

**The use of multimodality in English grammar  
teaching in eighth-grade textbooks in Finland in the  
21<sup>st</sup> century**

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Bachelor's Thesis

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**The use of multimodality in English grammar teaching in eighth-grade textbooks in Finland in the 21st century**

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This thesis examines the use of multimodal elements in textbook grammar instruction for eight-grade students in Finland. Multimodality refers to the use of different communication methods e.g. textual elements and pictorial elements together to present information. This thesis focuses on the benefits that pictorial elements have on grammar instruction. Analysis is conducted on how textbooks make use of multimodality when introducing ESL grammar to 8<sup>th</sup>-grade learners. Grammar teaching goals are examined in relation to multimodality in this thesis to establish a sense of proper grammar instruction. Pictorial elements are divided into four different categories based on their impact on grammar instruction. Analysis of textbooks showed that multimodal elements are not utilized to their full capacity to benefit grammar instruction. Pictorial elements that did not benefit grammar instruction were the most frequent in analyzed textbooks.

**Key words:** multimodality, grammar, textbooks, English as a second language, multimedia principle,

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# 1 Introduction

In this thesis I will analyze how multimodality is used in physical textbooks that teach English grammar to eighth-grade learners in Finland. I will compare textbooks from different years ranging from 2004 to 2023 to see how multimodality has been used in physical textbooks as the advancement of technology has made multimodal teaching more common. This thesis will only focus on physical textbooks as they are still a primary tool that is used in English language learning in Finnish middle schools. Physical textbooks do not have the capabilities of digital textbooks to host a wider range of multimodal elements; however physical textbooks still utilize visual elements alongside text to enhance readability and interest.

Multimodality refers to how meaning is created by applying different means of communication together (Kress 2010, 1). These means of communication include gestures, auditory and visual elements and space in addition to linguistic elements. Multimodality in physical textbooks mainly consists of linguistic and visual elements due to the restrictions of being printed on paper. This thesis will focus on how textbooks present grammar through multimodal elements. Grammar enables speakers to understand each other with complied rules of a language. This is why it is important to make it as clear and interesting to learners as possible. Grammar teaching can benefit from multimodality as multimodal elements can spark more interest in learning and help learners highlight key points from grammatical concepts. The research question for this thesis is how grammar is presented and how grammar instruction enhanced with different multimodal elements in physical textbooks.

This paper will first establish a theoretical background where multimodality is explained in more detail. In addition to multimodality, the theoretical background contains grammar teaching goals to see what makes grammar instruction competent. These two concepts are utilized in analysis to see how multimodality can benefit grammar instruction. After a theoretical background is formed, I will explain the nature of multimodal research to form a suitable research method for this paper. This section will also introduce materials that are used in this thesis. Materials will include English textbooks that are used in Finnish schools and two Finnish national core curriculums that the textbooks are based off. This section will be followed by results and analysis where multimodal elements present in grammar segments are analyzed. Multimodal elements are categorized and qualitative analysis is conducted to establish the benefits multimodal elements may have for grammar instruction. In the

conclusion of the paper, I will explain how multimodal elements were used in the textbooks analyzed and how research findings on the benefits of multimodality show in the materials for grammar instruction.

## 2 Theoretical background

The theoretical background for this thesis focuses on multimodality and examines grammar teaching goals in English as a second language (ESL) to examine how multimodality can be used to benefit grammar learning in students. This thesis will examine English as a second language since eight-grade materials for English learning are designed for students with no prior language learning experience outside of their native language and English itself.

### 2.1 Multimodality

Multimodality was developed by Gunther R. Kress and is the study of communication that uses multiple different modes to convey meaning (2010, 1). According to Kress, modes are elements used to represent concepts in communication (2010, 79). Modes can be text, images, sounds, gestures, speech or any other means of communication (ibid.). Multimodality is especially prevalent in teaching as classrooms contain many modes that can be used to enhance language learning. Textbooks are a good example of multimodality in language teaching as they often contain pictures, graphs and other visual elements that are in accordance with what is taught. Bezemer and Kress had noticed writing being put aside as the main mode used in textbooks in the 2000s (2008, 166). The use of multimodality in textbooks has been frequent for years.

Multimodal elements are not only used for aesthetic purposes but can benefit learning. Using text and pictures together to present information strengthens understanding. Learners combine both verbal and visual inputs to form a coherent understanding of said information (Mayer and Fiorella 2021, 8). Pictures, text and other modes of communication each present information differently. Using multiple modes to present a piece of information gives learners multiple ways to understand a single subject and choose which perspective suits their manner of learning. Mayer and Fiorella further explain that learners create a deeper understanding of information as they create connections between words and pictures (2021, 8). It is important to note that all uses of multimodal elements do not benefit learning. Mayer and Fiorella emphasize that promoting learning with pictures and words requires instructors to understand the best ways to use these elements together (ibid.). Multimodal elements only have educational impact if they are used correctly together.

Cognitive theory of multimedia learning is a theory that outlines efficient use of multimodal elements in teaching. This theory demonstrates the effectiveness of multimedia learning by

examining how learners process and store information (Mayer 2021a, 59). Multimodal representations benefit learning by forming an interconnected representation of a topic that combines both verbal and visual information (Mayer 2021a, 65). For multimedia learning to function properly presented visual and verbal information needs to be a clear and understandable to the learner. Connecting different representations together is a demanding process for learners therefore, multimodal elements need to rely information efficiently without overloading the learners' information processing (Mayer 2021a, 65–66). Multimodal elements need to clarify information flow in addition to being in accordance with verbal information. Unnecessary multimodal elements can hinder information flow and take space from essential information being processed. Mayer describes learners cognitive capacity as a limited resource that can be overloaded with poor instructional design or complexity of teaching materials (2021a, 66). Poorly placed multimodal elements can affect information flow and discourage learners from concentrating on the given topic. Teaching materials need to be presented in a clear way to students thus relevant information is easier to pick out.

Multimodal elements are used in textbooks to capture students' interest in addition to having an instructional purpose. Some pictures are used to make learning materials more engaging and to boost motivation. According to Mayer connecting new presentations to prior knowledge to form a complete understanding of a topic requires motivation from the learner (2021a, 66). Even though these pictures do not carry relevant information, the motivation that students may get from pictorial elements is beneficial for learning.

## **2.2 Grammar teaching goals**

I will examine grammar teaching goals to determine the proper use of grammar instruction. Connecting proper grammar instruction to multimodality in education will give insight into the effectiveness of multimodal instruction in ESL.

Richards and Reppen present the idea of grammar teaching outcomes being divided into two parts: Grammatical knowledge and grammatical ability (2016, 151). Grammatical knowledge refers to the learners' understanding of grammar rules and grammatical ability is the skill to take knowledge of grammar rules and use them to produce text that is accurate and appropriate to the given context (Ibid.). Grammar teaching aims to teach learners grammar competence that includes both grammatical knowledge and grammatical ability. Without grammatical knowledge, language production would not be possible. In turn teaching grammatical ability in ESL is crucial as appropriate use of grammatical structures may change

depending on the context and situation in which an utterance is formed. Proper grammar instruction thus presents grammar structures clearly and teaches proper use of these structures.

The goal of second language teaching is fulfilling the need for people to communicate with each other in society (Cook 2016, 223). This further illustrates the importance of teaching grammatical ability as languages are learnt to be able to use them in communication.

Multimodality can help to make the acquisition of grammatical ability in ESL more engaging and easier for students. Multimodal modes such as speech and illustration give learners examples of language usage and proper grammar utilization that help them form grammar abilities. Multimodal elements can in addition benefit instruction of grammatical knowledge by presenting grammar concepts in pictorial and verbal representations.

### 3 Materials and methods

Acknowledging the nature of multimodal research is important to conduct appropriate analysis on the topic. According to Bateman, Wildfeuer and Hiippala multimodality is interdisciplinary and is applied differently in various fields of research with varying methods (2017, 9). Multimodal research varies between academic disciplines. Determining the most suitable methods for multimodal research thus requires knowledge of the field of research that a study is tied to.

#### 3.1 Multimedia principle

The varied nature of multimodal research requires further investigation into methods and past studies to find a method that aligns with the approach and research questions of a study. Multimodal research in the field of education is mostly centered around the debate on if multimodal understanding should be taught explicitly (Bateman, Wildfeuer, and Hiippala 2017, 46). Multimodal research in education has grown as computer graphics have become more common making the addition of multimodal elements to textbooks easier. There are studies in second language learning that are focused on multimodality; however, multimodal research is more common in the general field of education without focusing on a singular subject.

I have chosen to use Mayer's principles of multimedia learning to form the method for this thesis. This approach will be used to analyze the effectiveness of multimodal elements in textbooks. Bateman, Wildfeuer and Hiippala describe Mayer's approach as a popular stance on the study of multimodal education. (2017, 47). This thesis will focus on one of Mayer's principles of multimedia learning: the multimedia principle. Mayer's multimedia principle is explained as a phenomenon where learning is more effective when pictures and text are used in cooperation than when information is only presented in text (Mayer 2021b). In the context of this paper Mayer's principle is comprehensive enough to bring forth meaningful analysis on the scope of a bachelor's thesis.

Multimedia principle divides picture elements present in textbooks into 4 categories: decorative, representational, organizational and explanative (Mayer 2021b, 154). These categories of pictures each have varying levels of input on enhancing the learnability of a text. Decorative pictures serve the purpose of sparking interest or entertaining the reader while representational pictures portray a single concept found in the text (ibid.). Organizational

pictures show relationships between elements of a text e.g. in the form of a map while explanative pictures describe systems and how they work (ibid.). The usefulness of images present in textbooks varies. Decorative and representational images have little to no educational input, whereas explanative pictures serve as the main mode of presenting information to learners (Mayer 2021b, 153). Mayer used these categories to conduct quantitative studies on the occurrence of images in textbooks (2021b, 153). Even though these categories were originally used for quantitative analysis, they are also applicable to qualitative analysis as they give insight into the educational value of multimodal elements in textbooks. I will use these categories to examine the functions that pictorial elements have in grammar instruction. This thesis will also include analysis of other design elements to complement the framework presented by Mayer.

### **3.2 ESL textbooks**

Materials used in this thesis include four different Finnish textbooks used to teach English to eighth-grade learners. Each of the textbooks consists of two versions: a textbook and a workbook. Grammar sections are present in both versions of the book; therefore, this thesis will examine multimodal elements present in both text- and workbooks.

Two textbooks are made to fit the current guidelines from the Finnish national core curriculum for comprehensive schools published in 2014 (Opetushallitus 2014). Current textbooks include *Level up 8 Texts* (Daffue-Karsten 2023) and *Exercises* (Daffue-Karsten et al. 2023) published by Sanoma Pro. In addition to *Scene 2 Texts* (Hiitti, Banfield, Lumiala, Parikka, Tolkki, and Kustannusyhtiö Otava 2017) and *Exercises* (Hiitti, Banfield, Lumiala, Parikka, Tolkki, Heikkanen, et al. 2017) published by Otava. Books from different publishers were chosen to get a broader view of the field of textbooks being used in education. To analyze changes in how textbooks have presented grammar over time, I have chosen two other books that follow earlier guidelines from the Finnish national core curriculum for comprehensive schools published in 2004 (Opetushallitus 2004). Older textbooks include: *Top 8 Texts* (Blom et al. 2012b) and *Exercises* (Blom et al. 2012a) published by Otava. The last textbook that is analyzed in this thesis is *Key English 8 Texts* (Westlake 2010) and *Exercises* (Kangaspunta et al. 2013) published by Sanoma Pro.

Guidelines in the national core curriculum contain descriptions of how ESL should be taught in comprehensive schools and what the focus and goals of ESL teaching should be. These guidelines are updated around ten years after they have been published to more accurately

reflect the field of education as it changes. The earlier guidelines from the national core curriculum published in 2004 depict ESL teaching goals to be reached when students are able to express themselves in informal settings and talk about casual topics relating to their own experiences (Opetushallitus 2004, 141; my translation). The earlier guidelines focus on language use in casual settings and the navigation of everyday situations in English. In the most recent national core curriculum from 2014, the focus of ESL is to encourage students to use English in different settings and make use of informal language skills that they have acquired in their own time (Opetushallitus 2014, 992; my translation). The goal for teaching ESL is to have students use language in an appropriate, reasonable and meaningful way (ibid.). Grammar instruction is important for each one of these goals as meaningful and appropriate language usage requires grammatical knowledge and grammatical ability.

The guidelines differ from each other greatly: the most apparent change is the level which students are expected to perform at when comparing the guidelines from 2004 to the guidelines from 2014. This change reflects the rise in student competence in ESL. Neither of the guidelines explain how grammar specifically should be taught or presented in teaching. Earlier guidelines list mandatory grammar rules that should be covered in comprehensive schools but cover no descriptions of grammar instruction. Because of this, textbook publishers, schools and teachers are responsible for the presentation of grammar in education.

## 4 Results and analysis

Analysis on textbooks is divided in this thesis into pictorial elements and other design elements. These modes work together to form an understandable and effective representation of grammar to students. Even though grammar is presented differently in each of the textbooks, grammar-related pages are usually divided into two different sections: task-based sections and theory-based sections. Theory-based sections present grammar concepts to students and task-based sections consist of tasks where students use the concepts in writing and interaction. This thesis will analyze multimodal elements present in both types of sections as grammar teaching concerns both grammatical ability as well as grammatical knowledge.

### 4.1 Pictorial elements

I will analyze how grammar is presented in textbooks using multimodal elements. Mayer's multimedia principle will be used to categorize multimodal elements based on their functions, and research from second language learning and multimodality will give insight into how these categories align with the goals of grammar teaching.

#### 4.1.1 Decorative

A considerable number of images present in textbooks are decorative with little to no connection to the information being taught and are purely decorative. Decorative pictures make material more appealing but can disrupt proper grammar instruction. Processing elements that do not connect to instruction results in extraneous processing (Mayer 2021a, 66). The limited cognitive capacity of humans forces learners to choose what parts of incoming information they should pay attention to (Mayer 2021a, 61). Extraneous processing does not result in relevant knowledge being learned (Mayer 2021a, 66). Processing irrelevant information from decorative pictures thus further strains students' limited cognitive capacity and does not serve educational benefit to students.

In textbooks Top 8 and Scene 2 grammar sections have recurring characters that are placed in theory-based sections. Small illustrations of characters are placed in pages that would not otherwise contain pictorial elements. This is done to make information-heavy pages more appealing to look at. These illustrations do not convey meaningful information to the reader and are categorized as decorative elements. Top 8 uses these illustrations in theory-based sections next to text (Blom et al. 2012b, 150).

Speech bubbles are elements that are found in each of the books, and most of them can be categorized as decorative. Decorative speech bubbles do not bring more information to the reader, instead, they are used to make the grammar rules more entertaining to read. An example of this would be in the textbook *Level Up 8* where speech bubbles are used in theory-based sections to contain example sentences (Daffue-Karsten 2023, 188). These speech bubbles do not have instructional benefits and are used for aesthetic purposes. According to Mayer, multimodal elements should be used to help readers understand and pick out important concepts from teaching materials (2021, 11). Decorative speech bubbles can contain information, but they are not connected to important aspects of the presented grammatical information. This results in extraneous processing as learners' attention is diverted away from important grammatical information in favor of e.g. example sentences. In *Level Up 8* nearly all example sentences are presented in speech bubbles. The main purpose of these speech bubbles is to separate example sentences from grammar rules, which are not paired with multimodal elements. This helps to differentiate elements from each other but does not enhance grammar instruction as vital grammatical information is not highlighted. Redundant use of decorative elements lowers the effectiveness of multimodal elements and results in extraneous processing. Pictures guide the viewers' attention; when they are used in education, they should benefit grammar instruction to lessen extraneous processing and direct learners' attention to useful grammatical information over e.g. example sentences, as grammar rules are more vital for learning.

These decorative pictures do not contain grammatical information; however, their purpose is to spark interest in the viewer. A study on the benefits and disadvantages of decorative pictures shows that the use of decorative pictures raise situational interest in students (Magner et al. 2014, 148). Even though motivating students is important, these pictures need to be used in moderation. Students' cognitive capacity is limited, processing decorative elements fills their cognitive capacity and may not leave space for relevant information to be processed. The same study concluded that students with high-prior knowledge of the subject benefitted from decorative pictures because of raised interest (Magner et al. 2014, 148–149). Students with low-prior knowledge had raised interest, although decorative pictures were found to overload students' cognitive capacity, thus hindering learning outcomes (*ibid.*). The educational benefits from decorative pictures vary depending on students' prior knowledge.

Decorative pictures were present in all analyzed textbooks. Older textbooks overall contained less pictures. In *Key English* multimodal elements were used scarcely and only found in task-

based sections. Pictures were featured in each grammar section page in Top 8. The number of multimodal elements were more closely aligned with newer textbooks in Top 8 compared to Key English. Decorative pictures were still utilized the most in these books compared to other categories. Newer textbooks contained more pictures overall with the majority being decorative. Using decorative pictures in textbooks does not in all cases impact student learning negatively but their use should be limited to ensure students are able to retain important information from grammar sections.

#### 4.1.2 Representational

The second most common type of picture present in textbooks was representational. Representational pictures portray a single element but do not necessarily contribute an instructional purpose (Mayer 2021b, 154). Most representational pictures do not enhance grammar instruction; however, analysis of textbook grammar sections in this thesis showed that some representational pictures can be a relevant part of grammar instruction. Representational pictures were included in every textbook aside from Key English 8 where no pictorial elements were present in theory-based grammar sections of the book with a minimal number of pictures being used in the task-based sections.

In the analyzed textbooks most of the representational pictures are simple illustrations of a character performing an action or images that relate to some of the example sentences given in the book. These pictures are used mostly to entertain the reader as the information that a student can get from these pictures does not correlate with the grammar concept being taught. These representational pictures along with decorative pictures do not contribute to grammar instruction.

When analyzing ESL textbooks, I noticed representational pictures varying in terms of grammar instruction. Images with no explicit connection to the grammar concept can be categorized as representational. However, I found that pictures can carry grammatical information without presenting the grammatical concept. Some representational pictures e.g. in Scene 2 (Hiitti et al. 2017, 14) and Level up 8 (Daffue-Karsten 2023, 80) are included within tasks. In these tasks students are required to form sentences based on pictures with a few example sentences outlining what grammatical concept the students need to use. The pictures themselves do not explain grammatical concepts, instead they guide students to use grammatical information that they have learned. In this case representational pictures act as the main mode of information and textual representations act as guides that help learners

produce answers and interpret the pictures correctly. These types of representational pictures mostly occur in newer textbooks and are seldom utilized in older textbooks. When information is represented with both pictures and text, the given information is processed more efficiently. Mayer and Fiorella explain that the combination of verbal and pictorial elements in teaching further deepens the understanding of a concept as these modes give learners different information from one another (2021, 153). Students process multimodal information simultaneously and form a broader understanding of the given grammar concept in use when presented with both textual and pictorial information. The representational pictures used in tasks could be replaced with text; however, doing so would hinder students' information processing. In addition, learners are more likely to form an understanding of the topic if they process both pictorial and verbal information (Mayer 2021b, 146). These pictures are distinguishable from decorative pictures as processing the pictures is necessary to complete the task. Generative tasks give students possibilities to train their grammatical ability and are a vital part of grammatical instruction.

Another example of representational pictures benefiting grammar instruction in textbooks is comics. Some grammatical concepts are first introduced in the form of a conversation between illustrated characters or a comic in Top 8 and Scene 2. Illustrated characters in comics can be categorized as decorative because their main purpose is to catch the interest of the reader. Even though the pictures themselves do not relate to the information being taught, comics contain dialogue that present examples of the current grammar concept in use. Because of this the comics themselves can be categorized as representational and are useful for grammar instruction. Richards and Reppen describes as the use of grammar as a tool to create spoken and written utterances that are appropriate to specific contexts (2016, 152). Grammar structures presented through dialogue give students context of appropriate use of grammar rules, thus developing their grammatical ability and enhancing the message of grammar sections.

Comics are most notably present in textbooks Top 8 and Scene 2. These textbooks are both from the same publisher but have differences in how their comics are presented. In Top 8 comics are placed at the beginning of each theory-based grammar section (Blom et al. 2012b, 144). In Scene 2 they are shown at the beginning of task-based sections in the textbook (Hiitti et al. 2017, 32–33). The integration of comics is most effective in Scene 2. Task-based sections in the textbook focus on tasks that require students to use spoken language and

interact with other students. The comics can serve as an example of how the students should perform incoming tasks and utilize the grammar concept in communication.

Representational elements have varying levels of educational input. Representational elements can be single pictures that connect to single example sentences from tasks and theory without benefiting grammar instruction. Comics give students examples of grammar concepts in communication and encourage students to use these concepts in their own speech, thus enhancing grammar instruction. Analysis showed that representational pictures can have an impact on grammar instruction. These pictures help students to enhance their grammatical ability but do not work by themselves and need text to complete the meaning and benefit instruction. Even though some representational pictures benefit grammar instruction, they can also overload students' cognitive capacity. In some cases, benefit of representational pictures in instruction may not be enough to warrant their use as students' cognitive capacity is limited. Representational pictures as well as decorative pictures should thus be used in moderation.

Representational images were used considerably more than organizational and explanative in all analyzed textbooks. Most representational images did not benefit grammar instruction as representational pictures that benefit instruction were present mostly in Top 8 and Scene 2.

#### 4.1.3 Organizational

Organizational pictures portray relations between concepts and directly benefit instruction (Mayer 2021b, 153). Organizational pictures can highlight relevant information or signal readers to compare differences in grammatical structures. Organizational elements in textbooks were not as frequent as representational or decorative elements.

Small symbols like arrows can be considered organizational pictures. Arrows are used in analyzed textbooks to signal changes in different units of language e.g. in Top 8 the combination process the words *would* and *not* into *wouldn't* were indicated with an arrow (Blom et al. 2012b, 144). Other small symbols, for instance illustrated question marks and exclamation marks, are used in textbooks to highlight or emphasize the functions of example sentences. These symbols differ from text as the marks are illustrated and significantly bigger than the font used in example sentences. In Top 8 small symbols are printed in hot pink to make them stand out on a light blue background (Blom et al. 2012b, 156). As the purpose of these symbols is to highlight information, design choices that make them stand out add to

their effectiveness. Illustrated question marks are used in e.g. Scene 2 to further emphasize that the shown sentence structure belongs to an interrogative sentence (Hiitti et al. 2017, 142). Exclamation marks as pictorial elements are used in textbooks to highlight the most relevant information on the page, thus making it easier for students to focus on the main points of the text. Even with optimal use of pictorial elements and clear verbal instruction students need elements that direct attention to relevant information (Fiorella and Mayer 2021, 185). Bringing attention to relevant information within a text is beneficial for grammar instruction as students can form representations of grammar concepts more easily.

Illustrations featuring a recurring character can also be categorized as organizational. In most cases character illustrations are categorized decorative pictures and did not benefit grammar instruction; however, some character illustrations contain relevant information for the viewer. Some character illustrations included dialogue e.g. in Top 8 a recurring character states the importance of a grammar concept (Blom et al. 2012b, 156). Character illustrations can also be used to add extra remarks, e.g. in Scene 2 a character reminds students that the verb *must* does not occur in past tense (Hiitti et al. 2017, 150; my translation). These illustrations have both entertainment and instructional value as they highlight relevant information and give additional information about structures that are exceptions to the presented grammar rules.

Another type of organizational picture present in textbooks were timelines. Even though timelines are most commonly used in placing events in chronological order, they are applicable for grammar instruction. In Level up 8 a timeline was used to arrange verb tenses in order of the time frame that the verb tenses represent (Daffue-Karsten 2023, 188–189). Presenting this grammatical concept with a timeline puts emphasis on the order of the verb tenses. This can help students remember correct verb structures for each tense.

Some textbooks disclose the difficulty of tasks in task-based sections with small illustrations. Level up 8 uses illustrations of three diamonds as a scale to mark the difficulty of said task, each filled diamond represents a boost in difficulty (Daffue-Karsten et al. 2023, 237). Top 8 has a similar system where more time consuming and difficult tasks are indicated with an illustration that resembles a stamp that has the word *bonus* on it (Blom et al. 2012a, 57). These organizational pictures help students identify tasks that are suitable for their language level. This is useful for especially high prior-knowledge students who are looking for more challenging tasks.

The most frequently occurring organizational elements were small symbols e.g. arrows and exclamation marks that highlighted important information. These elements were present in all textbooks but most frequently used in Top 8. Organizational elements overall were significantly more infrequent compared to representational and decorative elements. Scene 2 and Top 8, both books from the same publisher, made use of organizational elements more than other books. Nonetheless organizational elements mostly consisted only of small symbols as other types of organizational pictures were present in each textbook only a handful of times.

#### 4.1.4 Explanative

Explanative pictures benefit grammar instruction the most compared to other multimedia principle categories as they carry grammatical knowledge within the picture itself. According to Mayer explanative pictures are “Illustrations that explain how a system works” (2021b, 154). In grammar instruction explanative pictures describe the functions of certain sentence structures.

An example of explanative pictures in ESL textbooks can be diagrams that illustrate grammar concepts themselves. For example in Scene 2 (Hiitti et al. 2017, 179) the relationships of the prepositions of time and place are presented with a diagram of an upside down triangle. Prepositions *in*, *on* and *at* are placed within the triangle. As the pyramid narrows, so do the definitions of the concepts of time and place that the prepositions describe. The widest part of the triangle contains the preposition *in*. This placement indicates that the preposition is used for the most general concepts for time and place. The narrowest part of the triangle contains the preposition *that* describes the most specific concepts for time and place. Using the shape of a triangle, pictorial elements carry grammatical information about the prepositions themselves, thus greatly benefiting grammar instruction. Another example of an explanatory pictures can be found in Key 8 workbook where students learn the correct prepositions to use with the verbs *go* and *be* (Kangaspunta et al. 2013, 21). Presenting grammatical concepts with pictures adds variety to grammar teaching. According to Richards and Reppen grammar should be taught with varying methods to account for students’ differences in learning styles (2016, 157). Most grammatical concepts in textbooks are presented in the form of text; this approach makes grammar instruction limited and does not fit all learning styles. Presenting grammar concepts with pictures requires more effort from teachers and textbook publishers but may prove more effective to students with different learning styles.

Unlike decorative pictures, organizational and explanative pictures are proved to benefit low prior-knowledge students. In a study by Mayer and Gallini low prior-knowledge students were found to perform better when information was presented in diagrams in addition to text compared to when information was only textual (1990, 724). High prior-knowledge students' performances were not affected by multimedia additions (ibid.). Even though high prior-knowledge students did not benefit from instruction relevant pictures, their existence did not negatively impact performance. The use of organizational and explanative pictures should thus be more beneficial to instruction than decorative pictures as they help low prior-knowledge students perform better without impacting high prior-knowledge students' performance.

Explanative pictures were the least used pictorial element in analyzed textbooks. These types of pictures were utilized only once or twice in each of the textbooks. The low frequency of explanative pictures can be due to the difficulty of producing them. Integrating pictorial and textual information together to form a coherent learning experience can be significantly more difficult than presenting information through textual means exclusively.

## **4.2 Other design elements**

In addition to pictorial elements, textbooks feature other design elements that benefit grammar instruction. The most frequently used design element in textbook grammar sections are tables. Tables are used similarly to organizational pictures to show relations between concepts and to differentiate example sentences and other information from grammatical concepts that are the focus of grammar sections.

Other design elements in textbooks are formulas. These elements can present the process of forming certain sentence structures through constructions that look similar to mathematic formulae. For example construction of the present progressive is presented to the students in a formulaic form in Scene 2: “*am, is or are + the -ing form of a verb*” (Hiitti et al. 2017, 145; my translation). Addition of different words and morphemes are presented with the symbol + in this example to mimic the mathematic operation of addition, an already established concept for learners within the intended age range of these textbooks.

Formulaic presentations and tables are frequently used in each one of the textbooks regardless of their time of publication and. These are not pictorial elements but do serve the purpose of organizing concepts and showing relationships between words. These design elements closely

relate to organizational pictorial elements as their functions in instruction are the same. They are multimodal elements that benefit grammar instruction and help students remember and understand concepts better.

## 5 Conclusion

Analysis shows that multimodal elements can enhance grammar instruction. However, most uses of pictorial elements in textbook grammar sections did not enhance grammar instruction and were irrelevant to the grammar topics represented. Organizational and explanative pictures, that directly benefit grammar instruction, were rarely used in the analyzed textbooks. The analysis of textbooks further displayed that the categories in the multimedia principle do not in all cases relate to the instructional benefit of the images. Some representational pictures can carry instructional messages or are vital for certain instructional purposes, even though representational pictures are described as not aiding instruction. Nonetheless this was the case for only some of the pictures as most representational pictures did not add to grammar instruction. Even though this thesis focuses mostly on pictorial elements present in the analyzed textbooks, it is important to consider other strategies e.g. tables and other design elements when designing coherent grammar instruction.

Differences in grammar presentation between old and new textbooks were minimal. Similar uses of multimodal elements were found in all textbooks and each of them featured less multimodal elements in grammar sections when compared to other sections of the books. More differences were found between textbooks that had different publishers. Scene 2 and Top 8 included more pictorial elements in grammar sections than level up 8 and Key English 8. However, pictorial elements that benefited grammar instruction were found mostly in newer textbooks. This indicates a positive development in the use of multimodal elements that benefit grammar instruction. Although the results of this thesis show that multimodal elements can be used more effectively in grammar instruction than they are in current printed teaching materials. As the analyzed materials consisted of only four textbooks, the results of this thesis are indications on the nature of grammar instruction in ESL textbooks in Finland. Further empirical research is needed to accurately measure the effectiveness and learning benefits of multimodal elements present in current textbooks. Functional integration of multimodal elements in education requires more awareness on the benefits of multimodal learning and cooperation from teachers and textbook authors to further develop grammar instruction using functional multimodal learning strategies.

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