Bachelorproef:
Knowledge clips assisted instructions during English lessons

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Preface

I am currently completing my bachelor's degree in education with a focus on English and history at Odisee Co-Hogeschool, Campus Sint-Niklaas. This thesis represents an important milestone in my academic journey and focuses on the use of knowledge clips in the classroom. Specifically, I aim to explore the importance of applying multimedia principles and exploring their significance in English lessons.

This subject captured my interest because the use of knowledge clips has become increasingly popular in education. I wanted to contribute to making their creation before and use during English lessons more accessible and effective. Through this research, I hope to provide valuable insights into optimizing the use of knowledge clips.

Finally, I would like to express my gratitude to my supervisor, Ms. Ada Peters, my parents, and everyone who supported me throughout this process for their guidance and encouragement.

Sint-Niklaas, 23 januari 2025

Tine Vercauteren

Inhoudsopgave

Abstract

- **Keywords dissertation**

  - Knowledge clips
  - Multimedia principles
  - TEFL
  - Grammar learning
  - Knowledge clip assisted instructions

- **Research question**

Can knowledge clips support grammar learning during English lessons in a second year, 1e graad, A-stroom?

- **Short summary dissertation**

This dissertation explores the use of knowledge clips as an didactic tool in second-year English lessons (1e graad, A-stroom) to support grammar learning. Grounded in the theory of Multimedia Learning, which highlights the combined use of narration and visuals to enhance learning, this study investigates whether knowledge clips can improve students' understanding and retention of complex grammar topics. A checklist was developed based on design principles from Multimedia Learning to guide the creation and integration of knowledge clips into the instructional part of lessons. The study found that knowledge clips can effectively support grammar learning when they are well-designed, adhere to the checklist, and are integrated into lessons with generative activities led by the teacher. The research also demonstrated that knowledge clips are particularly beneficial when teaching complex material, such as tenses, and can assist in differentiation for mixed ability classes. The use of knowledge clips was shown to enhance students' active participation and improve retention of grammar theory. While the study's scope is limited, the findings suggest that knowledge clip-assisted instruction can be

beneficial across other year groups and subjects in secondary education, offering a transferable tool for teachers to enhance their teaching practices.

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1 Introduction

This dissertation was inspired by the growing implementation and popularity of multimedia tools, such as knowledge clips. However, their effective application in the classroom remains a challenge for many educators, including myself. This research seeks to address this challenge by identifying best practices and providing practical and clear guidelines for creating and using knowledge clips during English lessons, and more specifically grammar lessons.

In this dissertation the definition of knowledge clips, the many benefits of using knowledge clips, and the importance of applying the multimedia principles while creating and using knowledge clips will be discussed. The evidence-based advantages will then be tested in the school context of OLVP Bornem. During the research carried out, the implementation of knowledge clips, the Checklist for Knowledge Clip Assisted Instruction, the potential added value in differentiation, the assistance knowledge clips offer the teacher, and the improvement in grammar learning according to the teacher will be tested. This will be done through observations and interviews.

With this research, I aim to contribute to a broader understanding of how knowledge clips can be applied to improve teaching and learning outcomes. The findings of this research will not only benefit my own practice but also provide valuable insights for colleagues and other educators looking to integrate digital tools into their classrooms.

2 Probleemstelling

2.1 Introduction

2.1.1 Setting the scene

Digitalization is everywhere. Advances in telecommunication, automation, social media, AI, etc. all have an impact on about every aspect of our society. Young people grow up in a digital, multimedia world. Schools and education in general are impacted as well and consequently need to evolve. At the same time, education is marked by a continuous pursuit to improve didactic methods and is challenged to increase effectiveness and efficiency (van der Donk & van Lanen, 2024). Simultaneously questioning and building on existing educational insights is key in this endeavor.

This dissertation is at the intersection of these two, to use digitalization to improve didactic methods, by focusing on one specific question: how to benefit from the use of multimedia knowledge clips in classroom teaching?

2.1.2 What is a knowledge clip?

In the context of this dissertation, a knowledge clip is defined as a short video (multimedia: image and audio) of typically two to ten minutes, intended to educate students by providing an explanation or instruction on a part of the school curriculum. Knowledge clips can be integrated into a classroom lesson and played in the classroom, or they can be watched independently by the student at home or at school. The application and usage of these knowledge clips is controlled by the teacher, it is a tool in his didactic toolbox. In the practical part of this dissertation, focus will be put on knowledge clips related to the subject English in the 2nd year of secondary school (first year English), A-stroom.

2.1.3 Approach and structure

Using knowledge clips for classroom teaching has a cost. They need to be developed or purchased, preparing the lesson with knowledge clips may take more time and effort from the teacher, and the infrastructure in the classroom to present the knowledge clips (beamer or

screen, wifi,…) needs to be present and tested properly beforehand. In addition, presenting a video clip during a lesson takes valuable in-class time.

This cost must be outweighed by benefits, provide a reason for the teacher to make it worthwhile. For instance, using knowledge clips must be a solution to a problem: suppose that with the current didactic approach the instructional part of the affirmative form of the Present Simple takes 40 minutes after which only around 55% of the students understand and memorize the learning content. Reflecting on these results, the teacher would like to reach at least 75% understanding in 30 minutes. He starts an initiative to improve his didactic approach and considers the use of knowledge clips.

In this example there are some underlying assumptions that are too obvious to be analyzed further in this dissertation, but important enough to be stated: the primary purpose of any school is to teach students and increase their knowledge reaching the goals stated in the school curriculum. The teacher takes ownership of this objective for a particular set of students and a particular part of the school curriculum. For this the teacher has a fixed number of in-class hours (and preparation hours) that he must divide over the curriculum, and for each topic he needs to maximize the number of students that understand, memorize and are able to apply or reproduce the content. So, in the end, the decision to use knowledge clips (or any other didactic tool) in a particular class on a particular topic, is an optimization task in which the teacher is taking the decision.

This perspective of the teacher and his responsibility are paramount in this dissertation: What are the features of a good knowledge clip? When to use it? How to use it? These questions are analyzed from a didactic viewpoint and treated in a way that may assist a teacher considering the use of knowledge clips.

Note that a knowledge clip is serving an entirely different purpose than a videoclip on social media like TikTok. A good knowledge clip must help students to understand and memorize the learning content. A videoclip on social media, on the contrary, is designed to have a high probability to be liked and then shared by the viewer with other people in his social network. It must be funny, entertaining or surprising, holding the attention of the viewer long enough and resulting in a good feeling (releasing for instance endorphins).

The dominant theoretical framework in literature that is relevant for knowledge clips is called Multimedia Learning, with Richard Mayer as main protagonist (Mayer, 2021). His work provides a theoretical explanation on how learning works in the mind of a student watching a video and what features or supporting elements can boost this learning. The theory is supported by evidence from extensive A/B testing from Mayer's team and followers. Section 2 of this dissertation will briefly describe the relevant aspects of this theory and translates it into a practical checklist enabling a teacher to recognize the features of a "good" knowledge clip, and how to build-up the lesson around the knowledge clip to maximize the didactic benefits.

Section 3 analyzes the different situations in which knowledge clips can be beneficial, related to the first year English in the 2nd year, A-stroom of secondary school. First, general methodology tells us that the entire process of teaching a new subject can be divided in four phases: the motivation, learning, evaluation and differentiation phase. In which phase are knowledge clips best applicable? Second, teaching a first year English requires focus four components: grammar, vocabulary, skills building and culture. For which component is the use of knowledge clips best suited? Thirdly, there is differentiation on a class level with stronger and weaker classes, and within each class with stronger and less-strong students. With respect to differentiation and inclusion, when and how can knowledge clips be beneficial, or when should they be avoided?

Section 4 describes subjects for knowledge clips that were selected with the teacher in the application school. This selection resulted in real-life use of the knowledge clips involved.

The research took place in OLVP Bornem with the guidance of an experienced mentor. The use of knowledge clips to support grammar learning in second-year English lessons was tested. The sub-questions about their classroom use, effectiveness, differentiation, teacher usability, and impact on learning were all analyzed.

Different grammar topics were selected for trial lessons across five diverse classes. However, suitable knowledge clips were not readily available, necessitating the development of new materials tailored to the curriculum and multimedia design principles.

The research questions are as follows:

Can knowledge clips support grammar learning during English lessons in the second year, 1st graad, A-stroom?

In addressing this, the following sub-questions guide the study:

1. When does the teacher use knowledge clips in a real class context?
2. Does the checklist for knowledge clip assisted instruction help the teacher to efficiently develop a good knowledge clip and apply it effectively in the lesson?
3. Can knowledge clip assisted instructions be used as a didactic tool for differentiation between students and classes?
4. How user-friendly and supportive is the application of knowledge clips for the teacher?
5. Does the teacher see improvement in grammar learning?

2.1.4 Lifelong learning

Schools are not the only environment where online videos are used for training. Advances in digitalization created a variety of application areas. For instance, the majority of large- and medium sized companies worldwide use LMS (Learning Management Systems) today (SAP, 2024), through which employees are offered access to online training videos (also called e-learning). Certifications on a broad variety of subjects can be obtained from online courses. In addition, many household appliances come with online instruction or installation videos. Companies and institutions that develop these training or instruction videos on a professional level often advertise their application of Mayer's Multimedia learning principles (example: Pappas, 2024).

Adults are expected to learn independently from a training video, while students in the second year of a secondary school must rely on the support of teachers who structure the lessons and guide and support the learning process. This dependency is due to the not yet developed executive function skills and learning skills needed. Examples of executive functions are self-motivation and self-discipline during learning. A typical learning skill would be the ability to apply segmentation, make summaries, etc.

Applying multimedia learning with knowledge clips in the classroom helps to develop these executive function skills and learning skills, preparing the students for handling training or instruction videos more effectively in future life. Frequent use of knowledge clips may have the long-term benefit of stimulating lifelong learning. Although plausible, no references or evidence

were encountered in the literature study of this dissertation of this long-term effect. Frequent use of knowledge clips may have the long-term benefit of stimulating…

2.2 Multimedia Learning

2.2.1 Introduction

In the fifties and sixties of the previous century school television was introduced, whereby instruction videos were presented to students on TV, and this at home or in the classroom. Research showed however that this did not lead to more effective learning. At best, school TV can be used to support or enrich the classroom instruction by the teacher (Buelens et al., 2024; Clark, 1983; Knot, 2011).

During and after the Covid pandemic in 2020-2021, initially out of necessity because of the lockdowns, blended learning and its more specific form "flipping the classroom" were propagated (Versmissen et al., 2022). Blended learning is a "blend" of online and classroom teaching. In "flipping the classroom" students study instruction material before the actual lesson by reading a text or presentation, or watching a video (knowledge clip). The lesson then concentrates on applying and processing the learning material with questions, discussions or assignments. Afterwards research showed that blended learning as such does not always have better outcomes, and that in case of a better outcome it is the improved didactic design of the self-study material (e.g. adding quizzes) that creates the positive effect. Also, a positive outcome is mostly reached with students that have more developed executive functions and self-study skills, e.g. last years of a secondary school (Buelens et al., 2024, p. 31; Zhu, 2021; van Alten, 2019). In short, blended learning and "flipping the classroom" are not directly applicable in this dissertation focusing on teaching 1st year English in the 2nd year, A-stroom of secondary school, and a teacher with limited in-class and preparation time.

Other research shows that "flipping the classroom" which includes pre-teaching of prior knowledge using a knowledge clip can be beneficial for weaker students (better than no pre-teaching), but that it is less effective than interactive pre-teaching by the teacher (Severson, 2017).

The most relevant and comprehensive theoretical framework for knowledge clips is based on several decades of research by Richard Mayer, Logan Fiorella and many others (Mayer & Fiorella, 2021). Mayer's book Multimedia Learning (Mayer, 2021) is the most cited practical guide on how to combine text and images in learning. The findings and principles are evidence based, i.e. supported by A/B testing in more than 200 experiments.

In the next three sections, the essence of Multimedia Learning is described in a condensed way, considering a teacher who wants to practically apply the theory in the context of knowledge clips. Interested readers and basically all education and pedagogy professionals should be invited to read more about the subject as the field offers a wealth of fascinating insights and knowledge relevant in the broader context of classroom digitalization.

2.2.2 Cognitive Theory of Multimedia Learning

In the human cognitive architecture, three parts are involved in learning: the sensory memory, the working memory and the long-term memory, as well as three cognitive processes: the selection of information (from the stimuli), the processing of this selection, and the actual learning by integrating new information into the knowledge schemata of the long-term memory. According to the cognitive theory of Multimedia Learning, there are two separate channels for information processing: an auditory/verbal channel and a visual/pictorial channel, potentially (when applied well) doubling the learning capacity.

It works as follows:

- Students receive numerous stimuli from the environment that they retain in their sensory memory for a very short time. Based on the attention given to certain stimuli, the first cognitive process takes place: the selection of information. The stimuli to which attention is paid move on to the working memory. When students watch a video, they must focus their attention on the elements that are important to understand (select) the learning material, which means selecting certain information.
- The conscious processing of stimuli takes place in the working memory. This is the second cognitive process: organizing information like distinguishing between main and secondary issues, establishing structure (e.g. sequencing, cause and effect, comparison, classification) or linking the verbal explanation to the associated images. The working

memory not only receives new information from the environment, but also already stored information in the form of knowledge schemata from the long-term memory. This active processing results in a coherent mental representation (mental model or knowledge structure) allowing the student to make sense of the incoming information, to understand it. To enable this, the teacher not only provides the isolated facts but also guidance on how to structure and organize the information.

- The third cognitive process, the actual learning is done by integrating the new, organized information into the existing knowledge schemata of the long-term memory.
- The human working memory is limited in capacity. Students retain only a few pieces of new information (two to six) for a limited time (thirty seconds) if they don't interact with them. If the working memory is overloaded, no learning can take place. (Buelens et al., 2024, p. 122)
- The information processing system consists of both a sound channel (spoken words) and an image channel. The three cognitive processes above take place in the separate channels for verbal and visual information, but there is an additional step at the end of the processing whereby the verbal and visual mental representations are combined and integrated into one. Visual elements including some recalled from long-term memory help hereby to make sense in the verbal organization and vice-versa. Finally, the combined model (verbal and image) is integrated into the knowledge students already had in their long-term memory.
- The benefit of using the two channels simultaneously plays on several levels. First, the working memory is enlarged, so more than two to six pieces of information can be processed at once. Second, the combining step in the processing makes it easier to build a sense making representation as mentioned before, to understand the input. The knowledge schemata students form in this way are richer and stronger than when they are presented with information only in words or only in images. And thirdly, the storage in the long-term memory is a lot stronger because it can rely on both a verbal and an image pathway. (Kirschner, 2017)

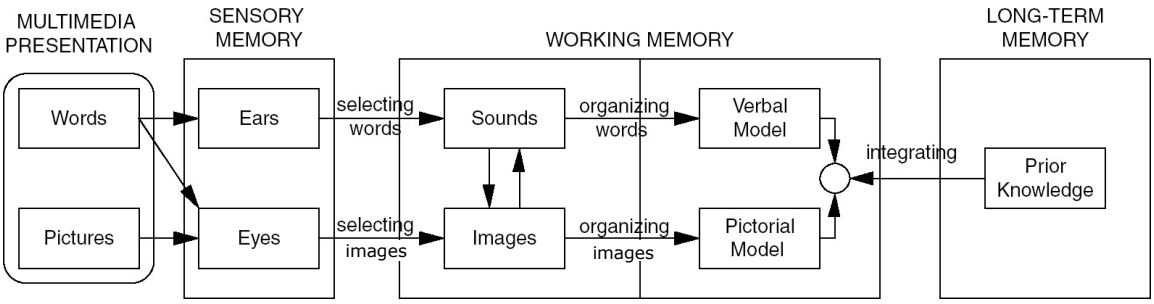


Fig 1: Cognitive theory of multimedia learning (Mayer)

Besides the limited bits of information that can be retained at one time in the working memory, there is a second limitation: the processing capacity in the working memory, or cognitive capacity. There are three kinds of cognitive processing during learning that compete for the limited cognitive capacity of the student:

- Extraneous Processing is the cognitive processing not serving the instructional goal. It is caused by poorly designed instruction material or methods: an overloaded presentation, irrelevant animations or background noise, an unclear picture requiring students to search for what is relevant. This can lead to distracted students, who multi-task, e.g. scrolling through his Instagram feed. All this can occupy large parts of the cognitive capacity of the students, capacity that is not available for the learning.
- Essential Processing involves the selection of the relevant input stimuli and organizing it as presented. The required cognitive capacity depends on the complexity and quantity of input the student needs to process at once.
- Generative Processing (or germane load in cognitive load theory) refers to the cognitive processing required to make sense of the presented material. Engaging mainly in essential processing without generative processing is applied in rote learning. Generative processing creates deeper understanding, but the mental effort needed requires the student's motivation to learn.

This results in three goals in the design of multimedia instructions (knowledge clips):

- Reduce the extraneous processing.
- Manage the essential processing.
- Foster the generative processing.

The next section describes the design principles for knowledge clips to achieve these goals.

2.2.3 Design principles of knowledge clips and their expected effect

Mayer (2021) calls the design principles for multimedia instruction material "the 15 principles of Multimedia Learning". In this section only those relevant for designing knowledge clips are selected. The description is kept short: what is the principle and how does it contribute, with relevant explanation for the teacher to apply them when working with knowledge clips.

Mayer's principles are evidence based, with scores indicating the effect size on the test results of students. A/B testing was applied, with students randomly assigned to a control group or an experimental group, in which everything was kept identical except the target instructional feature (one of the design principles). The scores are based on the mean transfer test score of students who learned 'with' versus 'without' the instructional feature. Transfer tests (in this context) tested the knowledge of the students as well as their ability to use this knowledge in new situations. The effect size (d) is computed by subtracting the mean score of the control group from the mean score of the experimental group and divide this by the pooled standard deviation. An effect size of 0,80 is considered large, 0,50 is medium, 0,20 is small, and only an effect size greater than 0,40 is considered educationally significant (Mayer, 2021, p. 89).

Suppose an average testing score without a design principle is 5,5/10, with a standard deviation of 1,5, meaning that 68% of the students is scoring between 4,0/10 and 7,0/10, then an effect size of d = 0,40 would mean an average testing score of 6,1/10, with 68% of the students scoring between 4,6/10 and 7,6/10.

The reported general effect scoring of multimedia training (verbal and pictures) versus only verbal instruction (text alone or narration alone), is d = 1,35 (Mayer, 2021, p. 117). In the example above, this would mean an average testing score of 7,5/10, with 68% of the students between 6,0/10 and 9,0/10. The multimedia principle is reported to apply more strongly to low-knowledge learners.

Mayer's effect scores are added here because they give an indication to the teacher applying knowledge clips what to expect as improvement and it allows to prioritize efforts in applying the design principles. But although Mayer's experimental testing is scientifically sound, the effect scores are only an indication for the teacher giving English in Flanders in the 2nd year, A-stroom

of secondary school. Mayer's tests did not include language teaching, tests were done in the US, and for students a few years older. The results for us may be worse, or better.

A. Reducing Extraneous Processing

1. Coherence principle (d = 0,86): Students learn better when extraneous material is excluded rather than included. This means that irrelevant material (cartoons or animations, unneeded words and symbols, background music) must be avoided as this reduces the cognitive capacity available to process the essential learning material. Also, diagrams and infographics must be kept simple.
2. Signaling principle (d = 0,70): Students learn better when cues are added that highlight the organization of the essential material: keywords in bold or color, zooming in on an image, the use of arrows and intonation, the use of a cursor to highlight what the teacher (the audio in the knowledge clip) is looking at. This prevents students from losing cognitive capacity in the selection of what to look at or getting lost in the complexity of an image and possibly disconnecting.
3. Redundancy principle (d = 0,72): Graphics with narration alone is more effective than also including on-screen text. Students can listen while watching the images but may get overwhelmed when reading while listening (see also modality principle). Adding a few keywords or a short description or definition as on-screen text may be beneficial, when it fits with the narrative. This principle mainly applies for fast-paced narrated animations.
4. Spatial Contiguity Principle (d = 0,82): Printed words (or figures) must be placed near the corresponding graphics on the page or screen, the closer the better. This allows students to process the information together and not waste cognitive capacity in figuring out which words and pictures belong together.
5. Temporal Contiguity Principle (d = 1,31): Narration must coincide with the related displays, corresponding words and visuals must be presented at the same time. Same reasoning as for Spatial Contiguity.

B. Managing Essential Processing

6. Segmenting principle (d = 0,67): Better learning outcomes are achieved when information is segmented, and students have control over the pace: directly when watching on their own,

or indirectly by signaling the teacher, asking him to stop, when watching the knowledge clip in the classroom. This requires breaking down complex information, including pictures, into smaller, manageable chunks that are presented in steps, allowing students to process each segment separately. Segments with too much information or information gaps between the segments should be avoided.

7. Pre-training principle (d = 0,78): Students learn more deeply if they have already learned the names and characteristics of the most important concepts in advance. This pre-teaching allows students to fully concentrate on the connections with the multimedia explanation. This can for instance be achieved by introduction explaining key concepts before starting the main teaching.
8. Modality principle (d = 1,00): Students learn more deeply from pictures and spoken words than from pictures and printed words. Printed words enter through the visual channel and only transfer to the verbal channel when the student does the mental effort to articulate the words in his mind. This occupies both channels and demands cognitive processing capacity.

C. Fostering Generative processing

9. Personalization principle (d = 1,00): Students learn better when the narration is using an informal conversational style rather than a formal style, for instance using personal pronouns (you and I). When students feel that the author is talking to them, they are more likely to see the author as a conversational partner and therefore try harder to make sense of what the author is saying.
10. Generative Activity principle (d = 0,71): Students learn better when they are guided in carrying out generative activities during learning (e.g., summarizing, mapping, drawing, imagining, self-testing, self-explaining, teaching or enacting). These generative activities stimulate the organization process in the working memory as well as the integration into the long-term memory.

Several design principles for generative learning in Multimedia Learning are not retained:

- The Voice principle (d = 0,74): Students learn better from multimedia presentations when words are spoken in an appealing human voice. When students feel that the

author is talking to them, they are more likely to see the author as a conversational partner and therefore try harder to make sense of what the author is saying. But:

  - most of the experiments Mayer refer to are comparing synthetic computer voices (created with technology of 15 - 20 years ago) with human voices;
  - what is “appealing” about a human voice is complex and still subject of research. It is also subjective: people differ in which voices they find appealing (for instance: Augustin, 2018);
  - this design principle is not actionable for a teacher making his own knowledge clip; we all have to do with the voice we have. The teacher can pay some attention to tone, intonation, etc. but can’t change his voice;
  - advising in a knowledge clip checklist for teachers to use an attractive voice may have a negative impact on the self-esteem of the teacher. If knowledge clips were developed for a larger group of teachers or schools, e.g. by a professional third party, it would make more sense to consider the Voice principle.

- The Embodiment principle (d = 0,58): Students learn more deeply from multimedia presentations when an onscreen instructor displays high embodiment, which can serve as a positive social cue that primes a sense of social partnership to the student, causing the student to try harder to understand the instructional message. Embodiment refers to ways that onscreen instructors can use their bodies to enhance the act of instructional communication: using hand gestures while talking, maintaining eye contact while talking, drawing graphics by hand while talking, etc. But:
  - to get it right, making a knowledge clip with embodiment takes a lot more time, effort and cost: synchronization of movements with the instructional part of the script, need for more professional audio and video recording equipment, getting a suitable recording environment (acoustics, light exposure);
  - this is not feasible for an individual teacher developing his own knowledge clips. However, the same remark about including a professional third party applies here as well.
- The Image principle (d = 0,20): The impact of adding a static image of the teacher to the multimedia presentation is in the small to negligible range.
- The Immersion principle (d = - 0,10): Students do not learn better in 3D immersive virtual reality comparing with a corresponding 2D desktop presentation.

2.2.4 Knowledge Clip Assisted Instruction

The students engaging in Generative processing is necessary to obtain understanding, to learn new concepts, to get new insights, to go beyond rote learning. The hard part is to motivate the students to make the required mental effort. But for those students that make this effort, experiencing the joy and satisfaction of understanding may lead to the development of self-motivation and self-discipline.

While the first nine design principles listed in previous section relate to the knowledge clip itself, the Generative Activity principle describes didactic techniques for the parts of the overall instruction outside the knowledge clip. A knowledge clip doesn't stand on its own but should always be embedded in a broader instruction: the knowledge clip assisted instruction. The teacher introduces the knowledge clip, talks and interacts with the students when the video is paused after each segment, and at the end.

The generative learning theory (Fiorella & Mayer, 2020) describes eight learning strategies that promote understanding. The teacher can choose from these eight and invite the students into a corresponding activity. This generative activity is performed during or immediately after the video and initiated and led by the teacher.

Each of these eight activities was extensively tested in A/B experiments resulting in an average effect size (Mayer, 2021, p. 388). However, these tests were conducted on college students who have more mature levels of cognitive processing skills. Not all these strategies may be applied directly to 13-year-olds, at least guidance by and clear instructions from the teacher are needed.

Most relevant generative activities in the context of this dissertation:

- Summarizing (d = 0,50): asking the students to give written or oral summaries of what they are learning from the lesson.
- Self-testing (d = 0,57): asking the students to answer transfer-type questions during the lesson.
- Self-explaining (d = 0,61): asking the students verbal explanations of the lesson.
- Teaching (d = 0,77): asking the students to teach what they have learned to others.

Less relevant generative activities:

- Mapping (d = 0,62): asking the students to complete concept maps, knowledge maps or graphic organizers of what they are learning from the lesson.
- Drawing (d = 0,40): asking the students to complete drawings depicting what they are learning from the lesson.
- Imagining (d = 0,65): asking the students to imagine illustrations depicting what they are learning from the lesson.
- Enacting (d = 0,51): asking the students to physically act out what they are learning.

2.2.5 Checklist for Knowledge Clip Assisted Instruction

Mayer's fifteen design principles for multimedia learning can be put in a checklist to evaluate if the design principles are met or not (Severson, 2017, p. 39). Building on this idea and to translate the theoretical insights from multimedia learning into something practical for the teacher, a one-page checklist is introduced. The benefits of developing this "Checklist for Knowledge Clip Assisted Instruction" are:

- the individual teacher preparing a lesson with a knowledge clip, developing a new knowledge clip or reusing a knowledge clip developed by somebody else: to save time and avoid forgetting something important;
- for teachers cooperating in a school or school-group on the use of knowledge clips: to have an aggregation point of best practices, to have a standard way of working allowing to share experiences and ideas between teachers, and to facilitate the reuse of developed knowledge clips.

The checklist not only covers the knowledge clip itself, but the complete instruction making use of a knowledge clip. Below the first version of this checklist is presented. Experiences obtained from the practical part of this dissertation may result in a second version.

Checklist version one

Principles		Check?
1	Coherence principle: people learn better when irrelevant material is excluded rather than included (words, symbols and music).	
2	Signaling principle: people learn better when cues (underlining, circling around, arrows pointing…) are added that highlight the organization of the essential material.	
3	Redundancy principle: in a fast-paced lesson, people learn better if image and narration are combined. Printed text is then too much, becomes 'unnecessary' (example sentences are not seen as printed text).	
4	Spatial contiguity principle: people learn better when corresponding words and pictures are presented near rather than far from each other on the page or screen.	
5	Temporal contiguity principle: people learn better when corresponding words and pictures are presented simultaneously rather than successively.	
6	Segmenting principle: people learn better when a multimedia message is presented in short fragments adapted to the learner's pace rather than as a continuous unit.	
7	Pre-training principle: people learn more deeply from a multimedia message when they already have some foreknowledge on the names and characteristics.	
8	Modality principle: people learn more deeply from pictures and spoken words than from pictures and only printed words.	
9	Multimedia principle: people learn better from words and pictures than from words alone.	
10	Personalization principle: people learn better from multimedia presentations when words are in a conversational style rather than a formal style.	
11	Generative activity principle: people learn better when they are guided in carrying out generative learning activities during learning (e.g., summarizing, mapping, drawing, imagining, self-testing, self-explaining, teaching, or enacting).	

Generative activity principle:

Most to least effective:			Check?
0.77	Teaching	Explain to others	
0.65	Imagining	Imagine a picture	
0.62	Mapping	Create a concept map, knowledge map, or graphic organizer	
0.61	Self-explaining	Explain to yourself	
0.57	Self-testing	Take a practice test	
0.51	Enacting	Move objects to act out the lesson	
0.50	Summarizing	Write a summary	
0.40	Drawing	Draw a picture	

Fig 2: Checklist for Knowledge Clip Assisted Instruction, version 1.

2.3 Potential application areas of Knowledge Clips

When and how can knowledge clips be used in the first year English in the 2nd year of the secondary school? Several perspectives are used to discuss this question: the general didactic phases of a lesson; the relevant TEFL (Teaching English as a Foreign Language) components to be included in knowledge clips: grammar, vocabulary, culture; and differentiation and inclusion.

2.3.1 General didactic perspective

The process of teaching a new subject matter consists of four phases (Standaert et al., 2018): the introduction phase (motivation), the learning phase (acquire & process), the evaluation phase and the remediation phase (differentiation). From this perspective knowledge clips can be applied in three ways: as pre-teaching in the introduction, to assist the instruction in the learning phase, or for differentiation.

A. Knowledge clips for pre-teaching

Part of the introduction of the lesson is recollecting relevant prior knowledge to facilitate the selecting and organizing processes when learning the new material. This can for instance be done by presenting the knowledge clip used in a previous lesson, or in case this takes too much in-class time, a selection of fragments or images.

Pre-teaching in the sense of first introducing new concepts or definitions needed in the new instruction is considered part of the learning phase.

B. Knowledge clips for instruction

Knowledge clips are most valuable when used to support the instruction in the learning phase: the knowledge clip-assisted instruction. In the rest of the learning phase, following the knowledge clip, students are invited to apply the new material by doing tasks and exercises, also in new contexts, to reinforce the learning. The emphasis is on practice: action by the students and differentiated feedback by the teacher.

During the introduction phase, before or at the beginning of this lesson, the focus is on capturing the students' attention and ensuring their motivation. Insight into the learning goals of the lesson and the importance of the material are provided, clearly explaining what is expected of the students. In case knowledge clip assisted instruction is new to the students, the teacher may need to explain in a few words how it works. If generative activities are foreseen, the teacher can outline in advance what type of questions or tasks students may expect after each segment or at the end of the clip, and how they can prepare for them.

Of course, during the motivational introduction phase, the teacher may use another short video to capture the attention and motivate the students, e.g. a video of London taken by a drone with James Bond music in the background. Not every video used in class is a knowledge clip; video material can serve other purposes.

C. Knowledge clips for remediation and differentiation

In case the teacher decides in the feedback part of the learning phase or after the evaluation phase that repeating the instruction is needed for certain students, he can decide to reuse the knowledge clip.

In addition, the teacher may decide to make knowledge clips available online for the students to watch while studying at home. These clips can be the same, or different: either a new clip on the same topic, or a new clip to challenge the stronger students. The disadvantage of this approach is that the teacher has no control. The student does not watch it, watches it with little motivation and a maximum of distraction, or watches it without doing the generative activity designed.

2.3.2 TEFL components: grammar, vocabulary and culture

Teaching English as a Foreign Language (TEFL) in the first year consists of four important components: grammar, vocabulary, skills development and culture (Harmer, 2015). Grammar topics can benefit most from knowledge clip assisted instruction, especially in the higher grades, because of their complexity. Main grammar subjects are tenses (e.g. present simple, present continuous), the parts of speech (e.g. nouns, verbs, adjectives, adverbs) and basic sentence structure.

Vocabulary and culture lessons can also benefit from knowledge clip assisted instruction, but because these topics need less generative processing than grammar, the benefit mainly comes from essential processing and double long-term memory paths (better rote learning). Thematic vocabulary can for instance be explained in a thematic knowledge clip, e.g. weather-related words in a weather forecast clip.

Knowledge clips are not a great help when it comes to teaching skills. They lack interaction, immediate feedback, and contextual application needed for practicing speaking, listening, reading and writing. Knowledge clips cannot replace active, real-world practice or personalized instruction. However, skills such as reading and listening can be practiced while using knowledge clips.

2.3.3 Differentiation and inclusion

The reported general effect scoring of multimedia training versus only verbal instruction as described on p. 15, is rather large: it can be compared with the difference between barely passing an examination or passing it with distinction. Of course, one needs to be careful with figures, but if knowledge clip assisted instructions are implemented broadly, this could apart from the better school results for students also have important implications on differentiation, inclusion, and the motivation of teachers.

Today classroom populations are often highly diverse in terms of skill level, motivational level, health and social care needs, and knowledge of English. Broadly needed individual remediation can easily overload the teacher and even the school system, which is not good for the students who do not reach their full potential but also demotivating for the engaged teacher. But the teacher can control his didactic approach, he can choose to use knowledge clips and try to realize the positive effects of multimedia learning. And if the results would be in line with what is reported for Multimedia learning, then there would be less need for extra support for less strong students. The best remediation is the one that is not needed.

This could also result in more inclusive education in the classroom. Students struggling with development, neurological or learning disorders might just be able to understand the new material and develop at the same pace as the stronger students.

Classes also differ. Strong classes have mostly strong students, the reverse for weak classes. The same verbal lesson, e.g. an instruction English grammar on the "present continuous" in the 2nd year secondary school, can have totally different outcomes when given to a Latin class or to a non-Latin class in A-stroom. The Latin class has stronger students (larger working memory, more self-motivation) with prior knowledge on grammar they obtained from their Latin lessons. The English lesson on present continuous may be easily understood and memorized. In contrast, the weaker class consists of a different type of learners (smaller working memory, less self-motivation) and less prior grammar knowledge from other language lessons. The same lesson may result in a large portion of the class not understanding and memorizing the material. In this example, a knowledge clip assisted instruction in the latter class may bring a lot of benefit, while for the Latin class it could even be counterproductive: too simple (boring the students) and taking more than necessary preparation and in-class time. It is up to the teacher to assess when and when not to use this didactic tool.

2.4 Selection of the practical problem

2.4.1 School Context

The practical part of this dissertation was carried out in OLVP Bornem, a Catholic school with 1180 students of which 225 in the second year, spread over 13 classes.

My mentor was Ine Kerremans, a very experienced teacher of Dutch and English. All decisions related to the practical part of my research and the execution of the trial lessons were made in close collaboration.

2.4.2 Research question and sub-questions

The research question investigated and discussed is the following:

Can knowledge clips support grammar learning during English lessons in the second year, 1st graad, A-stroom?

In addressing this, the following sub-questions guide the study:

1. When does the teacher use knowledge clips in a real class context?

2. Does the checklist for knowledge clip assisted instruction help the teacher to efficiently develop a good knowledge clip and apply it effectively in the lesson?
3. Can knowledge clip assisted instructions be used as a didactic tool for differentiation between students and classes?
4. How user-friendly and supportive is the application of knowledge clips for the teacher?
5. Does the teacher see improvement in grammar learning?

2.4.3 Grammar topics and class details

Four grammar topics were selected for the trial lessons, based on the curriculum and matching in the planning:

1. -ing form (verbs ending in -ing).
2. likes and dislikes (e.g. I like football, I dislike paintball).
3. present continuous tense (e.g. I am working).
4. short answers (e.g.: Are you OK? Yes, I am.)

The “short answers” knowledge clip was developed but unfortunately not used because of time constraints.

There were five classes for the trial lessons, providing sufficient variation to test the knowledge clips offer opportunities for class differentiation:

Class A: 22 students, Latin.

Class B: 19 students, Economy & Organization.

Class C: 22 students, STEM.

Class D: 23 students, STEM.

Class E: 23 students, STEM.

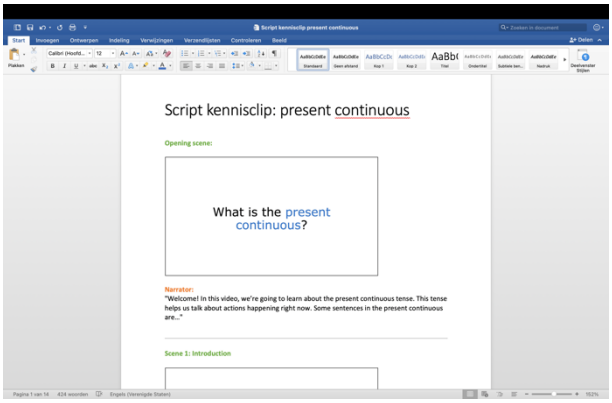
Class A was the strongest class with the highest motivation and most pre-knowledge in terms of language background. Class C was described as active and motivated, class E was known to be more challenging in terms of motivation.

2.4.4 Developing knowledge clips

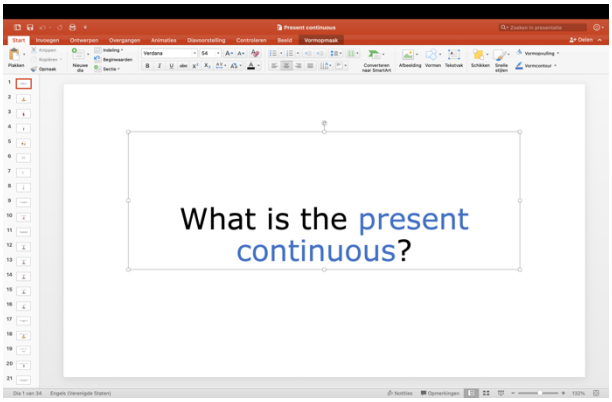
Usable clips for the selected topics could not be found, not from professional providers of didactic material nor in the public domain (e.g. YouTube). Clips that were found were not built for instruction, not on topic e.g. too general, and/or not applying the multimedia design principles.

Therefor it was decided to develop our own clips. These were the steps to do so:

1. Write a script of all relevant learning content, split this in scenes with for each scene the pictures and visualization, and the text serving as voice-over. If necessary, these scenes are grouped in segments with subtitles. Many design principles of the checklist are already applied: coherence, signaling, redundancy, temporal contiguity, segmenting, modality, multimedia and personalization principles.

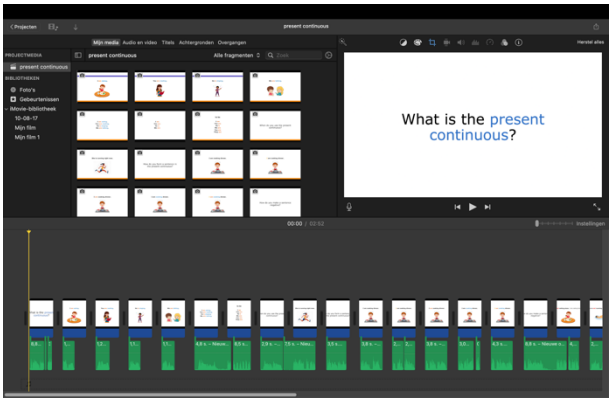


2. Make a PowerPoint, with one “scene” per slide, and paying attention to the spatial contiguity principle.



3. Take a screenshot of each slide (or save as a picture).

4. Add all screenshots in the correct order in iMovie or another video editing tool (e.g. Moviemaker).
5. Record the audio. Both laptops and smartphones can record audio fragments, but smartphones were found to give the best results. Read the script for each scene (keeping the personalization principle in mind) while recording. Remember that the volume and tone should be similar throughout the fragments (no sudden sounds or louder words to avoid distraction). Then save each audio fragment with a specific name to make it easier to find it back afterwards.
6. Send the audio fragment(s) to a laptop if applicable.
7. Add the audio fragments in iMovie. These will be shown below the images.
8. Edit the fragments and scenes. The audio and scenes can now be made longer or shorter accordingly until the audio and visuals match. Audio fragments can be split or cut to cancel unnecessary breaks or to interrupt fast-paced sentences. Make sure however it still sounds natural: avoid unnecessary or distracting transitions.



9. Prepare the knowledge clip for classroom use: think about the important or difficult words that you should pre-teach, and the generative activities that are suitable. In this approach the pre-training, segmenting and generative activity principles are applied.
10. Put the knowledge clips on YouTube to guarantee they work in the classroom, only a link (url), a browser and internet coverage are needed. Sharing mp4 files does not give this guarantee, there are too many things that can go wrong with devices and apps to play mp4.

The 4 knowledge clips developed can be found here:

- Likes and dislikes: https://youtu.be/Fpt9qoe11UU
- Ing-form: https://youtu.be/jJJl7ccE5fM
- Present continuous: https://youtu.be/rqYIT4S03Pk
- Short answers: https://youtu.be/z8yxDxYlH1Q

On average it took around six hours per knowledge clip to be created. However, with some more experience this might be reduced to three to four hours. And of course, once a knowledge clip is made, it can be reused many times. An additional advantage of creating your own is that small adaptations, e.g. changing a few words in the narration or making a small change in the speed or adding a scene, can all be done very quickly in iMovie. This is not realistic when using knowledge clips developed by somebody else.

3 Research Method

To test the use of knowledge clips in grammar instruction, the study consists of making arrangements, developing knowledge clips, teaching, classroom observations, oral lesson debriefings, and a closing interview. More specifically:

- The researcher and the teacher (external mentor) make arrangements about knowledge clip trials (17/10/2024)
- The researcher develops knowledge clips (30/10/2024 – 11/11/2024)
- The teacher gives trial lessons with knowledge clips, the researcher is observer (five lessons likes & dislikes + ing-form, four lessons present continuous, two follow-up lessons present continuous, 15/11/2024 – 21/11/2024)
- The researcher gives a trial lesson with a knowledge clip, the teacher is observer (present continuous, 21/11/2024)
- The researcher has a closing interview with teacher (16/12/2024)

The grammar lessons with incorporated knowledge clips are designed in collaboration with the teacher. Generative activities are added but slightly adapted to the specific needs of each class.

During the observation of each trial lesson, attention is paid to how the knowledge clip is used, how the teacher engages with the material and how the students respond. After each lesson, an oral lesson debriefing is conducted with the teacher to assess whether she notices any difference in student understanding or engagement compared to traditional methods. Questions focus on the teacher's experience using the knowledge clip and her perception of its effectiveness.

The checklist that was developed (p. 49) is used both during the observation and as a guideline during the teacher debriefings, to explore whether it was helpful in guiding the lesson or enhancing the use of the knowledge clip.

Finally, after all lessons a closing interview is conducted with the teacher to capture the overall findings.

Connection to Research Question and Sub-questions:

Research Question: Can knowledge clips support grammar learning during English lessons in a second year, 1e graad, A-stroom?

The study will provide insights into whether the teacher and students find the support of knowledge clips effective in improving grammar learning.

Sub-question 1: When does the teacher use knowledge clips in a real class context?

The researcher will observe how and when the teacher integrates the knowledge clips in the lessons, depending on the subject and needs of the students, and during which parts of the lesson it is most effective.

Sub-question 2: Does the checklist for knowledge clip assisted instruction help the teacher to efficiently develop a good knowledge clip and apply it effectively in the lesson?

The first part of the question will be answered by the developer of the knowledge clips. For the second part, the observations and interview will clarify how useful the checklist is for the actual lessons.

Sub-question 3: Can knowledge clip assisted instruction be used as didactic tool for differentiation of students and classes?

The study will assess whether combining knowledge clips with generative activities (e.g. summarizing) provides a form of differentiation that supports diverse learners from different classes. The observations and the teacher's feedback will provide an explanation on how this works for the different groups.

Sub-question 4: How user-friendly and supportive is the application of knowledge clips for the teacher?

The observations and the teacher interview will clarify whether using knowledge clips and generative activities are practical and easy to use from a teacher's perspective.

Sub-question 5: Does the teacher see improvement in grammar learning?

The study will gather data on grammar learning, through the teacher interview and the observations. The teacher will provide insights into how she measures or makes conclusions

about improvements in grammar understanding to determine the impact of using knowledge clips.

4 Results

4.1 When does the teacher use knowledge clips in a real class context?

Introduction and learning phase

In alignment with the theoretical analysis (p. 22-23), all knowledge clips in this research were used to assist the instruction during the learning phase, followed by reinforcing the learning with exercises.

Variations were observed in the way the teacher introduced the lessons, regarding:

- Explaining knowledge clips in general, i.e. the first time explaining in more detail what was about to happen.
- Pre-teaching of new words that would be used in the knowledge clip.
- The generative activity and what was expected from the students.

Grammar lessons

Also aligned with the theoretical analysis, the materials developed in this research were all used in grammar lessons, to increase understanding and retention of the more difficult learning material.

Three series of lessons were given over the five classes: on *likes and dislikes*, on the *ing-form*, and on *the present continuous*.

- Both the *ing-form* and *likes and dislikes* knowledge clips were used without segmentation. The generative activity (making a schematic summary during the clip) was discussed after the clip.
- The first *ing-form* lesson did not go so well: the students were confused and made many mistakes during the exercises. This was compensated by the teacher in the following *ing-form* lessons by being clearer in the introduction on the generative activity expectations. As a result, in the following lessons a better understanding was obtained after the knowledge clip, and better results were visible in the exercises.

- The *likes and dislikes* lessons all went well with students having few difficulties in the exercises. In hindsight, the complexity of the *like and dislikes* lesson was probably too low to justify a knowledge clip assisted instruction. There is not a lot of understanding required.
- The *present continuous* lessons were all given with segmentation (7 segments), with teacher led generative activities between the segments, and clear instructions on the generative activity expectations in the introduction before each segment. Good understanding as well as good results in the exercises were obtained in the course of this lesson.

4.2 Does the checklist for knowledge clip assisted instruction help the teacher to efficiently develop a good knowledge clip and apply it effectively in the lesson?

Developing knowledge clips

As described on p. 20 the design principles in the checklist were closely followed when developing the knowledge clips in this research. These principles include coherence, signaling, redundancy, spatial and temporal contiguity principles for reducing the extraneous processing; segmenting, pre-training and modality principles to manage the essential processing; and personalization principle to foster generative processing.

Without applying these design principles when developing knowledge clips, the materials are less effective. The checklist is a good tool to keep focus on what are essential components.

Of course, a teacher having more experience in developing knowledge clips may not need to consult the checklist as frequently as a teacher just starting out.

Relevant principles during the lesson.

The pre-teaching, segmenting and generative activity principles are the most relevant from a didactic point of view, and it proves very effective to consider these three principles simultaneously. Before starting or resuming the knowledge clip, it is also important that the teacher points out essential words beforehand. This way, students know what to expect and

what they need to look for. Regularly pausing the video to practice a generative activity stimulates the students' working memory and helps them to understand the learning material.

During the research, three knowledge clips were used about different topics: *likes and dislikes*, *ing-form* and *present continuous*, in this order. The two knowledge clips that stood out in terms of "applying relevant principles during the lesson" were the *ing-form* and the *present continuous*. These videos were longer and had both intertitles for segmentation.

Ing-form

The knowledge clip assisted instruction about the *ing-form* used the generative activity principle. Before the knowledge clip was played, the teacher clarified what was expected from the students: they had to watch the video and then make a summary of the content discussed in the knowledge clip. (Side note: the fact that this was the first time they used these knowledge clips may have had an influence on their reaction.) Most of the students actively participated in the task. Some students began working during the clip itself, showing a clear understanding of the expectations. However, engagement varied, with some students completing only part of the theory and others not writing anything. In class C, teacher intervention was necessary to encourage students to start working on the exercise. While all students eventually engaged, common mistakes emerged, leading to the conclusion that longer clips require more pauses. In class A, nearly all students were actively working, with most having written down the key points from the knowledge clip and even using color in their summaries. Collaborative exercises with the teacher resulted in correct answers, indicating that the knowledge clips, combined with teacher guidance, were effective in teaching the grammar rules.

Present continuous

The knowledge clip about the *present continuous* used pre-teaching, segmenting and generative activity principles. Clear instructions were given before the knowledge clip was shown, and the clip was paused at every intertitle. Essential words were discussed beforehand and during the pauses. After each segment, students had to summarize what they had just

observed. At the end of the video, the learning content and the students' summaries were reviewed.

Students gradually understood the expectations during each stop in the knowledge clip and in each class, almost everyone collaborated by the end of the activity. Some students initially appeared unsure, but as soon as the purpose of the knowledge clip and the generative activity became clear, the majority completed the task correctly and began asking questions, indicating growing confidence and active participation. In the fifth and final class, class B, students not only participated actively but also explained the material to one another.

The observations during of lessons on these two grammar topics confirm the effectiveness of the teacher's guidance, and the need to implement all design principles simultaneously.

Adding a new design principle

In class E, when dealing with the *ing-form* students first started doing their exercises and then tried to make the summary. Very quickly, students were confused, and their summaries were not relevant or incomplete. In another class, the teacher just said they had to pay attention because there would be a task afterwards without specifying which task. Some students started to sigh as they were unsure what to do. In all the other classes, especially when working with the knowledge clip about *present continuous*, the most effective approach for the teacher was to give clear and detailed instructions. Students actively worked on their summaries, and their motivation was visible through their participation, and they gave mostly correct answers.

Giving clear instructions before showing a knowledge clip is crucial to ensure students understand what is expected of them. It helps focus their attention on key elements of the clip and minimizes confusion. Unclear instructions seem to create extraneous processing. This learning is so important that a new point should be added in the checklist for knowledge clip assisted instruction (see appendix).

4.3 Can knowledge clip assisted instruction be used as didactic tool for differentiation of students and classes?

Differences between and within classes

The five classes in which the research took place were all A-stroom 1e graad, but there is a difference between these classes (p. 26). This is why the teacher's expertise and knowledge about the classes is important to decide when and how to use a knowledge clip assisted instructions.

During the interview, the teacher mentioned that the only negative aspect of these specific knowledge clips was that using them in Class A, Latin, felt as rather unnecessary. These pupils have enough language background to deal with new grammar items.

In class B to E, differentiation was observed with two drivers, or factors that help promote a specific outcome:

1. As soon as a the knowledge clip started playing, the relative attention and focus of the students increased, and this was observed in all classes B to E, and for all lessons in which clips were used. So, also less motivated and weaker students were engaged. This does not mean all students but sufficiently more to make a noticeable difference in the class atmosphere. In class A this difference was not observed, class A had a high engagement with and without knowledge clips.
2. The teacher was able to involve more students by pre-teaching difficult words and giving clear instructions in the introduction about expectations. Additionally, the video was segmented into small chunks, generative activities *and* personalization were included, and social connections with the students were fostered.

The first driver, increased attention when integrating knowledge clips, cannot be compared to the double channel benefit in Multimedia learning: larger working memory, deeper understanding. These are two different things: increased attention does not necessarily mean larger working memory. Proving whether the benefit of using both the audio and visual channel in Multimedia learning is present or not through this observation seems difficult, if not impossible to discern in the context of this dissertation.

The second driver is not specific to knowledge clip-assisted instruction. Pre-teaching, segmentation, generative activities and personalization can also be applied without knowledge clips. At least knowledge clip assisted instruction does not prevent the teacher from applying differentiation through these principles. These activities lead to differentiation, whether using a clip or techniques.

4.4 How user-friendly and supportive is the application of knowledge clips for the teacher?

Teacher friendly and time-efficient

Based on the interview, we can conclude that the usage of knowledge clips and generative activities during lessons is teacher-friendly and time-efficient.

The teacher found the knowledge clips to be a valuable addition to the lessons. She felt the clips provided clarity and helped students understand and retain the material, which was her primary objective.

The teacher noted that using the knowledge clips did not influence her timing in a negative way, since the students seemed to grasp the theory better. The checklist was also described as clear and logical, supporting efficient planning and execution.

In conclusion, knowledge clips and generative activities offer a teacher-friendly approach that saves time while maintaining or even enhancing the quality of the instruction.

4.5 Does the teacher see improvement in grammar learning?

Improvement in grammar learning

Improvement in grammar learning was visible through observations and reported in the interview. The observed effects on grammar learning through knowledge clips were the following:

- The teacher observed that theory appeared to "stick" faster and longer compared to similar grammar lessons without knowledge clips. Specifically for the present continuous tense, where students often forgot to use the verb "to be" before the -ing form, only two to three students across all five classes made this mistake this year. She mentioned that every year, many students struggled with this concept, but the noticeable improvement in accuracy during the practice stage suggests a measurable enhancement in grammar retention and application transfer. This indicates that the clips save time as the learning content seems to have been stored in the students' long-term memory.
- While watching the knowledge clip of the present continuous, students showed active participation by completing tasks, such as creating schemes and engaging in conversations about these schemes. This behavioral observation suggests that their understanding of the grammar topic improved due to their active involvement.
- The processing phase after the knowledge clip was described as “smooth,” indicating that students were able to apply the grammar rules effectively in exercises. This reflects a successful understanding of the material taught.
- The knowledge clip assisted instruction provides an alternative explanation of the grammar rules with examples, possibly beneficial for some students.

5 Conclusion

Knowledge clip assisted instruction finds its theoretical foundation in Multimedia Learning, an evidence-based approach to understand and improve learning using the combination of speech (narration) and images. Based on this work, a checklist was developed describing the design principles that need to be followed to develop knowledge clips and to integrate them into the instruction part of a lesson, with the promise of significantly improved understanding and memorization of more complex learning material.

Can knowledge clips support grammar learning during English lessons in a second year, 1e graad, A-stroom? Knowledge clips were developed for a selection of grammar topics following the checklist and used in the instruction part of trial lessons in different classes. It turns out that knowledge clips can indeed support grammar learning during English lessons in a second year, 1e graad, A-stroom, provided they are well designed, follow the checklist, and integrated into the instruction stage. The teacher should initiate and lead generative activities before, during and after the knowledge clip.

Knowledge clips bring most benefits when applied in the instruction of more complex learning material like grammar (e.g. tenses). One should take into account that students with weaker language skills benefit much more than students who are good at languages. The checklist not only helps the teacher to develop good knowledge clips in an efficient way but can also be applied to assist in building an effective instruction lesson with the clips. From a teacher's perspective, knowledge clips are teacher-friendly and time-efficient, and allow for differentiation. Most importantly, grammar theory appears to "stick" faster and longer compared to grammar instruction given without knowledge clips. In addition, there is more motivation and active participation among the students.

Of course, the research in this dissertation was small in scale and has many limitations, but the results seem solid enough to recommend the gradual introduction of knowledge clip assisted instructions. My advice would be to definitely use clips for grammar lessons 1e graad A-stroom for students that are not very good at languages, as a means to motivate and activate them and as a tool to improve their insight in and knowledge about grammar. As the grammar becomes more complex in the 2e graad, clips could also be applied in following years for TEFL grammar teaching.

The checklist is a transferrable didactic tool that can benefit other language teachers and possibly teachers of other subjects.

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7 Appendix

7.1 Gantt-chart:

Week:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. Onderwerp																				
Mail sturen naar promotor om samen te zitten																				
Eerste versie onderwerp voorstel																				
Samenzitten met mevrouw Peters																				
Onderzoeksvoorstel/ plan van aanpak opstellen																				
Feedback toepassen																				
Onderwerp indienen via Toledo																				
2. Externe begeleider																				
Mail sturen naar mogelijke externe begeleider																				
Samenzitten met externe begeleider																				
Promotor op de hoogte houden																				
Contract externe begeleider indienen via Toledo																				
3. Probleemstelling																				
3.1 Probleemstelling formuleren																				
Onderzoeksvraag en deelvragen formuleren																				
3.2 Literatuuronderzoek																				
Voorbereiding: structuur vormen																				
Bronnen verzamelen																				
Bronvermelding bijhouden																				
Literatuur selecteren																				

Literatuur verwerken
Literatuuronderzoek bronvermelding (in de tekst)
Literatuuronderzoek bronvermelding (opsomming)
3.3 Probleemstelling indienen via Toledo
Mail met probleemstelling doorsturen naar promotor
Probleemstelling nakijken met promotor
Feedback toepassen
4. Onderzoeksplan
Onderzoeksmethoden vaststellen
Dataverzameling bepalen
Data-analyse bepalen
Onderzoek evalueren en bijwerken
Plan van aanpak bespreken met externe begeleider
Planning aanvullen met data van externe begeleider
Onderzoeksplan indienen via Toledo
Mail met onderzoeksplan doorsturen naar promotor
Onderzoeksplan nakijken met promotor
Feedback toepassen
5. Onderzoek
Ontwerpeisen maken
Ontwerpeisen voorleggen aan promotor
Kennisclip 1 maken
Kennisclip 2 maken
Kennisclip 3 maken
Kennisclip 4 maken
Bevraging / andere manier van vaststellen onderzoek maken
Vaststelling onderzoek laten nakijken door promotor
Feedback toepassen
6. Rapport

6.1 Titelblad																			
- Titel schrijven																			
- Titelblad vervolledigen																			
6.2 Voorwoord:																			
- Voorwoord schrijven																			
- Voorwoord nakijken																			
6.3 Abstract																			
- Kern- / trefwoorden schrijven																			
- Onderzoeksvraag noteren																			
- Korte samenvatting bachelorproef schrijven																			
- Referentielijst noteren																			
- E-mailadres noteren																			
- Abstract nakijken																			
6.4 Inleiding																			
- Inleiding schrijven																			
- Inleiding nakijken																			
6.5 Literatuurstudie																			
- Nalezen																			
- Laten nalezen																			
6.6 Aanpak																			
- Aanpak nalezen																			
6.7 Resultaten																			
- Resultaten verwerken																			
- Analyseren (belangrijkste en meest relevante resultaten)																			
- Verwijzingen naar literatuuronderzoek																			
6.8 Conclusie																			
- Deelvragen beantwoorden																			
- Verwijzingen naar resultaten																			
- Verwijzingen naar literatuuronderzoek																			

- Onderzoeksvraag beantwoorden	
- Verwijzingen naar resultaten	
- Verwijzingen naar literatuuronderzoek	
- Onderzoek beperkingen formuleren	
- Voorstellen toekomstig onderzoek formuleren	
6.9 Literatuurlijst	
- Bronvermelding	
- Bronnen op alfabetische volgorde zetten	
6.10 Bijlagen toevoegen	
6.11 Rapport	
- Lay-out verzorgen	
- Inhoudsopgave	
- Volledig nakijken	
- Laten nakijken	
- Inhoudsopgave	
- Rapport: resultaten laatste kans feedback	
- Feedback toepassen	
- Rapport indienen via Toledo	
- Rapport indienen via Turnitin	
- Rapport indienen via KULoket	
7. Journalistiek artikel	
- Opsomming belangrijkste kenmerken	
- Voorbeelden opzoeken	
- Structuur bepalen	
- Schrijven	
- Nalezen	
- Journalistiek artikel laatste kans feedback	
- Feedback toepassen	
- Journalistiek artikel indienen via Toledo	
- Journalistiek artikel indienen via Padlet	

8. Feedback externe begeleider																				
- Bestand downloaden																				
- Bestand voor feedback doorsturen naar externe begeleider																				
- Feedback externe begeleider indienen via Toledo																				
9. Zelfevaluatie																				
- Bestand downloaden																				
- Bestand invullen																				
- Zelfevaluatie indienen via Toledo																				
10. Voorstelling van de bachelorproef																				
- Belangrijkste informatie verzamelen																				
- Structuur maken																				
- Presentatie maken																				
- Presentatie laten nakijken																				
- Presentatie oefenen																				
- Presentatie uitvoeren																				

7.2 Elaboration of research methods:

7.2.1 Checklist version one

Principles		Check?
1	Coherence principle: people learn better when irrelevant material is excluded rather than included (words, symbols and music).	
2	Signaling principle: people learn better when cues (underlining, circling around, arrows pointing…) are added that highlight the organization of the essential material.	
3	Redundancy principle: in a fast-paced lesson, people learn better if image and narration are combined. Printed text is then too much, becomes 'unnecessary' (example sentences are not seen as printed text).	
4	Spatial contiguity principle: people learn better when corresponding words and pictures are presented near rather than far from each other on the page or screen.	
5	Temporal contiguity principle: people learn better when corresponding words and pictures are presented simultaneously rather than successively.	
6	Segmenting principle: people learn better when a multimedia message is presented in short fragments adapted to the learner's pace rather than as a continuous unit.	
7	Pre-training principle: people learn more deeply from a multimedia message when they already have some foreknowledge on the names and characteristics.	
8	Modality principle: people learn more deeply from pictures and spoken words than from pictures and only printed words.	
9	Multimedia principle: people learn better from words and pictures than from words alone.	
10	Personalization principle: people learn better from multimedia presentations when words are in a conversational style rather than a formal style.	

11	Generative activity principle: people learn better when they are guided in carrying out generative learning activities during learning (e.g., summarizing, mapping, drawing, imagining, self-testing, self-explaining, teaching, or enacting).	

Generative activity principle:

Most to least effective:			Check?
0.77	Teaching	Explain to others	
0.65	Imagining	Imagine a picture	
0.62	Mapping	Create a concept map, knowledge map, or graphic organizer	
0.61	Self-explaining	Explain to yourself	
0.57	Self-testing	Take a practice test	
0.51	Enacting	Move objects to act out the lesson	
0.50	Summarizing	Write a summary	
0.40	Drawing	Draw a picture	

7.2.2 Checklist version two

Principles		Check?
1	Coherence principle: people learn better when irrelevant material is excluded rather than included (words, symbols and music).	
2	Signaling principle: people learn better when cues (underlining, circling around, arrows pointing…) are added that highlight the organization of the essential material.	
3	Redundancy principle: in a fast-paced lesson, people learn better if image and narration are combined. Printed text is then too much, becomes 'unnecessary' (example sentences are not seen as printed text).	
4	Spatial contiguity principle: people learn better when corresponding words and pictures are presented near rather than far from each other on the page or screen.	
5	Temporal contiguity principle: people learn better when corresponding words and pictures are presented simultaneously rather than successively.	
6	Segmenting principle: people learn better when a multimedia message is presented in short fragments adapted to the learner's pace rather than as a continuous unit.	
7	Pre-training principle: people learn more deeply from a multimedia message when they already have some foreknowledge on the names and characteristics.	
8	Modality principle: people learn more deeply from pictures and spoken words than from pictures and only printed words.	
9	Multimedia principle: people learn better from words and pictures than from words alone.	
10	Personalization principle: people learn better from multimedia presentations when words are in a conversational style rather than a formal style.	
11	Generative activity principle: people learn better when they are guided in carrying out generative learning activities during learning (e.g., summarizing, mapping, drawing, imagining, self-testing, self-explaining, teaching, or enacting).	
12	Instruction: giving clear instructions before showing a knowledge clip is crucial to ensure students understand what is expected of them. It helps focus their attention on key elements of the clip and minimizes confusion.	

Generative activity principle:

Most to least effective:			Check?
0.77	Teaching	Explain to others	
0.65	Imagining	Imagine a picture	

0.62	Mapping	Create a concept map, knowledge map, or graphic organizer	
0.61	Self-explaining	Explain to yourself	
0.57	Self-testing	Take a practice test	
0.51	Enacting	Move objects to act out the lesson	
0.50	Summarizing	Write a summary	
0.40	Drawing	Draw a picture	

7.2.3 Knowledge clips

Likes and dislikes: https://youtu.be/Fpt9qoe11UU

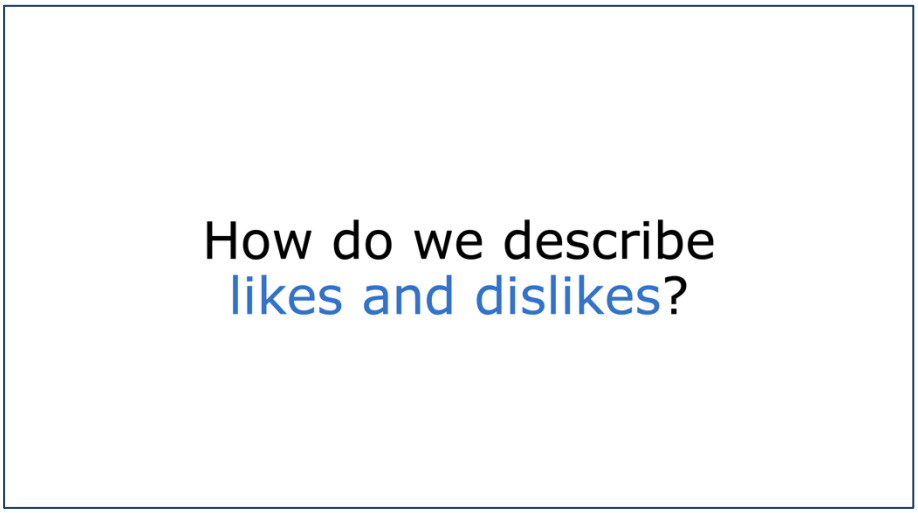
Ing-form: https://youtu.be/jJJl7ccE5fM

Present continuous: https://youtu.be/rqYIT4S03Pk

(not used) Short answers: https://youtu.be/z8yxDxYlH1Q

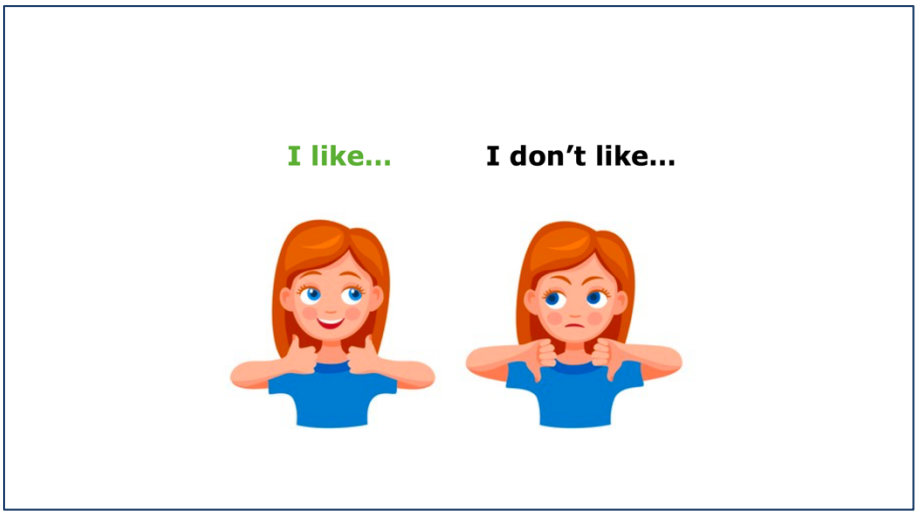
7.2.4 Knowledge clip script: likes and dislikes

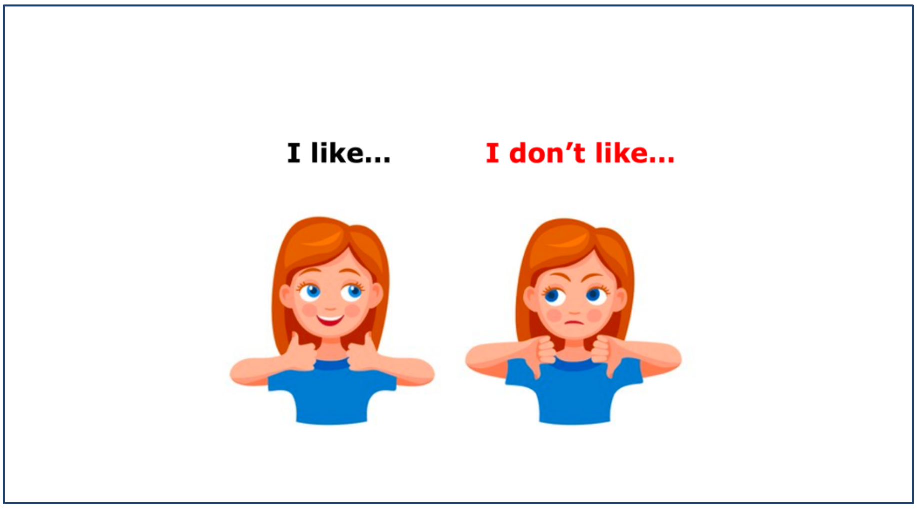
Opening scene:

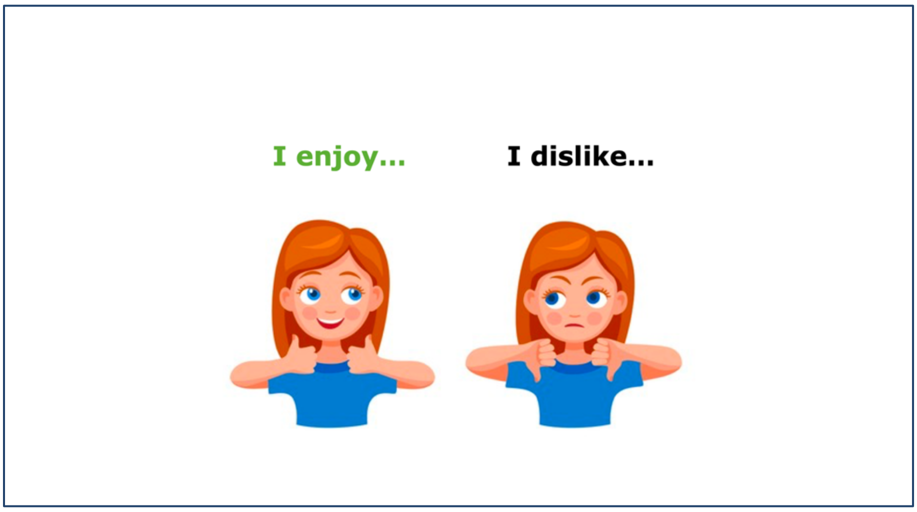


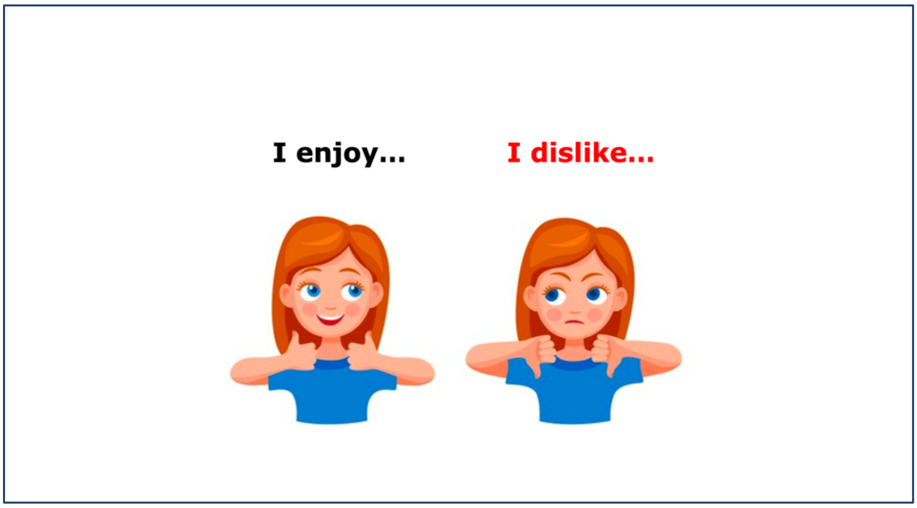
Narrator:
"Welcome! In this video, we're learning how to talk about things you like and dislike."

Scene 1: Introduction




I like…
I don’t like…


I enjoy…
I dislike…

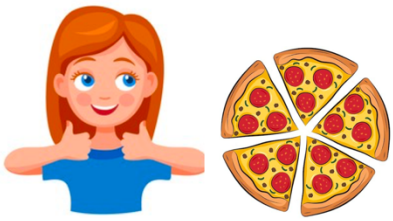

I enjoy…
I dislike…

Narrator:
"When we talk about things we like, we use phrases such as *I like.* For dislikes we can say, we say *I don't like*. We can also say *I enjoy* or *I dislike*."

Scene 2: Likes

Likes

I like pizza.

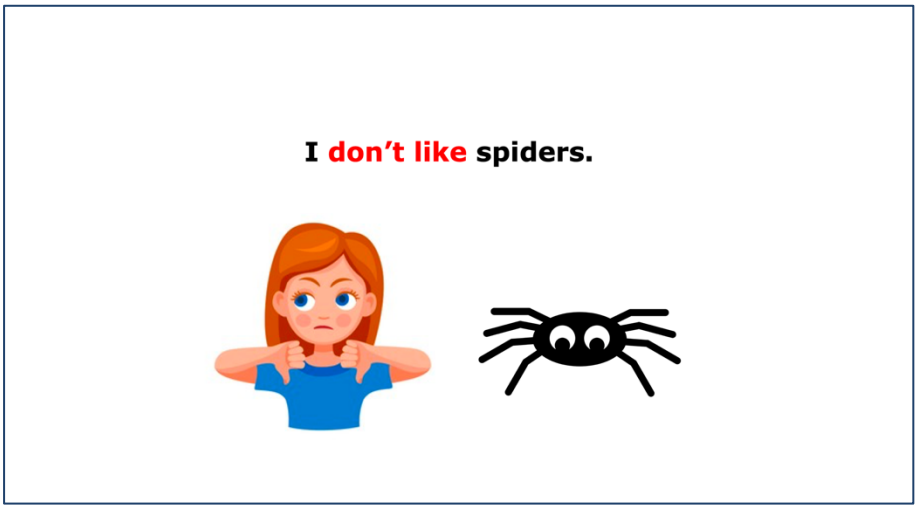


I enjoy music.

Narrator:
"To talk about something you enjoy, start with *I like…* or *I enjoy…* For example, *I like pizza* or *I enjoy music.* "

Scene 3: Dislikes

Dislikes

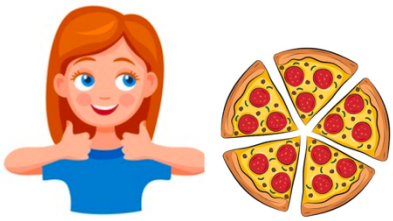


Narrator:
"When talking about something you don't like, say *I don't like…* or *I dislike…* For example, *I don't like spiders* or *I dislike loud noises.*

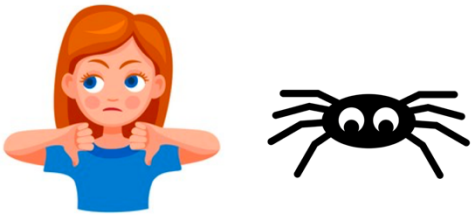
Scene 5: Adding More Detail

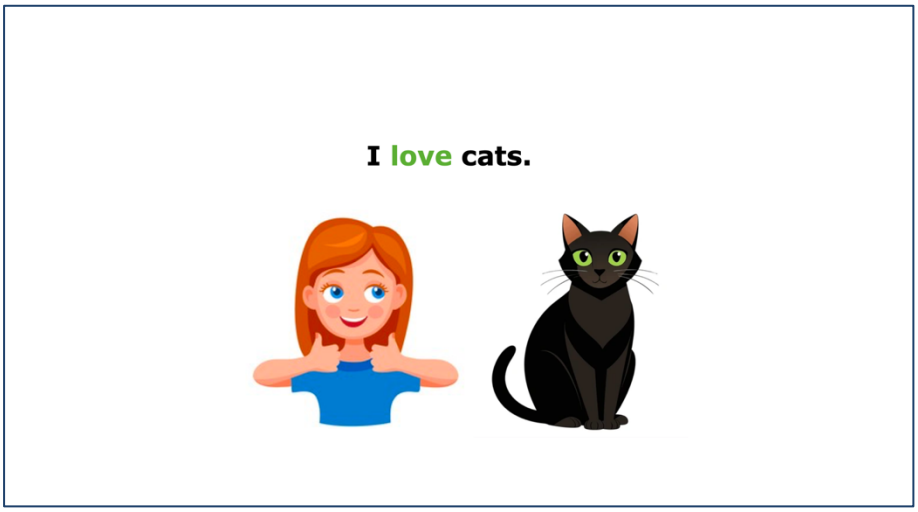
Adding more detail

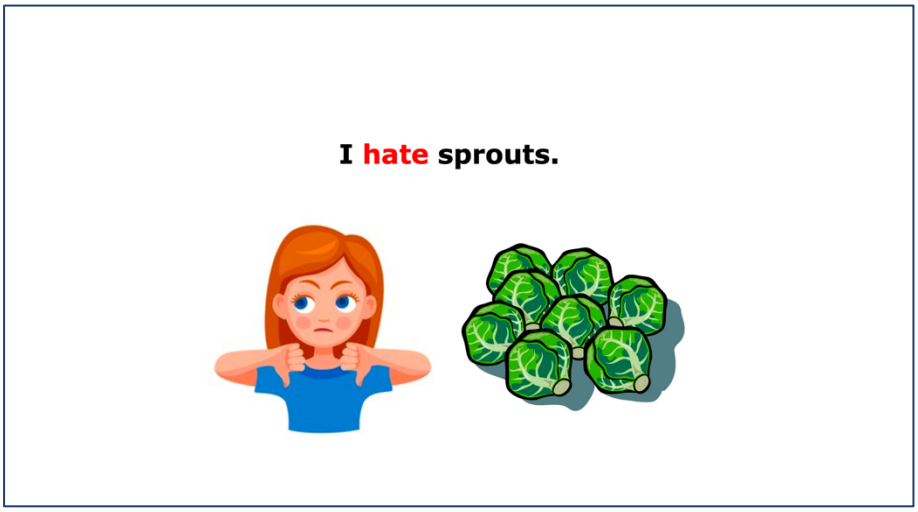
I really like pizza.



I absolutely dislike spiders.





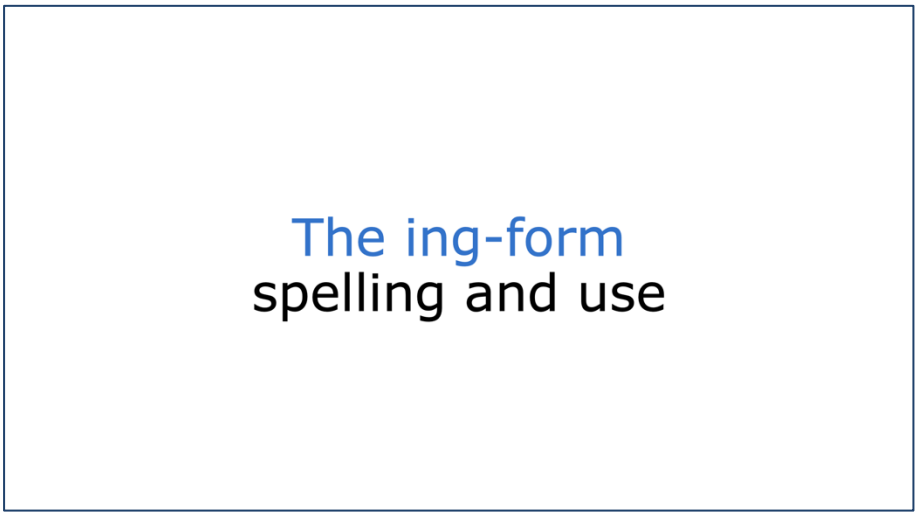


Narrator:

"You can also add words to make your likes and dislikes stronger. For example, *I really like pizza,* or *I absolutely hate spiders. I love cats*, or *I hate sprouts*"

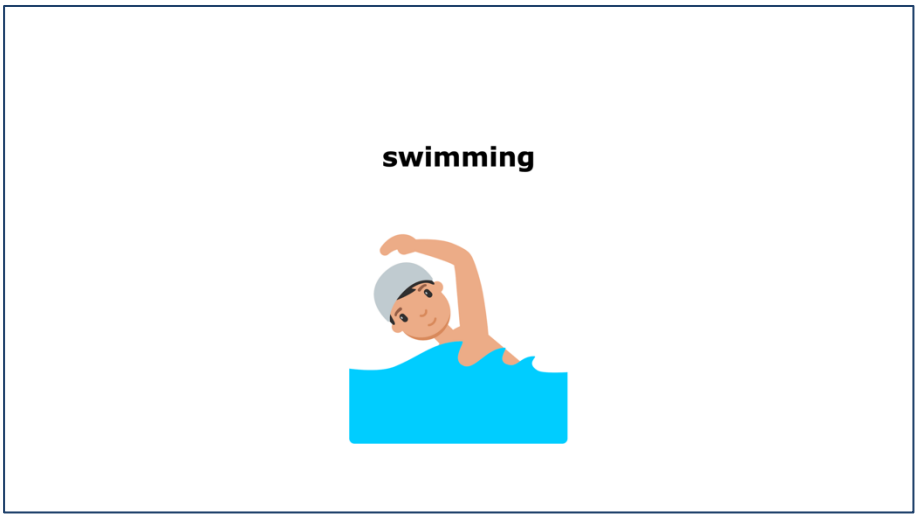
7.2.5 Knowledge clip script: ing-form

Opening scene:



Narrator:
"Welcome! In this video, we'll explore when and how to use the *-ing* —it'll help you describe actions, hobbies, or something happening now."

Scene 1: Introducing the *-ing* form



Narrator:
"An example of an ing-form is *swimming*." The *-ing* form is often used to talk about activities, like *swimming* or *playing.* You can think of it as the 'action form' of verbs."

Scene 2: Use 1 – present continuous

When do you use the ing-form?

an activity right now:

I am swimming.

an activity right now:

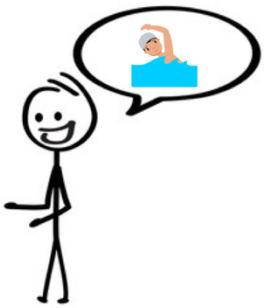
I am swimming.

Narrator:
"We use the ing-form with 'to be' to say that something is going on right now. For example, *I am swimming*."

Scene 3: Use 2 – noun

noun (= zelfstandig naamwoord):

Swimming is my favourite sport.



noun (= zelfstandig naamwoord):

Swimming is my favourite sport.

Narrator:
"Another time we use the ing-form is to name an activity. It works like a noun. In Dutch: zelfstandig naamwoord. For example: *Swimming is my favourite sport.*"

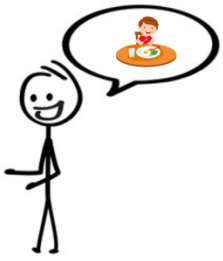
Scene 4: Comparing the two uses

activity:

I am eating.

noun:

Eating is my favourite part of the day.

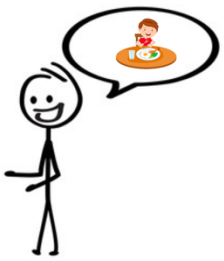


activity:

I am eating.

noun:

Eating is my favourite part of the day.

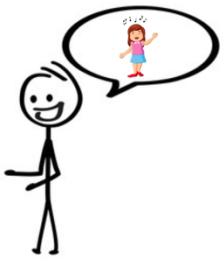


activity:

She is singing.

noun:

She is really good at singing.

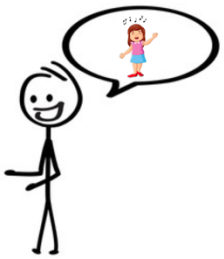


activity:

She is singing.

noun:

She is really good at singing.



activity:

She is studying to improve her grades.

noun:

Studying helps her improve her grades.

activity:

She is studying to improve her grades.

noun:

Studying helps her improve her grades.

Narrator:

"Now, if we compare them: an activity is *I am eating*. Using it as a noun is *Eating is my favourite part of the day*. An activity is *She is singing*. A noun could be *She is really good at singing*. As an activity: *She is studying to improve her grades*. As a noun: *Studying helps her improve her grades*."

Scene 5: How to form the *-ing* form

How do you form the ing-form?

The tree is growing.

The tree is growing. (to grow)

The tree is growing. (to grow)

He is playing football.

He is playing football. (to play)

He is playing football. (to play)

He likes driving.

He likes driving. (to drive)

He likes driving. (to drive)

He likes driving. (to drive)

They are dancing.

They are dancing. (to dance)

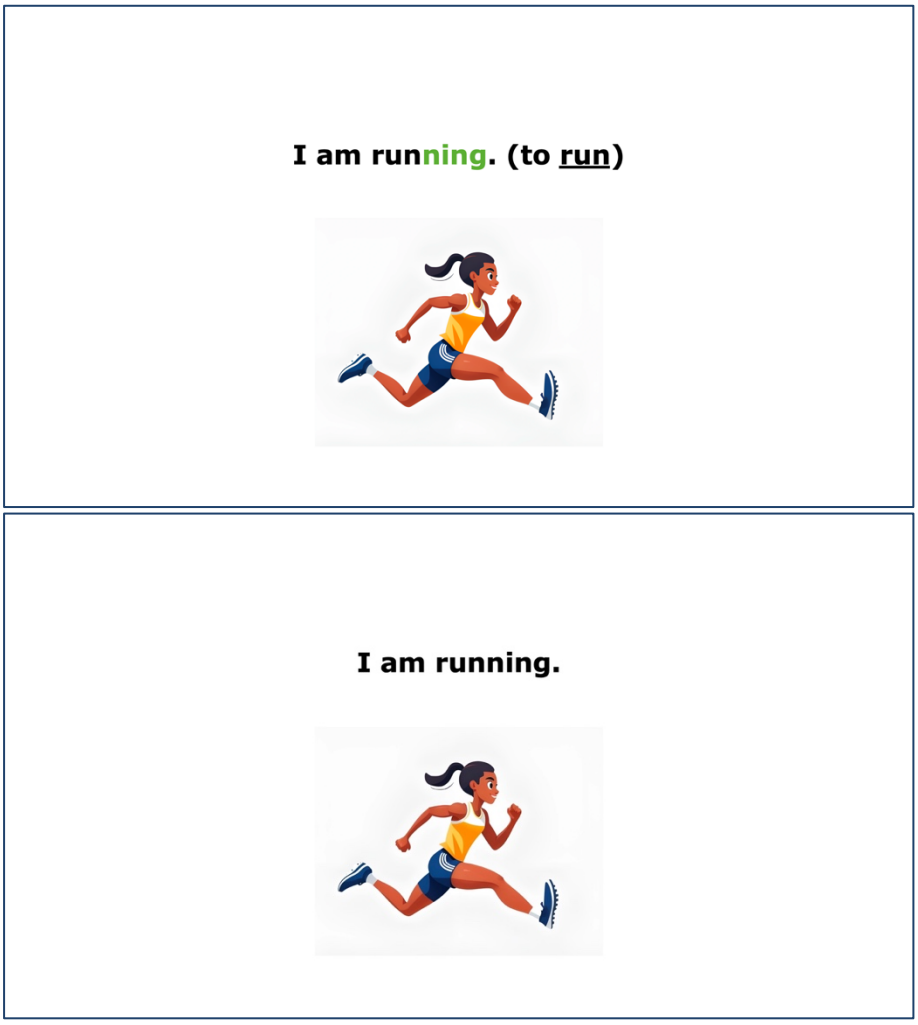
They are dancing. (to dance)

Every week this class goes swimming.

Every week this class goes swimming. (to swim)

Every week this class goes swimming. (to swim)

I am running. (to run)



Narrator:

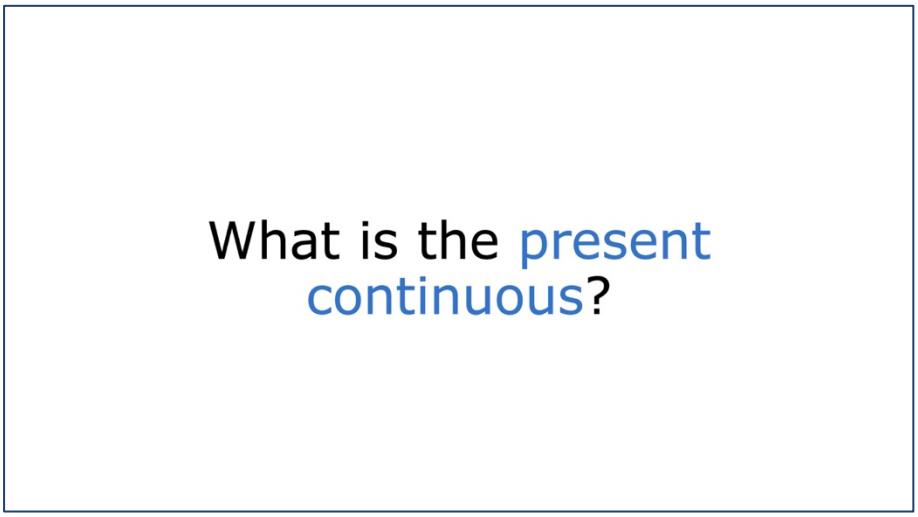
"For example *The tree is* growing. The infinitive form of ‘growing’ is ‘to grow’. To make the *-ing* form, you add *-ing* to the base form of the verb. Or *He is playing football*. We add ‘-ing’ after ‘play.

He likes driving: the infinitive is ‘drive’. Do you see what happens? We drop the ‘-e’ and add ‘-ing’. *They are dancing*: the same happens again. We drop the ‘-e’ and add ‘-ing’. So this happens to verbs that end with an ‘-e’: we drop the ‘-e’ and replace it with ‘-ing’.

Every week this class goes swimming: the infinitive is ‘to swim’. Voor ieder woord die één lettergreep is, en eindigt op een medeklinker, klinker, medeklinker, verdubbelen we de laatste medeklinker en voegen we ‘-ing’ toe. So ‘to swim’ becomes ‘swimming’, ‘to run’ becomes ‘running.

7.2.6 Knowledge clip script: present continuous

Opening scene:



Narrator:
"Welcome! In this video, we're going to learn about the present continuous tense. This tense helps us talk about actions happening right now. Some sentences in the present continuous are:"

Scene 1: Introduction

You are reading.

He is singing.

We are talking.

I am eating.
You are reading.
He is singing.
We are talking.

I am
You are
He is
We are

to be

I am
You are
He is
We are
You are
They are

Narrator:
"*I am eating, You are reading, He is singing, We are talking*. One thing we notice about these sentences is that 'to be' is always used: *I am, You are, He is, We are, You are, They are*."

Scene 2: When do we use the present continuous

When do you use the present continuous?

She is running right now.

Narrator:
"We use the present continuous to talk about actions happening now, for example *She is running right now.*"

Scene 3: Structure Breakdown

How do you form a sentence in the present continuous?

I am cooking dinner.

I am cooking dinner.

I am cooking dinner.

I am cooking dinner.

I am cooking dinner.

Narrator:

"We'll start with this example: *I am cooking dinner*. *I* is the subject. We always start with the

subject. *am* is the verb *to be,* as we have noticed already. And *cooking* is the *-ing* form of the main verb ‘to cook’. Together, they make the present continuous in *I am cooking dinner.*"

Scene 4: Negative

How do you make a sentence negative?

I am not eating pizza. I am eating breakfast.

He is not running. He is swimming.

She is not driving a car. She is riding a bike.

Narrator:

"Now, let's learn how to make the present continuous negative. To make it negative, simply add *not* after the verb *to be.* For example, *I am not eating pizza. I am eating breakfast / He is not running. He is swimming / She is not driving a car. She is driving a bike."*

Scene 5: Inversion Questions

How do you form a question in the present continuous?

You are cooking.

yes/no question:

Are you cooking?

Narrator:
"Let's use the sentence *You are cooking* again. To ask yes/no questions in the present continuous, we put the verb 'to be' before the subject. Now we have, *Are you cooking?* You can answer these questions with *Yes, I am* or *No, I'm not.* "

Scene 6: Question word Questions in Present Continuous

question word question:

What are you cooking?

question words

What
Where
When
Why
How
...

question word question:

What are you cooking? I am cooking Spaghetti.

question word question:

Where are you cooking? I am cooking in the kitchen.

Narrator:

"But how do you form a question if you want to know something specifically? These are called question word questions. For example *What are you cooking?* The question word is 'What'. There are also other question words such as *where, when, why*, *how*… You can't answer them with just 'yes' or 'no'. For example, *What are you cooking? I am cooking Spaghetti.* 'Spaghetti' gives an answer to the question 'What'. Or *Where are you cooking? I am cooking in the kitchen.* 'In the kitchen' gives an answer to the question 'Where'."

Scene 7: Summary

Summary

structure:

I am cooking.

structure:

I am cooking.

structure:

I am cooking.

negative form:

I am not cooking.

yes/no question:

Are you cooking?

question word question:

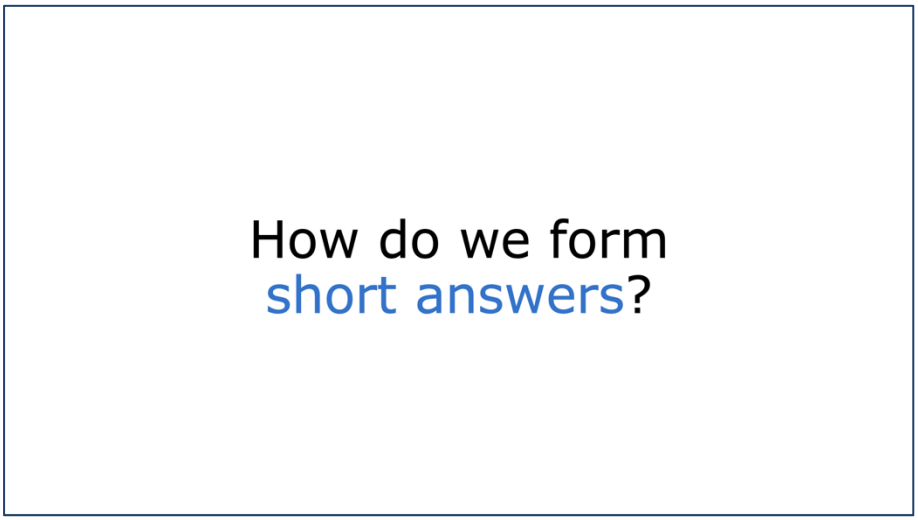
What are you cooking?

Narrator:

"So what we have learned now is that the present continuous uses the verb 'to be' plus the ing-form and we use it to talk about actions happening right now. We form negatives by adding *not,* and make questions by making them yes/no-questions or by adding question words."

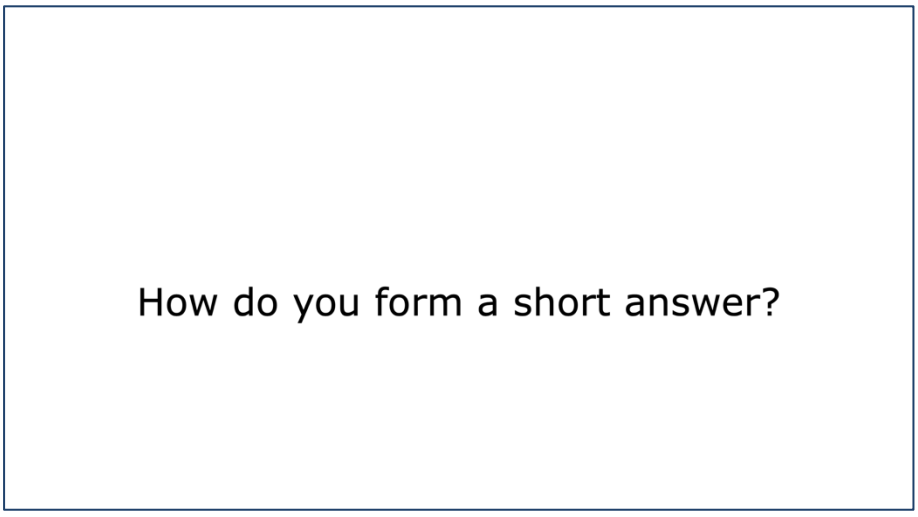
7.2.7 Knowledge clip script: short answer

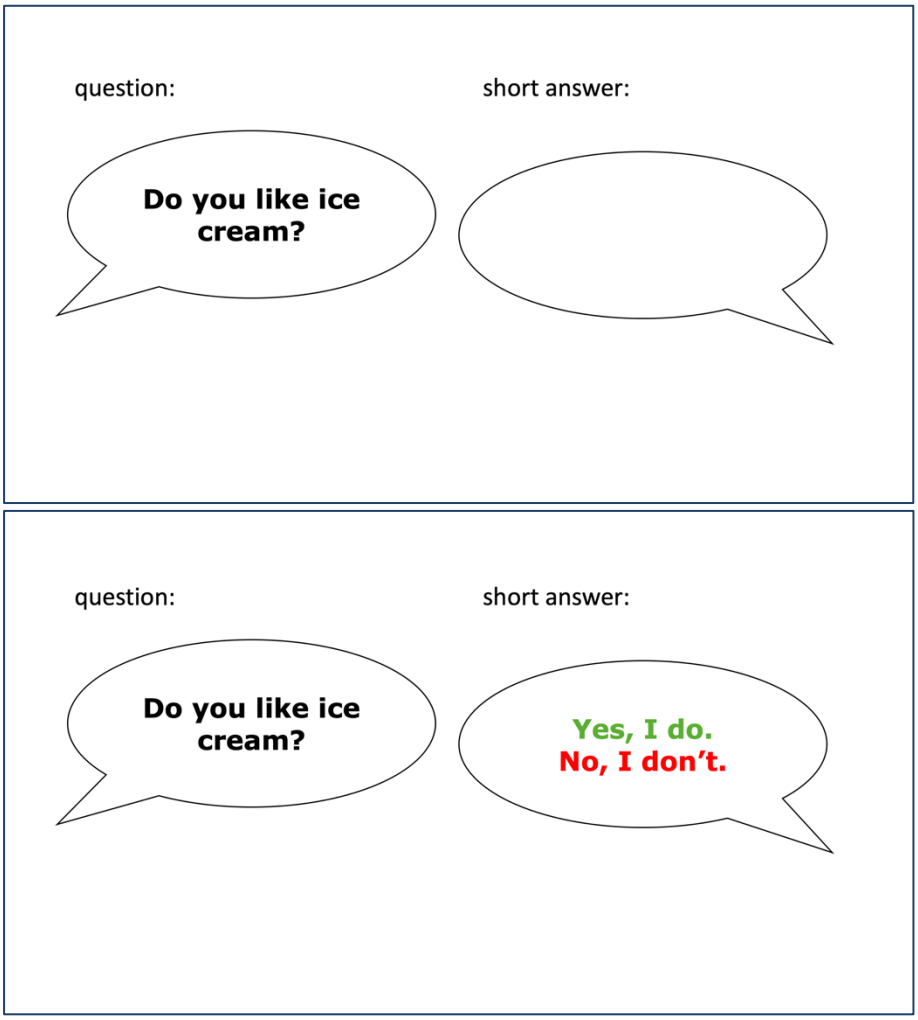
Opening scene:



Narrator:
"Welcome! In this video, we're diving into short answers in English: an easy way to respond without repeating the entire sentence. In English, we often answer questions with a short reply instead of repeating the whole sentence."

Scene 1: basics





Narrator:

"For example: *'Do you like ice cream?'* Instead of saying, *'Yes, I like ice cream,'* we can simply say, *'Yes, I do.'* or 'No, I don't.'" ' Let's look at how these work!"

Scene 2: Break-down of short answers

‘to do’

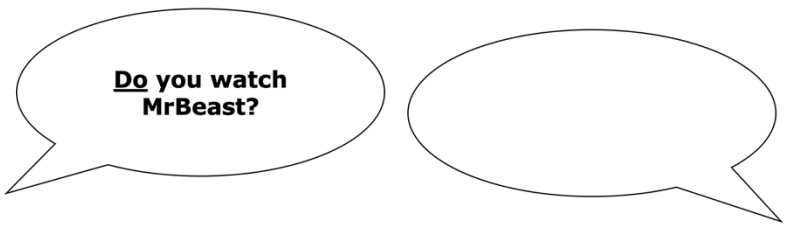
‘to do’ ‘to be’

‘to do’ ‘to be’ ‘have got’

‘to do’ ‘to be’ ‘have got’ ‘can’

Short answers with ’to do’

question: short answer:



question:

short answer:

<u>Do</u> you watch MrBeast?

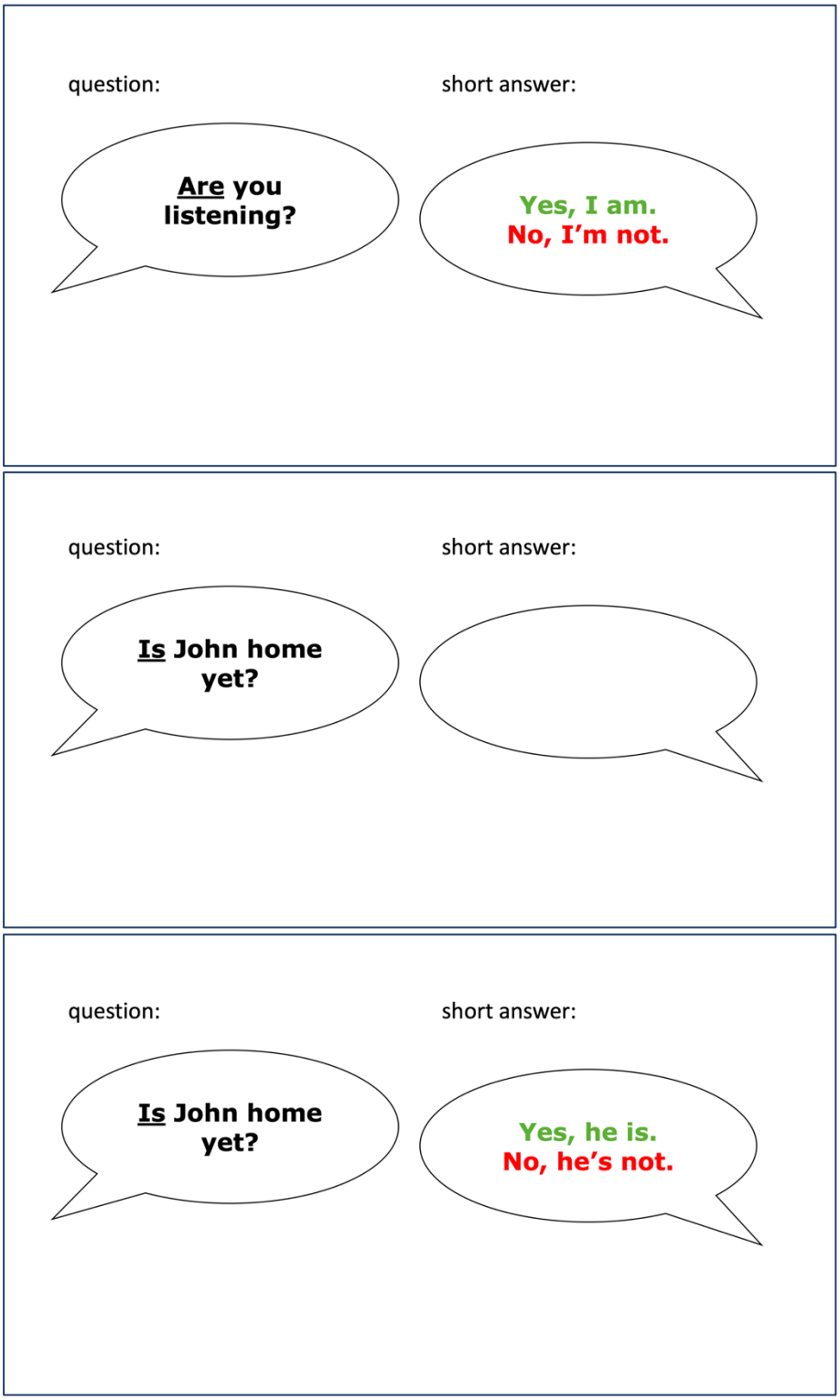
Yes, I do.
No, I don't.

Short answers with 'to be'

question:

short answer:

<u>Are</u> you listening?


question:
short answer:
Are you listening?
Yes, I am.
No, I'm not.
question:
short answer:
Is John home yet?
question:
short answer:
Is John home yet?
Yes, he is.
No, he's not.

Short answers with 'have got'

question:

short answer:

Have you got a pen?

question:

short answer:

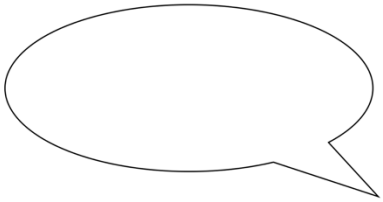
Have you got a pen?

Yes, I have.
No, I have not.

Short answers with 'can'

question:

short answer:



question:

short answer:

Narrator:
"Short answers use an auxiliary verb, like *do, does, have,* or *is.* For example, *'Are you coming?'* becomes *'Yes, I am,'* or *'No, I'm not.'*

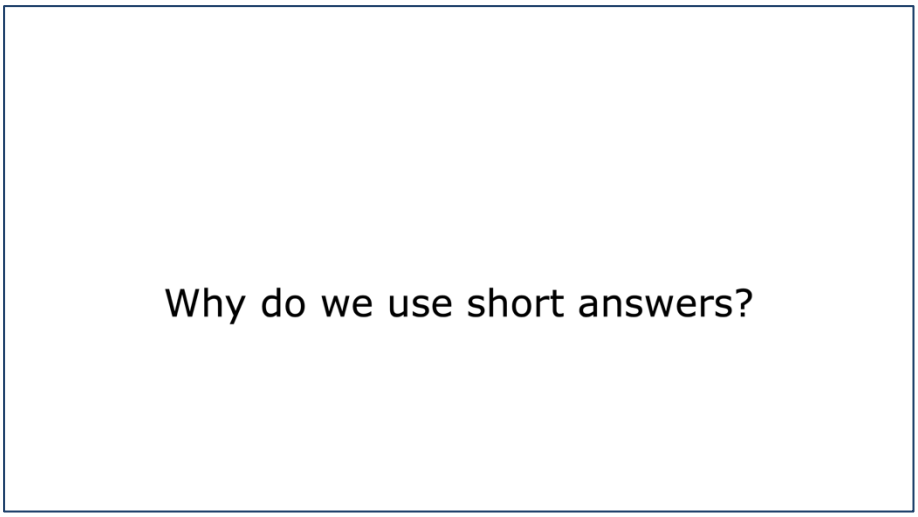
First example: *Do you watch MrBeast? Yes, I do or No, I don't*.

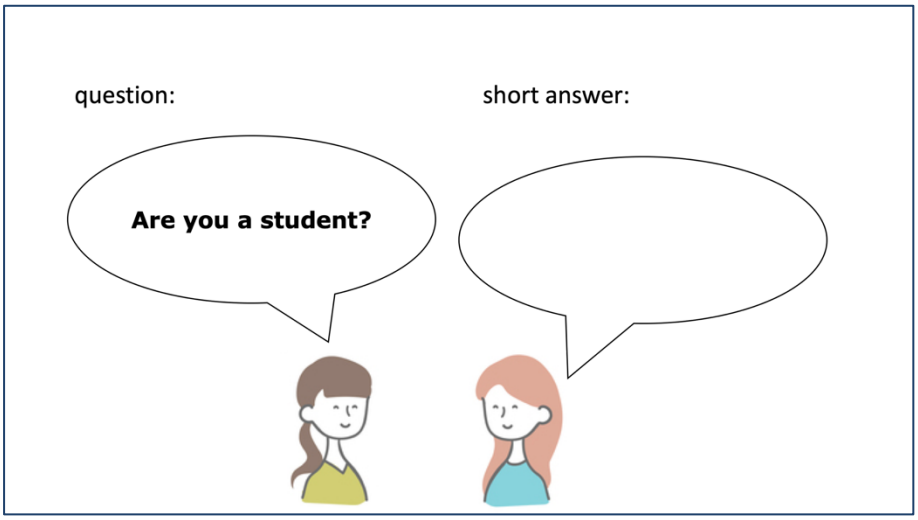
You can also start a question with 'to be'. For example: *Are you listening? Yes, I am or No, I'm not.* Or *Is John home yet? Yes, he is or No he's not.*

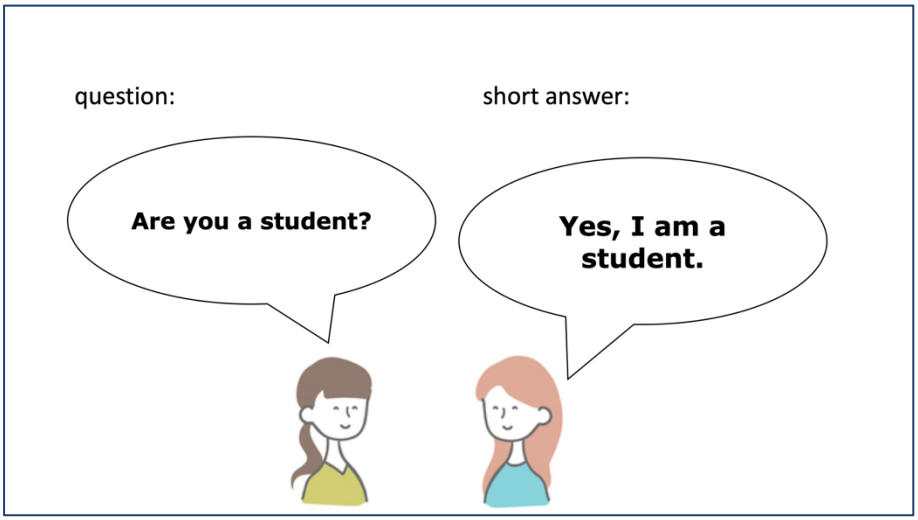
Questions can also start with 'have got'. *Have you got a pen? Yes, I have or No, I have not.*

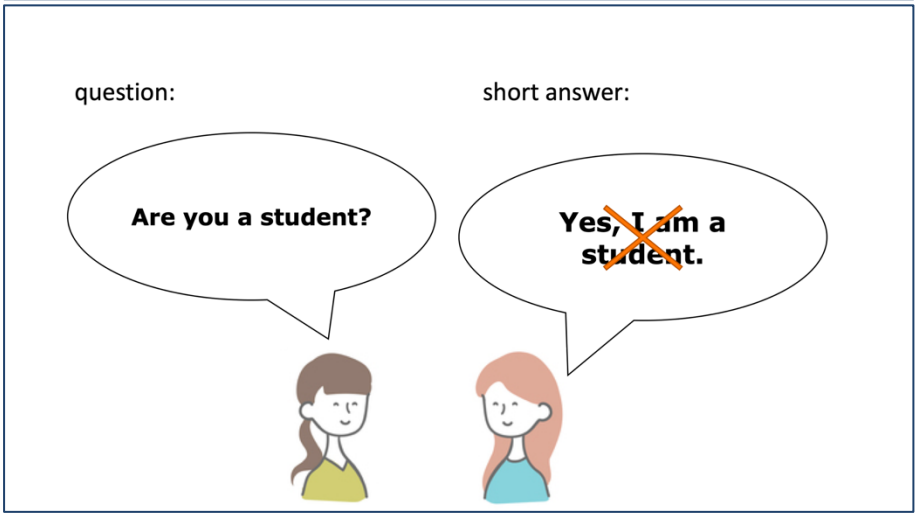
And finally, questions can also start with 'can'. *Can you play the piano? Yes, I can or No, I can't.*

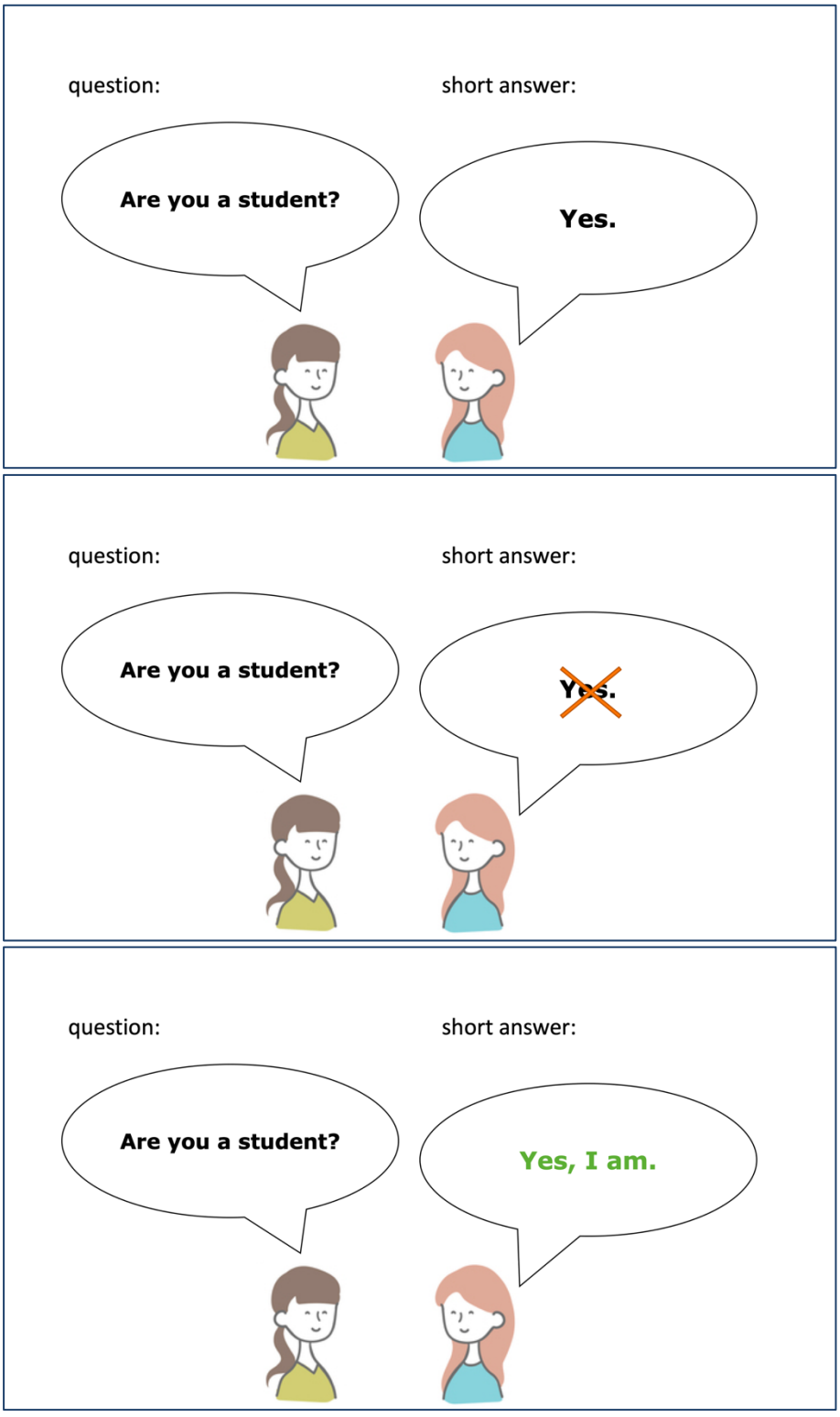
Scene 3: Why do we use short answers?




question:
short answer:
Are you a student?


question:
short answer:
Are you a student?
Yes, I am a student.


question:
short answer:
Are you a student?
Yes, I am a student.


question:
short answer:
Are you a student?
Yes.
question:
short answer:
Are you a student?
Yes.
question:
short answer:
Are you a student?
Yes, I am.

Narrator:

"Imagine someone asks, *'Are you a student?'* Instead of saying *'Yes, I am a student,'* but then you're repeating the entire sentence. On the other hand just say, only answering with *Yes* is too short and seen as rude. That's why we say *Yes, I am!* It avoids repetition and is polite."

7.2.8 Observation:

A (22 students):

General observation: they are curious. During the entire lesson they are very quiet. There is no talking, and most students participate (especially the same group of students).

Next lesson: they still remember the theory from previous lesson. They start slowly, apparently the lesson before was challenging.

During the song exercise they are all very focused.

1. **How is the students' focus?**

KC	Date	Observation
Likes & dislikes	Tuesday 19/11	Fifth time: They all pay attention to what they're seeing.
ing-form	Tuesday 19/11	Fifth time: they all pay attention to the video again.
Present continuous	Wednesday 20/11	fourth time: they all pay attention.

2. **How is the students' motivation?**

KC	Date	Observation
Likes & dislikes	Tuesday 19/11	Fifth time: They're not too enthusiastic.
ing-form	Tuesday 19/11	Fifth time: they're still very quiet.
Present continuous	Wednesday 20/11	fourth time: the students that already participated a lot, are more eager now. The student the teacher points out do know the answers.

3. **Do all the students participate during the activities?**

KC	Date	Observation
Likes & dislikes	Tuesday 19/11	Fifth time: One student works in different colours. (green and red)
ing-form	Tuesday 19/11	Fifth time: they all work on the activity again. Still very quiet. When looking around: almost all students have written down most of the theory from the knowledge clip. Just a few (2 to 3) students haven't. One student only wrote down what he had heard in Dutch. Other students worked with different colours now. Made the exercise together with the teacher, all correct.
Present continuous	Wednesday 20/11	fourth time: they all start the activity immediately. When the teacher points out different students, they have written down everything correctly. The students have everything correct. As soon as the teacher pauses the video, they all immediately start writing. Many type of schemes, they use a lot of colours, symbols, etc…

4. **Vaststellingen**

KC	Date	Observation
Likes & dislikes	Tuesday 19/11	Fifth time: the explanation beforehand is very clear.
ing-form	Tuesday 19/11	Fifth time: explanation is clear again. The exercises afterwards go really well. The grammar grid exercise goes well.

		The final exercise goes well, most students participate.
Present continuous	Wednesday 20/11	fourth time: Explenation is very clear again. References tot he titles and subtitles. They are still very quiet. One student doesn't write down anything, he didn't do this the previous lesson either. The teacher tells them not to write during the video, but some seem to prefer to write during the video. The exercises after the video are going well.

B (19 students):

Information in advance: fun but busy class.

Indeed, a bit busier, some cannot sit still, strong characters. At least 5 students who like to challenge the teacher, but they are enthusiastic.

1. **How is the students' focus?**

KC	Date	Observation
Likes & dislikes	Friday 15/11	First time: Not all students are focused (it's Friday morning). 14/19 students are working on it.
ing-form		Ing-form: during repetition, it appears that not all students understand it. They mainly write about what was already in the book.
Present continuous		Fifth time: I taught this lesson. Same observation as the other classes.

2. **How is the students' motivation?**

KC	Date	Observation

Likes & dislikes ing-form	Friday 15/11	First time: They are working quietly, and then, when the teacher allows them they are working together. Not all students seem to be motivated. At least two aren't and are looking around.
Present continuous		Fifth time: I taught this lesson. They all participated, more and more students started to participate after a while.

3. Do all the students participate during the activities?

KC	Date	Observation
Likes & dislikes ing-form	Friday 15/11	First time: All students are actively working on the task.
Present continuous		Fifth time: I taught this lesson. Most of the students participated. More and more. They all understand the subject matter when they had to explain it to each other.

4. Vaststellingen

KC	Date	Observation
Likes & dislikes ing-form	Friday 15/11	First time: The teacher says in advance what is expected from them. They watch the knowledge clip and then write down the theory in their own words. • The light went out and the atmosphere changed immediately (they were sleepy). Next lesson they should stay on. • The students wrote down a scheme, but this wasn't discussed afterwards. Next lesson, I will go around to look at their schemes. • The videos were never paused.

Present continuous		Fifth time: I taught this lesson. I should've used more example sentences to explain the terminology (despite the examples being in the knowledge clip). During the exercises one student struggled to connect the theory with the sentences.

C (22 students):

Active class, they all participate from the first minute onwards. They are very enthusiastic. During exercises before the knowledge clips they are all paying attention, asking a lot of questions. They are all kind to each other and help each other.

In the future: let this class explain to each other.

Question: do they still have to blossom in relation to the concept of knowledge clips?

They still remember the material from the previous lesson. It's getting off to a slow start though.

1. **How is the students' focus?**

KC	Date	Observation
Likes & dislikes	Monday 18/11	Fourth time: They all pay attention to the video.
ing-form	Monday 18/11	Fourth time: They pay attention. Some can't sit still throughout the entire video, but appear to pay attention. The person clearly paying attention to the video had the theory correct.
Present continuous	Wednesday 20/11	Third time: They pay attention to the video. The bell rang but they are still paying attention and participating in the lesson.

2. **How is the students' motivation?**

KC	Date	Observation
Likes & dislikes	Monday 18/11	Fourth time: They sighed when they heard they'd have to do an assignment afterwards. They all work on the scheme in silence.
ing-form	Monday 18/11	Fourth time: No sigh when the teacher told them to make a scheme afterwards. Perhaps because the explanation was clearer. They all immediately start making the scheme. It appears they are thinking a lot, very focused. Not necessarily enthusiastic. Het wordt nu klassikaal nagesproken, de meesten denken heel actief na. Het uitleggen aan de leerkracht motiveert hen en ze zijn heel actief bezig nu. Ze willen het begrijpen.
Present continuous	Wednesday 20/11	Third time: throughout the video, the more students start to understand what they have to do, the more they're participating and raising their hands.

3. Do all the students participate during the activities?

KC	Date	Observation
Likes & dislikes	Monday 18/11	Fourth time: Some students start making the exercises instead of the activity. The students are quiet passive, some just write down two words. When they have to discuss the results afterwards, they are more active.
ing-form	Monday 18/11	Fourth time: Some start making the exercise. The teacher has to emphasize this a couple of times. They are all making the scheme now. They all made the same mistakes. The video is to long not to pause. Bij het rondkijken valt het op dat niet iedereen de theorie en regels opschrijft, maar enkel de werkwoorden.

Present continuous	Wednesday 20/11	Third time: Some students are looking around, unsure of what they have to do. Most students have done it correctly. They are starting to loosen up after the second part of the video. They are starting to ask questions. It's getting better and better, more and more students raise their hands to participate.

4. Vaststellingen

KC	Date	Observation
Likes & dislikes	Monday 18/11	Fourth time: 'Goed opletten want je krijgt een opdracht' class: *sigh* Instructions teacher are clear, but not all students understand it. Some students didn't have the 'right' scheme. But the student answering did. When the teacher told them to correct it if necessary, some started writing.
ing-form	Monday 18/11	Fourth time: instruction is now very clear. 'Je maakt een schema van de info, je schrijft niet terwijl je kijkt.' Watching this knowledge clip in its entirety at once does not work. While completing the exercises, they do use the terminology of the knowledge clip (some translate it into Dutch). In general, they participated slightly less actively after the knowledge clip. As a class, they cooperated more during the exercises than during the knowledge clip. Next lesson: they still remember the theory, exercises are going well.
Present continuous	Wednesday 20/11	Third time: the instructions in advance are again very clear. The student that has to answer does not understand it very well. The teacher deliberately points out the students who she knows struggle with English in general. The first student wasn't able to answer, but it is getting better and better. The first student is now participating too. Apparently, they have to get used to the use of knowledge clips and what is expected from them. The pauses during the video gives them this chance.

D (23 students):

The class is very energetic. Strong characters, very playful.

They generally remember the learning material quite well about the ing form. Not everyone, eventually they have to look back at the scheme from last time.

1. **How is the students' focus?**

KC	Date	Observation
Likes & dislikes	Friday 15/11	Second time: They are all paying attention to the knowledge clip.
ing-form	Friday 15/11	Second time: They pay more attention and show more interest to the knoweldge clip (maybe because they know what's expected from them).
Present continuous	Tuesday 19/11	Second time: they are very attentive.

2. **How is the students' motivation?**

KC	Date	Observation
Likes & dislikes	Friday 15/11	Second time: Once they have to work independently, they react slowly, and some become confused.
ing-form	Friday 15/11	Second time: Some students are already busy writing down the diagram while watching the knowledge clip. More and more students are participating and raising their hands. They cooperate well while making the exercises from their workbook.
Present continuous	Tuesday 19/11	Second time: Because instructions are clear, students want to start writing right away.

		For some, the activity takes too long. For others it is more than sufficient. A student was dreaming, but knew the answer that she had seen from the knowledge clip.

3. Do all the students participate during the activities?

KC	Date	Observation
Likes & dislikes	Friday 15/11	Second time: All students participate, but not all students take it seriously. I've gone around and the schemes look fine.
ing-form	Friday 15/11	Second time: they already work during the knowledge clip (because they know what is expected). They work together, improve each other's schemes. They are already busy. I went around and except for two students, they have already made clear schemes. The class has picked up all the rules of the knowledge clips (this is noticeable because of the questions that are asked in class).
Present continuous	Tuesday 19/11	Second time: everyone is working on the scheme. They all cooperate well. They now clearly understand what the intention is.

4. Vaststellingen

KC	Date	Observation
Likes & dislikes	Friday 15/11	Second time: The teacher lets the students make the scheme. She then goes over what they have written. They weren't told in advance what to do. The video isn't paused.

ing-form	Friday 15/11	Second time: During the ing-form she lets them know in advance what they had to do. During the exercises they seem to have mastered the material, but the teacher goes over the material thoroughly again while completing the exercises. They understand the theory, references to the knowledge clip are made during the exercises. The video isn't paused.
Present continuous	Tuesday 19/11	Second time: The explanation is very clear again. Students ask additional questions. She starts again with telling them they have to write down a title in their scheme before they begin. She pauses at each subtitle. Working with the knowledge clip becomes easier and faster. The teacher goes over the question again during the schedule. A student does not yet understand the inversion question and question-word-questions and asks this. After additional explanation he understands. The exercises are going well.

Wednesday 20 november 2024: additional observation – follow-up lesson present continuous.

The first student mixes up the key words, but he still knows them all.

They have to explain the present continuous and how it's formed. A student looks back at her schedule. They eventually have everything correct. The repetition goes much smoother during the beginning of the lesson than the previous lessons.

They got the grammar grid right.

They all work on the exercises. The exercise is going smoothly.

The exercises that follow go well for many students. There are quieter students.

E (23 students):

In advance: the class is a little more difficult. Difficult atmosphere.

There are 7 students sitting separately. There's a lot of talking. Also, often rolling with their eyes. Maybe because this class is on Friday evening.

What to pay attention to next lesson: if the knowledge clip about the present continuous is interrupted, is there a difference in the extent to which they understand the material? (go around!)

When they go over it at the beginning of the next lesson, they don't know much about ing-form anymore. It takes a while for them to get going, but once they have the schedule back in front of them, things get going more smoothly.

1. **How is the students' focus?**

KC	Date	Observation
Likes & dislikes	Friday 15/11	Third time: They all pay attention and are watching the videos. They're very quiet, especially compared to how they entered the classroom.
ing-form	Friday 15/11	Third time: They pay attention again. They are quiet.
Present continuous	Tuesday 19/11	First time: They are given time to get ready, write a title, etc. Some pay very close attention. Some are playing.

2. **How is the students' motivation?**

KC	Date	Observation
Likes & dislikes	Friday 15/11	Third time: They start quietly, some start immediately, some look around to be sure about what they have to do. Some keep working even though they had to stop.

ing-form	Friday 15/11	Third time: They start making the exercise and then make a scheme. They immediately start working, but there is still doubt. Some aren't motivated during the lesson. They don't seem too enthusiastic.
Present continuous	Tuesday 19/11	First time: Not everyone starts the assignment. Most students do and actively participate. They are not necessarily enthusiastic.

3. Do all the students participate during the activities?

KC	Date	Observation
Likes & dislikes	Friday 15/11	Third time: They all work on the activity. They have all written something down.
ing-form	Friday 15/11	Third time: Not everyone. Some only have half the theory, some have everything, a few don't write anything.
Present continuous	Tuesday 19/11	First time: They work on the activity. Some don't. Students sitting at the front do. When they go over the scheme, most people get it right. They need some time but they gradually understand what is expected from them. By the end of the video, most are writing and collaborating. They actively cooperate.

4. Vaststellingen

KC	Date	Observation
Likes & dislikes	Friday 15/11	Third time: The video isn't interrupted.
ing-form	Friday 15/11	Third time: They first have to do an exercise, instead of immediately making the scheme. Most have forgotten what has to be in the scheme when they've finished the exercise.

		They solve the grammar grid correctly. During the exercises they use the same explanation as the knowledge clip (e.g. have, drop the e and add ing). The video isn't interrupted.
Present continuous	Tuesday 19/11	First time: The explanation is difficult. 'Hetzelfde aanpakken als vorige keer. We gaan het in stukjes doen. Wat is de bedoeling? Iedere keer als we stoppen moet jij opschrijven wat wij net gezien hebben. We beginnen al met een mooi titeltje.' Good: refers to the title or new question before continuing. 'Op welk woord in deze zin moeten we letten? Wat gaat nieuw zijn? (bvb negative, question).'

Thursday 21 November 2024: additional observation – follow-up lesson present continuous.

Student uses previous scheme to talk about the terminology. They still know the present continuous. They still remember the theory about 'to be' and the ing-form, and that you use this to form the present continuous. During the exercise, they are able to quickly recognize the present continuous in various sentences.

They have the form correctly when they have to write this down during the exercises.

Filling in the grammar grid went very well too.

They are impatient during the exercises, because the fire alarm is going to go off. More mistakes, because they want to do it as quick as possible, because it's almost time.

7.2.9 Interview questions teacher

Datum: 16/12/2024

1. **Wanneer gebruikte u de kennisclips? Waarom?**

De kennisclips werden in sommige lessen gebruikt als inleiding op de leerstof die nog aan bod moest komen. Bij andere lessen waren de kennisclips een vastzetting van de theorie. Deze werkwijze werd aangepast aan de planning die zich hiertoe wees. Volgens de leerkracht voelde het beter aan om de leerstof eerst toe te lichten met de kennisclip en vervolgens de leerstof te verwerken met de oefeningen.

Het onderwerp speelde hierin ook een rol. Bij de kennisclip over likes en dislikes was het interessanter om de kennisclips aan te bieden voordat de theorie al besproken werd. Bij de kennisclip over de present continuous was het interessanter om het na de bespreking van de theorie nogmaals aan te bieden als vastzetting, aangezien deze leerstof theoretischer was.

2. **Zijn de leerlingen gefocust tijdens het bekijken van de kennisclip en de tussentijdse activiteiten?**

Doordat de leerlingen tijdens en na de kennisclips de activiteiten (zoals het schema maken) moesten uitvoeren, waren ze meer actief aan het kijken en waren ze meer gefocust op de kennisclip. Volgens de leerkracht waren ze globaal genomen gefocust, vooral door de activiteiten.

3. **Zijn de leerlingen gemotiveerd tijdens het bekijken van de kennisclip en de tussentijdse activiteiten?**

Het hangt af van de klasgroep. Globaal gezien was het positief. Er was wel medewerking, maar niet van alle leerlingen. Bij de eerste clips waren de leerlingen nog onwennig, maar bij de laatste clips wisten ze hoe het moest.

4. **Denken de leerlingen mee tijdens het bekijken van de kennisclip en de tussentijdse activiteiten?**

De leerlingen wilden het schema maken, en de meesten hebben dit ook gedaan. Dit maakte duidelijk dat ze actief meedachten tijdens de activiteiten.

5. Merkt u een verschil met lessen waarbij kennisclips niet gebruikt worden?

De leerkracht had het gevoel dat de leerlingen de theorie sneller begrepen en langer bleef hangen (dit is niet gebaseerd op resultaten van vorig jaar). De leerkracht merkte ook dat de leerlingen bij de herhalingstoets minder vaak het werkwoord 'to be' vergaten in de present continuous. Normaal valt dit de leerkracht ieder jaar op, maar nu was het in alle klassen maar 2 of 3 keer voorgekomen (dit is niet gebaseerd op de resultaten).

6. Hoe verliep de verwerkingsfase na het gebruik van de kennisclip?

De verwerkingsfase na de kennisclip verliep vlot.

7. Merkte u dat de kennisclips een vorm van differentiatie was, of niet? Waaraan merkte u dit?

De leerstof werd dankzij de kennisclip op een andere manier en met voorbeelden uitgelegd. Tijdens de kennisclip schreven alle leerlingen mee.

8. Vindt u het gebruik van de kennisclip als leerkracht een meerwaarde?

De leerkracht vond het gebruik van de kennisclip zinvol. Het voelde niet aan als tijdverlies, aangezien de leerkracht het gevoel had dat de leerlingen dankzij de kennisclips de theorie onder de knie hadden.

9. Is er volgens u een nadeel aan het gebruik van kennisclips? Zo ja, welke?

Voor klas A waren de kennisclips misschien niet nodig, aangezien zij de leerstof al onder de knie hadden. Maar voor de leerkracht kan herhaling van de leerstof nooit kwaad, waardoor er geen specifiek nadeel is aan het gebruik van kennisclips.

10. Was het gebruik van de checklist een meerwaarde?

De leerkracht vond de checklist duidelijk en logisch.

7.2.10Interview questions researcher

Datum: 17/12/2024

1. **Wanneer gebruikte u de kennisclips? Waarom?**

Zoals afgesproken met de leerkracht werd de kennisclip tijdens de verwervingsfase van de present continuous toegepast.

2. **Zijn de leerlingen gefocust tijdens het bekijken van de kennisclip en de tussentijdse activiteiten?**

De eerste keer dat de kennisclip afgespeeld wordt letten de meeste leerlingen op. Na een tijd letten ze allemaal op, omdat ze door hebben dat het belangrijk is om aandachtig te zijn om mee te kunnen doen met de generatieve activiteiten. Tijdens de tussentijdse activiteiten volgt hetzelfde patroon. Niet iedereen werkt in het begin mee, maar eens ze door hebben wat de bedoeling is letten ze wel op.

3. **Zijn de leerlingen gemotiveerd tijdens het bekijken van de kennisclip en de tussentijdse activiteiten?**

Dit was een heel actieve klas, en de meesten werkten vanaf het begin mee. Eens de andere leerlingen doorhadden wat de bedoeling was werkten ze heel actief mee. Uiteindelijk waren er enkel wat stillere leerlingen die minder actief meewerkten maar op twee leerlingen na letten ze wel op.

4. **Denken de leerlingen mee tijdens het bekijken van de kennisclip en de tussentijdse activiteiten?**

De leerlingen dachten mee, zeker vanaf het moment ze doorhadden wat de bedoeling was. Ze werkten actief mee tijdens de tussentijdse activiteiten. Tijdens de activiteiten moesten ze een schema maken en mij telkens vertellen wat ze hadden genoteerd. Als de kennisclip bekeken was en de schema's klaar waren, moesten ze de leerstof aan elkaar uitleggen, en dan aan mij. Dit verliep allemaal heel vlot.

5. **Merkt u een verschil met lessen waarbij kennisclips niet gebruikt worden?**

Niet van toepassing.

6. **Hoe verliep de verwerkingsfase na het gebruik van de kennisclip?**

Vlot. Het enige dat ik achteraf nog anders zou gedaan hebben is meer voorbeeldzinnen gebruiken tijdens het bespreken van de schema's en de andere activiteiten; een leerling had moeite met de theorie toe te passen op de oefeningen. Voor alle andere leerlingen verliep het heel vlot.

7. **Merkte u dat de kennisclips een vorm van differentiatie was, of niet? Waaraan merkte u dit?**

Dit was moeilijk om te zien omdat ik de leerlingen niet goed kende, maar alle leerlingen werkten mee, en toen ik rondging zag ik dat de meesten (enkel de twee leerlingen die babbelden niet) de leerstof juist neerschreven.

8. **Vindt u het gebruik van de kennisclip als leerkracht een meerwaarde?**

Ik vind het gebruik van de kennisclip een meerwaarde en zou dit later ook gebruiken. Ik zou andere leerkrachten het zeker aanraden om het zelf eens te proberen.

9. **Is er volgens u een nadeel aan het gebruik van kennisclips? Zo ja, welke?**

In deze klas niet. Algemeen denk ik dat het voor sterkere klassen minder nodig is om toe te passen.

10. **Was het gebruik van de checklist een meerwaarde?**

Ja. Het was een duidelijke leidraad tijdens het maken van de kennisclips en het zorgde ervoor dat alle essentiële informatie op een gestructureerde manier verwerkt kon worden. Ook tijdens de les was het handig om te weten hoe de kennisclip toegepast kon worden. Er waren enkel wat details die misten, zoals duidelijke instructies geven tijdens de les om de leerlingen te motiveren.