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Vocational Orientation and Relevance in textbooks for the Upper Secondary Vocational Study Programme

A multimodal analysis of Vocationally Oriented Texts in the Subject English

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Sammendrag

Hovedfokuset i denne masteroppgaven er yrkesrelevans i faget engelsk på det yrkesfaglige studiet i videregående opplæring. Forskningsspørsmålet jeg har utviklet i denne sammenhengen er *hvordan legger læreverket SKILLS til rette for kravet om yrkesorientering i faget engelsk gjennom bruk av multimodale tekster*? Metoden er en grundig kvalitativ multimodal analyse av fire utvalgte tekster fra det omfattende læreverket *SKILLS* som er tilpasset det yrkesfaglige studiet. Oppgaven er i utgangspunktet basert på teori om hvordan multimodale tekster opererer, samt den antatte forestillingen fremsatt av Kunnskapsdepartementet om at yrkesrelevans kan forebygge frafall i den yrkesfaglige utdanningen. Begrepene yrkesorientering og relevans er da også sentrale faktorer som vil bli diskutert gjennom hele oppgaven. Analysen er basert på multimodal teori fra van Leeuwen (2005) og Løvland (2007), og fokuserer på fire lignende tekster med yrkesorientert innhold. Diskusjonen skisserer hvordan tekstene kan legge til rette for relevans ved å formidle yrkesorientert meningsinnhold. Konklusjonen av denne forskningen er at læreverket *SKILLS* gjennom integrasjonen mellom semiotiske ressurser i multimodale tekster legger til rette for yrkesrelevans i faget engelsk.

Abstract

The main focus of this master thesis is vocational relevance in the subject English in the vocational study programme of upper secondary education. The research question I have developed in this context is *How does the school textbook collection SKILLS facilitate the demand for vocational orientation in the subject English through multimodal texts*? The method is a thorough qualitative multimodal analysis of four selected texts from the extensive school textbook collection *SKILLS* which is adapted to the vocational study programme. The thesis is initially based on theory about how multimodal texts operate, as well as the presupposed notion argued by the Ministry of Education that vocational relevance can prevent drop out in the vocational study programme. The terms vocational orientation and relevance are also key factors and will be discussed throughout the thesis. The analysis is based on multimodal theory from van Leeuwen (2005) and Løvland (2007) and focuses on four similar texts with vocationally oriented content. The discussion outlines how the texts can facilitate

relevance by communicating vocationally oriented intended meaning. The conclusion of this research is that the school textbook collection *SKILLS* communicates through the integration between semiotic modes in a way that facilitates vocational relevance in the subject English.

Foreword

This thesis that has been a result of many hours of late-night hard work, marks the end of my years of continuing education as a teacher. Coinciding with the many consequences that the spring 2020 imposed on the world has made it a bit more difficult to carry out as well as complete, in terms of home office and closed universities, among other things. I would like to express my thanks to Associate professor Ingrid Jakobsen at the ILP for priceless and meticulous advice and supervision. I am grateful for her contributions as well as evaluation during this working process, in which I would not have managed without. Also, I would like to acknowledge my two studying daughters for technical as well as moral support. Finally, my patient and supportive husband deserves gratitude, he has helped me keep up moral many days when I wanted to give up.

1. Introduction

1.1 The Vocational education programme, multimodality and the textbook collection *SKILLS*

My interest in the way the texts we present to the pupils as a tool for learning are constructed has grown continuously through my long years working as a teacher, mainly in Norwegian and English. Also, as I have been fortunate enough to be able to participate in studies about basic skills and strategies for learning, I find the basic skill of reading a particularly interesting topic. Becoming more aware of how the design of the texts we use in our teaching and the strategies the pupils were applying when approaching these texts, I could experience the importance of texts that combined different ways of communicating the intended meaning. The term multimodality in texts soon became a very important foundation for my teaching methods and choices of teaching material. Explained in short, a *multimodal* text uses various resources to support and communicate meaningful content (Metliaas & Mørk, 2015 p. 3). These resources can be for instance pictures, figures and text in a textbook.

Through my work, mainly in the vocational educational programme in upper secondary school in the subject English, I could see that utilising multimodal texts was maybe even more useful in supporting the meaning of a text in relation to a second language. This was especially true concerning students who were less accomplished readers. In the vocational orientation programmes these pupils seemed to be more frequently represented. I became acquainted with the school textbook collection *SKILLS* (Arnkværn & Bottolfsletten, 2013), which in my experience served as a good tool for teaching these pupils, who a lot of the time seemed to be mainly interested in their vocational programme choice. Many of them had previously struggled with the subject English, and consequently labelled English merely as a necessary liability on their path to a future occupation. *SKILLS* seemed to facilitate motivation by presenting the curriculum through a variety of mainly multimodal texts, also several that were relevant in relation to their vocational educational programme of choice.

The textbook has traditionally been a very important scaffolding tool in the work of Norwegian teachers, as I have also seen in my years of teaching in various schools. Despite the widespread digital opportunities in contemporary time, this tradition still seems to prevail. The survey "Ark & app" administrated by the Ministry of Education in 2016 conveyed that as much as 60 percent of teachers in primary school and somewhat less in the higher levels based their teaching almost solely upon paper-based teaching material (Jelstad, 2016, p.1).

Thus, the research of how these resources can be composed and designed in order to aid the everyday teacher in guiding their students through the competence goals of each specific subject is certainly relevant.

1.2 Vocational orientation and relevance in the subject English

In Norway, most students can upon completion of the obligatory grades 1-10 attend an upper secondary programme. Here, they can choose between a general programme, which is often followed by higher education, and the vocational programme, which is designed to give the pupils a profession upon completion. English is a one – year compulsory subject for both programmes, though the vocational programme has the curriculum spread over two years. English is defined as one of the compulsory core subjects, in addition the vocational programme also contains subjects that are adapted to the various vocational programmes.

My experience as a teacher in the vocational study programme has been that the students in this programme seem to lack motivation for the common core subjects more frequently than pupils in the general programme. This tendency can be confirmed by the higher drop-out factor in this study programme. According to Brevik, Skarpaas & Isaksen (2020), the dropout rate was not only significantly higher among vocational students in the years 2013-2018, but in addition as little 42 percent completed within normative length of time. Though the tendency in this period was that the numbers of pupils completing was increasing, this is still low in comparison to 79 percent in the general studies Even though an additional 23 percent did complete within the approved five-year limit in comparison to ten percent in the general studies, the low completion rates have been rendered as worrisome by both national and international organisations as well as researchers. To reduce the number of dropouts, an initiative consequently emerged to increase the perceived relevance of common core subjects for students in vocational study programmes (Brevik, Skarpaas & Isaksen, 2020, p. 68-69).

Vocational orientation is in the guidance to the English subject curriculum defined as a local adaptation and is to be considered an addition to the curriculum which combines both competence goals from the vocational subjects and the common core subject in question. Furthermore, the guidance states that learning is more motivating when students can relate the chosen topics to their specific vocational programme (Ministry of Education, 2015, p. 2). According to the English subject curriculum provided by the Ministry of Education, the pupils attending the upper secondary education programmes should also meet a presentation

of the curriculum that is as relevant as possible through adaptation to their different education programmes (Ministry of Education, 2013, p. 2), which explains the term *relevance*. In conclusion, any means of teaching in the core subjects, like the use of school textbooks, should facilitate this requirement.

1.3   The idiosyncrasy of the subject English

The English language has become increasingly important tin society through the years. An idiomatic expression states that "The sun never sets on the British empire". While imperialism was the initial reason for the global spread of the English language, it has continued growing into becoming a language of communication across borders also after the fall of this era. Consequently, English has in contemporary time become a language which serves numerous purposes, including trade, international relations or even something as mundane as manuals for machines and repairs. The Ministry of Education also states about the subject English that it is a universal language that can be used for communication, entertainment and acquiring information on an international level. Furthermore, it is increasingly becoming a natural part of education as well as utilised as a working language all over the world (Ministry of Education, 2013, p. 1). Thus, mastering this language is an important competence in the execution of many professions.

The outlined idiosyncrasies of the subject do not only require all the pupils in the upper secondary programme to learn subject-specific content and developing language proficiency in general, it is also especially important for pupils in the vocational programme to learn programme specific vocabulary through vocational orientation. In the syllabus that each school develops on grounds of the guidelines from the Ministry of Education, this must all be considered. The guidance to the curriculum for the English subject also confirms this, as well as concluding that English is a subject that can be used as a tool in addition to serving a mean of gaining knowledge and personal insight (Ministry of Education, 2013, p. 1). As the subject English is in some cases must be considered a tool of necessity in order to acquire skills in the specific vocational programme, a high level of interdisciplinarity is implied to be expected from each educational institution on the upper secondary level (Ministry of Education, 2015, p. 3). Language learning in this context will according to the Ministry of Education occur when pupils are exposed to a diversity of texts and in the broadest sense of the term *text* (Ministry of Education, 2013, p. 11). In conclusion, the subject English is not only a compulsory subject in the upper secondary programmes, it also has a special relevance when

concerning proficiency, and should be given a significant role through targeted use of interdisciplinary cooperation between the common core subjects and the vocational subjects.

1.4 The basic skill of being able to read, and multimodality

What was new and essential in every subject when the then new curriculum arrived in 2006, was the focus on five basic skills: Oral skills, numeracy, digital skills, being able to express oneself in writing, and being able to read (Ministry of Education, 2013, p. 5). This implementation of all the basic skills regardless of subject initiated a gradual change in attitudes in Norwegian schools towards both contents and methods of teaching. Because of this change, all teachers in all subjects were now considered responsible for the basic skill of being able to read. Being able to read in English is defined in the English subject curriculum as being able to create meaning from a variety of texts, also within specific fields of study. In order to develop proficiency in reading in English, the pupils are also expected to make use of suitable reading strategies adapted to the individual type of text and situation (Ministry of Education, 2013, p. 5). Consequently, in subjects like social studies and science, reading strategies have become more relevant than earlier in Norwegian schools as a method for approaching different types of texts.

Pupils in the upper secondary educational programmes are supposed to read and learn from texts adapted to their vocational education programme in all subjects, thus also including English (Ministry of Education, 2013, p. 11). The guidance elaborates on this that thorough learning in their specific vocational subjects is to be acquired through interdisciplinary cooperation between subjects when working with texts (Ministry of Education, 2015, p. 3). Language learning in this context will according to the Ministry of Education occur when pupils can relate to a diversity of texts and in the broadest sense of the term "text" (Ministry of Education, 2013, p. 1). In this context, one could assume that multimodal texts would accommodate this demand, and that they should be approached with the aid of adequate strategies for reading. Subsequently, the students in the upper secondary vocational programme in their day-to- day situation encounter text types in the subject English that they earlier only would see in subjects like science and social studies. They also to an increasing degree meet multimodal texts, containing pictures and models. In fact, though the wider understanding of the term *text* was quite unknown in Norwegian schools before the curriculum of 2006 (Tønnesen, 2017, p. 14), Laberg stresses that in our contemporary time, all texts that appear in school textbooks can be considered multimodal (Laberg, 2006, p 17).

Consequently, applying adequate reading strategies for each text type in an extended perspective is essential for the pupils in this situation, as is also true in relation to the *SKILLS* textbook collection.

1.5 Research question

The aim of this thesis is to establish how to strive to helping pupils in the vocational study programme of the upper secondary education to complete their studies through applying relevance in the school book teaching material. My research question emerges as a natural consequence of the issues that are discussed in the previous chapters, and can be formulated

How does the school textbook collection SKILLS facilitate the demand for vocational orientation in the subject English through multimodal texts?

The following underlining questions will be discussed:

1. *How does the interaction between modes in the selected multimodal texts function in terms of communicating the intended meaning?*
2. *Do the choices of the sign makers facilitate vocational relevance?*

In relation to these questions, this research will focus on two different study programmes connected to the vocational education programme at the upper secondary level of education, specifically targeting the school textbook collection *SKILLS*. This collection is adapted to fit each programme specifically through texts that are vocationally oriented.

1.6 Framework

This research is organised by an initial chapter outlining theory about vocational orientation and relevance as well as multimodality, which together with the analysis forms a basis for the discussion. The importance of the school textbook in Norwegian schools is discussed, as an initial presupposition for the selection.

To facilitate the analysis, there is a chapter about methods discussing how semiotic modes interact to create multimodal texts, in addition to how these texts can be analysed. How the analysis of the selected texts will be conducted is furthermore determined in the method chapter. Finally, the selection is outlined and discussed with reference to validity and reliability.

The actual analysis is divided into two parts, where two similar pairs of texts are analysed as well as compared in regard to the research question. In the following discussion chapter I will sum up some of the observations made and questions raised in the analysis, and discuss these further. In addition to presenting to the conclusion of my research in the final chapter, I will also share some reflections upon which direction eventual supplementary research might take.

2. Theory

This chapter will outline some facts about the position of the school textbook in Norwegian history, as well as defining the terms vocational orientation and vocational relevance. The connection between relevance and motivation will also be discussed. Furthermore, the path from a more traditional view upon school textbook texts to the wider interpretation of the term will be discussed, concluding with an account of how the semiotic modes can operate in these multimodal texts

2.1 Researching textbooks

In older times, long before the days of the Internet, having access to the written word through books accumulated a great deal of power in society. Those who mastered the written language were initially few, and often acquired an elevated position on society. In each little village, the priest, the teacher and the chief of police were the centre of power. As a natural consequence, the textbook became a tool of great importance for teachers in our Norwegian schools. The teacher presented the established truth through the textbook and pupils were seldom in a position to challenge this. Today, in our contemporary society of endless information, there are so many other means of acquiring knowledge. Most people know how to read and write, and the teacher through the textbook no longer holds this position of power. According to Skrunes (2010), all textbooks for teaching purposes in Norway were until year 2000 required to be approved by the authorities before being distributed. The textbooks were scrutinised in terms of the teaching goals of the curriculum in addition to issues like adapted education, interdisciplinarity and local differentiation. This practice differed from most other European countries at the time and was applied by the government as a means to ensure a high level of equality in the Norwegian schools as well as making sure that the teaching material was in accordance to the curriculum (Skrunes, 2010, p.52). Thus, the power of the textbook has had some aid in prevailing in Norwegian teaching tradition, and still holds a certain position.

Many Norwegian teachers, though they do supplement with other sources, base their main scaffolding for teaching on the textbook chosen by their teaching institution. Not only does the textbook decide the contents of syllabus, it also dictates the order in which topics are presented (Grepperud & Skrøvset 2012, p.233). However, from this tradition emerges an important issue concerning the quality of teaching in contemporary time, as the scrutiny of the textbooks has now been terminated for several years. According to Skrunes (2010), the point of this termination was to stimulate to a wider range of variety in textbooks, rather than letting

go of scrutiny all together. The consequences of this was supposed to be a more vigorous scrutiny of the existing textbooks, as well as increased variety in teaching aids (Skrunes, 2010, p. 53) According to Grepperud & Skrøvset (2012), all research about the use of teaching aids in the Norwegian educational system reveal the same results: The textbook is of great essence. In a survey from 2004, four years after the elimination of Government examination, 87 percent of the teachers conveyed that they mainly utilized a textbook when planning for their classes, and the textbook was considered to be at least as essential as the curriculum amongst teachers. The explanation for this was simply that the textbook was a tool of convenience that organized the main contents of the subject, instead of each teacher having to gather and organize adequate teaching material on their own (Grepperud & Skrøvset 2012, p.226).

The survey "Ark & app" administrated by the Ministry of Education in 2016 to a certain degree corroborated the findings of Grepperud & Skrøvset (2012) in more recent time. In a time frame of three years 20 scientists observed the choices of teachers concerning teaching aids in the subjects social studies, mathematics, science and English in primary school in addition to upper secondary general studies and the vocational educational programmes. They discovered that as much as 60 percent of teachers in primary school and somewhat less in the higher levels based their teaching almost solely upon paper-based teaching material (Gilje et al. in Jelstad, 2016, p.1). Brevik & Lyngstad (2020) refer to a series of surveys when they comment upon the choices of literature and study aids in the upper secondary education programme. Not only do they conclude that 68% of the teachers choose most of their literary texts from the textbook, although this was not always considered the best source. They also found that the vocational teachers struggled to motivate students to read literature, and consequently often chose different texts (Brevik & Lyngstad, 2020 p. 168-169). This would support the view that vocational orientation and relevance through the use of multimodal text would be appropriate. Nonetheless, as scrutiny from the authorities concerning the contents of the textbooks in accordance to the curriculum is no longer in practice, this creates a conflict concerning the tradition of using the textbook as a scaffolding for the teaching in any subject. The syllabus in each subject at each separate school is still expected to be based directly on the curriculum. Choosing teaching aids in accordance to the goals outlined by the Ministry of Education, though, now falls in the hand of each school owner or teacher. Consequently, analysing textbooks is still quite relevant in our modern times and should be practiced by a

wide range of teachers in order to secure a certain level of quality in relation to the competence goals.

2.2 Vocational orientation and relevance to prevent drop-out

2.2.1 Motivation and relevance

The terms vocational orientation and relevance have as discussed become imperative in the vocational study programme. Since 2010, the Education Act has required the curriculum in the common core subjects to be adapted to the pupils' study programme (Christiansen & Fjeld, 2016 p. 1). According to the competence aims in the subject curriculum English for the vocational education programmes, the pupils are required to "read to acquire knowledge in a particular subject from one's education programme". The education is also supposed to enable the pupils to "understand and use an extensive general vocabulary (…) related to one's education programme" (Ministry of Education, 2013, p. 11).

PIRLS (Progress in International Reading Literacy Study) is a survey of reading skills which is conducted in 32 different countries every five years, Norway being one of the participants. According to The Ministry of Education, PIRLS defines reading literacy as "the ability to understand and use those written language forms required by society and/or valued by the individual". Also, PIRLS states about reading: "Young readers can construct meaning from a variety of texts. They read to learn, to participate in communities of readers in school and everyday life, and for enjoyment" (Ministry of Education, 2020).We have already learned that the Ministry of Education concludes that vocational orientation is a locally adapted addition that combines the curricula of the common core subjects and the vocational study programme. The relevance of the common core subject curriculum is also associated with the vocational programme. Brevik et al. (2020) concur with the first, but add to the latter that relevance is closely linked to motivation. This may not only be influenced by the vocational programme, but also other factors like individual prerequisites, youth cultures or society in general (Brevik, et al., 2020, p. 66). Motivation was as previously mentioned an issue of concern for me as a teacher, which would certainly call for adequate teaching aids and methods. They also present that students' motivation can be improved by a combination of vocational orientation and relevant teaching in the common core subjects (Brevik et al., p. 66). As we have seen that the school textbook is still an important scaffolding for teaching, the contents and design of these books might prove to be of some importance.

2.2.2 The "FYR" project

When pupils are not motivated, they can in my experience tend to have an increasing amount of absence which in turn may lead to dropping out of school all together. We have established that motivation is linked to relevance, which can relate to both vocational orientation and other individual factors. So, when the Ministry of Education endeavoured to improve completion rates in upper secondary education, this was their base line. The FYR project, which stands for Common core subjects, Vocational Training and Relevance (Fellesfag, Yrkesretting og Relevans) is the extension of "Ny Giv" (New Motivation), which was a nationwide project initiated by the Ministry of Education to reduce the dropout rate in upper secondary education (Christiansen & Fjeld, 2016 p. 1). While "Ny Giv", which lasted from 2011-2014 focused on all study programmes, the FYR project continued this work with special focus on the vocational study programme. The background for this project was that the Ministry of Education at this time emphasised that in order to succeed in their education, pupils in the vocational programme also needed to master the common core subjects (Christiansen & Fjeld, 2016 p. 1). This was to be achieved through some basic principles. The competence aims were to be simplified and expectations in general lowered. There was to be established vocational relevance in the common core subjects and vice versa. There was also to be established interdisciplinarity between the vocational programme and the common core subjects through cooperating in different projects (Ministry of Education, 2014, p. 6-7). As relevance according to the Ministry of Education additionally can be connected to issues that concerns the pupils though not being vocational relevance, the pupils' individual interests were also to be considered when teaching (Ministry of Education, 2014, p. 5). This way of incorporating the students in their own education by adapting the teaching to their point of view will hopefully result in more motivated students in the future. However, this will require that the teachers are able to relate to each specific vocational study programme. In my case, relating to for instance TIP (technical and Industrial Production) has been quite challenging with my background. For instance, I know very little about engines, which makes it a challenge to plan my lessons around vocationally relevant material.This is exactly why teaching aids like textbooks need to be designed in a way that makes this challenge manageable for the average teacher.

2.3 The multimodal text as a part of the broad use of the term *text*

The understanding of the term *text* has been through rapid changes in our contemporary Western society. According to Kress & van Leeuwen, a fully literate person is defined by the ability to treat writing completely as a visual medium. Mastering the art of writing texts has traditionally been an important achievement and an essential goal of education in our Western culture, separating us from the less valued, non-literate cultures (Kress& van Leeuwen, 2006, p. 17). Therefore, the conventional Western view upon what defines a text would most certainly be that it is a written, physical piece of paper with a collection of words, sentences and paragraphs that create a meaning. This would be exemplified by artefacts like books, newspapers or letters. Løvland argues that traditionally, within the term text lies an implication of this being written language. This has limited the status and awareness of other ways of communicating meaning in our modern society (Løvland, 2007, p. 11). Kress & van Leeuwen state that literate cultures like our society have systematically supressed means of analysing visual forms of representing meaning, because visual representation like drawings or carvings have customarily been affiliated with illiterate societies like indigenous peoples. Subsequently, there has emerged an absence of theoretical framework within which visual forms of representation could be analysed (Kress& van Leeuwen, 2006, p. 21-23). So, despite the modernisation in society in general, it seems these circumstances have contributed to that the established understanding of the term text as being only words on a piece of paper has kept its authority. In n recent times, though, Løvland observes that this limited understanding of the term text has changed within studies of language. Subsequently, the term text has been extended into also including for instance spoken language and pictures (Løvland, 2007, p. 11-12). This means that in our contemporary western society in general, the term text also includes other ways of communicating than the written language.

With the new subject curriculum in 2006 a much overdue change in views about the definition of a text in Norwegian text tradition emerged. At this time, Kress & van Leeuwen had already in 1996 stated that the Western culture was in the middle of a shift towards a new visual literacy in many important contexts like various written literature (Kress & Van Leeuwen, 2006, p. 23). The new subject curriculum in the subject English communicated that the pupils should encounter a wide range of texts, "using the concept of text in the broadest sense of the word" (Ministry of Education, 2013, p.1). This launched the idea of an extended understanding of the term text, introducing the expression *multimodal text.* Concurrently, the

subject curriculum for the subject Norwegian defined the multimodal text as a text where writing, sound and pictures were interacting (Ministry of Education, 2013b, p. 1). Additionally, the expectations from the Ministry of Education were apparent in general concerning the broad use of the word text, as the basic competence of reading was expected to be assured in all subjects (Ministry of Education, 2016, p.1). And so, the term *text* in a Norwegian educational context had also assumed an extended meaning.

2.4 Social semiotics and multimodality

The concept of multimodality in texts has derived from theories of social semiotics. Van Leeuwen (2005) as well as Kress & van Leeuwen (2006) base a great deal of their ideas on Halliday's social semiotic view on language presented in 1978 (Kress & van Leeuwen, 2006, p. 23). Social semiotics is a branch of semiotics which attempts to investigate and explain how modern society combines different aspects or signs in order to create meaning. Kress & van Leeuwen (2006) state that the key concept of semiotics is signs (Kress& van Leeuwen, 2005, p. 6), which according to van Leeuwen (2005) is the same as semiotic resources (van Leeuwen, 2005, p. 3) These signs, or semiotic resources, can according to van Leeuwen (2005) be any means of communicating meaning through actions and artefacts, spanning from facial expressions and gestures to means of technology like a computer or ink and paper in a textbook (van Leeuwen, 2005, p.3). An uncomplicated way of explaining the term semiotic resources can therefore simply be that they are actions that are used to communicate. Løvland (2007) also states that the social process of facilitating semiotic resources in order to create meaning is the very essence of what social semiotics investigate, thus including theories about multimodality (Løvland, 2007, p.147).

An essential feature of social semiotics is that it needs to exist in interdisciplinarity with social theory, because the theory needs to be applied on specific problems in specific fields. This means the theory of social semiotics needs to interact with the theory and practice of the area of investigation (van Leeuwen, 2005, p.3). In other words, semiotic resources need to be seen in the light of the social context and agenda from which they emerge in order to be prudently analysed. As an example, a song is not just a song, but a combination of semiotic resources that communicate within the framework of the social structure in question. Consequently, in our contemporary time, a seemingly uncomplicated song can be used to communicate political views or cultural affiliation through semiotic resources like language, sound patterns and video.

The analysing of multimodal texts is facilitated by terminology from social semiotics, when attempting to demonstrate the previously mentioned interaction between the social theory and the semiotics of the theory and practice of the area of investigation. According to Kress & van Leeuwen (2006), a multimodal text means any text which expresses meaning through more than one semiotic mode. Mode in this context is more simply explained by Løvland (2007) as way or form. Kress & van Leuven press that arching above these modes, there needs to be a code containing rules and meanings that helps the various semiotic modes integrate so that they can interact with and affect each other (Kress & van Leeuwen, 2006, p. 177). They introduce two such codes, where one operates in texts that spread out over some time, like a song or a dance. The other code provides integration in the semiotic modes of texts that have spatially co-present elements. This means that the elements occur all at once, which is the case concerning multimodal texts like paintings and newspapers. (Kress &van Leeuwen, 2006, p. 177). In some case the codes may occur simultaneously, like regarding movies or television. Løvland (2007) argues that identifying semiotic modes in multimodal communication is mainly a tool used for analysing multimodality. Identifying the synergy of the modes would presuppose being able to identify these modes in the context in question (Løvland, 2007, p.24).

2.5 Examining how semiotic resources operate in a multimodal text

2.5.1 Affordance

Having established that the semiotic mode in a multimodal text operates in order to communicate, it will be useful to investigate more thoroughly just how this occurs. Løvland (2007) states that the social process of facilitating semiotic resources in order to create meaning is the very essence of what social semiotics investigate, thus including theories about multimodality (Løvland, 2007, p.147). Furthermore, Løvland (2007) concludes that in order to analyse a multimodal text, it is necessary to identify the semiotic modes (Løvland, 2007, p. 24). Løvland (2010) also states that though recognising a multimodal text may be an overcoming task, singling out the modes might prove to be more challenging. What may be considered modes in a text will naturally differ in relation to the context (Løvland, 2010, p.1). Also, what is considered a semiotic mode in one context or culture, may not represent the same in another situation, making it essential to be able to analyse the context in order to

single out the modes in a text (Løvland, 2007, p.22). Depending on the context in each situation, there are limitations concerning how the different modes can communicate meaning. According to Brox & Jakobsen (2014), the term affordance illustrates how the level of communication achieved by various semiotic modes is distinguished by the limitation and strengths of each specific mode. This can be illustrated by how a melody can express certain moods better than words, giving it a specific and individual affordance (Brox & Jakobsen, 2014, p.10). Writing is for instance often used to communicate meaning in cartoon strips, but the words would give little meaning without the pictures. This illustrates the individual affordance of this mode in a specific situation. (Metliaas & Mørk, 2015, p.6). This means that the various semiotic modes that we can identify in a multimodal text utilise their distinctive features in order to communicate.

2.5.2 Multimodal integration by functional specialisation

Multimodal texts often consist of an integration of several modes. The process of analysing these texts requires a consideration of this integration: "In order to understand and analyse multimodal texts, one must study how the language and images come together to form integrated texts." (Kress & van Leeuwen, 2006, p.177). Different multimodal texts facilitate various semiotic modes in a wide range of ways in order to communicate. Meaning is created through these modes with different affordance, for instance the modes can be contrasted by how they are organised in the text or what shape and form they possess. Løvland exemplifies this by the integration in a text of one semiotic mode that grabs the attention of the reader and another that conveys information about abstract phenomenons, while a third mode expresses the values and identity of the author. The separate semiotic modes in this example are specialised to function in a specific way in order to communicate the same message together, but in different ways, called functional specialisation (Løvland, 2007, p. 26). Kress, 2003 states that functional specialisation is created when there is "a distinct representational and communicational affordance between semiotic modes" which is in addition used "in a targeted manner by the designer of a text" (Kress, 2003, p. 46). In conclusion, when functional specialisation operates as intended in a text, it facilitates the affordance of each specific mode in order to communicate the intended meaning. In some school textbook genres Løvland (2007) argues that functional specialisation through this balancing the affordance of semiotic modes can support a pedagogical representation of the intended meaning (Løvland, 2007, p. 50). Subsequently, this would be true in humanistic subjects like English, making

this an important aspect to consider when analysing multimodal texts designed for teaching English.

2.5.3 Multimodal integration by cohesion

Multimodal cohesion is categorised by Løvland (2007) as the interaction between the semiotic modes in a multimodal text that makes it come across as continuous (Løvland, 2007, p. 146). Theo van Leeuwen (2005) has developed four dimensions for this integration between semiotic resources in multimodal texts: *Rhythm, composition, information linking and dialogue*. He stresses that these dimensions never occur isolated, but in some form of combination (van Leeuwen, 2005, p.179). While rhythm is also categorised as composition in time by van Leeuwen (2005), composition is also explained through the terms composition in space and layout. I will use the terms rhythm and composition, as these are also the terms used by Løvland in her publications. In multimodal texts, these first two dimensions are the most important sources of cohesion, also because they create a link between the body and the semiotic resources in a text. (van Leeuwen, 2005, p. 181). Both rhythm and composition are elements that are essential for the scaffolding of the text, organising and structuring the meaning (van Leeuwen, 2005, p. 184).

The first dimension, rhythm, provides meaningful structure as well as coherence when a multimodal text unfolds over time, like in music or books. The integration of modes in this category consists of a rhythmical alternation between two states, like big and small, or the shift in letter size and headings in a text. Similar to music, the rhythm in a text requires repetition of a pattern, like in the refrain in a song is continuously recurrent. Subsequently, the pattern of a text that is repetitive can numb the reader, while a break in the established rhythm can function as a feature that invigorates the reader (Løvland, 2007, p. 29-30). While rhythm is an essential dimension that provides the scaffolding in a time-based text, the composition in space in the text is equally important.

Secondly, composition is the arranging of elements like items or abstract shapes so that they create balance, therefore also referred to as composition in space. The balance created by the arrangement helps making the meaning of the text visible (van Leeuwen, 2005, p. 211). Subsequently, the composition of these semiotic modes in a space guides the reader relating how to perceive the meaning of the text through facilitating appropriate strategies for reading. Distance, size and colours are important elements of the composition. For instance, the composition of the front page of a newspaper discloses what are the most important issues as

well as which pictures and headlines are connected (Løvland, 2010, p. 4). Some elements will through these literary devices naturally grab the attention of the reader more expediently than others. As an example, we are often drawn to the pictures and illustrations first when we come across a text. According to Løvland, the composition of the elements in a textbook, as how these pictures are arranged, will also communicate which elements are the most important for the intended communication. Subsequently, Løvland argues that the composition is especially crucial when concerning categorising the importance of the information. In this context, she points out that our direction of reading makes it logical to place items of news value in the right corner, and items that are expected to be previously known in the left corner of a text (Løvland, 2007, p. 32). Løvland further states that in textbooks like the ones produced for teaching purposes, composition is a particularly important part of the multimodal integration (Løvland, 2008, p. 25). To sum up Løvland's propositions, the composition establishes not only the value of information in each element, but also which reading strategy might be the most expedient in each separate situation. (Løvland, 2010, p. 4).

A third way of establishing multimodal integration can be through information linking, which appears when there exists a link between the information that is expressed through various semiotic modes (Løvland, 2007, p. 145). This cohesion does not relate to space and time, but rather to the meaning it creates, as through the connection between semiotic modes like headlines and pictures in newspaper ads (Løvland, 2010, p. 4). This means that one can assume the connection between for instance a movie and the subtitle may help get the contents and the intended meaning across. In this aspect, watching a movie in English, subtitles in Norwegian may prove even more helpful for the Norwegian ESL pupils. When semiotic modes as sound effects are added to a film, they can also enhance the intended meaning, a well-known movie like "Jaws" would never communicate the same meaning without the iconic music. This could serve as a good example of how information linking as reported by Løvland also can enhance the intended meaning (Løvland, 2010, p. 4). When the intended meaning is enhanced, this can be divided into the categories Elaboration and extension (van Leeuwen, 2005, p. 222). Information linking between the semiotic resources that elaborates, limits the attention of the reader, steered specifically towards this intended meaning (Løvland, 2007, p. 38). One might say that this integration removes all doubt as to what the reader should interpret. For instance, a picture can be a quite difficult semiotic mode to control, as it may create a wide range of associations. When it is accompanied by specific information like a name, the intended meaning is given more specific direction. Thus, van

Leeuwen states, the information is repeated or restated in order to clarify (van Leeuwen, 2005, p. 222). When the information linking creates an extension of meaning, it adds new information that is linked to the existing information. (van Leeuwen, 2005, p. 222). For example, the same picture can be accompanied by independent additional information that is not seen in the picture, like where the person in the picture lives or information about his family, thus extending the intended meaning.

The term redundance should specifically be discussed as a form of information linking. Concerning redundance, Løvland states that multimodal cohesion between modes like text and pictures do not consist of an identical rendering of the same meaning, rather by expressing more or less of the meaning through both modes (Løvland, 2010, p. 1). This means that the modes overlap each other, presenting excessive information in the text. The redundance between the semiotic modes writing and picture is as argued by Løvland traditionally very apparent in children's books, viewed upon by those researching this genre as an adaption to the less experienced reader, where scientists have confirmed that too strong cohesion in a multimodal text can pacify the reader by overcommunication. (Løvland, 2010, p. 1). However, this form of redundance in texts might prove to serve another purpose concerning textbooks produced for teaching purposes. Løvland states that researchers claim that this overcommunication might be favourable in instructional texts or textbooks designed for learning purposes (Løvland 2010, p. 2-3). As this favourability is somewhat limited by the motivations of the recipient, however, the benefits of redundance in textbooks designed for students might be a subject of discussion. Most teachers are quite aware that the motivation for learning amongst pupils in our contemporary time is quite variable. Being used to immediate feedback on their action through the dialogue-based information linking of the internet, the monotonous representation of a redundant text might prove a challenge. Concerning a second language, though, this form of overcommunication might be a useful resource, perhaps making it a useful tool nonetheless.

Dialogue is the last form of multimodal cohesion, which occurs when there is a dialogue between the semiotic modes. This interaction consists of an initiative move followed by a response, like in a conversation (Van Leeuwen, 2005, p. 250). This cohesion can be found in a written dialogue, for instance, or in pop music, where there will always be an interaction between the soundtrack and the lyrics (Løvland, 2007, p.39-40). This form of cohesion, one might conclude, is becoming increasingly important in our digital contemporary society, as Løvland illustrated by chatrooms and computer games (Løvland, 2007, p. 40).

2.6 Textbooks and multimodality

As I have discussed previously that the power of the textbook in the Norwegian tradition for teaching has been partially aided by the policies of the Ministry of Education. This prevailing of power connected to the basic skills of being able to read and write has also been an issue in countries like the United Kingdom. Grepperud and Skrøvset point out that today's textbooks are less textually based, and increasingly focusing on multimodality, thus being defined as presenting topics through text, photographs, illustrations, models and charts (Grepperud & Skrøvset 2012, p.233). As stated before, the sign of a fully literate social person is being able to relate to writing as a complete visual medium, without the use of other visual aids (Kress& Van Leeuwen, 2006, p. 17). This skill, traditionally a possession of a qualified elite in society, has been contained as a sign of social elevation as well as intelligence and a higher level of schooling. Thus, according to Kress & van Leeuwen, in our contemporary society, children have often been encouraged to produce images in their early years of schooling, seeing as their lower level of textual competence would accumulate the need for a graphic aid in order to communicate. Therefore, so has also been true for the texts intended for school purposes in the early years.

Towards the later years of primary school, however, images have been replaced by a greater proportion of written texts, while pictures and illustrations have assumed a more functional role (Kress & van Leeuwen, 2006, p. 16). Thus, the power position of the written word has as a natural consequence held its position longer in the more humanistic subjects, as the more specialised functions of explaining phenomenons would be more limited here. Kress & van Leeuwen nonetheless observed in 2006 that the rapid increase in use of visual communication outside the world of school was also making its way into all parts of education. Consequently, most texts of modern times involve a complex coherently designed interaction between written texts and images or other graphic or sound elements To sum up: The opposition towards the emerge of visual aids as a full means of representation has been upheld by the dominance of verbal literacy among elite groups (Kress & van Leeuwen, 2006, p. 17). However, this dominance seems to be fading in contemporary society, forcing teachers to learn how to find their way through an increasingly wide range of communicating both through the traditional textbook and other digital means. Multimodal texts in all ways and form are now an important part of everyday life, also in schools.

2.7 The term text and the school textbook as a phenomenon

In this chapter, I have outlined how the term text has gone from the more traditional use to a wider understanding, also referred to as multimodal texts. Furthermore, how the semiotic resources or semiotic modes can integrate in multimodal texts has also been an issue. Finally, I have discussed how the power of the textbook has been quite extensive in the Norwegian schools, and that they are still an important basis for the curriculum in many classrooms.

3. Method

In this chapter, I will discuss the validity and reliability of my research, as well as outlining the limitations that have defined the selection that has been made. Finally, the scaffolding for the analysis will be presented as outlined by Løvland (2007).

3.1 Hermeneutics

In the social sciences, findings within research can often be subjective and difficult to interpret in an absolute manner. When wishing to explore the veracity of new hypothesises, one needs to do this in a scientifically accurate manner. Thus, being aware of one's footing within the established philosophy of science is crucial. Initially, my means of interpretation falls under the category of *hermeneutics*. This term derives from the greek word hermeneus. This theory and methodology of interpretation which was originally used by theologists and philologists when interpreting for instance biblical texts with focus on contents. However, classical hermeneutics focused more on the context of the text and the concept of the hermeneutic circle, which suggests that the text as a whole can only be understood through understanding its separate parts, as well as through individual predisposition. Modern hermeneutics also focuses on the process of understanding as an interaction between the text and the interpreter (Kleven & Hjardemaal, p. 187-189).

As the hermeneutic approach describes language as a means of interaction, this coincides with Vygotsky's theory about learning. Vygotsky (1978) argued that learning would occur most expediently in children when in the presence of a guiding adult or more knowledgeable peer. According to Vygotsky, when solving problems there is distance between the actual developmental level of the child and the potential level of development under the guidance of a more knowledgeable other. This distance is called the zone of proximal development, more accurately defined by Vygotsky as "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (Vygotsky, 1978, p. 86). Imsen (2005) derives from this that learning arises from social interaction through language, and subsequently becomes individual knowledge (Imsen, 2005, s. 255). This confirms that social semiotics is an appropriate approach in this research project about semiotic resources and how they communicate in school textbooks.

3.2 Validity and reliability

The term *validity* does not only concern how valid the research appears, but also addresses to what extent valid conclusions can come from the research. Internal validity describes to what extent the findings of a research can support that there is a relation between the issues at hand (Kleven & Hjardemaal, 2018, p. 116-117). External validity discloses to what extent the results of the research can be generalized, or in what context they are valid. In the context of any given research, the validity is considered to be good if the findings can be true when concerning other people or situations that can be considered relevant (Kleven & Hjardemaal, 2018, p. 116-117). In other words: If the results of my research can be transferred into similar situations, like an analysis of a different textbook collection, they are valid.

In quality research, the context often requires the interpretation of the term validity to be less specific. Maxwell argues that a *commonsense* use of the term *validity* is customary among researchers. In my research, I will therefore use validity "in a straightforward, commonsense way to refer to the correctness or credibility of a description, conclusion, explanation, interpretation, or other sort of account" (Maxwell, 2005, p. 106). Subsequently, according to this interpretation of the term validity one does not have to "attain some ultimate truth" in order for the study to be "useful and believable" (Maxwell, 2005, p. 106). Furthermore, validity is the part of the research design where the researcher outlines his or her strategies to identify and rule out what threatens the hypothesis. This means identifying ways one might be wrong, or alternative explanations (Maxwell, 2005, p. 106). In qualitative research, this must often be done during or after the research, as it can be difficult to design controls that prevent aspects threatening validity in advance. "The main emphasis of a qualitative proposal ought to be on how you will rule out specific plausible alternatives and threats to your interpretations and explanations" (Maxwell, 2005, p. 107). Consequently, I will explore this issue in relation to the challenges concerning my research subsequently.

One issue concerning validity in my research might be my own bias. The starting point for my research is my experience in using the school textbook *SKILLS* in my teaching. My predisposition has been somewhat shaped by this experience, since I have seen some positive tendencies in some of my pupils as a result of focusing on vocational orientation. The research at hand, however, is more concentrated on *how* this vocational orientation supports vocational relevance through multimodality, as the theory I have presented has already established that relevance *is* important for motivation. This facilitates successful performance,

which is why the Ministry of Education presently requires vocational orientation in order to prevent drop out. To investigate how the chosen multimodal texts communicate, I am doing a multimodal analysis. If I find that the multimodal integration communicates adequately from a nonpartisan perspective, I can conclude that they do support vocational orientation. In my analysis I am making use of established framework provided by Løvland (2007). This should serve as a good means of objectiveness. As I will base my conclusions on this analysis, the validity should be unimpaired from any eventual bias.

Another issue is whether the selection of texts is representative for the general condition of the quite extensive set of school textbooks that *SKILLS* provides. The fact that the design of all the textbooks is nearly identical, should facilitate validity in the current case. I have attempted to choose texts that have similar design and intended meaning in two different textbooks in order to establish a base for conclusion. My individual interpretation has decided my choices here. These choices are based upon many years of using school textbooks for teaching. The selection of the appropriate texts for informal topics, competence aims and classroom situations can often be quite challenging. Consequently, as a teacher one needs to develop some skills in terms of analysing the different aspect of texts in terms of their usefulness in the situation at hand. Through this practice and my studies of the basic competence of reading I do to a certain degree consider myself competent of making these choices, which should ensure the presence of validity.

Finally, validity also deals with to what extent the findings of a study can be transmitted and used in relation to similar contexts, or their generalizability. I have chosen to look into one specific set of school textbook to see if multimodal text can function in a way that supports vocational relevance. Analysing multimodal texts to see how they communicate in relation to vocational orientation is most certainly relevant in this context, and this approach could also be applied when considering school textbooks produced by other publishers. Consequently, my research can be recreated by other researchers, which supports validity.

The term *reliability* describes to what extent one can trust the findings of the research at hand at the time it was executed, It is important that the scrutiny of the information at hand is consistent, as well as stable and accurate (Kleven & Hjardemaal, 2018, p. 100). Aiming to assure the reliability in my research, I am using well known and established framework for analysing multimodal texts, which also facilitates the possibility of other researchers replicating the research by looking into school textbooks produced by other publishers.

3.3 Selection

As the scientist in a quantitative research attempts distance by objectifying findings, qualitative studies contrarily pursue closeness to the participants. This makes qualitative research advantageous in researches pursuing the making or testing of a hypothesis (Kleven & Jardemaal, 2018, p.21-23). As my research is exploring how a school textbook can support vocational relevance, I find that it falls under the latter category. Thus, as the random sampling of quantitative researches is not convenient in this research project, a *purposeful selection* has been made in order to shed some light on the research question. In qualitative research such as mine, decisions about in what fields to conduct the research are according to Maxwell (2005) essential. These decisions are referred to as purposeful selection. This limitation of parameters is a significant challenge for any research. Purposeful selection can be more specifically defined as "a strategy in which particular settings, persons or activities are selected deliberately in order to provide information that can't be gotten as well from other choices" (Maxwell, 2005, p. 87-88). In my research, the school textbook *SKILLS* would as the foundation of my purposeful selection as an adaption fall under the category activity.

Making a purposeful selection can furthermore, according to Maxwell, be prudent when implementing a deliberate examination of cases that are critical for the initial or subsequently developed theories of the study. Thus, the theories can be illuminated in a way that is not possible when utilising representative cases (Maxwell, 2005, p. 90). To facilitate this, I have chosen a specific collection of teaching materials, *SKILLS*. This collection consists, as is customary in our contemporary society, not only of the traditionally established textbooks. In addition to this, today's pupils also have access to features like audio material, simplified texts and extensive digital resources. As is conventional, there is also a manual for teachers. The teaching material made for upper secondary education must not only fulfil the requirement of the subject curriculum at hand, but also relate to the expectation of vocational orientation. To accommodate this, the publishers have designed a specific set of teaching aids for each vocational programme. Choosing all or several of these means of communication for a qualitative research would most certainly widen the parameter too much. Since the textbook as previously argued is still quite important for the teaching in Norwegian schools, I have therefore fittingly chosen to focus my research on the school textbook collection *SKILLS* in the subject English.

The issue is to investigate how textbooks by communicating through multimodal and vocationally oriented texts can support vocational relevance in the subject English. This is done under the assumption or theory that they through this strategy would serve as an adequate teaching aid for this purpose. Concerning the *SKILLS* textbook collection, there is a separate textbook made for every vocational programme, with a variety of text types that are vocationally oriented. Still, they are all similarly designed, and many texts that are not vocationally oriented are identical. Limitation is an important part of selection. Hence, the first challenge concerning selection has been how many texts and textbooks to investigate. As the textbooks made for all the vocational programmes share the same design, considering the limitation of this research I found it sufficient to choose textbooks belonging to only two vocational programmes. This decision was based on the fact that there is a wide variety of textual material and genres to choose from, and I thought it appropriate to also choose more than one type of text from each programme to be able to illuminate my thesis question. This led to the choice of looking at two different texts from each of the chosen textbooks that were similar in design. Though I wanted to make a representative selection, my choice still fell consistently on factual texts. Even though many of the other genres also facilitate vocational orientation, I found this a more accurate way of illustrating how the multimodal texts could support vocational orientation. Also, I found that there was less consistency among the separate issues concerning similarity in vocationally oriented texts that were not factual. As this selection is meant to be representative to as great an extent as possible, they will also serve as a representation of the textbook collection in its entirety, though with an awareness that the limitations of this thesis makes it difficult to give a complete analysis of such an extensive textbook collection.

To sum up so far, I have in relation to the limitations of this research chosen to look at two texts from each selected textbook that have similar design in addition to being vocationally oriented. The specifics of these texts as well as additional selective choices will be further elaborated on in chapter four. The texts that are not vocationally oriented are less relevant to this research. Examples of these have subsequently not been included in the selection. This selection will allow me to investigate how multimodal texts aim to facilitate vocational relevance through communicating vocationally oriented content. As I have already established, this is expected to increase the pupils' motivation, which also might prevent drop out in the upper secondary vocational programme.

Creating textbooks in accordance to the growing expectations concerning vocational orientation might prove to be a quite extensive task. As there is a wide range of choices in the vocational upper secondary educational programme, the *SKILLS* (Arnkværn & Bottolfsletten, 2013) collection of school textbooks accordingly exists in nine different issues. In this thesis, the selection has due to the limitation and after careful consideration been limited to two of these textbooks. As the general likeness is established as prominent, I am choosing to do a close and deep analysis as opposed to a broader and more superficial analysis. This is also important in terms of facilitating the multimodal analysis perspective. The individual textbooks are mostly similar in design and structure, but they still differ significantly and in a manner that occasionally seems somewhat inconsistent concerning contents. For instance, identical non- vocationally orientally texts are placed in different chapters for no apparent reason. Presumably, the authors have made some choices relating to vocational orientation that has led to these choices. In general, however, the authors appear to strive for as much similarity as possible This seems to be the case in all the texts in scrutiny, thus creating an adequate foundation for generalisation.

Relating to such an extensive collection of school textbooks such as *SKILLS*, with all its individual alterations and accommodations, an essential and challenging task concerning the limitations of the research in this project is how to choose what text types to analyse. As previously argued, more or less all school textbooks are multimodal. Be that as it may, not all the multimodal texts in the collection also communicate vocationally oriented content in a representative fashion. Therefore, I have peeled away novel excerpts, interviews and cartoons among other things, even though they all are represented both with and without vocational orientation in mind. However, to show an example of how many texts in this textbook collection do focus on vocational orientation in respect to the interaction between text and pictures, I have selected two sets of texts from different textbooks that are similar in both design and content. Furthermore, the selection has been limited to double spreads of pages in both cases, even though one of the texts is an excerpt which part of a text spreading over several pages. Including this text in its entirety would not be expedient in relation to the limitations of this research, nor relevant to the chosen focus of the analysis.

3.4 Analysing multimodal texts constructed for educational purposes

When analysing multimodal texts in the perspective of educational use, it is expedient to start out by looking more closely into the social context. In this respect, Theo van Leeuwen (2005) focused precisely on how texts are created based on the idiosyncrasies of the various social settings that surrounded the texts. Consequently, what separates a text that is customised for a learning situation from a text created for recreational purposes are the idiosyncrasies of those two very different social situations (Løvland, 2007, p. 43). This difference can be observed by comparing for instance a teenage magazine to a science school textbook. Løvland (2007) has introduced a tool for analysing multimodal texts, based on four dimensions for semiotic analysis presented by van Leeuwen (2005). These four categories are *discourse, genre, style and modality*, which van Leeuwen stresses are always all a part of what the text communicates (van Leeuwen, 2005, p. 104). Nonetheless, Løvland (2007) argues that in many cases, some of these dimensions might be more relevant than others. (Løvland, 2007, p. 69) Considering this proposal, the choices as to what dimensions to focus on when analysing must be made in relation to the context and intended meaning of each text. analysing the discourse of a text requires being able to recognise what type of text is at hand, and choosing the adequate categories for analysing. Løvland (2007) has also provided specific questions to be used within the categories for analysing, These questions elaborate on each dimension as presented subsequently and will be a basis for my analysis of the chosen multimodal texts (Løvland, 2007, p.87-88).

3.4.1 Discourse

As all texts naturally aspire to communicate some meaning, this first dimension concerns the content or meaning of a text. According to Løvland (2007), the importance of content in school textbooks is obviously bound to be considerable, thus separating it from texts that are meant for more recreational use (Løvland, 2007, p. 44). As an example, one might consider a text with the setting of a city. While a text for recreational purposes like a magazine might single out information about shopping and eating, a text for learning purposes like a history textbook might focus more on historical sites. All aspects or values cannot be represented in one text, so the author needs to make choices. Subsequently, analysing discourse consists of identifying what the author has ruled out as well as included in his presentation and how the included issues are emphasised. Van Leeuwen (2005) has presented five categories for

analysing discourse in texts: Actions, manner, presentation, actors, resources, time and space (van Leeuwen, 2005, p. 106-108).

The actions and the manner in which they are performed, are essential features in the text. Actions must be performed by *actors* that have various features and roles. The actors perform this by utilising different *resources* (Løvland, 2007, p. 45). The resources are the artefacts that the actors need to enact the social practice of the discourse (van Leeuwen, 2005, p. 108). *Time* and *space* relate to how much time the action takes, and where it takes place (van Leeuwen, 2005, p. 108). Løvland (2007) states that the elements presented by van Leeuwen can be represented differently in different types of texts, often not all of them at the same time. (Løvland, 2007, p. 46). Also, one needs to consider the presence of functional specialisation or redundancy when analysing discourse (Løvland, 2007, p. 50-51). To sum up, analysing and interpreting discourse requires identifying what the author has ruled out as well as included in his presentation and how the included issues are emphasised,

3.4.2 Genre

Within social semiotics, van Leeuwen (2005) has classified discourse as the "what" of communication. Subsequently, he refers to *genre* as the "how" of communication (van Leeuwen, 2005, p. 130). One can imagine that this communication through texts can be an interaction between actors in a wide range of situations. Løvland uses the term *speech act* in the sense that they are "actions one performs through making use of language in real life situation" (Løvland, 2007, p. 52). According to Austin (1962), speech acts are statements that are neither true nor false, but rather create their own truth. They become true by the very act of uttering them (van Leeuwen, 2005, p. 130). Halliday (2004) confirms this idea by insisting that the act of speaking consists of an exchange where *giving* or offering also implies receiving, as demanding must imply that there also exists giving. Thus, he concludes that the speech act is an interaction (Halliday, 2004, p. 107). From the two most basic speech roles giving and demanding as presented by Halliday, he derives four basic speech acts: Giving or demanding information on the one hand and giving or demanding goods and services on the other hand (Halliday, 2004, p. 107). In a day to day situation, one can apply this simple principle to a variety of multimodal text to see how they demand attention, demand some kind of activity or simply offer information.

3.4.3 Style

In a multimodal text, the individual way of communicating in combination with individual choices can express the personal *style* of the author or sign maker. Van Leeuwen (2005) states that a multimodal text also reflects the social and cultural identity of the author in addition to identity. This can be observed in elements like handwriting or choice of words. The expression of style in a multimodal text can often appear when a party has an agenda that requires identifying from a specific social group, like selling a product (Løvland, 2007, p. 65-66). Also, one can expect that the expression of style can be useful in a school textbook, as the style of the text can be designed to target the specific group that one intends to identify with the contents. This can prove a useful instrument for the author of a school textbook. Van Leeuwen (2005) defines three different types of style: Individual style expresses the individual difference and identity of the speaker. Social style expresses social position rather than individuality. The combination of the two previous styles, referred to as lifestyle, enables people to announce their values and ideas through appearance, connecting with peers unconstrained by issues like geography or social position (van Leeuwen, 2005, p. 140-145).

3.4.4 Modality

The last semiotic dimension, *modality*, tells the reader something about the credibility of the text. When semiotics seek to determine credibility, van Leeuwen (2005) stresses that they do not ask how true the text is in a so-called objective point of view, but how true the text is represented. In other words, how the sign maker conceives the truth, and with what semiotic resources that truth is represented (van Leeuwen, 2005, p.173). Løvland (2007) narrows modality down to two features: Naturalistic modality and abstract modality (Løvland, 2007, p. 68). Naturalistic modality plays on the fact that the more real the image looks, the higher is the modality (van Leeuwen, 2005, p. 148). This can be seen in a nature photograph, for instance. Abstract modality presents abstract truth as the visual truth, which means that the more the image represents the general pattern of the item it is illustrating, the more truth it communicates (van Leeuwen, 2005, p. 148). This kind of modality can be exemplified by a model of something, like an engine. In school textbooks. Løvland (2007) points out that pupils will often have difficulty regarding a naturalistic presentation as an abstract or scientific truth, as the naturalistic presentation in general life is regarded as more of a single phenomenon existing in that specific time and place. To help pupils think about real phenomenons in an abstract way, the sign maker will therefore often combine the two modalities, showing both a natural image and a model (Løvland, 2007, p. 68).

4. Analysis and comparison two pairs of similar multimodal text spreads in different editions

In this chapter, I will present the texts that I have chosen to analyse. In addition to the criteria I have outlined from the thesis in chapter 3, I am founding my selection on my own experience in using school textbooks in numerous editions and subjects during my teaching years. The selection has been limited to two of the text types that I regard as most representative for the selected textbook collection. Since I am choosing to analyse and compare similar texts from different editions, this analysis to some degree also functions as a discussion. An additional, overall discussion will appear in chapter 5.

4.1 The school textbook collection *SKILLS* – a presentation

The collection of textbooks *SKILLS* (Arnkværn & Bottolfsletten, 2013) is designed for teaching in the secondary educational programme, more specifically in the two years that make up the vocational programme. This collection of teaching material is published by Gyldendal Norsk forlag, edited by Kari Anne G. Arnkværn and Kaja O. Bottolfsletten. I will focus on two textbooks in this context, specifically the textbook designed for "Technical and Industrial Production" and the textbook used in the vocational programme "Restaurant and Food". The textbooks are produced as several different versions in accordance with the specific vocational categories. Each version consists of just above four hundred pages. These textbooks were published in 2013, designed to meet the demands of the subject curriculum of 2006 as well as the needs of the "FYR" project.

Addressing the pupils, the authors explain that *SKILLS* offers a wide range of exercises and activities, in addition to a wide variety of texts that are all differentiated. According to the authors, they have aimed to "entertain, inspire and interest" the pupils (Arnkværn & Bottolfsletten, 2013, p. 3). As the textbook is called *SKILLS*, one might also assume that the authors are aiming to develop the pupils' skills in English as well as vocational skills in an English perspective, as the website of the publisher also confirms. According to the website of the publisher, the textbooks are designed to promote vocational orientation in addition to systematic progression concerning basic competencies, differentiation, evaluation that supports learning and a good relation to language in general. Furthermore, the website states that the nine textbook editions all include ten chapters in accordance with the subject curriculum, where the content focus is equally divided between chapters that are mainly identical and chapters that are different. Still, even in the differentiated chapters, topics like

grammar, learning strategies and developing writing skills are identical. Though the themes in the differentiated chapters are still mainly equal, these chapters are according to the publisher designed with vocational relevance in mind (Gyldendal).

Upon opening any textbook in the collection, the first impression is that it is quite hefty, containing a substantial amount of texts of various categories. The pages are filled with pictures and illustrations, and there are cartoon strips, bar graphs and maps. There is a variety of textual communication means and genres, for instance jokes, factual texts, novel excerpts and poems. There are also identical sections that focus on grammar and writing skills. This textbook collection at first sight appears to my understanding and experience as a teacher to be a thoroughly thought through and designed product in accordance to the expectations of the Ministry of Education. In this context, however, the incentive is a more specific analysis of multimodal texts in the textbook collection in question. Vocational orientation is only one, though essential aspect of the curriculum in the subject English. Still, awareness of how this is facilitated in school textbooks is important in reference to the issues outlined in the FYR project, and my analysis will focus on the interaction between vocational orientation and multimodality in the texts.

4.2 Analysis – additional reflections concerning the selection of texts.

Doing a multimodal analysis can be a challenging task, even with a detailed framework such as the one Løvland (2007) has derived from van Leeuwen (2005). Perspectives to consider are not only what to analyse, but also what criteria to utilise. Concerning what aspects of the text to analyse, both communication of contents and the efficiency of the communication may be issues to review (Løvland, 2007, p. 88-89). In this context, it would be appropriate to look at what the most important features in the multimodal communication of vocationally oriented texts might be. When scrutinising this communication, one must initially establish what the text is communicating, as well as how the semiotic modes interact to facilitate this. Contemplating van Leeuwen's (2005) categories for cohesion, one also needs to choose which of these are appropriate in this context. As previously established, they might all be relevant in some cases, while it on other occasions might be convenient to leave some categories out. These choices will be made consecutively in compliance with what the texts communicate as I understand it. Løvland's more detailed points will also be utilised as a supporting scaffolding in my research (Løvland, 2007, p. 87-88).

4.3 "Fact file"- Analysis of two similar, standardised texts

The first text type I have selected is extracted from two different editions of the textbook collection; Technical Industry and Production, and Restaurant and Food. In accordance to the previously debated aspects of reliability, I see it relevant to look at how similar texts in the individual textbooks communicate vocationally oriented content through interaction between modes. Both texts are categorized by the authors in the index as "factual texts", more specifically referred to as "Fact Files". The texts in question are "Machines for Food Processing", p. 222-223 in the textbook adapted to "Restaurant and Food"(Arnkværn & Bottolfsletten, 2013) and "Metals" p. 222-223 in the textbook for technical and Industry and Production (Arnkværn, 2014). Both texts are from chapter six, respectively titled "Tools and Ingredients" and "Tools of the Trade". As these texts are not only from the same chapter, but also communicate similar topics, design and even the same page number, they serve as a good example of the significant amount of similar textual material that appear in this collection of school textbooks. This facilitates performing a corresponding analysis of the two texts. The text from the chapter "Tools and Ingredients" is called "Machines for food processing", while the text from the chapter "Tools of the Trade" is called "Metals". I will refer to the texts as respectively the proper nouns "Machines" and "Metals".

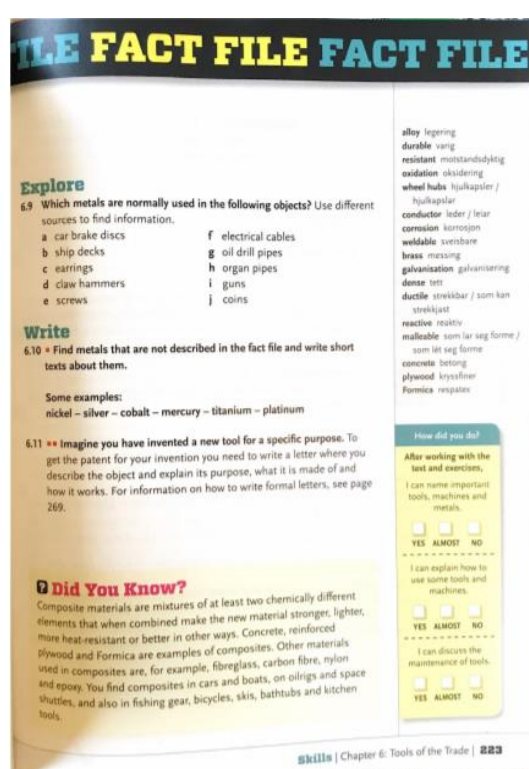*Figure 1*   *Figure 2*
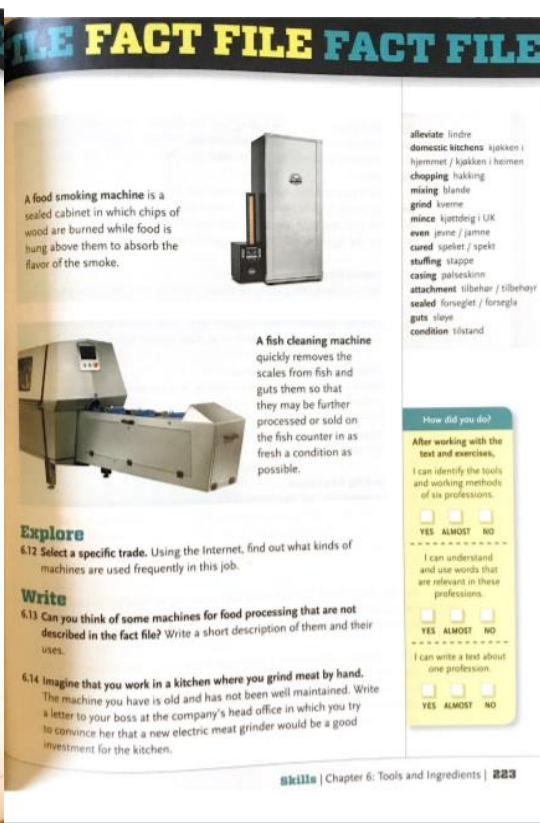
Figure 3   *Figure 4*

The design is largely identical, which exemplifies the design of all the "Fact File" texts in the respective textbooks. The two "Fact File" texts consist of a double page spread with an identical header across the pages in flashing colour with the words "Fact File". All the "Fact File" texts in the textbook have the same basic design, which facilitates standardisation: The pupils will be helped in developing strategies to understand the contents, as they will eventually most likely recognise the text type. Under the heading "Metals", there are pictures on the first page of different items with explanations of their distinctions. On the second page, there are exercises, as well as textboxes with glossary and a quiz, all assumedly well known to the students through systematic repetition in most of the previous texts. The two texts, though giving the general impression of likeness, still differ in some choices of design and content. When focusing on the pictures, the ones in the "Machines" text are given more space in the spread. Consequently, there is some space left after filling in the basic design items

glossary, exercises and quiz. This issue is solved by adding a textbox in the "Metals" text with fun facts, called "Did you Know".

The "Fact File" texts are multimodal texts that communicate meaning through the interaction between the modes choice of colours, text and photographs. The use of text boxes also in my opinion functions as a semiotic mode, as it communicates something about the importance of the content. Although the differences that have been pointed out has some impact on the communication of the texts, they still stand out mainly as quite equal, as some standardized features are mostly identical. In one of the texts one can see an example of how the textbook collection differentiates through a red dot-system, where three dots indicate "most difficult". This system will be known to the pupils, as it is used in relation to both texts and exercises. On the bottom of each page, one can see which main chapter the text is a part of.

The discourse of a multimodal text concerns the meaning of the text or the *what* of the communication, where the choices of what is and what is not included are also an important aspect to consider. The genre is the *how* of the communication, or with what actions is the information communicated? The individual semiotic modes in the two texts represent different actions. The most important action in both texts at hand is clearly to inform, which is also communicated though the colours and content of words in the header: "Fact File". The actors are structures, tightly organised in text boxes and paragraphs to signalise their informational function. The yellow and blue contrasts the black and clearly signals the importance of the content, signalling that important contents are communicated. The colours of the textboxes also communicate a degree of importance, as well as organising the text. In the "Metals" text, the pictures are limited to the first page, while the text "Machines" has pictures in both pages. The excessive space has been filled with a "fun fact" frame with the heading "Did you know" in flashing pink letters. The author wishes the reader to be entertained by the "fun fact" frame, while the crisp, blue colours of the exercises headings give a more practical sensation.

The texts offer several types of scaffolding through framing. The "how did you do?" box encourages the pupils to assess their understanding of the contents of the text. Being placed last in the spread in relation to reading direction, this textbox type is frequently used in all the texts. Consequently, this is expected to be a known feature to the pupils. This signalises that this task is to be done last. Another type of frame that appears in the text, contains glossary. Although the glossary is in a word frame and the English words are highlighted by bold

letters, the grey background does not claim for as much attention. Glossary is also included in most of the texts in the book, which would indicate that the pupils are already accustomed to their role and importance. Consequently, there is less need to emphasise the importance of the contents of this textbox, though the fact that the English words are in bold letters does indicate that they are the focus issue.

In the "Metals" text, the different metals are highlighted by bold letters as well as illustrated by pictures. This helps the reader understand that this is the main issue. Additionally, while the pictures in the "Machines" text are enhanced as well as separated by coloured frames, the pictures in "Metals" are presented in columns. This different use of the mode framing can be interpreted as while metals, though being different, are still part of one group. The machines, on the other hand, stand more out separately. Also, it signalises that the "Metals" text is more informational as well as fact oriented, while the "Machines" text focuses on items used in practise.

Even though the integration between the features of the textual content and colours helps distinguish the hierarchy of importance of the contents, there is a lot going on concerning discourse in both of these spreads. Contemplating the two texts, "Metals" has not only the pink heading, but also an absence of framing of the items and seems more disorganized in general. This more chaotic communication is also increased by the light blue fact frame that appears on the bottom of the first page of the spread. This text box type is not seen in any other of the "Fact File" spreads in the issues of scrutiny, and therefore seems somewhat unmotivated. Maybe this information should have been included in the text instead? In conclusion, the communication comes across as being inconsistent and not fully thought through.

In both texts, the pictures interact with the mode writing. However, there is a distinction between the two textbook spreads in how this interaction operates. In "Metals", the modes text and picture interact through functional specialisation to communicate facts about metals. While the text communicates the facts, the pictures give examples of how the different metals can appear. This multimodal interaction supports the communication of the meaning of the text. In "Machines", the pictures show specific machines, and the texts give facts about those very items. As the exact same information is given in two different modes, this is an example of how redundance can appear in a school textbook. This is as previously argued quite common in educational contexts in order to "overcommunicate" the message. The difference

in communication strategy between functional specialisation and reinforcing with redundance in the two texts is also illustrated by the placement of the pictures in relation to the text. On the one hand, in the "Metals" text, the pictures are placed initially according to reading direction, serving as a communication in and of its own. Thereby, the pictures function as a "pre-reading" support to the reader. The pictures in "Machines", on the other hand, is placed after the text, supporting the reader by repeating and overcommunicating the already delivered message. In this reference, it should be mentioned that one of the pictures in the "Machines" text is placed before the text in accordance to the reading direction. This seems like an odd and random choice, disturbing both design and communication. It would seem as though this choice might have been made because the picture has been cut, making it look strange in a design perspective to put right next to text. One might wonder if the right choice has been made here concerning communication, and if the choices of pictures are done by the authors themselves?

It is interesting to see how the communication in "Metals" has not emphasized on more specific scientific information about the metals, as what are their formulas or where in nature they occur. While choice of focusing on the actual use of the metal supports a vocationally oriented perspective, a more scientific point of view might still for instance have been an approach when concerning the subject science. Also in "Machines" the information is limited, explaining the practical use of the machines. There are no user manuals or information about the names of the different parts, the focus is simply on what tasks might be aided using these machines.

While discourse is the *what* of the communication, genre is the *how*. The two texts appear in the context of being school textbooks in the subject English produced for the secondary vocational education programme. The communicative action that the semiotic modes work together to perform, is to give information about relevant items concerning the respective future professions. The communication of parts of the mode text gives information to the reader, while the questions on the second page demand activity from the reader. These are school textbooks, which tells the reader that the author is also presumably in possession of a bird's eye view of the curriculum. The relation between the author and the pupil for which the communication is intended is therefore clearly that the author holds the power of knowledge, communicating factual information to the pupil. The interaction between the semiotic modes helps communicate the intended meaning. However, he integration between the modes creates a quite "loud" communication, as the modes colouring, the bold letters and the frames are all

demanding a lot of attention. This complexity, in my opinion, makes the text that communicates the intended meaning diminish to some extent. As the author seems to be attempting to communicate some relevant information about the different machines, this important piece of information which is mainly in the text next to the picture might end up being the last aspect to grab the attention of the reader. In the text "Metals", this is even more true because of the "Fun Fact" textbox with the flashing pink heading which disturbs the rythm. However, the modes text and picture still integrate through functional specialisation to communicate the intended meaning, enforcing the message.

Style can, as previously established, be a useful instrument in order to make the recipient identify with the intended meaning of the text. An important starting point for commenting on the style of the text, is to establish the motives of the agenda of the author. In this context, it would be safe to assume that the authors have educational motives, wishing to communicate information about machines the pupils will meet in their future occupation. The feisty colour choices and layout of the modes can be rendered as a means of accommodating the needs of the age group, interacting in a way that might appeal to them as well as evoke interest.. The agenda of the transmitter is clearly educational with no other ulterior motive. Aside from this, the texts do not utilise any aspects of peer culture to communicate, the communication of meaning basically relies on relevance through vocational orientation. Therefore, the style in both texts strengthens the educational value through the combination of multimodality and vocational relevance.

Modality speaks to how true the text appears to the recipient. It would also be relevant to contemplate what features of the choices concerning modes that leads to the perception of truth (Løvland, 2007). The context of these texts might make the question of modality seem excessive, as they appear in school textbooks. As argued previously, the school textbook retains high status when concerning being a deliverer of established truth. Any pupil will as recipient most probably already before opening the textbook have accepted the authority of the author. Subsequently, the intended meaning of the "Fact file" texts might not encounter many challenges regarding accepted as the established truth. Still, the question of how the semiotic modes interact to support this presumption remains. Initially, the genre of the text fortifies the modality, as they are factual texts. The way the semiotic modes interact supports this by their tight, factually oriented design and interaction, which is often seen in factual texts. The text also deals with real life artefacts which are presented through pictures rather than illustrations, which collaborates the authenticity of the context. These pictures interact

with the contents of the texts next to them in a way that supports the intended meaning of the texts, strengthening the sense of reality which supports the modality. In combination with the context of being texts in school textbooks, this makes the modality quite substantial in both texts.

4.4 "Tomorrow and Beyond"- Analysis of two representative texts with traditional design.

As previously discussed, the *SKILLS* textbook collection addresses the issue of vocational orientation through creating a blend of text material where some are identical, some are similar, and some are very different. This multitude of choices do make it somewhat challenging to single out what texts are representative of the collection in total. The "Fact File" texts are one example of such reappearing, thus considered representative, text types with similar design and contents. The texts that have been selected for this analysis represent another reappearing text type. Even though there is such an extensive and diverse material to choose from, I consider this text type a good representation of vocationally oriented texts the pupils will frequently encounter in the textbook collection. The two previously discussed texts appear in similar chapters that are specifically vocationally oriented in general. Although there are five chapters that are presented as being mainly vocationally oriented by the editors, other chapters also offer texts with this focus. The two texts in question are from chapter 10, which is titled "Tomorrow and Beyond" (Arnkværn, 2013), (Arnkværn & Bottolfsletten, 2014). They are an example of how several texts in the collection, while addressing an initially unrelated overall theme, still have a vocationally oriented approach. While the spread for the "Restaurant and Food" textbook relates to the future of food industry, the "Technical Industry and Production" text is about transport in the future. Consequently, although the overall topic of the two chapters is in coordination, the different issues still offer vocational differentiation.

In the future, traffic may be surveyed and operated by technology only, allowing drivers to sit back and read their paper while driving.

Transport in the Future

Our history has been filled with transportation innovations. In the 19th century, the steam locomotive completely changed how we transport goods and passengers. In the 20th century, the car and airplane dramatically reduced the time it took to go from one place to another – making the globe seem like a much smaller place.

Transport is a vital part of today's society. With people and supplies constantly being moved over great distances, it is crucial that transport is as efficient and environmentally friendly as possible. With some of the technologies shown in this text, you could cut a half-day plane trip down to only two hours, ride an extremely fast and almost noiseless train, or "drive" an automated car almost hands-free. With so many modes of transportation, the potential for improvement is endless. What will be the next big technology to sweep the globe? Will it be an improvement on existing products or will it catch us by surprise?

Cars

In the past century, cars have become perhaps the most dominant and widely used form of transportation. In the years to come, we will continue to develop technology to make cars even faster, more energy efficient and environmentally friendly. This technology will most likely change the way we move, work and live.

With a fully automated street system, drivers with "smart" cars could relax while their cars are guided by magnets placed along highways. The cars would run automatically as the highway computer system calculates the flow of incoming and outgoing traffic, resulting in productive, steady, streamlined transportation.

In an automated highway system, all the vehicles on the road would be communicating with a main computer. This computer would use traffic modelling to streamline speeds, thus creating a very even traffic flow. As early as 1994, these ideas were demonstrated in real life. Using magnetic markers, an eight-car "platoon" of vehicles was successful in riding safely, smoothly and quickly. When the technology is there, and cars are programmed for it, a natural step forward will be to create underground road systems with the same features. Vehicles with zero-emission technology would be a natural part of the concept.

Trains

Improving public transport is particularly interesting in and around large cities, where conventional car traffic is a true challenge for people and the environment. The first Maglev train in commercial use was launched in Shanghai, China, in 2002. It is extremely fast, reaching speeds up to 310 miles per hour (approximately 500 km/h). The term "maglev" is short for "magnetic levitation." Electromagnets keep the train steel track running under the train. The "levitation" refers to the train hovering above the guideway.

Maglev technology is continually enhanced. Inductrack is a new generation representing a safer, low-energy alternative. Maintenance cost of this unique technology is lower, and it also uses less energy.

The Maglev train runs by magnetism, and was a wonder of design and speed when it was presented in 2002.

After working with the text and exercises, you should be able to

► explain what an automated highway system is
► talk about the principle behind the Maglev technology
► mention some possible methods of transport that are not yet available

innovations nyskapninger / nyskapingar
vital svært viktig
crucial avgjørende / avgjerande
efficient effektiv
mode måte
sweep feie over
improvement forbedring / forbetring
evolve utvikle seg til
widely used mest brukt
sophisticated raffinert
obstacle hindring
calculate beregne / berekne
incoming innkommende / innkomande
exiting utgående / utgåande
even jevn / jamn
features kjennetegn / kjenneteikn
platoon tropp
zero-emission null utslipp / utslipp
conventional vanlig
levitation sveving i luft
hovering holde seg svevende / halde seg svevande
guideway spor under Maglev
enhance forbedre / forbetre

Molecular Gastronomy

Before you start
Do you like experimenting in the kitchen?

Put on your safety goggles and safety gloves. Go into the laboratory, oops, I mean the kitchen. Carefully pour liquid nitrogen into a previously prepared cream mixture. Stir, and hey presto! You have bacon-flavoured ice cream. Does this sound like sci-fi cooking? Well, it is molecular gastronomy.

What is molecular gastronomy?

Molecular gastronomy is basically yet another attempt to enhance the pleasures of eating. This is achieved through scientific analysis of varied physical and chemical processes that occur while cooking. It is a new world of cooking where the scientist and the chef work together in order to change the way we experience food, in terms of taste, sight and smell.

Molecular gastronomy, also known as experimental cuisine, has caused a lot of controversy and confusion. In the beginning people associated it with chemical and unhealthy ingredients. This view has changed, however, as more people indulge in faux caviar, crab ice cream, arugula spaghetti, transparent ravioli or vegan scallops with carrot ginger caviar. Today the potential of this modernist cuisine is seen as infinite and people realize it offers so much more than the traditional techniques of cooking, frying or baking. Not only does it take food preparation to a completely different level, but it also lets us expand our imagination and be creative with regard to how we prepare, cook and present our food.

Molecular cooking techniques

With easy access to simple molecular cooking kits, you can experiment with food as art in the privacy of your own kitchen. The essential tools you need are syringes, pipettes, silicone tubing, slotted spoons, measuring spoons and various sets of food additives. There are four techniques that are commonly used in restaurants. The acronym GETS will help you remember them. G stands for "gelification", which is simply a process of turning liquid into gel. E is "emulsification", meaning turning liquid into light air foam. T is "thickening", which means increasing the viscosity of a solution or liquid solid mixture. Finally, S represents "spherification"– shaping liquid into spheres that resemble caviar.

Even though avant-garde cuisine is a time-consuming activity and one has to follow a very strict procedure, it has already revolutionized restaurants throughout the world. If you have ever dreamt of becoming a wizard, this might be your opportunity to do so.

After working with the text and exercises, you should be able to

► explain what molecular gastronomy is
► use words related to molecular gastronomy
► listen for specific information

pour helle
liquid flytende / flytande
nitrogen et fargeløst grunnstoff i gassform / eit fargelaust grunnstoff i gassform
stir røre
hey presto vips
attempt forsøk
enhance forbedre / betre
sensory sensorisk
pleasure glede
physical fysisk
chemical kjemisk
controversy strid
confusion forvirring
unhealthy usunn
indulge in unne seg
infinite uendelig / uendeleg
expand utvide
cooking kit kjøkkenutstyr
syringe sprøyte
measuring spoon måleskje / måleskei
food additives tilsetningsstoffer / tilsetjingsstoff
acronym akronym, forkortelse
solid i fast form
foam skum
viscosity viskositet (hvor tykk/ seig en væske er)
revolutionize revolusjonere
wizard trollmann

Figures 5-8

The two texts are designed quite traditionally in terms of semiotic modes, very much like the vast majority of texts in the collection. Also here, standardized similarities dominate, like boxes for glossary and competence aims. The main topic of the chapter, "Tomorrow and beyond" is initiated by a double topic page spread, communicating through similar sub-headings that the chapter is going to deal with innovations in the future. The "Restaurant and food" text is a double spread on the pages 398-399 (Arnkværn & Bottolfsletten, 2013), called "Molecular Gastronomy". This text deals with how scientists and chefs are working together to enhance the pleasure of eating in the future. The "Technical Industry and Production" text differs by being spread over twice the number of pages, respectively 402-405. (Arnkværn, 2014). This text is named "Transport in the future". The content of the text is a representation of how different means of transport might evolve in the future. In my analysis, I will refer to the texts as respectively "Gastronomy" and "Transport".

The choice of designing a longer text for the Technical Industry and Production educational programme is interesting to me, as this might be explained by a specific distinction between these two specific programmes. To my experience, "Restaurant and Food" on the one hand is a programme which educates for a quite limited range of professions, all dealing with one component: Food. Thus, the two-page spread ensures vocational orientation for most of the pupils attending the programme. Technical Industry and Production, on the other hand, educates pupils with a wide range of professions where mechanics are involved. Therefore, ensuring vocational relevance in this case would require a wider range of topics within the text, which is also the case. Even so, I am choosing to limit the main part of the analysis to the first two pages. Firstly, this makes it more expedient to explore the two texts conjointly. Also, analysing the texts, the two first pages of this spread can adequately serve as a representation of the text in its entirety. The semiotic modes in both texts are the same as the previous texts: Pictures, text, choice of colours and frames.

Reviewing the texts initially, the discourse or the *what* of the texts is quite intertwined with the genre, or the *how*. Though the semiotic modes in texts can represent different actions, these two texts mainly communicate one intended meaning. Subsequently, the *how* can be illustrated by the choice of contents, which is customised in accordance with the respective educational programmes. Taking a quick overview of the texts, it is quite clear that they are factual texts, as they mainly replicate facts. The table of contents also supports this notion, as they are actually labelled as "factual texts". Consequently, the most important action that the

semiotic modes represent in the two texts is to inform. The actors are the structures, quite traditionally organised with the standardized text boxes for glossaries, and black headings as well as subheadings. The textual structure and overview is additionally enhanced by paragraphs, organising the content in a way that is frequently seen in school textbooks.

As in the previously analysed texts, the colours of the textboxes do not only organise the texts, but also help communicating their degree of importance in relation to the other parts of the text. The standardised glossary textbox does not really stand out much because of its grey colouring. As already argued, though, the bold lettering of the English words does affirm that they are of importance This also indicates importance in relation to the Norwegian translations. The yellow and turquoise colour combination of the box that contains competence goals in particular claims attention and would be a natural initial focus. Still, these textboxes are placed in the upper right corner of page two in the spreads, which does not accommodate that they would be given initial attention in consideration of reading direction. One might consider that placing them in the left corner of the first page would be more expedient if the authors were wishing the pupils to relate to the competence aims before they read the text. Additionally, in the "Gastronomy" text, the picture is in clear competition of the attention, somewhat signalling the same level of importance as the box with competence aims. This is one example of the differences concerning communication that the contrast of choices in respect to pictures might generate.

The two double spreads have roughly the same amount of text in relation to pictures, though the picture space is divided in two in the "Transport" text. In comparison to the "Gastronomy" text, this makes the pictures stand out less, a contrast that is also intensified by the colour choices and contrasts of the picture in the "Gastronomy" text. This picture is clearly a much more dramatic message, which makes the pictures of people in a car and a train in the "Transport" text seem quite uninteresting in comparison. While the choice of picture in the first text draws attention and spikes interest, the pictures in the second text almost seem to disappear in the text. This serves as a good illustration of how pictures can succeed or fail as semiotic modes when the goal is not only to support the intended meaning, but also to pique interest.

The picture in the "Gastronomy" text, though entertaining, might represent a distraction in reference to the competence aims Still, it does support the intended meaning through functional specialisation. The picture does not simply repeat the contents of the writing, as in

redundance, but elaborates and illustrates, creating room for additional reflections upon the textual content. The pictures and text in the "Transport" text in contrast interacts with the text by simply repeating the contents, which exemplifies the classic schoolbook use of redundance. This integration supports the intended meaning by simply repeating it, not leaving room for any distractive reflections. From my perspective, the first picture sends a much more powerful message. The striking picture accommodates the text by adding almost a theatrical feature, since it is quite obviously staged. This feature can one the one hand pique interest within the target group. On the other hand, it might distract the less accomplished reader and confuse the learning of subject specific vocabulary. In conclusion, when analysing the texts concurrently, the interaction between the modes in these structurally mainly identically designed texts sends out different messages in relation to what is important. The textbox, the heading or the pictures?.

The agenda of the sign maker is generally important to establish in reference to style. In order to make the pupils identify with the main content of the text, which in this case concerns future innovation, the authors have customized the contents through vocational orientation. The agenda is still presumably to educate, with no other ulterior motives besides the obvious agenda of selling the textbook collection. The two texts in question are, apart from the flashing textbox, a less feisty design than the previous texts. Though relying on a quite traditional design in school textbooks, the picture in the "Gastronomy" text might be seen as an attempt to appeal to the age group because of its fresh and colourful appearance. As in the previous texts, there are subsequently few aspects of peer culture. Establishing relevance through vocational orientation is the main strategy.

The modality or authenticity of the text is initially a given because of the context of being a school textbook. This perception is also strengthened by the fact that they are factual texts. The semiotic modes are organised in a quite typical interaction for school textbooks. This allows the modality to lean on the established authority of the schoolbook, leaving little room for the pupils to have doubts concerning authenticity. However, also here one can detect somewhat deviating communication. When looking at the "gastronomy" text, the fact that this is a real-life picture should normally strengthen the modality. On the contrary, however, in this case the design gives a strong sense that this is staged. The lipstick combined with the excessive artefacts also communicate a sense of irony, which does not really support the authenticity of the intended meaning. In the "Transport" texts, the pictures contrarily support the factual information in the texts by communicating real-life relevance. Though they are a

less colourful feature, they support the modality of the text with more efficiency. Consequently, there is a discrepancy in design between the texts which in this case works better for the "Transport" text.

5. Discussion.

This chapter will consist of a final discussion in reference to the research question. I will attempt to find as well as, to some extent, evaluate how the multimodal texts in the textbook collection can facilitate vocational orientation. I will also try to establish to what extent this communication of vocationally orientational content functions, thereby hopefully facilitating less drop out in the Vocational programme. Though I have attempted to make a representative selection, the textbook collection in its entirety is also to some extent under scrutiny. As the texts can only be partly representative to the textbook collection in its entirety, they have been chosen to illustrate the main issues of this research: How multimodality can facilitate vocationally oriented meaning, thus ensuring vocational relevance in the vocational study programme. Therefore, I will also comment upon this.

Various multimodal texts communicate through the integration of a wide range of modes. Kress & van Leeuwen state that the understanding of multimodal texts is presupposed by studying how the language comes together with the images to form integrated texts (Kress & van Leeuwen, 2006, p.177). In this perspective, the theories Løvland has derived from van Leeuwen (2005) and the multimodal analysis in chapter 4 will serve as an adequate base for evaluation in terms of how the multimodal interaction facilitates vocational orientation. To be precise, the main goal of this research is to establish whether the selected texts facilitate vocational relevance through vocational orientation, thereby establishing motivation or the pupils. This is what is required by the Ministry of Education, under the assumption that vocational orientation and relevance will help prevent drop out in the vocational study programme. Considering the limitation that the selection of this thesis represents, a conclusion as to how the textbook collection in its entirety might facilitate vocational orientation will still be suggested.

5.1 "A lot going on" - do the selected texts facilitate communication of vocationally oriented content?

5.1.1 Complexity

Investigating the communication of vocationally oriented content is a crucial part of the research question. In this context, the complexity of the multimodal integration in some of the selected textual material is interesting in particular. Though the current curriculum has been applicable from 2006, the common core subjects were from 2010 also required to facilitate vocational orientation (Christiansen & Fjeld, 2016, p. 1). The analysis of a selection of texts

from the textbook collection at hand has uncovered an initially quite traditional design, though spiked up with colours and framing. All the selected texts are indeed attempting communication of vocationally oriented meaning. This communication is initially indisputably accomplished, as well as strengthened in modality through the authority of the school textbook genre. However, the design of the texts still makes the communication somewhat inconsistent in my opinion.

Framing as a semiotic mode in general would be expected to facilitate the communication of a text by offering scaffolding of textual contents. However, the use of framing can also end up fractioning the text too much, distracting the reader from acquiring the intended competence by disrupting the reading process. In the "Fact File" texts, the use of framing is quite prominent, though still it does function quite well when used as a standardised feature. This offers advantageous scaffolding to the reader, facilitating the communication of the intended meaning. However, the framing in the "Machines" text works better than the "Metals" text in terms of scaffolding, as it has more pronounced framing. Also, the "Metals" text represent an example of the somewhat reoccurring inconsistent design in the textbook collection, as it has a light blue frame that does not occur in other "Fact File" texts. In conclusion, though the vocationally oriented intended meaning is clearly communicated with a high degree of modality through authority, the untraditional choices mixing in with the otherwise traditional design creates a complexity that is somewhat distracting to the communication.

Though the standardised design initially facilitates the communication through recognition, the texts are all quite complexly organised and contain a lot of information. The discourse is disturbed by some design choices that are inconsistent in reference to the standardisation, like the absence of framing the items in the "Metals" text, or the flashing oddly placed textbox with competence goals in the two texts from the chapter "Tomorrow and Beyond. " The attempted, feisty colour choices and pictures that are probably aimed towards the peer culture also deviate from the established overall design. Consequently, they seem more misplaced than fresh, disturbing the otherwise traditional school textbook design of the collection. The odd choice of picture in the" Gastronomy" text also exemplifies deviation, creating a competition for attention and disrupting the message as well as diminishing the authority of the sign makers. The factual contents of these texts would in this context maybe be better served by sticking more consistently to the traditional design choice in terms of communicating intended meaning. The overall impression is that there seems to be too much

going on in these texts, and the inconsistent deviation from the framing and structure also confuses the hierarchy categorising the importance of the content.

Even though the notion that there is "too much going on" might seem plausible, this is still an issue to contemplate. Are the authors more responsive to the focus group than an average teacher? Do teenagers in the contemporary society interpret the message and layout differently than an adults, even if they are educators? As I, many of the scholars in educational issues are quite of age. Coming from a very different generation in terms of coping with such busy multimodal communication, it is important to be aware of the possibility that a more "chaotic" communication can work quite well for the young people of contemporary time.

5.1.2 Redundance and functional specialisation in the texts

The four selected texts facilitate various forms of information linking. While functional specialisation allows the modes to interact in a way that supports the communication of the intended meaning through illuminating different aspects, redundance simplifies the information linking by expressing the same meaning through various modes. One the one hand, redundance or overcommunication of the intended meaning is generally viewed upon as an adaption to the less experienced reader, often seen in children's books (Løvland, 2010, p. 1). Functional specialisation without redundance, on the other hand, is often utilised in school textbooks, balancing the affordance of the semiotic modes to support a pedagogical representation (Løvland, 2007, p. 50). Interestingly, the analysis uncovers that the two pairs of texts that are assessed differ within themselves when it comes to these two forms of interaction.

In the first analysis, "Metals" utilises functional specialisation in the interaction between text and pictures, while "Machines" also communicates through redundance. This deviation in design choice between two mainly identical texts seems odd, coming across as a quite random choice. As the texts are targeting basically the same audience, it seems somewhat strange that the simplifying overcommunication of redundance is used in one text, while the classic humanistic school textbook design of functional specialisation is used in the other. One might wonder if the sign makers are aware of the consequences these choices might create in terms of communication. Still, in both texts the interaction between the modes text and picture do clearly communicate as well as strengthen the intended meaning, and the successful communication of vocationally oriented contents appears to be well accomplished.

In the second analysis, there is also a discrepancy between the two quite similar texts concerning the interaction between the modes text and picture. While the semiotic modes in "Gastronomy" interact through functional specialisation, redundance is in addition utilised in "Transport". Though these two texts are quite similar in design, genre and transmissible contents, the distinctions in intended meaning still make it easier to relate to diversity than in relation to the highly standardised "Fact File" texts. However, these contrastive choices in integration between the modes displays a confusion as to what is the most important message in these texts. The picture in the "Gastronomy" text steals a lot of attention from the textual contents, as well as interacting with the text in a way that deviates slightly from the intended meaning, confusing the overall message. What is most important here? Contrarily, the design choice of redundance in the "Transport" text seems more appropriate, supporting the intended meaning in a more collected manner. Considering all of these issues concerning the interaction between picture and text, the overall impression is a bit less convincing than what is the case in regard to the "Fact File" texts. However, it is important to be aware that though the main assumption leading to the FYR project is that there are many less accomplished readers in the Vocational study programme, there will most certainly also be quite a few very accomplished readers. As the school textbook should aim to meet all pupil needs, this variation in communication should be included to make sure these pupils end up being under stimulated. The conclusion might be that the authors are right in their choices. The question that remains is whether these choices are random or purposeful? Since one of the otherwise similar pair of texts show inconsistency in these choices, a conclusion about this is difficult to mace in reference to the selection. redundance to simplify or functional specialisation to accommodate a more textually competent audience?

The terms vocational orientation and relevance have the later years become quite imperative to the vocational study programme. First of all, vocational relevance is an issue that must be taken into account concerning syllabus, as the Ministry of Education requires the pupils to be acquainted with texts that promote knowledge in subjects from their own study programme (Ministry of Education, 2013, p. 11). Furthermore, this inclusion of vocationally relevant curriculum in all subjects is expected to promote relevance, which according to Brevik et al. (2020) is closely linked to motivation. Assessing the selected texts in this perspective, the sign makers have not only utilised some basic design strategies, but also made some choices in relation to contents that should initially facilitate vocational orientation and relevance. Also, the design choices do as earlier outlined have some "feisty" elements that come across

as being directed to accommodate a young peer culture. That being so, the main design choices are still quite traditional in a school textbook perspective, as exemplified by the selected texts. As a result, when considering to what end the design choices communicate the vocationally oriented content sufficiently, the design choices do come across in general to be somewhat inconsistent, the "feisty" choices serving as more of a disturbance to the intended meaning than relating to the peer culture. Also, the seemingly random choices between redundance and functional specialisation in otherwise mainly similar spreads, confuses the overall communication. All the same, the textbook collection in its entirety is quite extensive, accommodating each vocational study programme with its own edition. In addition, there are several examples of more feisty multimodal text design choices in general in some of the textbook editions, but not to such an extent or organisation that they could be rendered as representative. All in all, though the layout in general is traditional, this might also facilitate performance in the common core subjects; Standardisation might aid understanding of the intended meaning.

Ensuring a vocationally relevant curriculum in the common core subjects would assumedly, as the Ministry of Education project has outlined, reduce drop out by increasing mastery among pupils of these subjects (Christiansen & Fjeld, 2016, p. 1). Consequently, the FYR project derived from this context, focusing on lowering the expectations in general in the common core subjects as well as establishing interdisciplinarity between the common core subject and the vocationally oriented subjects (Ministry of Education, 2014, p. 6-7). The lowering of expectation might coincide nicely with the choice of redundance between the semiotic modes pictures and text, as this is adapted to the less accomplished reader. This might also be some of the background for the somewhat traditional choices of the authors, as we have established that redundance and traditional design facilitates the less accomplished reader. Since English is also a second language, redundance is a well-known strategy for supporting vocabulary and overall understanding, which would make this integration a good means of attaining subject specific vocabulary.

When not utilising redundance, functional specialisation can still be a good aid in the reading process, less accomplished readers might draw advantage of this well-known school textbook design, especially in combination with traditional scaffolding of frames that the spreads also offer. In conclusion, traditional choices might not be the worst to make when approaching a less motivated group of pupils that might also in general be in need of simplified expectations in the common core subjects. Understanding and relating to the intended meaning must be the

most important intent in this perspective, which is quite adequately ensured in this textbook collection as I see it.

5.2 Summing up the discussion.

In this chapter, I have conducted a final discussion in reference to the research question. I have attempted to evaluate how the multimodal texts in the textbook collection can facilitate vocational orientation, in regard to Løvland's (2006) points and the additional theory as presented. I have also evaluated to what extent this communication of vocationally orientational content functions in general, thereby hopefully facilitating less drop out in the Vocational programme. My findings are somewhat inconclusive, and additionally to some extent not as expected as I will outline in the conclusion.

6. Conclusion

6.1 Main findings and conclusion

The school textbook has traditionally held a powerful position in Norwegian schools, which still prevails. Even though the curriculum, not the textbook, is supposed to control the curriculum, many teachers still use the textbook as scaffolding. Though adding other resources, the fact that the teachers are so loyal to the textbook makes its design and contents an important issue in the Norwegian classroom.

Starting out I wanted to establish how to help pupils in the vocational study programme to complete their studies through applying relevance in the school textbook as teaching material. This lead to the research question: *How does the school textbook collection SKILLS through multimodal texts facilitate the demand for vocational orientation in the subject English?* According to Maxwell, a study does not have to consist of attaining an ultimate truth in order to be useful and believable (Maxwell, 2005, p. 106). So is also the case in my findings, which turn out to be somewhat inconclusive. The textbook collection *SKILLS* does indisputably to my conclusion communicate vocationally oriented material through multimodal communication. However, since basically all school textbooks are multimodal, this is not an unexpected discovery. As to the question how the authors go about communicating this content in a way that facilitates the receiving part, there is considerable discrepancy in the design choices that makes it difficult to make an absolute answer to this. Considering the limited selection this research requires, the findings must also be put into the perspective that this may not be ideally representative for the entire collection. Maxwell states about this that identifying where one might be wrong, or alternative questions, must often be done during or after or during the research (Maxwell, 2005, p. 107), as has been the case in this research. Assuming that this selection is sufficiently representative, however, I would conclude that the choices of using different types of integration between modes in the texts while still maintaining a traditional overall school textbook design facilitates a wide range of pupils' needs. As the integration between modes in the different texts target both more and less accomplished readers, they facilitate the zone of proximal development learning as outlined by Vygotsky and aids the learning of subject specific vocabulary through interacting with multimodal texts. Consequently, communication of vocationally relevant content can be claimed to be ensured, thereby presumably aiding the motivation amongst the pupils which might help prevent drop-out.

6.2   Further research

Through this research, I have gained a lot of knowledge about the design of school textbooks. I have been particularly astonished by the complexity that is needed in order to facilitate vocational orientation. Also, I have become more aware of how important this perspective is in order to create vocational as well as personal relevance in the minds of each pupil.

Maxwell (2005) argues that ruling out specific plausible alternatives and threats to ones explanations and interpretations is essential in a qualitative proposal (Maxwell, 2005, p. 107). In doing so, one also must rule out many interesting and potentially relevant issues concerning the focus of the research. The challenge of a research project can often be just this; but the scope and limitations of the research must be considered carefully when choosing one's path. Consequently, several interesting issues will probably emerge during a qualitative research, only to be dismissed all the same.

Issues that I have contemplated, but seen it fit to dismiss within the limitations of the research, are for instance looking into other media than the textbook in reference to vocational orientation and relevance. As any modern textbook collection, *SKILLS* also offers teaching resources, audio material and an extensive digital platform. Looking into multimodality in one or more of these areas would most certainly be interesting, as they naturally are frequently in use in teaching practice, accommodating the textbook. I myself have in this perspective more and more accommodated necessary skills for conducting teaching with a mainly digital footprint, as I am at this time working in a mainly digitally oriented school. I find that this has freed me more than earlier from the textbook focus, which automatically empowers the subject curriculum as presented by the Ministry of Education. Furthermore, a broader selection concerning the school textbooks could have been an interesting perspective, maybe also giving a better overall view of this extensive textbook collection. As I have chosen to do a thorough multimodal analysis of the selected texts, however, this was not an option in my case. Still, both my approach and my findings most probably be utilised in relation to other media. Finally, looking into several textbook collections in terms of vocational orientation and relevance might have been interesting. Seeing how extensive and complex a textbook collection needs to be in order to facilitate vocational orientation, though, that would be a task of such magnitude that it would fit for a much more extensive research.

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