory in cognitive learning theory. Working memory is the temporary storage and manipulation of information, while long-term memory is the more permanent storage and retrieval of information. According to cognitive theory,

learners actively process and organize information in working memory, with the goal of transferring it to long-term memory for later use. (Schunk, 2012.)

Schunk also suggests that before new information is stored in a long-term memory (LTM) it must go through encoding process, that suggests three steps:

- **Organization.** It implies that a well-organised material is easier to acquire. Organizing bits of information into meaningful chunks enhances learning and as it is further noted - even when material is not organized, individuals tend to impose structure on it to aid recall. This is because organized material links items systematically, so recalling one item can trigger the recall of other linked items.
- **Elaboration**. Elaboration involves expanding upon new information by connecting it to existing knowledge, which helps with encoding and retrieval by creating a network of interconnected memories. Even if the new information is forgotten, elaborations can often be remembered.
- **Schemas.** These are needed to structure great amount of information into a system. These frameworks allow individuals to interpret and make sense of new information considering their existing knowledge. Schemas can be formed through experience or instruction and can be used to facilitate comprehension, retention, and retrieval of information. (Schunk, 2012.)

When creating educational material, the points mentioned above should be kept in mind to promote the execution of newly gathered information into a long-term memory. The provided material needs to be offered in a way to further expedite it into schemas, connecting it to existing knowledge of the viewer (by offering different scenarios) and not forgetting to structure the latest given information into purposeful portions.

A Dual Coding Theory (DCT) is also a part of cognitive theory that explains how the brain processes and represents information. Specifically, it suggests that the brain can process information in two distinct formats: visual and verbal. According to DCT, when people learn new information, they encode it into both visual and verbal codes simultaneously, which enhances their memory and understanding of the material. (Clark & Paivo, 1991.)

Clark and Mayer (2011) emphasise the importance of cognitive theory in the creation of educational videos. They recommend that e-learning courses should include both words and graphics, based

on cognitive theory and research. "Words" refers to written text shown on a screen or spoken text given through headphones or speakers. The term "Graphics" includes static pictures like drawings, charts, graphs, maps, and photographs, as well as dynamic graphics like animations and movies. The cognitive learning is being enhanced by including these audio and visual resources. (Clark and Mayer, 2011.)

In addition, Cognitive learning theory has important implications for multimedia learning, which utilises several modalities such text, graphics, animation, video, and audio to convey information to learners. One of the studies that is based on the cognitive multimedia theory, suggests that presenting visual and audible content together can improve the retention of information and enhance the quality of children's arithmetic learning outcomes. (Al-Zahrani, Mustafa & Al-Hamadi, 2010.)

2.4.1.2 Behaviourism

Such theory as Behaviourism must be mentioned as a fundamental when describing learning theories. Behaviourism mainly describes visible features of human behaviour. It accentuates variations in behaviour which result from stimulus-response correlation made by the trainee. Importantly, the reward and punishment system that Behaviourism suggests offers the idea that desired behaviour can be rewarded and unwanted – punished. The profit that the learner might get can be differed, but in any case, must be important to learner. For instance, if teacher wishes for the class to behave during the lesson, one of the rewards that student might get is running an errand or offered to go to the library. It needs to be added that the stimulus for each student is different, therefore the accomplishment might differ, as with all teaching methods. (Parkay & Hass, 2000.)

To gain the effectiveness of the positively given response, Pavlov's research shows, that if brain is to be conditioned to provide responses caused by stimuli, then brain can connect stimuli to learn new responses (Houser, 1997). When looking for effectiveness of behaviourism^ theory and its relation to learning outcomes, conducted study by Rosenshine and Stevens (1986) also found that behaviourist teaching techniques, such as direct instruction and feedback, were effective in improving learning outcomes in a variety of academic subjects.

Behaviourism concepts may be included in educational videos by incorporating an inventive points system or other sorts of rewards for the viewer. Behaviourism highlights the importance of repetition in learning. Therefore, these movies should include activities that promote the repeated practice of particular behaviours. Moreover, instructional videos are a potent tool for imparting new skills and knowledge. They may dissect intricate activities into smaller, digestible parts, offer instant feedback and incentives, and encourage constant repetition and practice, all of which enhance a structured and effective learning process.

2.4.1.3 Experiential Learning Theory

Mainly, Experimental Learning is known as *process of learning from experience*. Dewey described it as "learning by doing", noting the active engagement of the process. Whereas Wolfe and Byrne explained it as "experience-based learning". (as cited in Gentry, 1990.)

Based on Kolb's work where he describes Lewinian Experiential Learning Model (as shown in Figure 3), learning is conceived as four stage cycle, where the ground for reflexion and observation is the concrete experience. Furthermore, these observations are gathered into a *theory* which serves as a basis for new connotation that leads to an action. The implications or hypotheses can be used as a framework for taking action to generate fresh experiences. (Kolb, 2014.)

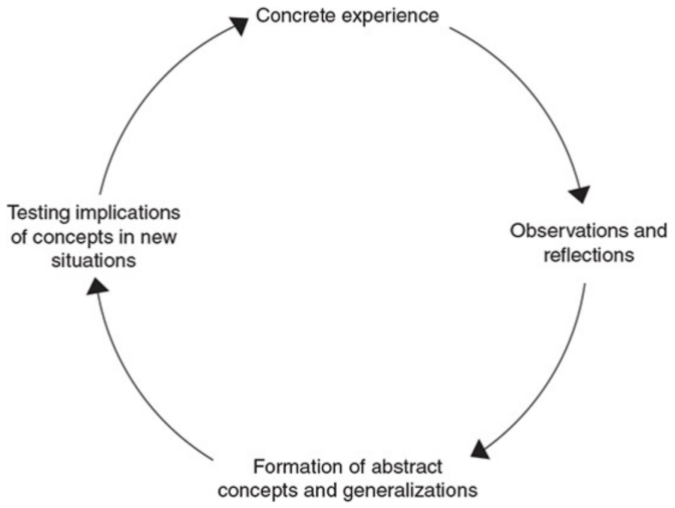

Figure 3: The Lewinian Experiential Learning Model (Kolob, 2014)

Therefore, when proceeding with learning process the newly offered information can be taught starting with the desired result or the outcome, then asked and investigated its formulation leading to an understanding of how it is formed, for instance, in demonstrating pupils a sentence that was

created using Present Perfect during English Language Lesson. To recognise the grammar structure, teacher might offer to recognise each part of the sentence and write down the formula, understanding the order or the words and the forms of the auxiliary and main verbs that are used to create such sentence.

Authors Wolfe and Byrne suggest that Learning process is best expedited in case four components that are shown in figure 4 (Gentry, 1990).

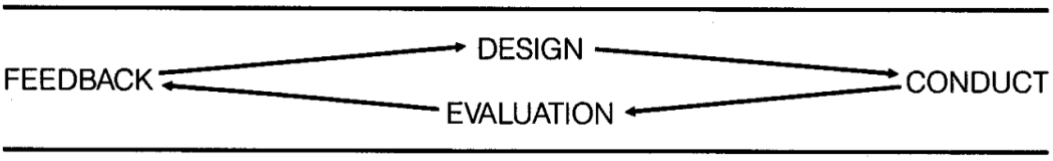

Figure 4: Process-Oriented Version of the Wolfe and Byrne Model (Gentry, 1990)

Gentry (1990) elaborates on the following components:

Design. This stage includes initial steps that an instructor is taking to prepare for the learning experience. This phase is described as one which includes learning objectives as well as selection of activities for students, the potential criteria that might affect learning process, and lastly the appliance scheme.

Conduct. Stage of conduct includes controlling of the design. Timetable of the planned experience might be created in the design phase, whereas this, conduct stage, includes possible changes of the timetable, taking care of activities to carry out positive outcome of this phase. The whole process must be monitored and well carried out and structured.

Evaluation. The instructor executed the learning experience that should be provided regularly. Also, authors mention that learners should get a chance to evaluate the learning process itself, in addition demonstrate newly gained knowledge.

Feedback. It is suggested that this should be a continuous process and must be carried out from the very start of the experience until debriefing. Importantly, learners must feel the chance to fail and learn from the mistakes.

All in all, Experimental Learning theory focuses on the process of learning to provide a holistic experience for learners and facilitate the process as well as improve academic performance. (Leal-Rodríguez & Albort-Morant, 2017.)

When transforming cognitive theories into practical learning resources such as instructional films, adhering to fundamental learning principles is crucial. Optimal video content integrates visuals and audio in a harmonious manner to prevent learner confusion. To ensure effective retention, it is crucial to deliver information simply and concisely, considering the limitations of human cognitive capacity. Effective educational movies not only provide information but also push learners to link new concepts with their existing knowledge. The next part will explore the application of these learning principles in creating multimedia instructional products to enhance learning effectiveness.

2.4.2 Multimedia learning

The conventional definition of instruction refers to the process of conveying information from a sender to a receiver through a medium that can transmit the message. The receiver then uses their senses to understand the message. Medium of instructor is something that had to undergo through a big change, since before media the most common medium for instruction was the human voice supported by gestures. (Dijkstra, Jonassen & Sembill, 2001.)

The authors Seel and Winn in the end of 20th century observed the shift of the role of the medium and noticed that now the given instruction can be supported by pictures, sounds or other visual representations and not just the person directly talking to the public (Seel, Winn, 1997).

Multimedia as a term has been used to describe methods and learning materials that utilise different senses of learner and not just one, which refers to use of the computer to deliver interactive and multisensory messages to learners. With advancements in technology, the ability to provide multimedia has improved, resulting in more sophisticated courseware that includes lifelike graphics, audio, colour, animation, and intricate simulations. (Dijkstra, Jonassen & Sembill, 2001; Clark & Mayer, 2011.)

Moreover, it is suggested that instructors and instructional designers must incorporate gaming elements into educational settings to accommodate diverse learning styles. One of the benefits of

gamification as an instruction tool, (that is based on scenario-based learning) is that it proves great results in self-paced learning. (McGrath & Bayerlein, 2013.)

Clark & Mayer (2011) as shown in Figure 5 also support the idea that Multimedia incorporates words (spoken or as an audio format) and pictures (or videos) that then are received by senses – hearing and sight.

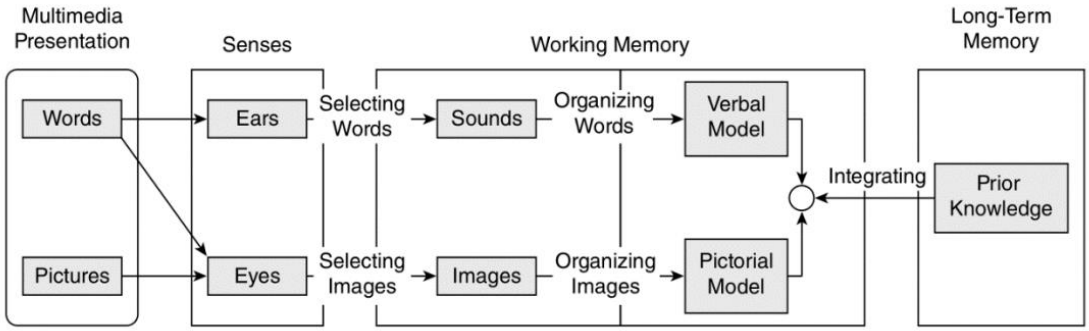

Figure 5: Cognitive Theory of Multimedia Learning (Clark & Mayer, 2011)

When exploring the topic of multimedia learning a question about whether the multimedia principle is universally applicable to all learners are to be asked. Research suggests that the recommendation to incorporate both words and graphics in educational materials is particularly significant for novice learners, as opposed to expert learners. Mayer and Gallini's (1990) series of experiments, which focused on lessons about brakes, pumps, and generators, found that novices were able to learn better when exposed to both text and illustrations rather than text alone. In contrast, experts learned equally well from both conditions. This suggests that experienced learners can create their own mental images based on the text, while less experienced learners require assistance in relating the text to a useful pictorial representation. (Mayer & Gallini, 1990.)

The study demonstrated that students had a more effective learning experience with multimedia classes using both words and graphics compared to sessions utilising solely words. Students who received instruction using both words and pictures performed 55% to 121% better on problems requiring them to apply their knowledge in new contexts. This finding was uniform in all eleven investigations included. (Clark & Mayer, 2011.)

Kuliyeva's research underscores the significant impact of multimedia in educational environments, specifically emphasising the transition from conventional teaching methods to the incorporation of aural and visual components facilitated by technology. This progression is consistent with the

cognitive paradigm of multimedia learning, which suggests that learners get advantages from training that incorporates both verbal and graphical representations. Significantly, this strategy has demonstrated remarkable advantages for inexperienced learners, offering them essential visual aids that professionals may not require. The results emphasise the need of integrating words and images in instructional design, particularly when developing video resources, to improve learning outcomes and promote the transfer of knowledge. This comprehension acts as a vital connection to the prior conversations on multimedia learning, emphasising the need of instructional films that are both useful and crafted to stimulate various senses to accommodate a wide range of learning preferences. (Kuliyeva, 2018.)

Since one of the multimedia learning tools is educational videos - Liu and Elms (2019) provide the basis of educational videos by explaining the diverse advantages of using videos in education, including increased student involvement, the reduction of intricate ideas, and the encouragement of independent learning. The increased level of involvement is not just focused on attracting attention, but rather on converting the learning process into an interactive experience that deeply connects with pupils, particularly in the field of language acquisition where engagement is crucial for effective understanding and memory retention (Liu and Elms, 2019).

Expanding on advantages of educational videos, the research defines the crucial features of instructional videos, with Clark and Mayer (2011) highlighting the interdependent connection between visual and auditory elements. This combination is an interaction where words, both visually and audibly perceived, match with static and dynamic graphics to create a strong and effective teaching experience. A key strategy is to use a multimodal approach, as demonstrated by Singh et al (2023).

The flexibility provided by instructional films, as highlighted by researchers like Wang (2023), caters to the varied requirements of language learners who get advantages from the ability to regulate the speed of their learning. This control is a fundamental aspect of contemporary education, enabling learners to review and strengthen language concepts. This customisation of the learning experience to suit individual needs enhances the effectiveness of language acquisition. (Wang, 2023.)

According to Goodall and Bovik (2020), incorporating real-world information into educational films enhances the language learning process. Educational films go beyond standard text-based

resources to provide context and story, enhancing the language learning process by making it more relevant and immersive. (Goodall & Bovik, 2020.)

Darshan Singh S. and colleagues (2022) emphasise the significance of utilising both visual and verbal signals in teaching materials. The efficacy of instructional movies, especially in language teaching, depends on the meticulous selection of auditory and visual components that create a favourable learning environment. Using these multimodal tactics, educational films function as both a means of comprehension and a motivator for the practical application of newly acquired language abilities. (Singh et al., 2023).

To summarise, the chapter on educational videos emphasises the profound impact of multimedia on language teaching. Instructional videos have become a powerful tool that engages learners and clarifies intricate language topics. They also facilitate self-paced study and provide a refreshing alternative to standard educational tools. The successful integration of auditory and visual components in these movies is crucial for creating profound cognitive associations and facilitating the incorporation of language into long-term memory. The use of such materials in educational practices emerges as an approach that has the potential to reshape the course of language acquisition for both teachers and learners.

Educational videos are intrinsically linked to instructional design as they are a medium designed to accomplish precise learning objectives, which are the core of instructional design. Instructional design refers to the process of developing educational experiences that enhance the efficiency, effectiveness, and appeal of acquiring information and skills, as described by educational researcher Merrill. (Merrill, 1983.)

2.4.3 Instructional Design

Instructional Design is known to characterise an organised procedure that helps to develop educational curriculums to ameliorate learning (Seel, Lehmann, Blumschein, Podolskiy, 2017). The authors Cennamo and Kalk also mention the idea of Instructional Design as a process consisting of few collaborating elements, that are outcomes, activity, and assessments (Figure 6) (Cennamo & Kalk, 2019).

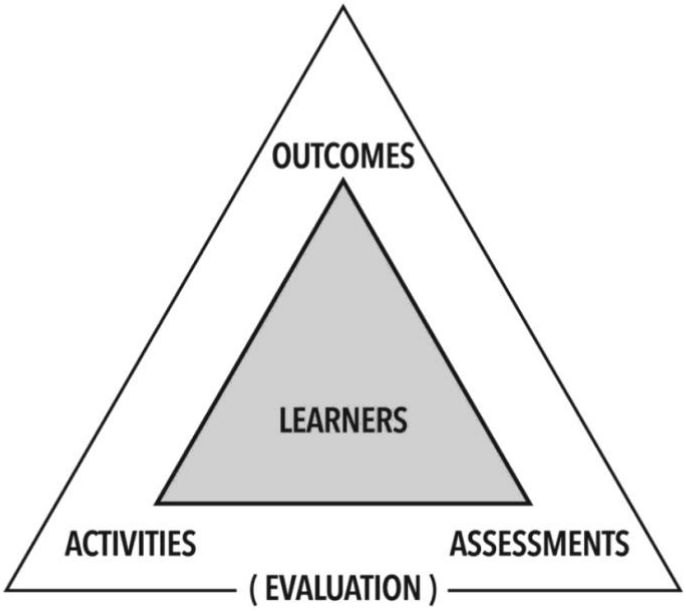

Figure 6: The Essential Triangle of Instructional Design (Cennamo & Kalk, 2019)

Authors Cennamo and Kalk (2019) describe the triangle as a balancing space for three of the elements that are *outcomes, activities,* and *assessments* for the learning experience to be as effective as possible. The three mentioned elements are there to serve as a foundation for the *learner*, and as such, they are being the centrepiece of the triangle. Evaluation, which is thorough and interconnected, is critical for providing feedback. This feedback can be both formal and informal. The purpose of such evaluation is to help identify what adjustments may be necessary to align the learning process with desired outcomes or goals. In essence, evaluation is used to predict and guide necessary changes that enhance learning effectiveness. (Cennamo & Kalk, 2019.)

The adoption of instructional design concepts is crucial when developing educational films to guarantee that the information is both effective and entertaining. The design of instructional films is guided by numerous fundamental concepts, derived from the study conducted by renowned experts in the field.

Robert Mager (1962) emphasised the significance of precise and quantifiable learning objectives that unambiguously delineate the learner's expected abilities following video instruction. The content, organisation, and assessment procedures utilised inside the video should be guided by objectives. (Mager, 1962).

Content organisation refers to the arrangement and structure of information, as discussed by Gagne in (1985). The Nine Events of Instruction, developed by Robert Gagne, offer a systematic structure for organising material in a sequential manner. Educational films should captivate the student's attention, provide explicit goals, trigger the recollection of previous information, deliver the content, offer direction, prompt the learner to demonstrate their understanding, provide feedback, evaluate performance, and improve the retention and application of knowledge.

According to John Sweller's (1988) Cognitive Load Theory, educational films should be constructed in a way that avoids overwhelming the learner's working memory. One may do this by dividing information into segments, utilising visual and aural channels efficiently, and eliminating excessive intricacy (Sweller, 1988).

Richard Mayer's (2009) Principles of Multimedia Learning promote the utilisation of both words and visuals instead of words alone, the consistency of giving only necessary information, and the indication of significant content. To enhance learning, it is important for videos to synchronise on-screen text with relevant images (Mayer, 2009).

Constructive Alignment, developed by John Biggs (1996), highlights the need of aligning learning activities and assessment tasks with the desired learning goals. It is important for educational films to actively include students in activities that facilitate the attainment of desired goals, which should then be evaluated in a suitable manner (Biggs, 1996).

Carol Ann Tomlinson's (2011) research on diversified teaching emphasises the need of catering to the unique requirements of learners by offering several methods for gaining knowledge and showcasing their understanding. It is important for educational films to accommodate various learning styles and skills (Tomlinson, 2011).

Author Roth (1963) has also described central concepts of instructional design. He mentions that learning process as such revolves around *problem solving.* Another point that is described is that learning is present to contribute to behavioural change and learning to ameliorate interest in certain topic (Rots, 1963).

These principles function as a framework for educators and instructional designers to produce educational videos that are both informative and conducive to learning. By following these

principles, instructional films may be created to cater to the varied requirements of learners, guaranteeing that the material is easily understandable, captivating, and impactful.

In conclusion, while considering the merging of instructional design and educational videos, it is important to focus on the fundamental elements of a well organised educational experience, which include desired objectives, engaging activities, and effective evaluations. The components establish a strategic framework for designing instructional films that are specifically tailored to fit the goals and learning objectives of the learners.

During the empirical portion of the thesis, the idea of Gentry's: Process-Oriented Version of the Wolfe and Byrne Model (Gentry, 1990) is going to be used as a basis for describing the educational video creation process.

3 PURPOSE AND OBJECTIVES

In the following chapter the research questions, the purpose of the thesis as well as the learning objectives are looked at. The methodology used for the qualitative research is also described. The objective of the thesis is to identify best practices and guidelines for developing educational videos, in addition to analysing the videos produced by the author and identifying the effects on students when they are given the opportunity to evaluate them. The thesis author's learning goal is to understand the components of efficient educational video, therefore creating such instructional material. Following questions have been created based on the authors learning goals.

The research questions are:

- How does the design and presentation of multimedia elements in instructional materials affect learners' cognitive processes and learning outcomes?
- How can educators optimize the use of multimedia elements to promote effective learning?

3.1 The methodology and time span of the diary

The diary was created based and reported on the framework of Gentry's: Process-Oriented Version of the Wolfe and Byrne Model (Gentry, 1990) and its four components:

Design: A description of the execution of the design and planning process for creating the instructional videos.

Conduct: An explanation of the process involved in creating the videos.

Evaluation: A description of the methodology used to assess the videos' influence on the learning process.

Feedback: Feedback from students was gathered through qualitative research.

There were five educational videos films during the time of February-April 2023. Two videos were filmed in February, one in March and two in April.

3.2 Qualitative Research

The research utilises a qualitative technique as it is considered the most suitable for delving into the core of a phenomenon and understanding the participants' experiences. All study questions are qualitative and attempt to examine and characterise experiences within a context. (Onwuegbuzie & Leech, 2006.) The goal of study is to recognise and explain the common characteristics and distinctions within the specified group (Akerlind, 2005). The interviews were selected using the "purposive maximum variation sampling" approach (McMillan and Schumacher, 2006) to accomplish this objective. This method was used to get diverse perspectives from a limited number of people. Table 1 outlines the differences in relation to the participants' gender and English language comprehension level. All the interviewees are the same age and grade – 8th grade students, age 14.

Table 1. List of interviewees

	Pseudonym	**English Comprehension Level**
1	*Edvins*	*B1*
2	*Anna*	*B1*
3	*Rebecca*	*B2*
4	*Gregory*	*C1*

3.2.1 Data Collection

To describe and evaluate the authors' educational videos, four structured interviews were held. The conversations were carried out online with each of the students separately and took around 30 minutes each. The aim of the interviews is to gain the feedback, which is one of the Gentry's Model's components, (Figure 4), on the educational video materials created.

The open-ended questions (Appendix 2) were asked to retreat qualitative data. Open-ended questions are favoured for their capacity to elicit rich, complex replies that can reveal more about participants' thoughts, feelings, and experiences (Langdridge, 2004). The interviews were conducted in February 2024. A consent form was furnished to the participants, which detailed the

research's objectives and the rights they were to possess as participants. The consent form specified that participants were provided with the choice to decline responding to any inquiries posed throughout the interview. The interviews were conducted virtually and were recorded with the participants' consent. They underwent an automated transcription process facilitated by an integrated transcription feature.

3.2.2 Data Analysis

The interviews were analysed using thematic analysis (TA), which is an appropriate method for investigating perspectives, attitudes, and individual experiences (Braun and Clark, 2012). It is crucial to acknowledge that TA is an iterative procedure wherein the researcher makes necessary back-and-forth movements throughout the different stages of analysis. Consequently, it is advisable to approach the development of this process progressively and not in a hasty manner. (Braun & Clark, 2006.)

In the first phase of thematic analysis, the data is condensed through coding. The procedure commences with a methodical assessment of the transcriptions, followed by the generation of preliminary codes via individual examination of every interview transcription. Later, a comparison was made between these preliminary codes, and recurring codes were merged to identify emerging themes. The organising themes were subsequently further subdivided into global themes that served as a comprehensive summary of the data. To facilitate the investigation and understanding of each overarching theme, a thematic network was constructed for every global theme. (Attride-Stirling, 2001.) A detailed description of this thematic network will be provided in the subsequent chapter on results.

4 DIARY ENTRIES

This chapter includes diary entries that compel four elements: design, conduct, evaluation, and feedback portion. The process of filming educational videos is described. The planning and description well as the analysis of the created material is presented in this part.

4.1 Design

During the Design phase of developing English language acquisition-specific instructional videos, the educational requirements of Latvian eighth and ninth graders were given special consideration, ensuring the age-appropriateness and cognitive accessibility of the instructional content. Videos were created in Latvian and English languages, but some of them incorporated Russian language as well.

The learning objectives connected to these recordings were carefully designed to correspond with the stringent criteria of the national education curriculum in Latvia (General Education Law, 2019). The objectives were formulated with the purpose of increasing linguistic proficiency and cultivating cultural understanding and the practical implementation of the English language across diverse academic and practical environments.

All educational videos were filmed at the premises of RISEBA University of Applied Sciences in Riga. The video editing crew is also made of students at the same university. These educational videos were used by students to learn during real English Lessons and the feedback from students is reported in the section of Feedback.

4.2 Conduct

During the filming process of the educational videos, the author of the thesis planned the video scenarios based on the principles of 9 Gagne's instructional events (1965). Understanding the framework of the videos it meant to start each video with the stage of **Gaining Attention.** For attention grabbing, such sections were used; starting the video with a sound signal, that gains the

attention of the viewer. For instance, Video I starts with two friend phone call talking about the new purchase of a car, adding the elements of pictures of the cars on the screen and audio signals imitating the car (Video I), whereas the following video (Video III) begins with a riddle, "*what do you get combining two words or the visible pictures on the screen? A man and a snow – together create a snowman"* (Figure 7).

Figure 7. TavaKlase video: Gaining attention stage

Another video began with explaining the real-life situation, which According to Goodall and Bovik (2020) is beneficial when acquiring foreign languages. The video begins with a real-life situation, where the presenter is in search for a new car (Video II).

9 Gagne's instructional events (1965) consist of a second segment known as **Informing Learners of the Objective.** As a result, the presenter communicates the purpose of the video to the audience once the attention has been captured and the viewer has become fully engaged in the video. Additionally, the objective should be made apparent via the video (Figure 8).

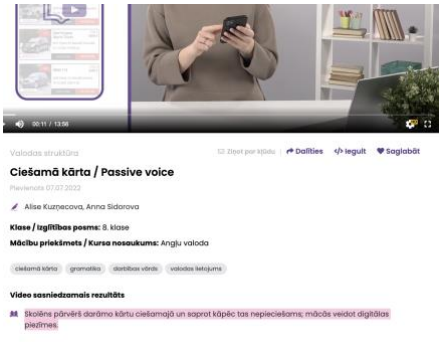

Figure 8. TavaKlase video: Informing Learners of the Objective stage

The third part of Gagne's instructional events (1965) includes **Stimulating Recall of the Prior Learning,** which in general encompasses open-ended questions, offering students to think of their prior experiences. For instance, in Video II (Video II), the presenter asks whether student recognises the same grammar structure in their native language, thus stimulating idea of prior

knowledge. In Video IV (Video IV) two presenters offer pupils to think broader and mention any other compound words that come to their mind after the introduction of the video. Whereas in Video V (Video V) presenter offers to play a game where students' can finish the offered sentences based on their knowledge – they might know the phrase or they must find out the answer before they give it (Figure 9).

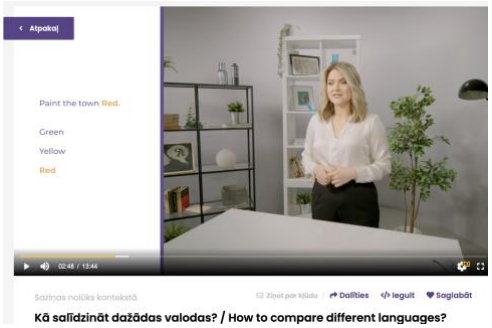

Figure 9. TavaKlase video: Informing Learners of the Objective stage

Presenting the stimulus is the next stage of 9 Gagne's instructional events (1965). To optimise comprehension and retention, the instructional video introduces new information with great attention to detail during this segment. Acknowledging the significance of active participation material is deliberately divided into attainable sections. After every segment, the presenter proceeds to an analysis and strengthen comprehension by providing illustrative examples, thereby facilitating the learner's grasp of the concepts. Such as Video V (Video V) provides visual representations to the presenters explanations of spam emails (Figure 10).

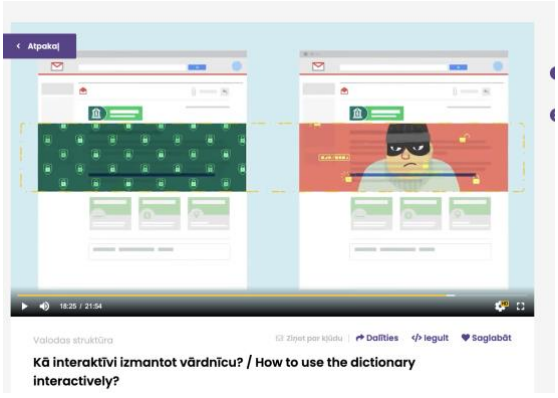

Figure 10. TavaKlase video: Presenting the Stimulus stage

9 Gagne's instructional events (1965) following phase is **Providing Learning Guidelines**. The presenter provides support and strategies to assist students in comprehending and integrating new

information. This is crucial for effectively scaffolding learning. In one of the created videos (Video I) the guidelines are given through the examples - creating dialogues using an online dictionary, that is offered as a help and guidance for pupils with weaker English Language skills (Figure 11). Whereas in video II (Video II), the learner is invited to take notes and pause to video to keep the wanted tempo. The offered grammar is visualised with graphs and post-it cards, as well as use examples are provided through the video.

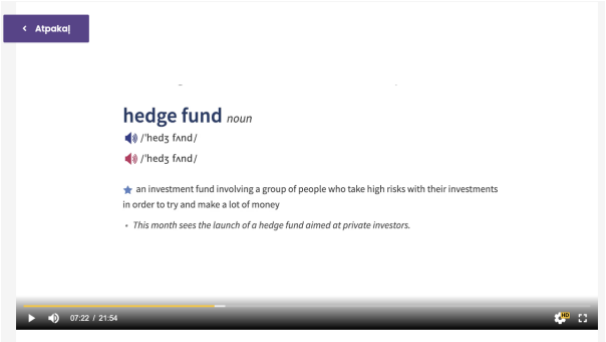

Figure 11. TavaKlase video: Providing Learning Guidelines stage

Consequent element of 9 Gagne's instructional events (1965) is **Eliciting Performance.** Or in other words – the practice element takes place. By demonstrating the task achievement, the presenter invites students to join in the process or thinking, therefore stimulating their involvement. Such as, in Video IV (Video IV) the student is asked whether they know the meaning of words. During the test portion of the video – presenters offer possible answers, therefore, even if the student has not got the idea of the right answer, they have a choice of guessing (Figure 12).

Figure 12. TavaKlase video: Eliciting Performance stage

Subsequently **Providing Feedback** phase takes place in the Gagne's (1965) work. Presenter gives the correct answers and offers students to count gained points. To assess the student's understanding of the topic the feedback is given after task completion. In the first video (Video I)

teacher cheers up students behind the screen and suggests that it is all right to get the answers wrong, therefore providing positive support. Whereas in Video II (**Video II**) the present offers students to count the correct points and encourages them to be honest (Figure 13).

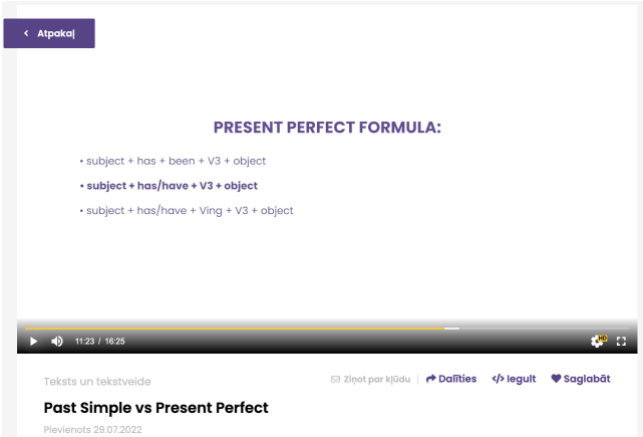

Figure 13. TavaKlase video: Providing Feedback stage

Assessing Performance is a stage where Gagne (1965) is offering to recognise whether the students have reached the expected outcome. In creation of TavaKlase video materials pupil self-assessment checklist is suggested by teacher. While doing the practical task, teacher invites pupils to pause the video to count the points, therefore, check themselves. Each response is well explained to guide the viewer through the correct answers and provide the reasons for their accuracy.

Self-assessment is supported by Andrade and Valtcheva as a means of fostering students' capacity to evaluate their own work in relation to predetermined criteria. This methodology is in accordance with Gagne's work, as it promotes students to critically examine and contemplate their achievements, thereby enabling the detection of deficiencies in comprehension. (Andrade & Valtcheva, 2009.) At the end of the video the teacher concludes what has been done coming back to video goal that was stated at the beginning of the video, thus reflecting on the objective of the video.

Enhancing Retention and Transfer is the last phase of Gagne's instructional events (1965). This part of the learning gives students the chance to make connections between course topics and possible real-world applications to help them retain more knowledge. Such as in Video II (Video II) presenter suggests finding similarities of this grammar structure with the viewer's native language, therefore offering a broader view on the problem. Within (Video III) the video another presenter

appears offering the same grammar concept in student's native language to broaden the understanding of the topic. At the end of the video, the presenter asks a question to recall the students' ideas about the content discussed (Figure 14).

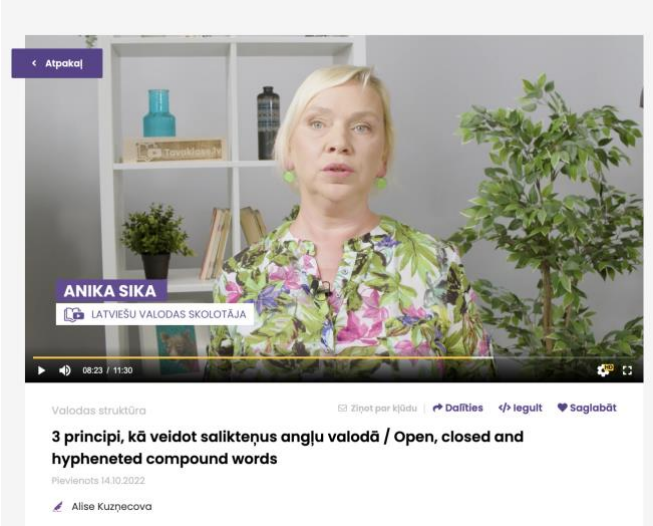

Figure 14. TavaKlase video: Enhancing Retention and Transfer stage

4.3 Evaluation

During the Evaluation stage, a preliminary data collection was carried out to assess the effectiveness and clarity of the TavaKlase educational videos and explore whether some of the videos have bigger influence than others (Appendix 1). The questions that were asked are based on the presented information in the video. There are open-ended, multiple choice and grammar tasks.

'Eliciting Performance' (Gagne, 1965) segments are incorporated into each video to help learners practise a particular skill or grammar structure in accordance with the learning objectives of the video. As a result, each video incorporates a specific activity to actively involve the kids. Five students participated in the research's feedback component after seeing each video and completing the associated practical activities. The following are the results of this preliminary evaluation phase. Students were given tasks without context (Table 2).

Table 2. Points gained: before watching educational material

	Points gained				
Student's name	**Video I**	**Video II**	**Video III**	**Video IV**	**Video V**
Edvins	2/5	1/7	3/7	4/6	0/2
Anna	3/5	2/7	3/7	4/6	0/2
Rebecca	2/5	3/7	6/7	5/6	1/2
Gregory	5/5	5/7	6/7	6/6	2/2

After analysing the results, it seems that tasks that are included in Video III and Video IV yield better results for students with lower English Comprehension Level than results on tasks that appear in Video I,II and V. One of the reasons for that could be that videos III and IV include Vocabulary tasks whereas other video tasks are Grammar based.

In addition, the results from Table 2, that were gathered at the start of the research, from students before watching the educational videos are now presented after watching of the video (Table 3).

Table 3. Points gained: after watching Educational Material

	Points gained				
Student's name	**Video I**	**Video II**	**Video III**	**Video IV**	**Video V**
Edvins	4/5	4/7	5/7	5/6	1/2
Anna	4/5	4/7	6/7	5/6	2/2
Rebecca	5/5	3/7	6/7	5/6	2/2
Gregory	5/5	6/7	6/7	6/6	2/2

The results have improved for all the students and presented in the chart (Figure 16).

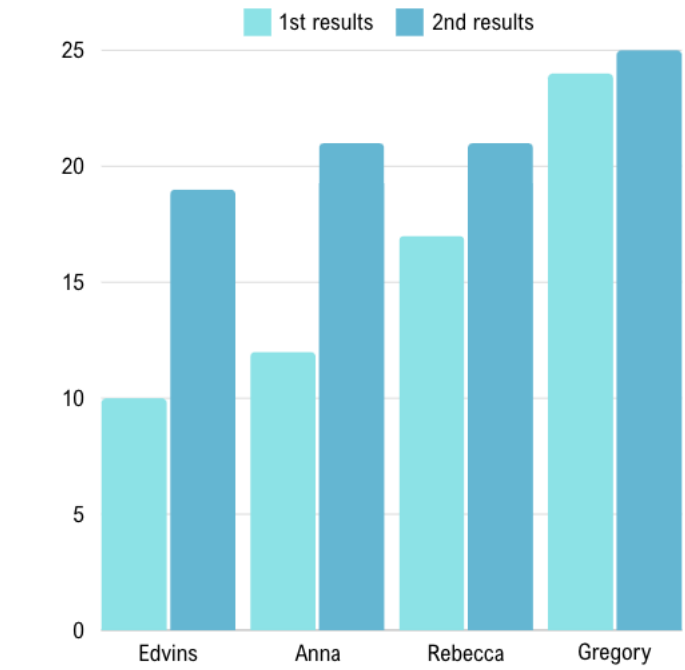

Figure 16. Student's total results before and after the watching of the Educational Material

In general, it can be said that educational videos have played role in student's acquisition and comprehension of the given material, both for grammar and vocabulary centred lessons the results are notable. Edvins has increased his result by 25,9%, Anna has shown 33% result increase, Rebecca has improved by 14% and Gregory has ameliorated his results by 3%.

Results for Video II that is based on Passive Voice acquisition has low improvement rates, which can be explained by the commentaries given by respondents, saying that the video lacks visuals and is too long, as well as the speaking tempo is too quick. Whereas the video that has two presenters, such as Video IV, is most engaging, therefore providing the best result increase.

In addition, if continuing such video creation, it must be decided how best to include feedback portion of the lesson, potentially using interactive quizzes or forums, as well as making the videos shorter and keeping pace of the speech moderate.

4.4 Feedback

The analysis of the qualitative data takes place in this subchapter. Four students were asked seven questions after watching five educational videos created by the author of the thesis (Appendix 2).

Results of the analysis of interviews that were conducted with four students are shown in Thematic Analysis, therefore creating Thematic Analysis Network (Figure 15). There have been detected six themes and subthemes detected. Results seen here represent the summary of the simplified results. Further on, the citations from structured interviews will be used to support the visual.

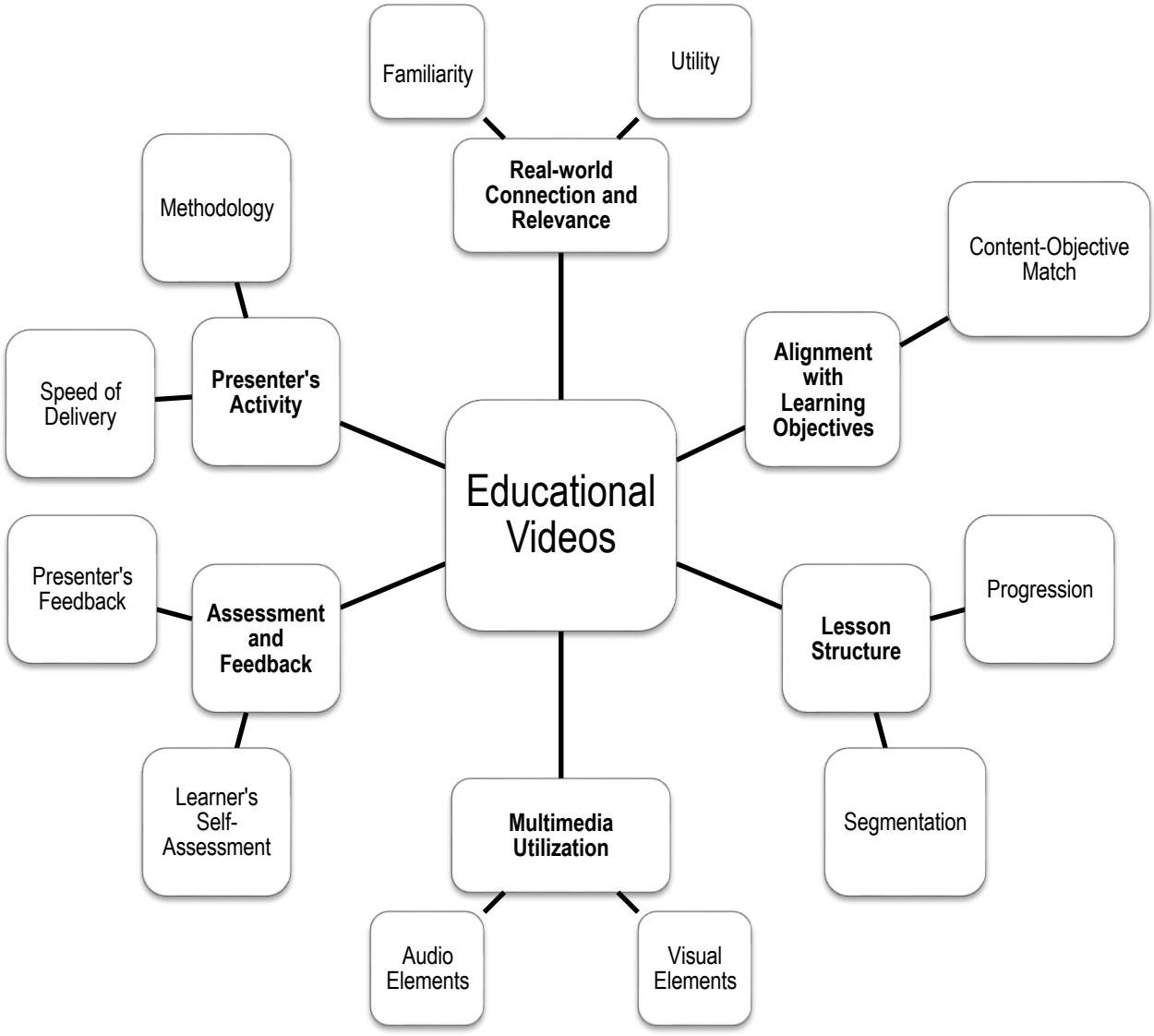

Figure 15. Thematic Network Summary

4.4.1 Real-world Connection and Relevance

A theme that has been identified in the research part is Real-world Connection and Relevance. The following subthemes are Familiarity and Utility. The importance of those is explored in the following section.

Familiarity. All respondents noted the importance of the implications of the real-life situations that were found in each of the videos. For example, Edvins said that *"the phone conversation in the car at the start of the video looked like something that could actually happen." (Edvins)* While the other respondent mentioned, *"the riddle about the snowman is something that we have done a lot in elementary school." (Rebecca)*

Utility. Another one of the subthemes that was stressed in the answers of respondents were usable methods. For example, this was expressed as follow: *"it is good to know how to look up words in online dictionary for home tasks and self-study." (Gregory)*

4.4.2 Alignment with Learning Objectives

Theme that came up during the interviews was Alignment with Learning Objective, which has been detected in several instances. More specifically, the subheading Content-Objective Match explores the examples.

Content-Objective Match which has defined the necessity of clear objectives, "*teacher came back to initial objective that she mentioned from the star of the video after a few parts of the video, reminding of topic." (Anna)*

Importantly, on the website of www.tavaklase.lv all of the videos include Objectives that are visibly written under the videos; therefore serve as an example for students throughout the video watching process, giving a chance to remind them what the goal of this material is.

4.4.3 Lesson Structure

Following reoccurring theme was Lesson Structure that is explored in the subthemes of Progression and segmentation.

Progression: One of the most important aspects to consider when producing a video is progression; it must start with basic tasks and progressively advance to more complex ones. As one of the respondents mentioned, "*I think step-by-step instruction with post-it-notes made the video very clear." (Rebecca)*

Segmentation: The division of different phases of the video was mentioned by a few respondents, one of them commented on it with the following commentary, *"I like that video had different parts, like theory and then practical task." (Anna)*

4.4.4 Multimedia Utilization

A theme that occurred during the interviews is Multimedia Utilization, that further on divides into the segments of Visual Eland and Audio elements .

Visual Elements: Notable element that was highly mentioned by all respondents is the usage of visual elements that support the video itself, *"I liked that the words that were important were written in the bottom on the screen, so I could pause the video and write them down." (Rebecca)* On the other hand, one of the respondents mentioned that the visuals were too immature, *"I feel like the visual elements were too childish, yes, I think it's nice to have pictures, but these were too easy, like for kids." (Gregory)* It also must be added that two of the respondents mentioned lack of visual elements in grammar video that explored the use of Passive Voice (Video II), by suggesting to incorporate more the graphs and pictures.

Audio elements: The role of audio elements was also noted by two of the respondents, *"I liked when the car beeped, I looked at the screen straight away." (Anna)*

4.4.5 Assessment and Feedback

Another recurring theme was Assessment and Feedback that is explored in the subheadings of Learns' Self-Assessment and Presenter's Feedback.

Learners' Self-Assessment: Three of the respondents mentioned Learners' self-assessment possibility thought all videos, *"I think that test (a;b;c) option is good, because this way I could repeat something that teacher just explained. And if I didn't know the answer, I had a clue that helped me and actually I could even guess or answer intuitively." (Edvins)*

Presenter's Feedback: Presenters feedback is highlighted in few of the answers, examples suggest, *"sometimes I wanted better summary and feedback of the task, I feel like it was too quick, and I didn't analyse the task myself yet."* On the other hand, same responded mentioned the following, *"I like that teacher supported me through screen." (Rebecca)*

4.4.6 Presenters' Activity

Sixth of the theme that was noted during the research part was Presenters' Activity, which divided into Speed of Delivery and Methodology subthemes.

Speed of Delivery: It must be stated that speed of delivery was a serious concern, since three out of five respondents mentioned that the tempo most of the times was too fast, *"Fast dialogue confused me." (Edvins)* Or another respondent said, *"teacher was speaking too fast in some parts, so I couldn't do the task at the same time with he." (Anna)*

Methodology: The dialogues received favourable feedback, however the pace of them was criticised in some of the videos. *"It was cool when the other teacher joined in the videos. It would be better if you wouldn't stand together in one frame though." (Gregory)*

5 REFLECTION

The theme analysis included six main areas: Real-world Connection and Relevance, Alignment with Learning Objectives, Lesson Structure, Multimedia Utilisation, Assessment and Feedback, and Presenters' Activity. Throughout these topics, the interview replies to frequently emphasised various tendencies.

The significance of incorporating familiar and relevant experiences into teaching material had been emphasised. Being familiar with the subject not only engages learners but also helps with greater understanding and memory retention. The importance of practical relevance in teaching videos was highlighted, indicating that real-world applications greatly increase their educational value. The findings from conducted interviews are supported by Clark and Mayer (2011) who suggest that by grounding learning in recognisable theories not only retains the attention of the leaners but also facilitates deeper understanding of the topic.

The clarity and consistency of learning objectives with the material are essential. Educational videos are most impactful when they possess explicit, well-defined objectives that are directly mirrored in the material. This alignment guarantees that the educational experience is concentrated and achieves the desired learning objectives. Gagne's Nine Events of Instruction (1965) underscores the importance of the idea of material alignment with learning objectives.

Regarding the lesson structure, responses highlighted that organising material in a coherent manner helps learners understand better. Dividing lessons into smaller portions was considered advantageous as it let learners process material more easily. It is supported by Mayer's Segmenting Principle (2009) that suggests that cognitive overload might be lessened when provided material and the information is arranged into cohesive sections.

Utilisation of multimedia, incorporating visual and auditory features, is essential for improving and reinforcing learning outcomes. Visual aids such as photos, graphs, and animations aid with conceptual visualisation play a crucial role in the learner's capacity to take in and understand the knowledge. Mayer (2009) also advocated the usage of verbal and visual cues to facilitate learning.

Assessment and Feedback: Including self-assessment opportunities enables learners to measure their comprehension and strengthen learning. Feedback from the presenter or instructor can improve the learning process by highlighting the necessity for interactive aspects in instructional films. It must be added that the feedback element is supported by Schunk (2012) that connects the concept with the design of delf-regulated learning, which can be supported by educational videos.

The efficacy of a presenter's delivery, approach, and tempo significantly influences learner engagement and understanding. Diverse delivery techniques should be used to accommodate various learning styles and preferences. Authors Rosenshine and Stevens' (1986), as well as Tomlinson (2001) also note that the delivery of educational information must cater to broad spectrum of learning styles. Finally, it is important to address the research questions and conclude.

RQ1: How does the design and presentation of multimedia elements in instructional materials affect learners' cognitive processes and learning outcomes?

The research showed that the design and presentation of multimedia components in instructional materials have a considerable influence on learners' cognitive processes and learning results. Cognitive processes were enhanced by presenting information through both auditory and visual channels, in accordance with the dual channels' paradigm of cognitive research. Multimedia components that decrease cognitive load and increase engagement have been shown to promote retention and transfer of knowledge. The research assessment phase demonstrated an enhancement in learners' comprehension, highlighting the efficacy of multimedia in educational resources.

RQ2: How can educators optimize the use of multimedia elements to promote effective learning?

Educators can optimise multimedia features in educational materials by following cognitive theories, as indicated by the thesis findings. Instructional videos should be created in accordance with clear learning goals and include interactive components to engage learners, as discussed in the research. It was suggested to divide material into digestible segments and combine them with appropriate images and audio signals. Videos, where two presenters take place are also advantageous. Incorporating real-world examples that align with the learning objectives was seen to increase engagement and educational significance. Students' feedback emphasised the need

for a calm pace, in-depth feedback, clear visuals, and organised strategy to support cognitive processing.

Based on the Theoretical section and Empirical part, here are the principles to follow when creating educational video:

- Educators may enhance the use of multimedia components by following evidence-based approaches.
- Avoid include unnecessary information that does not contribute to the learning goals - adhere to the Coherence Principle.
- Signalling Principle: Utilise cues to emphasise crucial information.
- Follow the Spatial Contiguity Principle by positioning related words and images in proximity.
- Temporal Contiguity Principle: Display matching words and images simultaneously, not one after the other.
- Segmenting Principle: Divide items into manageable sections.
- Segmentation Principle: Introduce fundamental principles before delving into intricate subjects.
- Modality Principle: Utilise narrative instead of on-screen text when explaining images.
- Utilise a conversational manner and virtual tutors to provide material, using the Personalisation Principle.
- Multimedia Principle: Utilise both verbal (audio or text) and visual elements instead of relying just on words.

The thesis went beyond theoretical review by implementing theoretical ideas in a real setting. An advancement in the field of educational technology was achieved by developing instructional films that adhere to cognitive learning and multimedia instruction concepts. The films demonstrated how to apply these theories in real-world situations.

Further on, to increase the validity and reliability to the results research could be conducted with control groups, where some of the students would have gone through learning particular study material with the help of the TavaKlase educational videos and some not.

Student observation could also take place and add depth to the results – what exactly get students bored, excited or provide any reaction at all.

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APPENDICES

TASKS FOR DATA COLLECTION

APPENDIX 1

Questions asked based on information presented in **Video I:**

1. Pick the correct one! Affirmative sentence in Past Simple:
   - subject + has/have + V2+ Object
   - subject + Ving + object
   - subject + V2 + object
2. Pick the correct one! Present Perfect formula:
   1) subject + has + been + V3 + object
   2) subject + has/have + V3 + object
   3) subject + has/have + Ving + V3 + object
3. Create a question tag! You didn't see James, _____**?**
4. Create a question tag! She never cleans up, _____**?**
5. Create a question tag! They have been to France, _____**?**

Task based on information presented in **Video II:**

Passive and Active Voice task. Complete the text with the correct form of the words in brackets.

My grandma Sophie Gill 1_____ (WRITE) four Matilda stories over a period of 20 years. Most of the stories 2_____ (TELL) by Matilda's sister, Mary but Matilda 3_____ (TELL) two of the stories herself. By 1960, Sophie Gill 4_____ (WRITE) three Matilda stories but she decided to stop writing about the character. However, the stories had become 5_____ (EXTREME) popular with readers of The Strand and many were 6_____ (DISAPPOINT) when the stories stopped being included in the magazine. So, in 1980, Matilda 7_____ (BRING BACK) from the dead and appeared in two more novels. Up to this day readers continued to enjoy further adventures of Matilda and her friends.

Task based on information presented in **Video III:**

Create a compound-nouns based on words that are visible in the picture.

High	-	handed
Empty	-	speed
Mass	-	tech
High	-	handed
Deep	-	depth
Left	-	fried
In	-	production

Task based on information presented in **Video IV:**

Explain the following:

1) Meaning of the word proposal.
2) Meaning of the idiom “go big”
3) Synonyms for the verb “to handle”
4) Meaning of “What do you do for a living”
5) Meaning of the idiom “dip into your pocket”
6) Meaning of the collocation “I am concerned about”

Task based on information presented in **Video V:**

Choose the correct answers:

1) Finish the idiom “Paint the town____”
    - Green
    - Yellow
    - Red
2) Meaning of the idiom “Beat around the bush”.
    - To slow down.
    - Stop working on something.
    - Avoid saying what you mean, usually because it is uncomfortable.

INTERVIEW QUESTIONS

APPENDIX 2

1. Describe how the video content connected to your previous knowledge or experiences.
2. How was the content in the video relevant to real-world applications and presented? (please give examples)
3. How well do you think the video's content aligned with its stated learning objectives? Please provide examples.
4. How did the structure of the video affect your learning experience.
5. What kind of opportunities within the video were there to assess your understanding of the study material?
6. What multimedia principles (audio/graphs/symbols/text) were evident in the video. How did these elements support your learning?
7. Discuss any moments in the video that you found particularly confusing and/or clear. What do you think could have been done to improve your comprehension?