

# Excerpts from the Curriculum of the Norwegian Waldorf Schools

Approved by Utdanningsdirektoratet (The Norwegian Directorate for Education and Training) June 2020

The Curriculum is valid from August 2020.

The excerpts were translated into English in October 2022.

Class 1 is a Kindergarten class in the Norwegian Waldorf schools. The notation Grades 2 – 10 equals Grades 1 – 9 in the German Waldorf curriculum.

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# Overview – Ideas and Practices in Waldorf Education

## Introduction

*Overview – Ideas and practice in Waldorf education* gives an account of core educational ideas and values within the Norwegian Waldorf curriculum and presents essential elements of educational practices in Waldorf schools. The first part of the curriculum describes the value base and the cultural and knowledge-related foundation of the Waldorf School. The didactic understanding of development and the basic principles of teaching are presented in relation to the pupils' learning and progression. The second part of the curriculum provides an overview of educational goals for each subject and describes learning outcomes, core contents and core learning methods for the teaching in the different grades. Allowing for the principles of adapted education and local curricular activities, both parts of the curriculum are otherwise mandatory.

This overview and the individual subject curricula each have both an ideal and general character. The contents and methods described in the curriculum should be adapted, respectful of the abilities and potential of each individual pupil and each group of pupils. The general intentions of the curriculum and individual needs and talents of pupils form a complex frame for Waldorf education. Balancing these issues requires constant re-evaluation on the part of the school and the teacher. Education must be a collaborative effort, involving pupils, teachers, parents and the school's leadership and furthermore, relate to society as a whole. Each school must therefore ensure that its curriculum and teaching respond to and enhance local cultural and geographical conditions.

Contemporary schools exist in a society characterised by great cultural, technological, economic and environmental changes. Future generations attend today's schools and the task of education is to provide for a responsible and sustainable development in the years to come. Pupils should not merely be educated for society as it is now; they should be provided with the capacity to face future society in a knowledgeable, value-oriented and innovative way. A well-rounded development of abilities and skills, as well as a deep-seated ethical foundation, is necessary to meet the challenges of the future.

Waldorf education emphasises the individuality of the pupil as a source of renewal and creativity. The unique individuality of each pupil is related to an ability to take action ethically and to personal development. The goal of education is to create optimal conditions for this essential part of the human being; one might say that which is 'sacred' in a person, to be developed and come into its own. The challenge for education and the curriculum is to provide help and inspiration so that the pupils' individuality and personal uniqueness will have the greatest opportunity to flourish.

In addition to respect for the individual, Waldorf education is rooted in the idea that all school activities should be consciously related to the surrounding society, to the diversity of cultures and to the natural environment. The Waldorf approach sees no contradiction in the twofold intention to honour the individual in each child while, at the same time, preparing the child for the conditions and expectations he or she will meet in the wider world. Socialisation and the acquisition of socially required skills and knowledge are necessary elements in an education

towards freedom. It is precisely in fellowship and in authentic cultural and social situations that each and every person can find a place and the potential to live in tune with his or her own abilities, attitudes and convictions.

### **The spiritual basis of Waldorf education**

Waldorf education was developed by Rudolf Steiner (1861–1925) and originated in his philosophical and anthroposophical ideas. Anthroposophy relates to humans, society and nature in a spiritual as well as a material way. This implies that the material and perceptible aspects of existence are connected to their non-perceptible, spiritual components. In anthroposophy, the human being is described as composed of body, soul and spirit and the spiritual nature of humankind is interpreted as existing beyond life and death. Thus, an image of humankind arises acknowledging the sacred and unfathomable in all persons, beyond observable traits and characteristics. This holistic idea inspires Waldorf education towards humane and ecologically oriented ethics with a twofold goal: the first is contributing to the development of viable life strategies within topical, societal and cultural premises; the second is an education that seeks to treat each individual pupil with reverence and respect. This respect is further expressed in how Waldorf pedagogy relates to nature, culture, history and society.

Anthroposophy or elements from a spiritual worldview are not present in teaching, but constitute a background for values, attitudes and methods of teaching.

### **Two founding ideas**

Waldorf education is largely founded on two core premises. The first is the importance of thinking, feeling and willing being interwoven in fruitful cooperation. In other words, it can be said that the foundation for learning and development lies in an act of will related to emotional experience, which subsequently is connected to intellectual learning. The way in which teaching engages the will and the emotions first forms a basis for the later development of cognition, independent judgement and the acquisition of theoretical knowledge. The idea of educationally relevant connections between thinking, feeling and willing has been known since the days of Plato. Best known, perhaps, is Pestalozzi's learning of the head, heart and hand.

The second central premise in Waldorf education involves a four-fold structure of humankind. Rudolf Steiner described the four aspects as the physical body, the etheric body, the astral body and the ego. The physical body is composed of the same materials that exist physically in the world. In this respect, humankind is related to minerals. The etheric body is a term signifying the life-principle in humankind and reveals itself through growth and form, a quality which humankind has in common with plants and all other forms of life. The astral body denotes the ability to communicate, including communication through perception and movement. It can be understood relationally as a disposition towards sensitivity and reaction as the human being encounters his or her environment. Human beings have this in common with animals. Finally, the ego is associated with thought, language skills and self-awareness: it was in the ego that Rudolf Steiner perceived the spiritual aspect of humanity. These four existential parts are interpreted as dynamic elements within a living whole that are constantly in development. A view of humankind thus arises recognising that in addition to the physical body, life, perception, movement and also language, thought and self-reflection are all part of a fuller description of human nature.

Each of these four aspects requires its own educational stewardship. Waldorf education therefore emphasises different modes of teaching and learning in the care of what is physical, what is alive

and what is relational. The Waldorf ideal of education towards freedom is based on a deep respect for the unique quality of the human self. Accordingly, the education seeks to promote the uniqueness and development of the individual without seeking to push it in specific directions. The school shall strive to give children and young people the best foundation for ethical, political, religious and insightful self-direction.

Such an understanding of education, where learning goes hand in hand with the development and maturation of the child, has roots in the ideas of Aristotle and Kant, among others, and is related to several approaches in developmental psychology. While Waldorf education is thus associated with important ideas in the history of education, incorporating them within a principle of education for freedom is unique to the Steiner approach.

### **Education towards freedom**

The ideal of an education towards freedom is central to Waldorf education. Here, freedom is understood not in terms of the greatest possible emancipation or self-realisation, but rather as the potential for pupils to develop their skills and talents in such a way that they can make active and responsible choices for themselves and their world.

The concept of freedom in Waldorf education is related to a harmonious development of thinking, feeling and willing on the one side and physical health, good habits and maturity of relations on the other. Hence, freedom is recognised as bearing a connection to both the child's active, learning consciousness and to his or her bodily and constitutional nature. The ideal of an education for freedom can thus be seen as an intertwining of the two core Waldorf educational premises. By raising the importance of both consciousness and constitution in connection to the child's learning and development, Waldorf education seeks to afford pupils' independence and responsibility. Freedom in this respect means the capacity to relate responsibly and innovatively to ethical challenges.

At the Waldorf School, children and young people are regarded as complete and competent individuals in their own right. Childhood is considered as in no way inferior to adulthood and holds its own inherent value. At school, the pupils live their lives, and the activities there should be perceived as safe, meaningful, rewarding and challenging. However, children and young people are vulnerable. They need adult guidance and protection in order to thrive and extend their abilities in learning and development.

The concept of freedom gives Waldorf education a value orientation for the particular realities of school and community, where pupils, teachers and parents take part in each other's learning and development. The idea of educating towards freedom thus casts an ethical light on all educational activities. This can evoke wonder and mutual respect, as well as inspire openness towards the unknown. Waldorf education does not promote or adhere to any specific religion, faith or worldview.

### **Value orientation in Waldorf education**

Teaching in Waldorf schools complies with the objects clause in the Norwegian Education Act and the fundamental values stated therein. The learning and development that occur through the diverse activities and relationships in school help form key aspects of the identities, values, norms and attitudes of children and adolescents. The school's value orientation is made explicit in the teaching content, but is also present in key learning methods, forms of socialising, the choice of activities and

materials, to mention just a few. Aesthetic expression and artistic orientation are given special emphasis in Waldorf schools. The design of the teaching, classrooms and timetables reflects key values. Waldorf education emphasises that the entire activity of the school, from the material operation of buildings and outdoor areas for teaching to how people are treated, is underpinned by a deep ambition to make the world a better place. In this way, respect for human dignity and nature, freedom of spirit, benevolence, forgiveness, equality and solidarity can find an expression and be nurtured and developed. The school as a whole and all those who are working in it strive to be constructive and creative role models for values in the encounter with children, adolescents and their parents.

A reasonable degree of cohesion between theory and practice is crucial for the credibility and effect of the school's value orientation. The school's task is to defend democracy, responsibility for the environment, equal rights, health, ethical vigour and critical thinking in such a way that practices and forms of interaction reflect the teaching content to the greatest degree possible. The school must obviously also look to the future and nourish ideals and hopes. Utopias also have an educational legitimacy. Tactful pedagogy knows that clarity is required about the ideals and norms that the school represents, while showing deep respect for the pupils' individual attitudes and values.

By recognising that fundamental values often entail complex challenges, both for the individual and for society as a whole, the school can help strengthen the respect and sense of realism in the interaction with values. Dialogue, multi-perspectivity, reflection, enthusiasm and activism can in various ways cause values to take root and become reality. Similarly, the emotions, love and rightful anger that arise in teaching may help deepen the pupils' value orientation.

### **A threefold understanding of the curriculum**

In his lectures on education, Rudolf Steiner often stated that the curriculum is formed out of the needs of the pupils and out of their abilities to learn and develop. The teacher's task was to interpret, to 'read human nature', and to teach based on this 'reading'. A teacher who meets his or her pupils afresh, every day, with an inquiring respect for this individual's uniqueness, becomes a fellow creator of a mutual ethical relationship. The Waldorf curriculum and its educational principles recognise and care for this delicate ethical communication between teachers and pupils. A teacher who truly sees the pupils can be aware of the potentials inherent in every child and can use this awareness to stimulate learning and development.

In addition to the idea of the teacher's reading of the pupils' potential and the associated adaptive learning, the Waldorf curriculum aims to ensure that all school subjects and activities are covered in a comprehensive manner. During the course of the school years, pupils will encounter a complete range of subject content and a rich variation in ways of working. This means that the school years, as a whole, comprise learning opportunities in relation to an entirety of knowledge, skills and competences appropriate for today's living conditions. The curriculum aspires to constitute such wholeness on many levels: from mythical time to the era of information technology; from felting wool to developing digital skills; from local cultural traditions to global solidarity and understanding. Both the subject matter and the practical methods begin with what is close and familiar and then move through the school years in the direction of complex and abstract relationships. A full spectrum of knowledge is thus communicated and processed during the years at school.

A third principle of the curriculum is that all learning is organised according to a principle of development. Seen from a broader perspective, Waldorf education offers teaching and learning

linked to three seven-year periods of development. Each seven-year period is again differentiated in that specific topics and teaching methods are selected as appropriate to each age group. Subject matter is organised in lines of progression inviting pupils into given learning and developmental opportunities. This aspect of the curriculum goes beyond the individual situation of each pupil and can be regarded as a qualitative journey of development, a *Bildungsreise* throughout the 13 years of school.

The Waldorf curriculum cannot be understood by examining just one of these three dimensions in isolation. The ethically oriented 'reading' that can occur in encounters between pupil and teacher, the complete subject content and methodology within the curriculum and its developmental structure must be considered as a mutually supportive whole. The curriculum presupposes respect for every individual child, and aims at giving rise to an education with a profound moral sensitivity and perceptiveness to the qualities and potentials of the pupils. Subject matter and knowledge inherent in the curriculum are directed towards a complete content, which reflects the world's *realia* and at the same time aims at allowing for pupils' personal identity processes in encountering the various learning contents as the children grow older. Thus, the curriculum builds on an idea of respect for each pupil and an intention to design the teaching in light of an ethically oriented reading of the characteristics and abilities that the pupils bring with them.

By treating these three curricular aspects as partially independent, fertile spaces can occur; educationally creative intervals where the aim of predictable learning blends with consideration for all the unpredictable and immeasurable events that occur every day at school. Thus, the curriculum reveres the cultural heritage of the past, remains open and sensitive to the future and provides space for a rich, qualitative unfolding of life at school every day.

### **Knowledge and ethics**

Waldorf education stands as an ideal for the school years as a whole, whereby pupils elaborate on core motives of knowledge by engaging in active experiencing, emotional commitment and thoughtful understanding. The concept of *knowledge* in the Waldorf curriculum includes abilities that are practical, emotional, theoretical and social. Subject matter thereby becomes fields of development for pupils. The goal is that over time, knowledge and skills will foster competencies oriented towards, for example, innovation and problem-solving. This presupposes an ethical view on how knowledge is dealt with at school. Knowledge understood as participation in the world, as a competence for taking action, implies that the curriculum should be ethically oriented towards active and formative qualities of knowledge. In this way, Waldorf education links knowledge content to ethical reflection on human actions, seen in light of the fundamental distinction between good and evil. Acquisition of knowledge is understood as a process of ethical *Bildung*.

Seen in a global perspective, the world is dependent on knowledge that focuses on society and nature as a whole and on a knowledge concerning the consequences of changing or influencing nature's cycles and processes. There is, likewise, a need for deep and inclusive understanding of the world's different cultures and societies. An essential, ethical aspect of the school's way of teaching is a well-rounded frame of reference, connecting knowledge and skills to a greater arena of phenomena. Ethically oriented in-depth learning is the goal. Waldorf education makes certain value choices in creating a moral context for the knowledge with which pupils work at school. Teaching is marked by a deep respect for the greatness and diversity of nature and for cultural differences and uniqueness. An element of reverence is thus expressed in Waldorf education's approach to knowledge. The ability to reflect critically also belongs to this same ethical understanding of knowledge.

In a society in which knowledge is continuously growing, developing and changing, the school should assist pupils in establishing a basis for independent acquisition, interpretation and comprehension of available information, as well as awaken their interest and desire to create new knowledge. In Waldorf education, the teachers continuously explore new ways of creating good teaching models. In addition, major emphasis is placed on the pupils' curiosity and urge to explore. In this way, the school becomes an arena for individual and local knowledge work. The inclusion of working methods from the arts and crafts also helps strengthen ethical in-depth learning at school. In these activities, pupils are faced with material resistances and corrections when something is created and brought to realisation. A value orientation can take place in the careful choice of materials and modes of expression. Working with art and handicrafts can thus contribute to the development of a practical and ethical intelligence.

The Waldorf curriculum comprises a broad range of subjects but the ways of working within each subject often promote concentration and deep learning. This in-depth perspective allows every school year and every theme to be experienced by the pupils as new and academically challenging. Working in thematically concentrated blocks gives teaching an exemplary character and provides teachers and pupils with time for deepening elaboration and reflection. The principle of concentration, combined with the progression from what is familiar and specific to the global and more abstract, creates an important educational and ethical foundation for the acquisition of knowledge. Below are some examples of how an ethical relationship to knowledge and teaching can be maintained in practice.

Many Waldorf Schools work together with a farm where pupils can experience plants, animals and people in a living agricultural setting. Every season brings its own activities and experiences placing pupils in contact with pre-industrial life rhythms and tasks. It is also usual for pupils to tend a school garden, taking part in cultivating vegetables, herbs and flowers. Excursions to forests and fields, mountains and fjords are, likewise, a part of a class's world of experience. These activities seek to create bonds with nature and with archetypical tasks belonging to nutrition and domestic life.

Storytelling emphasises a contextualising mode of teaching, on many levels. The unfolding events of a story can speak to corresponding events in the pupils' own individual experience or imagination. A story usually differs from a factual account by having a specific, tangible frame in which to impart the content. During the first school years, folk tales, legends and myths from different cultures seek to create resonance, inspiring pupils' imaginative development as well as laying the ground for further acquisition of knowledge in later years. Stories help strengthen identities by serving as an inspiration towards a deeper understanding of nature, culture and human relationships in a recognisable form.

In the higher grades, teaching shifts more towards comprehension and discovery of laws, causalities and relationships in both sciences and social studies. For example, specific descriptions of historical events and people can be followed by a discussion of ideas and societal structures that lie behind them. Likewise, the pupils' own reasoning can come to the forefront when, for example, the teacher poses questions in such a way as to allow the pupils themselves to discover the principles behind James Watt's steam engine. By including biographical and general historical information, the scientific, personal and social consequences of Watt's invention can be examined and evaluated. The class may even decide to put on a play from this era, portraying the lives and conditions of industrial workers, to give artistic expression to this historical period.

From an ethical perspective on knowledge, the challenge of the school is to guide pupils towards discovering interconnectedness, innovative thinking and interpreting overarching perspectives. A reservoir of basic knowledge makes a good beginning but this knowledge will not seem real or vital unless it is based in personal experiences of connectedness and in practical competences. The role of knowledge in the Waldorf School aims at being part of a greater task of striving to help pupils find their place in the world and giving them the insight and courage to enact change. True knowledge implies insight into self and the world, united with a capacity for ethically oriented action.

### **Arts and the art of teaching**

Art and artistic activities pervade most aspects of Waldorf education. Ideally, this encompasses the teaching of all subjects, school architecture, teacher education and collegiality and social relations of the school.

Waldorf education recognises a kinship between the idea of education towards freedom and the school's practice of artistic activities. Just as freedom and responsibility belong together, artistic expressions are realised in the encounter with different framing conditions and resistances. In Waldorf schools, curricular subject content represents a framework for the use of arts. All school subjects provide material for artistic processes. Art provides an arena for exercising and practising skills, interdisciplinary discovery, comprehension and the awakening of creative powers interconnected with subject knowledge. Subject teaching and artistic work modes are understood as having a mutually enriching relationship. Art in its own right is highly revered in Waldorf education but it is simultaneously perceived as a tool and companion in education; a source of subject elaboration and comprehension, to deepen experiences and knowledge. Artistic work with the subjects paves the way for in-depth learning, whereby concepts from the teaching can become dynamic, development-oriented and seen within a network of relationships.

In the Waldorf School, on the one hand, the teacher shapes instruction artistically; on the other hand, the ways in which pupils learn are accompanied by artistically inspired modes of working. Thus, the school upholds the principle that both teaching and learning are strengthened by integration with artistic ways of working. The very nature of art indicates that its expressions can be varied to suit different teaching situations and needs. Artistically-formed teaching can connect general subject matter to an individually created 'dramaturgy' or 'colouring'. The content of instruction is thereby made specific and the teacher's commitment and enthusiasm can be made apparent. Likewise, pupils are given the opportunity to make their own choices in processing the current learning themes. Wherever art is integrated into school pedagogy, spaces for creativity and deeper understanding of the subjects are afforded for both teachers and pupils.

A look at class activity throughout the school day can illustrate how artistic endeavours and aesthetic awareness come to the fore in various ways. In Primary School, the day usually begins with a main lesson, where activities such as singing, recorder playing, movement, recitation and often some kind of social game initiate the day. Then follows a dialogue between pupils and teachers on topics from the teaching, the goal being to foster a respectful as well as creative culture of classroom dialogue. After the discussion follows pupils' own work. This often takes the form of pupils writing, drawing and creating their own workbooks in which they make an individual record and contribution to the topics on which they are working. In addition to the workbook, the Waldorf School uses a range of other processing tools in which the artistic, the practical and the theoretical are integrated. A main lesson will often conclude with the teacher introducing new material. Depending on subject and grade, the teacher may use various other art-



inspired methods. This can be storytelling in which historical material is visualised and dramatised, or it can be aesthetically presented experiments in physics or chemistry, rhythmical movements connected to mathematics, or drawing or modelling in biology, to name but a few possibilities. Later in the day, pupils meet with corresponding aesthetically organised instruction in foreign languages, mother tongue and mathematics. A key feature of the art of teaching in Waldorf schools is the rich use of variation and rhythmic subdivisions of the teaching process. Conversation and reflection in class discussions alternate with quiet individual work and a rich repertoire of bodily movement. Such rhythmic variation counteracts cognitive bias, sharpens the attention and makes for a healthy school day.

In addition to the artistically adapted instruction in theoretical subjects, actual art and handicraft subjects are given a significant place in the curriculum, both in primary and secondary School. Pupils usually work several hours a week with subjects such as music, eurhythm, drama, painting, drawing, modelling and a range of handicrafts. In these subjects, technique and practice are emphasised alongside aesthetic expression. Just as the theoretical subjects contain artistic work modes, there is an attempt to bring methodical, technical, historical and other theoretical elements to art and handicraft subjects, all in keeping with the philosophy that theory and practice are interwoven.

In addition to art and artistic work modes, art itself plays a prominent part in the shape of the school buildings and grounds. The architecture in many of the Waldorf school buildings is characterised by structural variation and rich use of colour. The buildings themselves should be sustainable as well as functional.

### **The workbook, pupil activity and learning processes**

Subject matter and school activities are, to a large degree, presented and led by the teacher. The teacher's central role in Waldorf education is combined with granting the pupils time and rich challenges in their own learning processes and in working together with peers. Teaching should also let the pupils present subject matters to their class. Such presentations are based on the pupils' own collection of knowledge, exploration and experiences linked to relevant topics from the teaching.

The pupils' processing and adaptation of the learning contents generally take place one day after the subject has been presented in teaching. Both teachers and pupils literally sleep on the topic before it is brought up again in common discussion and further individual processing and interpretation. In their conversation and communication with the pupils, the teachers take care to pay respectful attention and respond to all the pupils' statements. A vibrant and dynamic culture of conversation can help strengthen the class's urge to explore, joy of discovery and critical reflection. Spoken activities help bring new perspectives to light, make the teaching feel more relevant and strengthen democratic forms of interaction in the class. Here, it is crucial for the teachers to be attentive to the potential that lies within the pupils' input, and to practise the art of posing open-ended questions that invite reflection. A good teacher can wait and endure silence. The conversation is followed by individual work on the subject matter.

The composition of an individual workbook is a widely-used practice in central theoretical subjects, such as mother tongue, mathematics, social studies and the sciences. The workbook contains both a description and a processing of the core knowledge from the actual instruction. In the early years of school, the workbook is a means for pupils to practise the use of letters and numbers and create form drawings, as well as drawings from the teacher's storytelling. As part of

the very first reading and writing instruction, pupils write simple sentences from the stories told by the teacher. This helps promote pupils' textual fluency and the workbooks will contain texts copied from the blackboard, dictations and independently generated texts in many genres.

Independent investigations and reflections and generally freer thematic ways of working increase with age. From Grades 6 to 7 (5 to 6<sup>1</sup>), pupils increasingly write their own independent texts and summaries of the lesson. They gradually also draw on other printed and digital sources in addition to the teacher's presentations. The workbook is given a conscious aesthetic form both in respect to language and visual quality. This creates a constant exercise of mother tongue language mastery and varying techniques of illustration. In this way, writing skills and creative expression are constantly practiced on an interdisciplinary basis. Digital technology is integrated into the repertoires of working with the different subjects. As a result, critical evaluation of sources and conscious use of credibility criteria gradually become a key element of subject processing knowledge acquisition.

Besides the workbook, Waldorf education uses a range of other ways of working. This can be everything from drawing, painting and modelling to composing poetry or, for instance, an anatomy class project in which the class sculpts parts of the human skeleton. Other typical assignments can be in-depth essays, the use of exercise books in mathematics or languages, or more extensive projects in which pupils individually or collectively work on different themes to be presented, in widely varying forms, to the rest of the class. In some subjects, a printed textbook is used in addition to other subject literature and the content of the self-authored workbook. The pupils' independent work takes place every day at school and occasionally in the form of homework.

In Upper Secondary School, an increasingly greater degree of subject immersion is expected. At the same time, pupils are expected to take greater responsibility for their own learning. This culminates in the final years' individual thesis; a year's immersion in a self-chosen theme or project connected to a specific subject area. A competent supervisor guides the pupils in their research process, involving an independently chosen topic, self-guided development of working methods and a public presentation. The thesis usually has a written part as well as a practical-artistic section. The project concludes with an oral presentation before a larger audience and is assessed by an external examiner. Such a comprehensive process points beyond the general compulsory school years and aims at preparing pupils for further studies.

### **Digital skills and information technology**

In the course of very few years, digital technology has changed the world. Never before has a technological revolution been so all-pervading or influenced humankind and nature in such a complex and comprehensive manner. Digital technology is characterised by, on the one hand, its invisible presence in the organisation of almost every function of society and on the other hand, the visible and central place digital media occupies in the workplace, in education and in recreation. Technology is unnoticed in that life and work is made easier; it comes into focus by being an indispensable tool in production, communication and entertainment. In a short time, this ever-present digital technology has created completely new forms of activity. Thoroughgoing interactions between humans and machines have become possible. A digital culture has arisen in

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<sup>1</sup> In Norway, grade 1 starts at 6 years, one year earlier than in the original Waldorf school curriculum. In the Norwegian Waldorf schools class 1 is a Kindergarten year. For comparing with many other countries, the grades must be adjusted one level down, which is also noted in the text.

which texts, numbers, images and sounds can be used, combined and communicated with a huge degree of freedom.

Digital technology poses challenges for teaching and learning at many levels. Waldorf education, which places equal weight on the two perspectives of child and society, asserts that digital media has a self-evident place in education, legitimised by this technology's central position in society. On the other hand, it is necessary to consider what consequences the use of digital media have for the health and development of children and youth and to reflect on its influence on their culture, on their ability to learn and to communicate. Such considerations aim at creating a nuanced and dynamic picture of digital technology and its role in Waldorf education. The use of digital technology is taught as an interdisciplinary topic, where issues such as health, democracy, fake news, influence and activism are addressed. The ability to relate critically to sources is developed systematically throughout the pupils' schooling. The dominant role that digital media have gradually assumed requires the school to make conscious choices regarding regulation of the amount and type of digital activity during school hours.

In this context, a general educative attitude in Waldorf education implies that the role of digital technology should be seen in relation to the entire course of school years and to the developmental structure inherent in the curriculum. The place of digital media in education should be related to pupils' potentials to learn and develop and be seen in an interdisciplinary perspective. Principally, it can be said that the visible aspect of digital technology should be mastered during the school years in a way that is independent, functional and conscious. The more hidden aspects of technology should likewise be dealt with in that pupils gradually develop reflective and critical skills relative to the presence of digital technology.

In Waldorf education, digital technology will be related to:

- *craft*: practical user skills
- *art*: the ability to express oneself digitally, aesthetic forms and means of expression
- *communication*: social media, use of learning platforms
- *theoretical knowledge*: understanding of hardware and software, the ability to acquire and use digital information
- *learning through educational software*
- *critical reflection and judgement*: netiquette, assessment of consequences of technology use and active and reflective participation, data protection, algorithms and skills in critical assessment of sources
- *compensation*: reinforcement of physical movements, sensory skills, relationships to human beings and nature; increased focus on experiences that are not technologically mediated

The Waldorf outlook is that the principles of learning in the first years of school, with a strong focus on practical physical activities, movement and richly composed sensory experiences, will act as an important foundation for the further development of digital competence. The presence of a living, resonant language, plus music and arts and crafts, educate and develop precisely those basic skills, later to be used with digital tools. The teacher's presence as a responsible, partaking and mediating adult creates space for an engaging and situated learning during the first school years. In the interaction among children and their teachers, something unexpected occurs every day, for better and for worse. The practical life experience that grows out of the daily

interpersonal improvisation creates an ethical foundation for the freer ways of interacting made possible within digital cultures and forms of communication.

In the kindergarten and the first school years, the use of digital technology therefore plays a very minor role. This period is dedicated to practical forms of learning, to companionship, to sensory and physical activities that are not based on digital technology. Such activities are justified by central Waldorf educational ideas on knowledge, learning and human development. In the Primary School classes, a basis for digital competence is built via the development of cooperation and basic physical skills, as well as experience with hard-copy images and texts.

Teaching begins with the familiar and the practical and gradually expands to include abstract knowledge and digital modes of working. This emphasis on non-mediated experience continues throughout the school years, while a digital competence is developed gradually, in parallel with this.

In Grades 5 – 7 (4 – 6), pupils work with basic forms of digital technology. User skills in simple text and image processing are developed, as well as in communication via social media, email and the Internet. The role of technology as a tool is emphasised and discussions take place about netiquette, data protection and 'digital ethics'. A balance is continuously sought between building on the skills pupils are already mastering and challenging them with learning new skills and contents.

In lower Secondary School, Grades 8 - 10 (7-9), a more technical understanding of digital technology comes to the fore. How is a computer built? What is it made of and how do its components work together? What kinds of software exist and how are they distributed and used? How does the internet work? In Waldorf education, this kind of information plays an important role because it is intended to contribute to pupils' independence and to enhance their potential for creativity and participation.

Over the years, pupils become proficient in the use of digital technology and integrate it into their schoolwork, through various kinds of digital 'workbooks' and artistic expressions. The development of an understanding of digital culture is, on the one hand, connected to developing ethical and critical judgements. On the other hand, project work allows for genuine experiences of both advantages and disadvantages of working in the digital world. Pupils are also made aware of how they can contribute to advancements in both commercial and open-source software.

In upper Secondary School, digital tools are increasingly integrated into the pupils' schoolwork and modes of expression. Alongside strengthening user skills and technological comprehension, comes reflection and assignments that explore both the potential and challenges of digital media. Political, environmental, artistic and academic issues associated with digital technology are addressed. At this stage, digital technology can be integrated into most subjects, either as a tool for communication, presentation and information gathering, or as a theme in itself for deepened understanding and reflection.

### **Block teaching – the structure of the school day**

In the Waldorf School, mother tongue, mathematics, social studies and sciences are taught in blocks, usually lasting from 2 to 5 weeks. The school day begins with an extended lesson, between 90 to 120 minutes long: this is referred to as the *main lesson*. During these weeks, the class is occupied daily with one specific subject: an invitation to a deepened immersion for both pupils and teachers. This work mode offers good possibilities for projects, group work and

interdisciplinary cooperation. The character of the main lesson period also allows for independent and investigating activities by the pupils.

The main lesson is followed by various subject lessons. Subjects, which require regular practice and systematic skill building, are taught in regular weekly lessons throughout the year. Certain subjects, like mother tongue and mathematics, are taught in both regular lessons and in blocks of main lesson time. The school strives to arrange the schedule so that mother tongue, foreign languages, mathematics and certain art subjects are placed in the middle of the day, while physical education and handicrafts are situated at the end. This structure is based on the idea of a three-fold division of the school day. The school day begins with theoretical subjects, continues with subjects that emphasise the repetition and practice of skills and concludes with subjects involving physical activity and acts of will. This makes it possible for conscious and unconscious processing of theoretical subjects through the other subjects as the day progresses. The school day is, in this way, also granted a rhythmic variation that promotes concentration and well-being.

### **Assessment culture**

The forms of assessment used in Waldorf education are an integral part of its pedagogy and correspond to the principles of assessment for learning. The purpose of assessment is to stimulate the pupils' insight into their own development and to strengthen their confidence in their own abilities and potential. The assessment shall also provide information on the pupils' learning seen in relation to the goals of the curriculum. The feedback to pupils and their parents shall ensure transparency and predictability and contribute to a good collaboration between all parties involved. For the teachers, the assessment is an instrument to improve and develop teaching practices and adapt them to the needs and learning potential of each individual pupil.

Constant emphasis is placed on a positive, developmentally inspiring dialogue between teachers and pupils, in which a common understanding of the assessment criteria and potential ways of improvement is the goal. The ideal of an education towards freedom is connected to the development of self-insight on many levels: academically, personally, socially and practically. Self-assessment skills are therefore practised in all years of school. The ability to make free, individual self-assessments is all about raising awareness of the reasons for own choices and of understanding both individual potentials and limitations. Various forms of self-assessment and mutual assessment whereby the pupils give each other feedback can be integrated into the teaching from the very first school years. Waldorf schools do not give grades at the primary and lower secondary level. At the upper secondary level a midway assessment based on a numerical grade scale is carried out each year. A graded final assessment is also carried out for completed subjects.

The assessment applies to all stages of learning; from preparation via execution to a retrospective look at what has been done or created. In Waldorf education, interest in the subject itself is seen as the key impetus for learning. The learning methods and content are intended to be motivational in themselves. Inspiring and realistic expectations of what is to be done and learned set the criteria and provide a basis for assessment as the learning progresses and after completion. Guidance, input, encouragement and good questions are key elements in the continuous assessment. In retrospect, the pupils and teachers can acknowledge, ponder and reflect on what has been accomplished. What perspectives and opportunities for understanding are inherent in the subject itself? What is the road ahead, what can be improved, and what was good about the things that were done? Were the expectations realistic, did the criteria function well, and were the goals achieved? Constructive and appreciative feedback brings joy, is inspiring and builds confidence

and self-efficacy. The school shall also be a place where the pupils can learn from their mistakes in safe surroundings.

### **Age-adapted assessment**

Consistent with the notion of development on which Waldorf education is founded, assessment and feedback assume different forms depending on the pupils' level of maturity and self-insight. The assessment follows the view of development in Waldorf education as described in this overview. See especially the section on development of cognition in light of the curriculum.

During the first school years, Grades 2-4 (1-3), the teaching seeks to establish a culture for mutual recognition, wonderment and reflection on what the class as a whole and individual pupils have created or worked on. This entails verbalising aspects of images, performances, texts or objects. The focus is on experiencing what is good, beautiful and truthful. The teacher's intention is to always provide honest and constructive feedback. Input and encouragement as regards the pupils' ongoing work can be given with sympathy and compassion. For the pupils, these years are about developing a culture and an understanding of how assessment can be part of a fruitful and natural part of creating something or of encountering the phenomena of the world. The teacher seeks to set relevant and open-ended assignments with more than one right answer or solution, while maintaining clear and predictable goals. Thus, the different contributions from pupils may help inspire a culture of evaluative generosity and diversity. Individual assessment for pupils to correct their own work or achieve specific targets is gradually incorporated into the assessment culture, but plays a lesser role during the first years. The teaching in these years will largely inspire learning through imitation and internal imagery based on the teacher's narratives. The teachers' evaluation of their own practices therefore constitutes a crucial component. When the teacher sees the teaching reflected in the pupils' activities, this is about facilitating well-being, learning and development by adapting the content and methods of teaching.

From Grade 5 to 7 (4 to 6), criteria and assessments are more clearly oriented towards the subject content of the teaching. The pupils constantly need to master new knowledge and skills, and assessments will provide insight into what has been mastered and what remains to be learned. Teachers must make it clear what is expected of the pupils in their assignments, so that assessments are transparent, predictable and understandable. Efforts are made to ensure that the pupils develop a richer understanding of the cumulative nature of learning, where new knowledge builds on prior learning. During these years, assessment will help the pupils see their own work and that of others in a perspective of development. It should build on the joy of already possessing a foundation of knowledge and skills that can be expanded and differentiated with each passing year. In doing so, assessment can be oriented towards conquering new skills and discovering new knowledge interconnections.

This orientation towards academic content and progression is reinforced at the lower and upper secondary levels. In addition, pupils are to an increasing degree involved in formulating their own criteria and engaging in evaluative reflection on their own. The phenomenon-oriented nature of teaching enables assessments to take on a more interpretative and open format during these years. Academic material can often be understood and presented in a variety of ways, and the reasoning in assessments must therefore be reflective and flexible. The more open the assignment, the greater the degree of discretion and interpretative freedom that will be needed in the assessment. The assessment format from previous years is maintained, so that aesthetic, ethical and fact-oriented judgements can be integrated into a whole or considered separately. The final assessment after Grade 10 (9) must be transparent and precise, and have a clear rationale,

whereby it is worded in a way that is understandable to the pupils. The same applies to the grading of assignments throughout the upper secondary level. The goal is for pupils to know where they stand and to be aware of their strengths and weaknesses in relation to their own development and the goals and criteria of their education.

### **Overview of the content and structure of assessments**

- An ongoing dialogue on the school work between the pupils and teachers.
- A one-to-one meeting is held at least once every six months between the pupil and their class teacher, alternatively a subject teacher.
- Parent-teacher meetings are held at least once a year, where parents are informed about the work in the class, the content of the teaching and the role and participation of parents.
- At least two conversations are held every year between parents and the class teacher, with a focus on the pupil's learning, skills development and behaviour at school.
- Two academic assessments will be carried out every year throughout the pupils' schooling. This will look at the pupil's learning in relation to the learning outcomes in the curriculum, and will provide guidance in how pupils can improve their school performance. These assessments can be carried out as part of the meeting with the pupil.
- An assessment of orderliness and conduct is given in the semi-annual assessments throughout the pupils' schooling.
- From Grade 8 (7), the results of the semi-annual assessments must be given in writing and the annual assessment must include a record of the pupil's absence.
- Following the final assessment, a certificate will be awarded upon completion of the lower secondary and upper secondary levels. After completion of the lower secondary level, a text-based certificate is issued, while a numerical grade scale is used for upper secondary, with a written final assessment when required.
- The school must have an appropriate system for documenting assessments.

### **The teacher**

The responsibility of the teacher spans from manifesting the pedagogical tact required to earn the trust of children and young people, to conveying content creatively, to local curriculum development and administrative tasks. On the one hand, the teacher acts as a companion and supporter to the child; on the other hand, as a representative of society in dialogue with children and their parents.

Establishing fruitful and trusting relationships between teachers and pupils is of great importance in Waldorf education. Pupils' learning and development is stimulated when they feel respect for their teachers and trust in the teacher's ability to teach well, to make fair judgements and to lead a class. To care for and develop this pupil-teacher relationship constitutes a pillar of Waldorf education. Ideally, the teacher should be an 'authority', in the best sense of the word. A fruitful dialogue and mutual respect between school and home is, likewise, a support to pupil well-being, learning and development. Often, a group of pupils will have the same class teacher for a number

of years. The teacher's in-depth knowledge of each pupil and the academic development of the class enables nuanced forms of in-depth learning and adaptive learning.

Much of the teaching in the Waldorf School is teacher-led and of a conveying nature. Teachers are daily challenged to create living, motivating and informative lessons. The use of storytelling and the goal of teaching as an art provide teachers with the task of combining an appropriate academic level and interdisciplinary knowledge with an engaging pedagogy. Similarly, the teacher will need to develop a nuanced and sympathetic way of listening and keep their attention focused on the pupils' statements and initiatives. Appreciative responses and respectful interaction by the teacher are essential for the pupils' learning and development. The teaching should facilitate a broad spectrum of individual activity for the pupils, where the teacher sets open-ended questions and assignments, follows up the pupils' impulses and allows the interests and views of the pupils to help shape the school work. Waldorf schoolteachers, therefore, need to maintain constant personal development, widening their academic horizons, extending their teaching abilities and attention, and maintaining their social responsibilities. The teacher's commitment to self-development relates to assisting children and young people on their developmental paths.

Teachers are part of a professional community. Along with the school management, parents and pupils, they are engaged in an ongoing development of the school's educational practice. By maintaining a community that is kept up-to-date academically and engages in mutual reflection and development work, teachers can help promote well-being, learning and value orientation at their school. In their daily educational work, teachers will need to exercise discretionary judgement based on research and experiential knowledge. A fruitful dialogue between the teachers and the other actors at school can help combine insight, discretion, intuition and research-based knowledge in the teaching.

### **Seven-year periods**

In Waldorf pedagogy, specific developmental motifs are connected to each of the first three seven-year periods of life. In the first seven-year period, the pedagogy is primarily oriented towards developing acts of volition and the maturing constitution of the body. In the Waldorf Kindergarten, emphasis is placed on learning through imitation, interaction and play connected to a wide spectrum of sensory and motor experiences.

Pupils in the second seven-year period are motivated to learning through good and trusting relationships with their teachers. In the first part of this period, the pedagogy is aimed towards experiential and imaginative abilities, through practice and artistic work modes. Later, more and more weight is placed on comprehension attained through reflection.

In the third seven-year period, teaching is oriented primarily towards the pupils' own thinking and their new potential for ethical engagement, through which they can develop individually responsible and loving relationships with their world.

The curriculum is divided and differentiated within the seven-year periods such that every school year receives its own thematic profile. Some years are more strongly influenced by new experiences and subject matter; others are characterised by processing, practising and immersion in already familiar themes. Waldorf education emphasises certain age groups in which completely new challenges for the pupils are the focus of learning. These instances of new material coincide with a threefold division of the seven-year periods, such that important new themes and work



modes are introduced when pupils are circa 7, 9–10, around 12, around 14 and at 16-17 years of age.

After Grade 1 (Kindergarten) and the introduction of writing, reading, mathematics and processing pictorial or imaginative stories, are two school years in which these skills are honed and developed further. Practice and developing proficiency are key in this period. At the end of year 4 (3) and beginning of year 5 (4), new elements are introduced. Basic grammar and science topics, such as zoology and geography, take on a broader scope and a new character. The pupils' abilities in comprehension and abstract reflection face a distinct challenge at this age. The curriculum for 12-year-olds bears a similar leap in the direction of more independent thinking and exercise of judgement. Physics and geology are introduced here, with new learning methods and new kinds of cognitive understanding. At age 14, the school again introduces new and important elements focusing, among other things, on a broader comprehension of cultural, democratic and moral perspectives in history and social studies. Likewise, the transition from Grade 10 to 11 (9 to 10) brings with it new and more existential challenges. One of many possible examples here is the legend of Parsifal, which forms the basis of the 17-year-old's reflections on every human individual's responsibility for his or her own action and life-choices.

Such a rhythmic division throughout the school years grants pupils space and time for maturation, growth and reinforcing experiences of confidence in relation to school subjects. The markedly new learning experiences can renew the school experience, making it vivid and varied. This means that the pupils can experience and value their own development and at the same time build upon knowledge, skills and competences in relation to school subjects. The table below gives an impression of some of the main features of Waldorf education's developmental ideas. There is, obviously, a continuous development within these seven-year-periods implying that, for example, long before the age of 14, the pupils are versed in more independent ways of thinking and making judgements.

*A Keyword Overview of the Seven-year Periods in Waldorf education*

| 0–7 years                        | 7–14 years                                    | 14–21 years                                       |
|----------------------------------|---|---|
| Learning via imitation           | Learning via the teacher's presentation       | Learning by means of own thinking and judgement   |
| Sensory stimulation, play        | Mental images, experience, practice           | Appreciation and love of the world, understanding |
| Willing                          | Feeling                                       | Thinking  |
| Development of the physical body | The rhythmic life-processes: the etheric body | Communication, relations: the astral body         |

## **Developmental motifs in Waldorf education**

### **Individual and social developmental motifs**

Waldorf education is founded on a spiritual idea of development, in the sense that the pedagogy is motivated by the full spectre of human developmental needs. Seen in this perspective, neither

talent in a certain area nor specific learning disabilities should necessarily prevent pupils from being able to follow the class progression. Waldorf pedagogy seeks to assist and challenge every pupil according to his or her needs and abilities. An overall assessment of each pupil's situation will also take into consideration the value of learning in a community and that of giving or receiving help when needed.

The span of cognitive development within a class will show a wide range of abilities. There may be several years' worth of discrepancies between the pupils' level of mastery in some subjects. However, pupils with vastly differing predispositions can, with enthusiasm and reward, immerse themselves in an engaging lesson where lively story-telling, art and handicraft activities take place. The social community in the class is of primary importance for Waldorf education. Extra help or extra challenges are given to those who require them. Specially gifted pupils receive additional assignments and challenges to maintain their motivation and their demands for appropriate learning challenges. In addition to the principles of adapted education, there is an emphasis on promoting solidarity and community. The children should learn to feel secure when they are together and undercurrents of competition are limited.

By including the importance of community in the classroom, Waldorf education strives for an equal weight between the development of individual knowledge and skills on the one hand and social competences, on the other. Artistically inspired modes of teaching make room for every individual to be challenged and to develop within the general classroom environment. What each pupil learns in the course of a lesson will always be unique. Every listener apprehends the teacher's narrative differently and its instructional content will, likewise, be individually absorbed. Teaching methods are composed in such a way that some elements emphasise collective work more strongly, while other themes or exercises are intended towards individual processing. Below follows an overview of the main pedagogical themes in the three seven-year periods.

### **Willing, feeling, thinking**

Developmental structure in Waldorf education calls special attention to the way a child's will, feeling and thinking make up differing themes of development and different arenas for learning and growth. Each of these arenas affords the processing and development of particular knowledge, skills and competences. Knowledge in this regard is perceived as bodily, situated and intersubjective in addition to the mind's cognitive handling of information. It is valued on many levels, from tacit to explicit, from practical to abstract. Bodily and experience-based knowledge forms a foundation for subsequent cognitive learning and development.

In the first phase of life, Waldorf pedagogy is directed toward the will. The basic idea is that the child meets and becomes acquainted with world phenomena through his or her own activity. These will-based experiences create a foundation for perceptual and feeling-based experiences in the second seven-year period. Waldorf education emphasises that the development of cognition can build on previous emotional and will-based experiences. This can create a frame of reference and a sense of connection in the growing person and entails an in-depth learning perspective on their entire schooling.

When thinking and feeling work together in a fruitful way, affection enters thinking and stimulates enthusiasm and the joy of understanding. In addition, when a person's will contributes constructively in an appropriate manner, he or she will be capable of acting ethically. Good cooperation between thinking, feeling and willing enables the human being to partake positively in the events of the world.

The significance of thought, feeling and will in Waldorf education is differentiated such that the path from willing, via feeling, to thought represents a great all-encompassing learning structure, lasting throughout the three first seven-year periods. Below is given a short presentation of the idea of thought-feeling-will and how its potential for learning is expressed in the curriculum.

### **The role of will in pre-school education**

In Waldorf education, the child's will-activity constitutes a primary point of orientation in the first seven-year period. The reasoning behind this includes the viewpoint that, in order for higher cognitive and emotional skills to develop freely at a later stage, they require a rich grounding in practical experience. The pedagogy is therefore designed to encourage learning and development through activity. Children at this age have a drive to deal actively with their environments and this drive is met and taken up by the educators. The focus is on letting the child live out his or her need for activity in a productive way. As their task here, educators become active and caring role models, while responding to the child in an appreciative, loving and fair manner. The kindergarten creates an adapted environment where children are invited to sense, imitate, move, speak, contemplate and play. Children can be active most of the time and participate in activities alongside adults, without adults always taking a leading role. A breathing and rhythmic variation structures the activities throughout the day, week and year, creating an atmosphere of security, predictability and expectation for the child. The idea is that the people and environment surrounding a child's activity, in time and space, shall provide good opportunities for learning and development.

On visiting a Waldorf Kindergarten or a first-grade class in a Waldorf school, one meets with beautiful and imaginative toys made of natural materials. One encounters educators who consciously invite imitation and inspire the child's need for being physically active. Much of the time is devoted to free play. Otherwise, the day is filled with singing, storytelling, rhythm and rhyme, movement games, painting, drawing and modelling. A healthy meal is prepared and eaten together. At this age, going for walks and playing outdoors in nature is similarly justified by the emphasis on sensory-motor experience in the first seven-year period.

### **The importance of emotional engagement in the second seven-year period**

In the second phase of life, Waldorf education draws attention to the pupils' interest, motivation and ability to enter a learning situation with pleasure and joy. Throughout the early school years, practically every world phenomenon is dealt with in the curriculum and is presented in such a way as to engender the pupils' emotional engagement. Teaching in this period moves through a rich landscape of feeling. Here the pupils and their teachers go exploring together. Through teaching that is emotionally inclusive and artistically shaped, the child learns about numbers and letters, about animals and plants, people and minerals. Instruction can acquire a deeper meaning for pupils when it is associated with something they appreciate or actively dislike. Even negative emotions have a vital role in education. Teachers thus consciously include the whole register of emotion in their lessons. This rhythm between seriousness and humour, concentration and free expression is what gives the school day freshness and a truthful character. Emotional engagement constitutes a key basis for moral behaviour and ethical attitudes.

In Waldorf education, emotionally oriented teaching bears a connection to developing good habits. This is the case for work habits, as well as for creative, emotional and intellectual habitual attitudes. Habits are fostered via conscious repetitions in teaching and learning. Repetition is thus an important element in developing both will and feeling. In art and handicrafts, as well as in

mathematics, languages, and many other subjects, there is an inherent element of repetition. By systematically repeating various tasks, pupils learn what it takes to reach their goals. In such a way, feeling and will are woven together in a natural manner.

### **The role of thinking in adolescence**

During the middle and upper years, teaching is directed, in expanding degrees, towards pupils' ability in self-directed thinking and judgement. The teacher organises lessons in such a way as to provide pupils with the opportunity to reflect on the context, to draw conclusions and create their own arguments. Subject matter is now presented as phenomena, a way of teaching that brings the active thought-process of the pupils into focus. To a greater extent, the teacher asks questions and pupils provide the answers. In Waldorf education, imagination plays a major role in the development of thinking during adolescence. The teaching therefore seeks to present subject material in a lively and intuitible manner as a background for the pupils' exercise of sound judgement and more abstract thinking.

At this point, connections, consequences and perspectives come to the fore in history and social studies. History as a narrative forms a colourful basis for reflection and interpretation. In these years, the collection of knowledge and exploration by the pupils themselves play a more prominent role. As elsewhere in its teaching, Waldorf education maintains its intention of proximity to experience and orientation towards holism in its approach to knowledge. Provisions are made for a critical and exploratory approach to sources. Interpretation and personal assessment are given priority. The sciences are taught via experiments in physics or chemistry, often preceded by the teacher's presentation of the historical context of the experiment. From the basis of observation, previous knowledge and individual reflection, the pupils reach a phenomena-based understanding of the explanatory models used in the sciences. Artistic subjects are also given a more theoretical treatment during these years.

The motif for all theoretical teaching during these years is that academic understanding should inspire the pupils, kindle their enthusiasm and their love of the world. It can be said that in general, following puberty, Waldorf education entails a consciousness-raising and ethically oriented way of working through the subjects and themes that pupils have already met in more emotional and experiential ways in earlier school years.

To a youth of 16 years, it is important to be able to take a stand on what is right and what is wrong and to be able to form one's own ideas of good and bad. Young people have a real responsibility to themselves in furthering their development toward adulthood. Their personal judgement is tested continuously, both inside and outside of school. Adolescents need an ability, rooted in their own minds, to think: that is, a thinking ability connected to their own emotions and powers to act. Self-knowledge and world-knowledge are parallel motifs for Waldorf education in this period.

### **Three constitutional developmental motifs**

The second main theme in Waldorf education emphasises that the human 'I' is active in a living, sensitive and relation-making body. Waldorf education emphasises that the physical body, the living and the relational must all be approached in differing ways throughout the course of schooling.

## **Physical-organic body development**

Waldorf education aims to stimulate the child toward a good bodily and physiological development up to the age of seven. The entire body, especially the brain and nervous system, undergoes a comprehensive maturation and development during these first years. Active use of the senses and of movement is emphasised in order to support this development.

Physical development progresses further until after 20 years of age, but for Waldorf education, the first seven years of such development is a main concern. The idea is that children in this period can best take advantage of their potential for physical development through forms of learning based in the senses, in imitation and in movement. These are activities supporting and stimulating the immense transformations occurring in the nervous system, the internal organs, muscles and the skeleton. An education that emphasises cognitive learning and memorisation of abstract concepts can, from a Waldorf perspective, possibly disturb this organically-directed growth.

When the child is ready for a new stage of development, this shows itself through changes in his or her relation to the environment. A more content-based language comprehension, a more independent memory and a generally more internalised experience, may characterise the transition to the second seven-year period.

## **Rhythmic Life-Processes**

The transition to the second seven-year period implies that the teaching now focuses on a new kind of learning that takes place more mentally. In the same way that the first phase of development is tied to physical development, the theme of the second seven-year period is life-processes that take place in time. In humans, both organic and mental processes are permeated by rhythm. The heartbeat, breathing and sleep are the most obvious representatives of the manifold rhythms that apply to human life. Waldorf education works out of the experience that emotional engagement stimulates biological rhythms in the organism. It is a widely known phenomenon that pulse and respiration are activated when the emotions are engaged. By emphasising a rich emotional repertoire in teaching, the intention is also to strengthen the pupil's rhythmic constitution.

Throughout this second seven-year phase, Waldorf education seeks to respond to and support these life-giving processes in children. This is achieved through an artistic and consciously-formed rhythmic way of teaching. The entire lesson plan, as well as each individual lesson, is shaped intentionally with regard to a beneficial, supportive rhythm. Theoretical and artistic subjects are combined to create a well-rounded and varied daily and weekly rhythm. Stillness and movement, seriousness and humour, music and shape-forming elements seek to create richness and enthusiasm in each lesson. Sleep plays another vitally important rhythmic role in Waldorf pedagogy. By first allowing the pupil to sleep on the new material to let its content be fertilised by subconscious processing during the night, it can subsequently be enriched in conversation the following day. Good work habits, practising the ability to remember, repeated exercises of art and handicrafts, as well as the establishment of skills in subjects such as mathematics, writing and reading, are all central themes in this phase of development. Consistent emphasis is placed on communicating and using concepts from the subjects in a vivid and open manner. The ideal is for the concepts to develop along with the pupils and be presented in a way that enables new understandings and new learning perspectives as the pupils grow older.

Waldorf education considers it important for children from the age of seven to connect with their closest adults in a new way. While imitation and free play characterise education in the first seven-

year period, the second period stimulates the child's ability to internalise what the teacher shows as an example. The teacher, as an accepted and trusted adult, is a vital educational resource for the child at this age. Through being a true and natural authority for the pupils, the teacher can assist their learning and development in a beneficial way. During this second seven-year period, Waldorf education turns towards, among other things, the child's appreciation of nuances in the teacher's linguistic expressions. Good use of the art of storytelling is therefore emphasised in teaching. A rich and conscious use of spoken expressions and images thus seeks to arouse the pupils' awakening ability to think. Just as historical culture reflects a development from the time of mystery through the great epic age and up to the birth of philosophy, so teachers vary their method of presenting material from year to year. Throughout this seven-year period, the experiential aspect of teaching is accentuated. This is preserved even when a more scientific approach is introduced from age 12. In general, the final years of this second seven-year period move gradually more in the direction of self-reflection and judgement, characterising the time after puberty.

### **Communication and relationships**

Puberty implies huge upheavals on both a mental and a physical plane. At the same time as the body becomes capable of reproduction, a shift occurs towards independence in the young person's soul-life. Sympathies and antipathies, interests and dislikes are experienced more deeply and more individually. Adolescents develop new abilities in communication with other people and with nature. These abilities can be united by a comprehensive concept of love: an individual and responsible way of relating to the world. Qualitatively new relationships can now arise.

These new abilities are addressed and challenged in Waldorf schools by teaching that seeks to support a harmonious development of judgement and the ability of self-reflection. Good judgement arises from clear thinking and a rich ground of experience. A similar prerequisite for good judgement is the presence of interest, good will, freedom from prejudice and an ability to critically reflect.

Having learned about world phenomena in an emotionally engaging way during the second phase of life, pupils can grasp a renewed and more conscious interest in their surroundings, following puberty. Waldorf pedagogy aims at supporting adolescents in establishing new and deeper ways of relating to their environments and to fellow humans. At school, pupils practise more conscious ways of collaboration as a foundation for both action and acceptance. The developmental theme for this age group is communication and building relationships in the widest sense of the word.

Teaching is granted a phenomenological character by presenting scientific experiments or historical facts to pupils in such a way that they can discover and express its principles. Since antiquity, the word 'phenomenon' has contained a double meaning and can express both that which is observed outwardly and that which comes to light in the arena of consciousness. The word's root, *fanos* (Gr.), means light or torch and can, in many ways, be seen as a key concept for Waldorf education in the third seven-year period. By means of a teaching approach that focuses on the phenomena of the world and via an individually practised comprehension that casts light on these phenomena, Waldorf education seeks to stimulate a respect for nature and fellow human beings. When the holistic perspective and ethical implications of the phenomena are made clear, this helps highlight the network of relationships that unites as well as obligates. True communication involves the ability to create a sounding board within one's own mind for world phenomena, as well as openness to ethical insight and preparedness for action.

## **The role of the senses**

Waldorf education stresses sensory experiences as a source of development, vitality and enjoyment. Rich sensory experiences combined with active movements and emotional openness in childhood provide a fertile ground for the development of central functions in the brain, the nervous system and other bodily organs. The child experiences the world and his or her own body through the senses. The senses give consciousness its basic material; for the educator, a deeper knowledge of the nature of the senses is a tool to better understand the developmental and learning processes occurring in the child.

In Waldorf education, the senses are treated as a whole, as working together and complementing each other. Only through the coordination of several senses can an experience of reality arise in the observant human being. An example of this is how the eye perceives both light and colour phenomena and spatial or moving qualities. Objects can be described according to shape and colour. An unconscious conclusion, an associative activity, occurs when seeing the colour is connected with a perception of shape. According to Rudolf Steiner, this mental coordination of different sensory modes contributes to experiencing the perceived as real. That which is perceived by only one sense lacks this dimension of reality. With such a perspective, it is apparent that, for example, the senses of movement and balance have an important role to play in complementing the other senses.

On the whole, Waldorf education seeks a conscious interplay between composite and combined sensory perceptions. Eurythmy is an example of how pupils practise the unifying of different senses. Eurythmy is a movement-art involving music or poetry. Ideally, a poem or a piece of music is made visible through movement. The pupils move while listening to language or music. The listening is active because it is accompanied by expressive movements. Ideally, all school subjects should include elements of sense coordination. This brings learning closer to reality with a focus on the immediate experience.

In Waldorf education, various forms of movement are used in connection with both ordinary and therapeutic language learning. There are fine connections between motor skills, movement and language development. The concept of language can, in an educational context, be extended to include communication in a wider sense. Thinkers such as Paracelsus and Jacob Böhme wished to understand nature as an expression of language; to read the book of nature. Correspondingly, movements have been shown to be pedagogically useful conveyors in many learning situations. The school subjects are given a 'voice' through physical activity. A Waldorf teacher can use movements in practically every subject during the early school years. In mathematics, the multiplication table is taught rhythmically with jumps and claps and in writing, the teaching of the formation of letters is derived from painting and drawing exercises. Throughout, coordination between hand and mind is sought. This enriches knowledge, makes it accessible and lays the foundation for a fruitful competence of action.

This interconnection of the different sensory experiences gives teachers and educators important perspectives in their work. Touch, rhythm and movement strike chords in the child and are understood to work deeply together with the development of social and cognitive skills. In this way, experiences in nature, play and artistic activity are given an extended educational importance. To learn with the body brings experiences relevant to life and produces a creative atmosphere in which theory and practice can blend together.

## **Development of thinking in light of the curriculum**

The methodological structure of the Waldorf curriculum is designed to foster the development of thought in varying ways throughout the course of education, from kindergarten to the final year of Upper Secondary School.

Developing abilities in thinking is a complex process. Most areas of life provide skills that are necessary and relevant for the thinking process: endurance, concentration, flexibility, precision, tolerance, imagination, wonder, etc. The ability to think is built upon all the experiences an individual has undergone. Waldorf education emphasises a systematic development of different aspects of the thought process. The goal is that pupils, upon completion of school, can master the full spectrum of thinking.

### **Preschool age – The six-year olds**

In Waldorf education, the pre-schooler's movement and sensory perception form an important foundation for the further development of cognitive thinking. In many of his lectures on education, Rudolf Steiner points to a connection between motor development and the growth of language and cognitive skills. The body has its own 'grammar' and logical structure. Through an educational focus on movement, coordination and balance, there is awakened in the child a sense of relations, of cause and effect. A pedagogy that persistently works with sensory perception is, at the same time, affording children's awareness of size, weight, form and space. These are core concepts pointing to a correspondence between experiences within the world of movement and the foundations for thinking.

Imitation represents another important early phase in the development of thinking. When a child learns by imitation, it is presupposed that the child perceives and connects himself or herself to the other through movements. This experience includes an internalisation; a deeply shared communication. The transition from sensing to movement involves a creative moment. Imitated movements come about after an inner processing of that which was imitated. In free, spontaneous play, for example, the child experiments further with movements assimilated via imitation. The child explores through play. This is a comparable process to what goes on in reflective thinking, which later develops in adolescence. Reflective thinking requires first an internalisation of the problem at hand, its manifestations and consequences and further understanding is dependent on an exploratory thought process before a conclusion can be drawn. Waldorf education prioritises a rich bodily situated and intersubjective cognition during childhood.

### **Grades 2–4 (1 – 3)**

From Classes 2 to 4 (1 to 3), Waldorf pedagogy aims at preserving and developing the motor-sense experiences from the first phase of life. An element of imitation will be present in later learning, but now a new and important dimension of thinking is added: a focus on the pictorial and imaginative.

A child listening to a story rich in imagery visualises the described events in his or her inner eye. Children have a vast capacity for visualisation and can be completely enthralled by their own pictorial participation while the teacher is speaking. The pupils shape and colour what is described. Even when the narrative only hints at the elements present, a pupil's imaginative power can fill out and individualise the story. A landscape drawn in simple story-telling terms can be interpreted and elaborated by pupils to include mountains, water, plant life and varied skies. The teacher can see the different perceptions of only one story in the pupils' different drawings and artwork.



Narrative material for these first three years of school includes folk tales and legends, as well as lively stories of animals, plants and natural phenomena. Pupils listen to biographical stories of life and work in the pre-industrial age and colourful stories from the Old Testament. Through such narrative accounts, they become acquainted with essential identity-forming motifs from culture and nature. In holding conversations and presentations, the pupils practise both their own narrative skills and their ability to listen to others. In doing so, they are invited from an early age into the process of forming their own identity based on how experience is expressed in language. The rich world of narratives constitutes an important basis for self-understanding and insight into the world.

Several qualities necessary for cognitive development are practiced through pictorial narratives. Philosophers as early as Plato and Aristotle showed how thinking is related to imagery. Metaphors and other linguistic figures play an important function in learning something new. Pictures can form a bridge between known and unfamiliar subject matter. The creative and innovative sides of thinking are also bound to pictorial and metaphorical ways of understanding.

Creating inner images is a rich and complex process. An imagined picture always reaches for a completion or a fullness; it will have its horizon and perspective. A child visualises through transforming a spoken description into his or her own internal image. A process in time is transformed into a spatial experience. The child's consciousness becomes a 'scene' where events unfold in an understood and self-generated sphere. The inner activity experienced here provides a platform for the further development of thinking. The child learns to hold a visualised content in consciousness; he or she learns to relate events to each other in narrative time, while simultaneously connecting this inner activity to his or her own creativity. Although the child takes no direct role in the story, the child's own pictorial representation of the narrative includes him or herself in the action. The beholder is present in what is seen.

### **Grades 5–6 (4 – 5)**

In Classes 5 and 6 (4 and 5), new principles of cognition come into play. A large part of the fourth year curriculum is about discovering and studying analogy and interdependence. Analogy is a precursor to the more stringent causal thinking. Analogical relations can be described from their internal or external relatedness. An octopus resembles a human head, a verb in grammar expresses an action, a numerator in fractions is related to its denominator and the child's home environment forms a starting point towards getting to know the entire map of the country. Learning and understanding build on the creation of connections between world phenomena. Bridges are built from the known to the unknown. The ability to make associative analogies is exercised throughout this school year. In comparison with pictorial perception, what analogous thinking loses in the whole perspective, it gains in sharper delineation of certain phenomena's interrelations. A stronger element of direction and activity is brought into the process of comprehension.

Class 6 (5) introduces yet another new aspect of thinking. In both the arts and sciences, connections can be made which are more than analogous but which cannot be expressed as purely causal concepts. For example, in botany, the teacher emphasises that a plant should be studied in reference to its environment. How do light, wind, and moisture conditions affect the plant's growth? Which plants thrive in a specific environment? How do differing environments affect the appearance of the same species? Through this approach, pupils discover dynamic and complex cognitive principles. Correspondences are no longer as free as in the world of analogy,

yet there is still room for variation and individual qualities. This is an appreciation of mutable and plastic causality.

### **Grade 7 (6)**

Class 7 (6) represents a milestone in Waldorf education, seen from the perspective of the evolution of thinking. During this school year, science subjects are given a large space in the curriculum. Subjects such as physics, geology and history now emphasise an understanding in terms of cause and effect. An example of this is the experiment of the monochord from a period in acoustics. Pupils observe how the tone of a string sounds an octave higher when the string length is halved. Even a small inaccuracy in the length of the string leads to a disharmonious interval. The relationship is absolute and precise: one-half the length creates the octave. There is no room for mutability or invention in this natural law. Cause and effect here present a clear, mathematical relationship. Such strict causal relationships are rare and only limited to certain aspects of science but this solidifies an important stage in the development of thinking. Clarity and predictability are the qualities exercised in this kind of teaching.

In history, a similar strict cause and effect cannot be employed. Instead, the learning aims at an understanding of history in terms of interpreted relations between the past and the present. Possible connected lines of events are presented and possible consequences of past events are discussed with the pupils. The posing of contrafactual 'what if' questions is introduced as a means to debate and reflect on what could have happened.

In mathematics, algebra is introduced in connection to calculating area and percentage. The use of letters as representatives for number values is, in itself, an exercise in abstract thinking. Algebra implies an orientation towards the ideas behind mathematics in comparison to a more operative use of numbers. Abilities in abstract thinking lead to greater freedom of understanding. This is an important step on the way to freeing the thought process from the world of sensory perception.

### **Grades 8 and 9 (7 and 8)**

Teaching and learning at the lower secondary level are directed towards a holistic understanding in which all previously rehearsed ways of thinking are brought into use. In history, pupils study the Renaissance, the great voyages of discovery, the Reformation and the Industrial Revolution. In science lessons, chemistry is introduced with combustion and human biology connected to anatomy and health. All these subjects are examples of areas where ethically oriented holism can be practised. Pupils' individual attitudes and social awareness are involved and challenged. Elements of adventurous visualisation are combined with abstract technical information. Pupils have the opportunity to experience how their school subjects have a specific bearing on their own lifestyle and personal choices, while at the same time bringing information about faraway conditions or abstract facts. During these years, the teaching provides rich material for the essential formation of identity in the pupils. The new challenges in thinking in these years involve the synthesis and development of personal judgement, while maintaining values such as respect, solidarity and compassion. This development of ethically oriented understanding is associated with the Waldorf education ideal for the years of adolescence, which states that knowledge about the world and love of the world are intertwined.

## **Grade 10 (9) and the upper secondary level**

Teaching in the last year of lower secondary and at the upper secondary level extends and completes this development of the ethically oriented, holistic perspective on thinking. An increasing degree of abstract thinking is exercised alongside an extension of the horizon of knowledge. In Classes 10 and 11 (9 and 10), pupils work with basic notions of both science and society. An overview is offered in most subject matter, as well as phenomena, which lend themselves to a relatively straightforward understanding. Thermodynamics and classic mechanical physics are examples of this. These two years allow room for maturation of thought. Pupils work to gain security in their judgements.

In Class 12 (11), pupils' perceptions are given a new challenge. Schoolwork raises more existential questions that cannot be treated as straightforwardly as in the previous two years. Studies in medieval culture and history point to deeper aspects of existence. Questions concerning faith and doubt are given a more prominent place. Electricity and cellular biology also invite extended inquiry into the complex nature of life and matter. Pupils' individual ethical relationship to a subject's inherent questions is accentuated throughout.

In Class 13 (12), teaching orients itself anew in themes that shed light on the individual's place in society. Academic work is given a holistic character when, for example, the theory of evolution is taught in biology. On an individual level, pupils are invited to combine academic comprehension with self-knowledge and social competence. Independent work on the final year thesis is an integration of knowledge, experience, research and personal choice and direction. The goal is to stimulate thought that is grounded in the pupils' own world of experience, while at the same time inspiring and encouraging the attainment of new skills and knowledge connected to a widened social responsibility and understanding of others.

## **History and organisational form**

### **The Waldorf curriculum in historical perspective**

The first Waldorf School was established in Germany in 1919. The industrialist Emil Molt of Stuttgart was originally committed to reforming the public school system after World War I. When this failed, he arranged for funding and facilities in which to start a school for the children of workers at the Waldorf Astoria Cigarette Factory, where he was director. Rudolf Steiner was asked to lead the faculty of teachers and to develop the school's educational principles and practices. In 1926, Elisabeth Grunelius established the first Waldorf Kindergarten, attached to the school in Stuttgart.

In Germany and in most other countries, these schools retain the name Waldorf Schools. In Norway, the first such school, established in Oslo in 1926, took its name from the founder of its educational principles and was thus called the Rudolf Steiner School in Oslo. Steiner Schools (*steinerskoler*) is the expression used in Norway.

Waldorf education took shape at a time when parts of Europe still lay in ruins after World War I. From their first days, the schools had an explicit intention of playing an active role in the development of new social forms. Through a new educational policy that no longer rested in the cultural and political heritage that led to war in Europe, Waldorf education intended to create a fertile environment for something new. The ideal of a responsible and democratically anchored

autonomy for schools and for the whole educational sector was presented as an important revitalising principle.

During the years 1919-1924, Rudolf Steiner delivered over 200 lectures on education. These lectures presented a range of educational ideas and pedagogical practices aiming at a renewal of education. Thus, the foundations of the Waldorf curriculum were shaped by a cultural and social commitment.

The Waldorf School curriculum emerged at a time when widespread educational reforms were taking place in Europe and progressive education was being developed in the United States. The primary goal of these educational reforms was to break away from curricula and teaching practices that had a one-sided focus on cognitive and memory-oriented learning. A more holistic and inclusive curriculum was developed. Attempts were made to integrate practical, artistic and theoretical activity in schools. The pedagogy became largely centred on the child and children's abilities, motivation and capacity to learn. In many ways, Waldorf education can be said to belong to the educational reform movement but Rudolf Steiner sought a balance in the Waldorf curriculum by also acknowledging the social perspective at a time when educational innovation was almost entirely child-centred. Steiner also emphasised subject matter knowledge and skills to a greater extent than many reform educationalists. He argued for the central role of the teacher in class leadership and supporting pupil learning, and in this connection spoke of the art of teaching. The Waldorf curriculum arose precisely at the crossroads between comprehensive ideas about children's developmental needs and thoughts about what is necessary for living in economic, democratic and cultural communities.

Waldorf education is international and its curriculum has formed a base for creating Waldorf Schools and Kindergartens on every continent in the world. It thrives within differing religious, cultural and economic environments. The broad and comprehensive conception of a curriculum, which arose from the founding ideas of Waldorf education, has been realised within widely varying societal and cultural conditions. This inclusive and broadly conceived curriculum vision has made it possible for Norwegian Waldorf schools to maintain their curriculum structure throughout a time in which public schools have radically changed their curricula several times.

### **Leadership, community and school development**

Waldorf education emphasises the association between the ideal of an education towards freedom and the latitude that each teacher has in the exercising of their profession. An atmosphere of openness that welcomes new opportunities enables a dynamic and lively mode of teaching. This also applies to the development of the school as a whole. In Waldorf schools, the teachers participate in academic and organisational activities and have the opportunity to help shape the school in many ways. A key idea in this context is that transparency, participation and co-determination at the workplace help create a holistic educational impetus that unites managers, school development and the daily work of the teachers in the classroom.

On the one hand, legislation requires independent schools to have a responsible board of directors, adequate management and a duly authorised director. The board of directors has overall responsibility for ensuring that the school is operated according to its intentions and in compliance with applicable statutes and rules for adequate financial management, administration and educational practices. Meanwhile, the teaching staff hold a key position in the school's daily life. Weekly meetings are held to foster and develop a pedagogical and administrative community where value choices and development needs can be reflected on. These meetings serve as arenas

for dialogue, where the quality of the school's activity can be deliberated and impulses for further development be generated. This presupposes a school management and a teacher team with both general and Waldorf educational insights.

Waldorf education requires a constant study of its own special character, including new interpretations of its source texts as well as sharing of innovative practices. Emphasis is placed on the responsibility of the management as well as individual teachers for maintaining and renewing the school's qualities in terms of Waldorf principles. A school management that fosters openness and a dialogical form of leadership provides the teachers with the opportunity to actively participate in a responsible and stimulating school community. Such organisation is essential for the quality and development of the school, and can inspire a school community where the teaching staff and the management jointly create a school that transcends the powers and visions of each individual.

# Mathematics Grades 2 – 10 (1 – 9)

## Aims and perspectives

Mathematics is part of our global cultural heritage. Humankind has used and developed mathematics to systematise experiences, to describe and understand relations in nature and society and to explore the universe. On the one hand, mathematics is an indispensable tool for gaining insight into the inherent orderliness of the universe. On the other, it has been one of the prerequisites for technology advancements and as such contributed to the shaping of society and culture. The symbolic language of mathematics builds bridges between the inner world of thinking and the outer world of nature. Using numbers and geometric shapes to represent concrete experiences opens a world of deeper insight that cannot be experienced directly.

When phenomena are reduced to numbers, causes can be identified, and change can be initiated. Science and technology are largely born out of mathematics. As such, mathematics is associated with an ethical responsibility because it enables the influence of good and bad. Mathematics plays a role in vital areas of society, such as medicine, economics, communication, politics, ecology, and energy management. A society oriented towards sustainability is dependent on insight and reason being applied to quantitative information. One of the goals of teaching mathematics is for pupils to develop such insight and judgement. This requires not only the acquisition of skills, but also a critical ability to ask questions and assess solutions in a wider context than the purely quantitative.

One pole in mathematics is the numbers, whose basis lies in counting as an activity and which leads into various mathematical operations and their application to reality. The other pole is the image, the shape, which manifests itself in the geometric world of lines, surfaces and volumes. Allowing a mathematical linkage between numbers and geometric shapes to develop is a key element of pedagogy. Achievement of the objectives in mathematics at primary and lower secondary school level requires pupils to experience mastery and motivation. A good balance between building skills and developing an inquiring mind can stimulate learning and generate an interest in the subject.

In the earliest school years, there is plenty of room for playful, flexible, and varied problem solving in relation to both concrete and practical exercises with everyday contexts. However, pupils are also encouraged to philosophise about the many puzzles of mathematics. Emphasis is placed on practising basic skills that enable mastery and thus motivation for further studies. Pupils will gain concrete experience of the beauty and laws of mathematics, both as numbers and shapes.

In grades 5 – 7 (4 – 6) knowledge, practice and skills acquisition play a key role. This means providing a rich variety of concrete situations in the teaching, where problem solving generates creativity and ingenuity, and where a practical approach or judgement can have as much mathematical value as a more theoretical one. The teaching alternates between exploratory, creative and problem-solving activities and skills training. The pupils are encouraged to communicate mathematics, in writing and orally. The teaching should lay the foundation for the pupil developing the competence needed to explain and justify methods, problem-solving strategies and results, and to express this through the formal mathematical symbolic language. Furthermore, the teaching should help the pupil to develop mathematical comprehension by working with mathematical concepts, operations and relationships.

From grade 7 (6), the mathematics become more abstract, and its rich world of number principles, equations, formulas and new aspects of synthetic and analytic geometry becomes more complex. Here, the teaching is more geared towards genuine mathematical cognition, although practical application and mathematical aesthetics are still very much involved. Many of the discoveries of

mathematics are characterised by simplicity and beauty, and a wide range of phenomena in the world of numbers and shapes have a striking aesthetic with a high educational value. The intention is for mathematics to appeal to the pupils' creativity, and their interest and desire to constantly seek new ways to explore. Historical and philosophical contemplations are integrated into the work with mathematics.

Mathematics forms a part of many of the school's activities across different subjects. As soon as calculations, estimates, overviews, comparisons or perspectives in time and space are involved, mathematical skills can be put to use. Pupils will practise their analytical and problem-solving skills through interdisciplinary integration of mathematics in everything from natural sciences and social studies to language and art. Mathematics plays a special role in the digital field, where number systems and algorithms form the very basis of the technology. As an academic subject, mathematics provides a broad and essential basis for the pupil's ongoing education, sustainable commitment, and democratic participation in their own lives.

## Learning outcomes

### *Learning outcomes for Grade 4 (3)*

*The aim of the teaching is to enable pupils to*

- participate in play and experimentation with counting and tables
- create and use a number line to solve exercises
- use automation skills in multiplication tables
- develop and solve exercises using mental arithmetic, oral story problems and simple estimations
- test and discuss different calculation strategies (algorithms); practise using mathematical language
- apply the position system and follow the rules (algorithms) for simple arithmetic using the four arithmetic operations
- participate in activities and problem-solving with body measurements and old units of measurement
- work together on using measuring units for length, weight and volume (litres) and compare sizes through practical exercises
- test mathematical statements and solutions to practical problems, and use simple practical calculations related to buying, selling, time and money
- explore, draw and describe number patterns and relationships between tables
- explore and describe the relationships between the four basic arithmetic operations
- develop and compare symmetrical and reflection shapes, line borders and non-figurative shapes
- recognise, draw and name simple basic geometric shapes
- develop simple statistics related to measurement and practical situations

### *Learning outcomes for Grade 7 (6)*

*The aim of the teaching is to enable pupils to*

- explain the relationship between fractions, decimal numbers, and percentages, and be able to convert them

- use the rules (algorithms) of the four arithmetic operations in problem-solving strategies and solve mathematical problems using the four operations with whole numbers, fractions, and decimal fractions
- explain place value on the number line and use fractions and negative numbers in concrete, practical situations
- identify and describe even numbers, odd numbers, prime numbers, square numbers, deficient numbers, and abundant numbers
- convert word problems to mathematical problems and explain solutions in mathematical language
- use mental arithmetic, estimation and rounding in practical calculations
- use the right units of measurement for length, area, weight, volume and time in practical calculations
- formulate and execute simple accounting exercises
- explain graphical representations of sizes and quantities and collate data in arrays, calculate averages and use simple statistics
- draw and read maps
- test known rules (algorithms) such as algebraic expressions and solve problems using basic algebra
- use freehand geometry as an expression of geometric figures and shape transformations, and symmetrical and reflection shapes
- create precise, complex geometric shapes using compasses and a ruler, and identify geometric patterns using colours
- create basic constructions and perform geometric shape transformations, and use mathematical language to identify different geometric shapes
- prove the sum of the angles in a triangle
- describe Pythagoras' theorem and  $\pi$  through concrete, visual testing

#### *Learning outcomes for Grade 10 (9)*

*The aim of the teaching is to enable pupils to*

- develop models, explore methods and justify solution strategies in the face of various mathematical challenges
- compare and convert number categories to standard form
- perform calculations using different number systems
- use the algorithms for prime factorisation and calculations with algebraic expressions
- use powers and square roots, and apply quadratic theorems and polynomials in calculations
- solve first-order equations and inequalities, and solve simple systems of equations with two unknowns, algebraically and geometrically, using coordinates
- explore the relationship between constant percentage change, growth factor and exponential functions
- create and interpret functions that describe numerical relationships in practical situations
- identify and exploit the properties of proportional, inverse proportional, linear and simple quadratic functions



- solve problems using scale and proportions, and perform calculations with variables in practical situations
- set up a budget and accounts; discuss questions related to personal finances, borrowing, buying and selling
- estimate and calculate length, circumference, angle, area and surface, and perform calculations with distance, speed, time, mass, volume and density
- explain the definition of  $\pi$  and use it in calculations of perimeter, area and volume, and use similarity, congruence and Pythagoras' theorem in calculations
- analyse properties of 2D and 3D figures and use the properties in calculations
- create complex geometric constructions, such as conic sections, and create perspective drawings with vanishing points
- examine and analyse probability using databases and practical experiments; describe sample spaces and express probability in different numerical expressions
- show with examples and find possible solutions to simple combinatorial concepts in practical situations

## Core contents

In the local curriculum, individual elements can be assigned to other grades than indicated below, or elements can be added.

### *Grade 2 (1)*

#### Numbers and number comprehension

- Playful mathematical activities
- Counting and movements
- The number line
- Quality and quantity in numbers
- Rhythmical work with numbers and tables
- Simple arithmetic using the four arithmetic operations, oral and written
- Oral calculation stories, mental arithmetic and estimation

#### Form drawing and geometry

- Shape recognition, names of basic geometric shapes
- Lines in varied movement
- Symmetrical shapes

### *Grade 3 (2)*

#### Numbers and number comprehension

- Even numbers – odd numbers, doubling and halving

- Arithmetic using the four arithmetic operations
- Rhythmical work with numbers and tables
- Practising multiplication tables
- Mental arithmetic and estimation
- Oral story problems
- Arithmetic using time/the clock
- Arithmetic with money
- Various arithmetic strategies (algorithms)
- Place value in the position system

### **Algebra**

- Number patterns and laws in known arrays

### **Form drawing and geometry**

- More complex problems with lines, symmetries and reflections

### *Grade 4 (3)*

#### Numbers and number comprehension

- Arithmetic using the four arithmetic operations in an extended number range
- Set-up: addition, subtraction, multiplication and simple division
- Continuation of automation of tables
- Continuation of mental arithmetic and estimation
- Various techniques and strategies
- Place value in the position system
- Arithmetic with money
- Simple number work related to time, days and hours
- Units of measurement: length, weight and capacity – from own measurements to standardised measurements
- Simple statistics in connection with measurements

#### Algebra

- The relationship between addition and subtraction
- The relationship between addition, multiplication and division

#### Form drawing and geometry

- Horizontal and vertical mirror reflection and symmetries
- Basic geometric shapes

## Grade 5 (4)

### Numbers and number comprehension

- Fractions, from whole numbers to parts of a whole, from parts to whole numbers, and comparison of fraction sizes
- Scale up and reduce fractions, find common denominators, addition and subtraction
- Fraction arrays
- The terms 'proper fraction', 'improper fraction' and 'mixed numbers' are worked with
- Basic exercises using the four arithmetic operations to calculate fractions, orally and in writing
- Number lines with whole numbers and fractions
- Mental arithmetic
- Repetition of multiplication and division tables
- Measurement and partitive division
- Constructing addition, subtraction, multiplication and division operations
- From a word problem to a mathematical problem
- Estimation before exact calculation

### Algebra

- Factorisation
- Relationships between proportions in fraction operations

### Form drawing and geometry

- Interwoven patterns
- Cross symmetry and transformation of shapes
- Basic geometric shapes

## Grade 6 (5)

### Numbers and number comprehension

- Even numbers, odd numbers, prime numbers, square numbers, deficient numbers and abundant numbers
- Calculating fractions, with a focus on division and multiplication
- Decimal fractions
- Calculating length and distance, weight and time, buying and selling
- Calculating gross and net, simple accounting
- Word problems to mathematical problems
- Calculations with numbers up to one million
- Mental arithmetic in the four arithmetic operations and fraction problems
- Simple tables and calculations of average values

### Algebra

- Relationships between the four arithmetic operations

## Geometry

- Basic freehand constructions: angles, triangles, squares and the interplay between them
- Aesthetics and beauty in geometry
- Geometric concepts
- The sum of the angles in a triangle
- First knowledge of Pythagoras and  $\pi$

## Grade 7 (6)

### Numbers and number comprehension

- Calculating percentages
- Calculating interest
- Area and volume
- Practical arithmetic
- Accounts, budgets, trade, discount/markup as a percentage
- Scale in connection with maps
- Tables and diagrams
- Temperature; plus and minus degrees
- Statistics and probability

## Algebra

- From known rules (algorithms) to algebraic expressions; the interest formula
- Simple arithmetic, addition and subtraction
- Practical calculation of  $\pi$

## Geometry

- Basic constructions with compasses: angle constructions, circles, various triangles, squares and polygons
- Pythagoras' theorem – visually processed
- The aesthetics of geometric shapes

## Grade 8 (7)

### Numbers and number comprehension

- Number theory: power and square root
- Negative numbers
- Continuation of accounts, budgets and trade
- Estimating length and area
- Calculating speed, distance and time
- Collating data, simple statistics

## Algebra

- Review of known algorithms, introduction to algorithmic thinking
- Develop and test models for problem-solving
- Equation

## Geometry

- Similarity and central perspective
- Surface transformation with area constancy (Pythagoras)
- The first four geometric loci
- Perspective drawing

## Grade 9 (8)

### Numbers and number comprehension

- Accounts and budgets, profit and loss
- Personal finances
- Calculating mass and density
- Volume and surface for all regular solids
- Functions; transitions between different representations
- Use of digital tools for graphic presentation
- Use of spreadsheets

## Algebra

- Continuation of equations
- Use of algorithms, e.g. in simple coding and programming
- Algebraic overview, order of operations with brackets
- Quadratic and conjugate theorems
- Presenting proof

## Geometry

- Congruence and solvability
- Surface transformation with height constancy (intersection)
- Presenting proof
- 3D geometric shapes; Platonic solids

### **Statistics and probability**

- Statistics and probability based on real problems
- Sample space

## Grade 10 (9)

### Numbers and number comprehension

- Number systems and their historical development
- Proportions used both in geometry and in practical calculations
- Choosing units of measurement and measuring instruments
- Linear and inverse functions, proportionality, inverse proportionality, gradient analysis
- Continuation of algorithmic thinking and application in problem-solving strategies; developing and testing models

### Algebra

- Systems of equations with 2 first-order and second-order unknowns, algebraic and graphic solution
- Factorisation of second-order polynomials
- Simple exponential functions

### Geometry

- The curves of the conic sections
- Proportions
- Overview of all geometric theorems for solving complex constructions
- Different representations of 3D solids in a 2D image
- The importance of geometry in technology, architecture and art

### Statistics and probability

- Statistics, probability and combinatorics (Pascal's triangle of numbers)

## Core ways of working

### Grades 2–4 (1-3)

Various methods are used to teach and learn mathematics to pupils in Grades 2 to 4 (1 to 3). Pupils work on motor, aesthetic, philosophical and geometric exercises to strengthen their interest and active participation in the subject. The world of numbers is discovered through play, activities and curiosity. The learning process goes from movement, exercises and mastery to understanding. Oral arithmetic in connection with real-life situations is a core part of the learning, as is reflecting on the properties of numbers and methods of calculation. Collecting and sharing, losing some and keeping the rest, arranging a quantity into equal units – these are all learning experiences which give opportunities to reflect on ethical issues.

Talking about different ways of solving arithmetic challenges enables pupils to develop a mathematical language. In Grades 2–4 (1 to 3), basic calculation strategies and skills will be consolidated, both orally and in writing.

The teaching is process-oriented: How do you think? The pupils will learn to verbalise how they think. Teaching is differentiated, which means that all pupils will have the opportunity to experience mastery and be challenged, and feedback is given that encourages and motivates pupils.

## Numbers and number comprehension. Algebra

Counting is a way of understanding numbers. Pupils count everything that can be counted, in the classroom and beyond. Numbers and counting are part of play, movement, rules and storytelling. Pupils will learn how to count forwards (addition) and backwards (subtraction). The number range is expanded over the three years.

Rhythmical counting exercises lay the foundation for learning the multiplication tables. In this method, certain numbers in the series of numbers are given an emphasis, all numbers are included, but some are only stressed with a clap or a whisper. The multiplication tables ( $2 = 1 \times 2$ ,  $4 = 2 \times 2$ ) are gradually exercised orally and then in written form. The 2, 3, 4, 5 and 10 tables can be practised first, then all the tables up to 12, followed by 20, 25, 50 and 100 in Grade 4. Connections and relationships between the tables are explored and can also be presented visually, using drawing and movement.

In Grade 2 (1), pupils are encouraged to reflect on the quality of numbers. 'What is there only 1 of in the whole world?' Pupils are encouraged to think about numbers, to link them to their own experiences and questions in order to initiate mathematical thought processes, not just find the correct answers. Numerical properties can be processed from 1 and often up to 12. Roman numerals up to 12 are introduced, since the way in which Roman numerals are written highlights the amount and number and can be indicated using fingers and hands. In Grade 3 (2), the concept of numbers is expanded through the introduction of odd and even numbers, doubling and halving, and in Grade 4 (3) through the place value of numbers in the position system.

In Grade 2 (1), pupils practise writing and using numbers. The order of numbers is demonstrated in different, often colourful, representations of number lines. Pupils can look for, identify and describe number patterns and predictable repetitions in the relationships between tables in visual representations of number lines.

In Grade 2 (1), arithmetic takes the form of practical exercises in order to give pupils tangible experience with methods of calculation. Various methods are used on the path from practical problems to pure figure work. The four arithmetic operations are practised using practical examples, on the number line and in simple written mathematical problems.

The calculation is analytical (from whole to part) and synthetic (from part to whole). A synthetic-based calculation seeks the right answer to a problem, and pupils can test and describe different ways of arriving at the answer. Through analytical calculations, pupils can see the relationships and possibilities of numbers and methods of calculation. The result is given, for example 60. What can 60 be? The pupils can test out and describe various ways of solving the task. Use of varied calculation strategies is a developing theme throughout their schooling.

Mental arithmetic and estimation are practised throughout Grades 2–4 (1-3). Strategies that are important aids in mental arithmetic, such as adding 10 and subtracting 10, become automatic. Strategies for adding and subtracting 100 are tested and practised. Multiplication and division by 10 and 100 are also practised.

Addition, subtraction, multiplication and division tables are automated through oral exercises linked to motor activities and written exercises. In Grade 4 (3), pupils explore the relationships between addition and subtraction and between the multiplication tables and division.

Estimation is practised so that pupils get a natural feel for ratios: smallest, largest, light, heavy, most. How many pages do you think this book has?

And: How do you think?  $1000 - 225 = ?$  /  $345 + 567 = ?$  /  $9 \times 25 = ?$  /  $100 : 6 = ?$

Mental arithmetic with whole numbers using the four arithmetic operations is also practised through oral story problems, which presents the arithmetic operations in a way that is pictorial and comprehensible. The stories can be thought up by either the teacher or the pupils, and be linked to real-life situations and events. This is developed in Grades 2–4 (1-3) and serves as preparation for later word problems. The story problems can also include searching for an unknown quantity, an exercise for later years' work with equations.

Place value in the position system as preparation for correct set-up in mathematics is covered in Grade 3 (2). Pupils collect tens or exchange tens. This can obviously be done through concrete representations (10 beans in a matchbox, 100 in a larger box) and practised using the four arithmetic operations. How to write arithmetic problems using addition, subtraction and possibly multiplication are introduced in Grades 3 and 4 (2 and 3), once the understanding of the place value of numbers in the position system is firmly established.

In Grades 3 and 4 (2 and 3), pupils will learn how to count money. The money system is a concrete example of the position system. Sums involving money are linked to the pupils' everyday life, for example in shops and on the bus. Counting time is done using the clock face (analogue), the days of the week, the months, and the seasons.

In Grade 4 (3), calculating size, weight and volume is a core part of the learning. The topic is introduced and developed based on the pupils' own measurements (body measurements such as inches, feet, cubits, fathoms) via historical measurements to today's standardised measurements. Social studies themes in Grade 4 (3), about life and work on a farm, in the forest and at sea, provide a colourful backdrop for varied measurement exercises, both individually and in groups. The aim is for the pupils to gain practical and real-life experience in measuring size, weight and volume. Pupils will have concrete experience of measurement and partitive division. Calculations involving money, measurements, weight and volume provide practice in using the decimal system/position system. Pupils add up to or convert to 10, 10 mm is 1 cm and vice versa, 10 cm is 1 dm and vice versa, etc.

The topic of measurement also opens the door to developing simple statistics, linked to known quantities.

#### Form drawing and geometry

Pupils work with form drawing in Grades 2–4 (1-3). They practise how lines move on the paper: vertically, horizontally and diagonally, in rounded and pointed shapes, in patterns, or as unique non-figurative shapes. The lines can also be created as movement in space, in the air, in sand, with string, alone and together with fellow pupils. Drawing shapes enables pupils to practise writing and geometry, but is also an aesthetic exploration of the relationship between line and space. Many of the exercises are repeated until the pupils feel they have a firm grasp of them.

In Grade 2 (1), emphasis is placed on varied exercises with straight and curved lines and shapes in a large format, and simple symmetry exercises. Symmetries and reflections become more complex in Grade 3 (2), along with patterns of repeating shapes. In Grade 4 (3), the focus is on horizontal and vertical reflection. The joy of creating something colourful and beautiful is part of the goal of shape drawing.

Recognising and naming shapes and describing spatial relationships, shapes and symmetries forms the starting point for a language about geometry. Drawing basic geometric shapes is covered in all grades.



### *Continuous assessment*

The core learning methods show how continuous assessment/formative assessment is an integral part of teaching that stimulates learning. Pupils are given the opportunity to show and develop competence in a variety of ways, and the teacher and pupils take part in a dialogue about the pupil's development in the subject. Continuous assessment will help to stimulate learning and develop pupils' knowledge of mathematics through play, exploration and practical work, with room for wonderment and curiosity.

### *Grades 5–7 (4–6)*

Grades 5–7 (4-6) are important years for establishing good working methods and robust skills in mathematics through thorough practice.

The number work and number comprehension cover whole numbers to fractions and decimal fractions to basic algebra. The link between mathematics and real-life practical situations is strengthened on this path from concrete representations to the more abstract. The importance of mathematics for personal finances and for wider societal factors will be turned to. Pupils are encouraged to test, describe, compare and evaluate different strategies for solving problems and to take an interest in how their fellow pupils think about the same things.

In Grade 5 (4), fractions are covered extensively, thereby introducing pupils to a radical, new, expanded number concept. In fractions, two digits are used to represent a number. This is contrary to earlier concepts of numbers.  $3 : 8$  or  $3/8$  represents a calculation process. This new understanding of numbers must be safeguarded in the pupils' learning process.

In Grade 7 (6), algebraic ways of thinking and methods are a core part of the learning. The step from arithmetic to generalisations of number patterns and back to practical application follows a variety of paths.

Form drawing continues in Grade 5 (4) and evolves into work with freehand geometry in Grade 6 (5) and to geometry using compasses in Grade 7 (6). The geometric vocabulary is expanded and used to test and assess the relationship between different geometric figures.

Cultural history, from ancient times and advanced civilisations up to the Middle Ages is covered in Grades 5–7 (4-6). This includes knowledge of the place and importance of mathematics and of certain thinkers and mathematicians who have left quite a mark on society.

### *Numbers and number comprehension. Algebra*

Three different ways of using fractions are introduced in Grade 5 (4): from whole numbers to parts of a whole, from parts to whole numbers (I am part of a family of 6,  $1/6$  part) and comparisons of the ratio between two quantities (two houses, one has two floors while the other has twice as many).

Fractions are introduced with concrete tasks where students divide, distribute, add and compare the unit fractions in practical exercises. Pupils gain experience by folding, cutting, gluing and drawing fractions. When a fixed size of the circle is used as a template, pupils can compare the fractions (check how many sixths fit in a half?) Pupils discover that  $1/2 = 2/4 = 3/6 = 4/8$  and can then practise whole rows of tables for other unit fractions. They become familiar with fractions in many different forms: as part of a circle, a square, a rectangle or a line. How many ways can a sheet of paper be folded in 2? Exercises like this pave the way to discovering and formulating connections.

Pupils perform many calculations using concrete fraction material (unit fractions). They divide a whole into fractions and put fractions together to form a whole. They scale up, reduce and find

common denominators using concrete fraction material. This gives pupils experience in working with factorisation and the relationships between quantities in fractional arithmetic. Proper and improper fractions, as well as finding how many wholes go into an improper fraction and conversion to a mixed number are also taught. Tangible fractions can be subjected to the four arithmetic operations (e.g.  $2 \times \frac{2}{5} = \frac{4}{5}$  or  $\frac{1}{3} \div 2 = \frac{1}{6}$ ) and gradually the pupils will master this using mental arithmetic. By exploring concrete representations of fractions, predictable repetitions can be discovered and formulated.

In Grade 6 (5), pupils will continue to practise, visualise and draw fraction problems at the semi-concrete level. This will help them to get to grips with multiplying fractions, which they may consider to be 'topsy turvy', since the answer to multiplication operations has so far been larger than the factors. Visualisation is also the key to understanding the division of fractions. Rather than using arithmetic rules to decide the method, the rules should be arrived at after practice.

Pupils become familiar with decimal fractions through measurement or division. Fractions are converted to decimal fractions and vice versa. Pupils practise decimal fractions using all four arithmetic operations and mental arithmetic, which they also continue to practise using both whole numbers and fractions.

Number comprehension is expanded in Grades 6 and 7 (5 and 6), not just with prime numbers, odd numbers and even numbers, but also square numbers, deficient numbers and abundant numbers. In Grade 6 (5) History, pupils learn about discoveries that provide information on the mathematics used in the ancient river cultures, and are introduced to Greek philosophers and mathematicians.

In Grades 6 and 7 (5 and 6), large numbers are handled, read and written. Pupils practise setting out and calculating large multiplication and division operations, even without a practical connection, purely as an exercise in the mastery of methods. Rules for division are tested and formulated, orally and in writing.

Pupils are encouraged to describe and discuss calculation strategies. The number line can serve as a representation of strategies in mental arithmetic, both when it comes to whole numbers and fractions. Multiplication tables and division tables are consolidated. Pupils identify and describe the relationships between the different types of operations.

The terms 'measurement division' and 'partitive division' are linked to concrete factors that are known to the pupils.

Basic exercises in being able to switch between different forms of representation and translate back and forth between the mathematical symbolic language and everyday language are core elements of the learning in Grade 7 (6).

When the calculation of percentages is introduced, it is closely linked to practical situations that pupils are familiar with from their everyday life. Calculating percentages is placed in the context of fractions and decimal fractions and pupils will practise converting between the various forms extensively. Calculating interest will also be covered, in addition to other aspects of percentages. The interest formula is the first expression for the path from known rules to a general algebraic expression.

During the year, simple, playful algebra is introduced as an extension of earlier operations. The algebraic expressions for addition and subtraction are developed and used. Pupils will try their hand at a practical calculation of  $\pi$ .

Practical arithmetic is a core part of the learning in Grades 5–7 (4-6). In practical calculations, all numbers correspond to a concrete quantity, whether it is a certain weight, distance, period of time or amount of money. The pupils' imagination is thus challenged, while algebra challenges their ability for abstraction. Based on the local context, concrete everyday situations are created where pupils can keep simple accounts showing income and costs. This can, for example, be linked to planning an excursion/class trip, or running a cafe at the Christmas market. As preparation for work with percentage increments/decrements in Grade 7 (6), pupils will perform reductions and markups in concrete quantities. The pupils can then use tables to create an overview, and the concept of average starts to have meaning in relation to fluctuations in sales over a period of time. Work on accounts and budgets is continued in Grade 7 (6).

In Grades 5–7 (4-6), pupils practise reading word problems and converting them to mathematical problems. They also practise explaining and justifying the methods. This is a continuation of the oral story problems in Grades 2–4 (1-3). In mental arithmetic, varied tasks based on practical arithmetic are practised. From Grade 5 (4), pupils learn how to make an estimation before performing an exact calculation. Rounding is used in written exercises.

Mathematics in everyday life and technology are important subject matters. The topic of scale can be explained in connection with geography and through practical tasks and experiments. Calculating averages and producing simple statistics and probability can be explored and produced in graphic form, for example with plus and minus degrees over time. Fractions and ratios can be used to draw length or determine distance on a simplified map. Through measurement, pupils explore and formulate the rules for calculating circumference, perimeter and surface area.

#### Form drawing and geometry

In form drawing in Grade 5 (4), cross symmetry is practised with vertical and horizontal mirror reflections. Interwoven patterns can be linked to Celtic and Norse motifs in cultural history.

In Grade 6 (5), pupils draw geometric shapes freehand. They explore various shapes and figures and learn about concepts that form the basis of Grade 7 (6) geometry using compasses, such as acute and obtuse angles, copying and bisecting angles, bisecting lines, normal, different triangles and squares. Freehand geometry does not require the same precision as when compasses or a ruler are used. However, emphasis is placed on pupils taking time and using their judgement in the aesthetic design of freehand geometry, in line with the ideals of Greek antiquity, which is covered in History in Grade 6 (5).

The circle is the starting point for geometry using compasses in Grade 7 (6). Based on the circle, the triangle, quadrilateral and hexagon are constructed, and readily other shapes. Constructing a pentagon can be perceived as a highlight. Colouring geometric shapes and patterns brings out the aesthetic side of geometry and can generate a sense of beauty. Various angles are constructed and measured. Pupils will practise drawing basic constructions: dividing a line segment, creating or dropping a normal, and bisecting and copying an angle. Through their work with constructions, pupils will become familiar with the different triangles and squares and explore their properties. Pythagoras' theorem is covered in both concrete and visual representations. By practising drawing circles and envelopes of a planar family of curves, pupils become familiar with parabolas and hyperbolas, and they discover the predictability of ellipses.

In connection with the work on circumferences,  $\pi$  can be introduced.

### *Continuous assessment*

The core learning methods show how continuous assessment/formative assessment is an integral part of teaching that stimulates learning. Pupils are given the opportunity to show and develop competence in a variety of ways, and the teacher and pupils take part in a dialogue about the pupil's development in the subject. Continuous assessment will help to stimulate learning and develop pupils' knowledge of mathematics through exploration and practical work, as well as reflection and self-evaluation of their work and results.

### *Grades 8–10 (7–9)*

Pupils' independent thinking is challenged in constantly new ways throughout Grades 8–10 (7-9). The learning methods involve gaining experience of new ideas and problems, with discussion and reflection. Methods are introduced and skills are practised. This stimulates and supports the pupils' intellectual development. There is a focus on developing ideas and models, but also on trying, testing and controlling them. Pupils are encouraged to understand how to formulate and justify an idea in a formula or model, and to use the formula/model to solve practical life situations.

Through experiences with and discussions of concepts such as factor, power, square root, prime number, function and proportionality, pupils can expand their number comprehension.

The use of measurement is developed in Grades 8–10 (7-9). The choice of measuring units and instruments is explained, and relationships and calculations between different units of measurement are explored.

The concept of algorithms is actively introduced in Grade 8 (7). This involves developing, applying, and explaining methods already practised in mental arithmetic, estimation and written arithmetic using the four arithmetic operations.

In geometry, emphasis is placed on exploring and formulating logical reasoning using geometric ideas and explaining geometric relationships of importance in technology, art, and architecture.

Knowledge of the lives and work of key mathematicians, from older and more recent times, opens the door for discussion on the driving forces behind the development of mathematics. The origins of different number systems (2, 5, 10, 12, 20) are covered and used in calculations.

### *Numbers and number comprehension*

Work with real numbers in the four arithmetic operations is continued in Grades 8 and 9 (7 and 8). All kinds of practical factors and situations in society where calculations are needed can be used as a starting point, such as accounts and budgets, trade, construction and operating costs. Pupils can look up sources about relevant projects and use them in their maths work. They can discuss what happens when one or more assumptions change. Simple exponential functions are seen in the context of other change factors, for example percentage increments/decrements.

In Grade 9 (8), pupils can use spreadsheets to solve problems related to personal finances. They will discuss and assess the expedient use of digital tools for, inter alia, the graphical presentation of practical factors and calculations.

The learning methods are exploratory and dialogical. Pupils develop and use appropriate strategies to solve problems. They discuss and evaluate different methods.

Also within measurement, pupils will seek to combine the strands that can provide a clear picture based on an inherent rationality. Pupils explore estimating length and area, and develop calculation methods for distance, speed and time. In Grade 9 (8), pupils calculate surface area, mass, volume

and density for different solids. In measurement exercises, arithmetical errors are considered, and precision and uncertainty in measurement can be discussed.

In number work, powers and square roots are developed through testing arrays and examples in Grade 8 (7). The rules for the four arithmetic operations and use of fractions are repeated, including rules for the multiplication and division of two fractions. More in-depth knowledge of negative numbers is a core part of the learning.

The number  $\pi$  is explored further, from physical forms to a general understanding.

The standard form of numbers is introduced in Grade 9 (8), and pupils will practise converting all types of numbers to standard numbers. Understanding that numbers are a form of representation for different number systems needs to be processed in different ways, because form of representation and concept merge in most contexts. One possible approach to disentangling the two can be to reflect on how form and image can be seen as two different properties that are united in the number. This lays a good foundation for pupils' understanding and use of the binary number system. Reflection and discussion can be linked to the topic of number systems and their historical origins.

Functions are introduced with free and dependent variables. Pupils learn how to explain and calculate all elementary conditions covered by functions such as the linear, inverse and simple quadratic functions. Pupils will explore and practise formulating a numerical analysis of the combined geometric and numerical representation.

### Algebra

Introducing variables and constants broadens pupils' experiences with algebra, and formulating the experiences expands their algebraic understanding of numbers. Pupils will work with a conceptual processing of earlier material, for example prime factorisation, and with putting into words how arithmetic can be generalised. This will help them develop an algebraic mindset.

In Grade 8 (7), first-order equations are largely linked to solving practical problems but are also developed theoretically in Grade 9 (8), involving equations with brackets, fractions, and monomials. In Grade 10 (9), equations are developed into sets of second-order equations with 2 variables, and they are solved both algebraically and geometrically. Factorisation is extended to second-order polynomials in Grade 10 (9).

Simple algorithms for coding and programming in Grade 8 (7) will be further developed in the next two years.

### Geometry

In Grade 8 (7), pupils work with the central perspective, where the transition from a 3D to a 2D representation is experienced and discussed. In 2D geometry, pupils use Pythagoras' theorem for calculations. Similarity and the four geometric loci are introduced as ideas to ponder and discuss.

In Grade 9 (8) geometry, pupils continue to expand their understanding of space by working with other representations of 3D space. Pupils practise the placement of points, lines and planes in space, and identify points and lines of intersection. Pupils analyse and calculate sizes in regular solids, such as box shapes and cylinders. Spatial understanding is gradually developed.

Creating 3D models of the five Platonic solids can help with this. In 2D geometry, pupils proceed in the same exploratory way to identify more geometric loci, such as Thales' circle, the parabola and the ellipse. Development of the conic sections introduces dynamic shapes with a large potential for

change. In constructions and conversations, pupils will work together to categorise and understand the complex whole.

In Grade 10 (9), the concept of proportion is developed. Together with the concept of peripheral angles, pupils work on a comprehensive overview of everything that has been reviewed to be able to solve complex tasks using non-traditional methods. Further work is done on representations of 3D shapes in 2D images, both isometric representations and normal projections.

#### *Statistics and probability*

Statistics can be introduced in Grade 8 (7) with pupils performing simple data collection and calculating averages, frequency, range and sample space. This can be combined with the use of different types of tables and diagrams. Analysing the data is part of the work process. Pupils can also look up and read various statistical surveys of relevant issues and discuss aspects of the method and quality of the surveys. These are learning activities that challenge the pupils' critical thinking and develop their ability to critically assess sources. Methods, contents, and findings can be presented and represented in various ways (tables, diagrams, figures, graphic representations, verbally, etc.). Statistics and the calculus of probability are practised further in Grade 9 (8) and this is expanded to include combinatorics in Grade 10 (9).

#### *Continuous assessment*

The core learning methods show how continuous assessment/formative assessment is an integral part of teaching that stimulates learning. Pupils are given the opportunity to show and develop competence in a variety of ways, and the teacher and pupils take part in a dialogue about the pupil's development in the subject. Continuous assessment will help to stimulate learning and develop pupils' knowledge of mathematics through exploration, argumentation, analysis and reflecting on aspects of mathematics and the relationships between them, and use of mathematics language and theories to assess their own work and results. Based on the competence demonstrated by the pupils, they should be given the opportunity to express what they feel they have achieved and to reflect on their own development in mathematics. The teacher will provide guidance on further learning and adapt the teaching so that pupils can act on the guidance to develop their competence in mathematics.

#### *Final assessment*

The final assessment/summative assessment should demonstrate the overall competence achieved by the pupil at the end of Grade 10 (9). Overall competence includes the ability to explore using a practical and artistic approach in combination with knowledge, understanding, reflection and critical thinking. The final assessment/summative assessment should also show the extent to which the pupil uses and can apply mathematical concepts to solve problems in transfers from theoretical to practical situations in familiar and unfamiliar contexts.

# History Grades 2 – 10 (1 – 9)

## Aims and perspectives

History as a school subject provides a unique opportunity to understand the world. It can inspire pupils to connect to the world through acquiring knowledge about other periods of time and the background for our own time and contemporary society. In the encounter with today's complex cultural, social, environmental and technological situations, history can promote respect for cultural diversity and a feeling of shared responsibility for sustainable development. History must both provide knowledge and act as a training ground for understanding the world.

Persons and events from history can form a basis for reflection and promote recognition and enthusiasm as well as critical reflection. Thus history as a school subject can both provide favourable conditions for fostering the individual's self-understanding and identity, and for their ability to be a thoughtful and constructive participant in social and cultural life. A central reason for its importance in the Waldorf school lies in the area of tension between social and individual aspects: reinforcing and nurturing the individual's identity with the aim of achieving a deeper understanding of 'the other' in space and time.

Humankind's accumulated knowledge of its own history constitutes a body of knowledge that far exceeds what any individual can master. Both the themes and amount of material are inexhaustible. Moreover, interpretations and approaches vary greatly so we must make choices in relation to themes, amount of material, and the use of sources and methods. History at primary- and lower secondary-school levels is wide-ranging, reaching far back in time and spanning the globe. It deepens knowledge of a selection of key historical events, while adopting a cultural history viewpoint and an interdisciplinary approach.

The reason for delving deeply into history is not only to arouse interest and engagement, but also to promote a form of recognition of human goals and challenges across different time spans and national borders. Beginning far back in history and following the birth of humankind and civilisations on all continents throughout the years of primary school permits a deeper identification with a diversity of cultures. The emphasis is on breaking away from a one-sided Eurocentric perspective and including the historical contributions and conditions of minorities, women, and children. The situation of indigenous peoples in past and present eras is a theme, including Sami history and culture.

Inspiring learning through a lively and emotionally engaging teaching conversation is vitally important in history. The use of a narrative approach encourages exploration, sense of wonder, and discussion of the links between current situations and past events. There is a shared focus on decisive world political events alongside stories of everyday life and culture, trade, production, transport, inventions, art, and the life stories of individuals. Relationships with the forces of nature and the climate are discussed in light of their relevance for life science, geography and sustainable development.

The subject must lay the groundwork for pupils' development of historical thinking skills and reflection. Early history in Grades 5–7 (4-6) is generally taught via the teacher's narratives and practical work in art and craft, while in-depth study of the French Revolution at the lower secondary level (Grades 7-9), for example, promotes political reflection and discussion of historical and present-day social upheavals. Pupils' development is supported through the focus on central historical themes: identification with the narratives of the early school years leads to analyses of history and interpretations of causal relationships at the lower secondary level. The pupils explore the main lines

of development and exercise their ability to think independently and grow their skills in discussing the driving forces and causal relationships of history.

Interdisciplinary activities emphasise the connections of history to other school subjects such as art, craft, language, and science. Meanwhile, as a subject it must promote awareness of time and train pupils to apply historical thinking skills and reflection. This involves knowledge of sources, source criticism and interpretation. Pupils also work with primary sources such as objects, artistic forms of expression, maps, and texts from earlier eras. Counterfactual reflections on history are suitable for practising historical thinking skills.

The teaching of history follows the central tenet in Waldorf pedagogics in relation to educational development. In the early years of primary school, the pupils are exposed to a wealth of experiences that can strengthen their general ability to show empathy. Such empathy can help create a platform for understanding and good judgement, and promote the ability to discuss what democratic citizenship means as well as inspiring pupils to develop their initiative and desire to translate academic insight into social commitment.

## Learning outcomes

### Learning outcomes for Grade 4 (3)

*The aim of the teaching is to enable pupils to*

- take part in processing learning content orally and in writing, and with an artistic/practical approach
- wonder about and share their thoughts about values and ways of life in earlier ages
- begin to understand their position in time and space by developing chronological accounts
- talk about important geographical and historical preconditions for settlement and economic activity in the local area
- show knowledge of the traditional Sami way of life
- share memories of their own life or the lives of older family members and friends

### Learning outcomes for Grade 7 (6)

*The aim of the teaching is to enable pupils to*

- process subject matter orally, in writing, and artistically
- give oral and written presentations that demonstrate their knowledge of key figures, events and types of society in Antiquity and the Middle Ages
- take part in exploratory conversations about the impacts of events in Antiquity and the Middle Ages, and up to the present day
- reflect on differences in types of society and ways of life in the cultures being discussed
- show basic knowledge of various historical sources and discuss their significance
- search for, read and use sources that discuss historical events and figures
- apply basic knowledge about historical driving forces and transformation processes in their own work as well as in teamwork

### Learning outcomes for Grade 10 (9)

*The aim of the teaching is to enable pupils to*

- reflect on the driving forces underlying the Voyages of Exploration and their consequences
- describe the main lines of development from pre-industrial society up to the introduction of new technology during the Industrial Revolution, and on to the present day



- discuss the development of colonialism and imperialism, and provide examples of decolonisation
- describe the common features of Norway in the Late Middle Ages and during the period of Danish supremacy
- investigate and account for the ideas and political forces that led to the fight for freedom and revolutions in the 18<sup>th</sup> and 19<sup>th</sup> centuries, and the impact of these on the development of democracy in Norway
- present important lines of development in Norwegian history in the 19<sup>th</sup> and 20<sup>th</sup> centuries, and show how they point towards present-day society
- investigate and present the main features of Sami history and their struggle from the mid-19<sup>th</sup> century to the present day to win their rights
- discuss reasons for and the impacts of key international conflicts and social upheavals in the 20<sup>th</sup> and 21<sup>st</sup> centuries and reflect on the significance of the actions of key actors in modern history
- discuss important social upheavals in modern history and reflect on how contemporary society may be subject to new upheavals
- exchange views on political ideologies and viewpoints and their influence on historical events
- reflect on historical events and how society might have changed if these events had taken a different course
- search for, read and assess carefully selected historical sources for use in their own work
- discuss the ideals of human dignity, and reflect on the development of racism and discrimination in a historical and modern perspective
- write texts about society using different genres, and draw, or find, illustrations that support the written presentation

## Core contents

### Grades 2 and 3 (1 and 2)

- Culture-bearing narratives from Norway, Europe and other continents
- Place names, roads, businesses, and farms in the neighbourhood of the school; local history and present-day social conditions
- Stories about events and people in the school's wider local area in the recent and distant past
- Stories about the pupil's own life and the life of someone close
- The concepts of past – present – future

### Grade 4 (3)

- A selection of Old Testament stories
- Primary occupations and handicrafts in pre-industrial times, in the recent past and now
- Fictional stories about agriculture, forestry, fishing, mining and handicrafts
- Women and children's participation in working life

- Social conditions and differences
- The annual cycle in agriculture: grain types, domestic animals, forestry, blacksmithing, house building, fishing
- Sami culture
- Traditional Sami way of life, cultural expression and craft traditions
- Objects, images and books linked to subject content

### Grade 5 (4)

- Norway's history
  - Norse myths and heroic legends
  - Sagas of the Norwegian kings up to and including Olav Haraldsson
  - Family sagas
  - Viking Age culture
  - Lines of development to the present day

From and including Grade 6 (5), history as a school subject is characterised by a wealth of material. The bullet points present the overarching themes, and most themes include a selection of concrete examples. Different elements can be added to or removed from the selection of concrete examples via local subject curriculum work and adapted learning.

### Grade 6 (5)

- Early advanced civilisations: Indian, Persian, Mesopotamian and Egyptian antiquity
  - Myths and religion
  - Historical and geographical conditions
  - From a nomadic life to permanent settlements
  - Forms of society, life styles
- Greek culture
  - Greek myths and heroic legends
  - Homeric epics
  - Types of society
  - Philosophy and science
  - Art and sport
- Hellenistic culture
  - Alexander the Great
- Lines of development from the cultures of Antiquity to present-day issues

### Grade 7 (6)

- The Roman Empire
  - The Period of Kings
  - The Republic
  - The Empire
  - The Age of Migration
- The life of Jesus, Early Christianity
- The life of Muhammed, Islam's reception history

- The Middle Ages in Europe
  - Pope – king, monastery – castle
  - The feudal society
  - Establishment of towns, Guilds
  - The Crusades; conflicts and cultural expansion
  - Sigurd the Crusader
- The High Middle Ages in Norway
- Lines of development from the past to the present

## Grade 8 (7)

- Voyages of Discovery
  - Marco Polo
  - 15th century maps, navigation equipment, types of boats
  - The driving forces behind the voyages
  - Prince Henry the Navigator, Vasco da Gama, Ibn Battuta
  - 1492: Christopher Columbus' voyage to America; Magellan
  - The Inca and Aztec culture, The fate of the native populations
- The Italian Renaissance
  - Leonardo da Vinci, Galileo Galilei, Mirandola, Savonarola, Michelangelo
- Norway's history and European history from 1349 to 1800
  - The Monarchy and the Church
  - The Black Death
  - Taxes, labour duties, tithes
  - The Kalmar Union
  - The art of printing, the Reformation
  - The period of Danish rule in Norway
  - Trade and economy in the 17th and 18th centuries
  - 1814; Norway's Constitution
- History of indigenous peoples in Norway and national minorities
- Lines of development from historical events to modern-day issues

## Grade 9 (8)

- The Industrial Revolution in England
  - Pre-industrial society; population growth and changes in agriculture
  - Changes in the textile industry
  - The steam engine: new production and transport methods
  - Factories, towns; living and working conditions
- America
  - Triangular trade, slavery
  - The American Revolution, the Civil War, the abolition of slavery
- Norway
  - Industrialisation: Oslo, or another area
  - Development 1814–1913; parliamentarianism, dissolution of the Union, suffrage

- Colonialisation, globalisation
- Lines of development from historical events to contemporary issues
- Data technology's history and significance

## Grade 10 (9)

- Political development trends from the 17th century up until the French Revolution
  - Power struggles and religious differences; the Thirty Years' War
  - King, nobility, church; privileges, the feudal system
  - The political ideas of the Age of Enlightenment
  - The first phase of the Revolution; human rights, ideals
  - The second phase of the Revolution; the reign of terror
  - Social reforms; Napoleon as the ruler of Europe
  - Nationalism
- Modern history
  - 'Isms' with an emphasis on socialism
  - Karl Marx. Darwin
  - Causes of the First World War, the race for colonies. The gunshots at Sarajevo and the outbreak of war. First World War
  - The Russian Revolution. Lenin and Stalin
  - The Versailles Peace Treaty. Consequences for Germany
  - The inter-war period. Hitler's path to power
  - The Second World War. Holocaust. The war in Norway
  - The peace settlement. The division of Germany
  - The Cold War
  - The fall of the Berlin Wall. The dissolution of the Soviet Union
- Lines of development from historical events to modern-day issues

## Core ways of working

### Grades 2–4 (1 – 3)

In Grades 2–4 (1-3), folk tales, legends, myths and mythical tales from all over the world form one central element of the history syllabus. The second element is the cultural history of local areas and the recent past.

Oral narratives form a starting point for history as a subject. Their content is in accordance with the oldest types of cultural expression and is associated with the mystical and religious aspects of different cultures. They originate in remote eras and regions, far from the here and now of the pupils. Nevertheless, for humans the motifs can be recognisable and close, inspiring wonder and reflection in harness with other approaches such as retelling, texts, images and dramatisation.

Becoming acquainted with the school's local areas provides a key to the other central element: local cultural history. Going for walks allows pupils to get to know residential areas, farms, roads and the natural environment. A mossy stone wall, remains of a foundation wall deep in the forest, redcurrant bushes far away from any house all lead to curiosity and reflection about that which was, is and shall be. How did people live and work in earlier times, and how do they speak to us now. Perhaps there is someone who knows about the history of the stone wall or the foundation wall? Or is there someone who has written about the history of the shipyard, the smallholding or the manor house? Or who

knows how a hill, or a rock has acquired its name? Concrete experiences can lay the foundation for insight into the preconditions for settlement and the establishment of different industries, questions that will also be taken up in social studies and geography. Moreover, studying local history will give scope for the pupils' stories and contributions to local history and cultural knowledge. One way of working is to facilitate access to objects, images and books related to the subject matter. Nature stories and myths in which plants and animals, water and wind are given a voice can create an experience-based bridge between social studies and life science.

The focus on local cultural history is expanded in Grade 4 (3). Stories, knowledge and experiences related to the key primary occupations and handicrafts in the past and present are general themes in all subjects: Norwegian, Crafts, Food and health, English and Foreign languages, Mathematics, and in the day-to-day school work with storytelling, painting and drawing and the recitation of poetry.

The teacher's oral mediation of fictional narratives forms a colourful backdrop for getting to know more about people's lives and work in agriculture, fishing, forestry, blacksmithing, mining, handicrafts and trade in the pre-industrial era or the more recent past. Fictional texts present people, adults and children, women and men who are shaped by their time and surroundings, and who create history themselves by living their lives. By using free storytelling techniques followed by conversation, the teacher can adapt, expand or use selected extracts from the literary material. Knowledge of tools, work techniques, the annual cycle of traditional agriculture etc. are part of the material dealt with.

The themes are traced to the present by enabling pupils to make their own discoveries, adapted to opportunities in the local area: visiting farms, fishing trips, tending and cultivating plants, making food, building cabins or the like on the school grounds, planting trees. Crafts can include activities such as tying, plaiting, weaving, laying bricks, doing carpentry and blacksmithing.

Cultural history in Grade 4 (3) also focuses on the traditional Sami ways of life, cultural expressions, and traditional handicrafts; a meeting between elements of history and social studies, enriched by art and handicrafts. Stories and songs from Sami traditions are included together with knowledge about the yearly cycle in reindeer husbandry, the central position of the reindeer in culture and trade as well as basic knowledge about the Sami people as an indigenous population.

Part of the content and activities described above is also processed in text and images in the pupils' workbooks, such as stories and other kinds of texts.

Throughout the three years from Grades 2–4 (1-3), the thematic focus is on finding and applying different approaches to the concepts of past, present and future in our own lives and in the community.

### **Continuous assessment**

The core learning methods show how continuous assessment/formative assessment is an integral part of teaching that stimulates learning. Pupils are given the opportunity to show and develop competence in a variety of ways, and the teacher and pupils take part in a dialogue about the pupil's development in the subject. Continuous assessment should help to stimulate learning and develop pupils' knowledge of history through stories, play, exploration and practical activities that allow pupils to show curiosity and ask questions.

### **Grades 5–7 (4 – 6)**

In Grades 5–7 (4-6), pupils become familiar with a wide range of cultural history content. The teacher's oral presentation of a theme is the starting point for different kinds of processing – orally,

in writing and artistically. The presentations give concrete and detailed portrayals of a selection of the characteristics of a culture and an era. People's lives and living conditions are more important than summaries of the course of major events or conceptual discussions of drivers of development. What did the houses look like, how did rich and poor, young and old, women and men spend their days? What do we know about social conditions, thoughts and values? The sources are described as are the uncertainties.

Traditional literary and religious texts form the backdrop for concrete portrayals of the culture and way of life. History in Grade 5 (4) begins in the near geographical area with Norse myths and heroic tales that are reworked orally and in writing and from a practical/artistic viewpoint. The path from this universe of powerful narratives leads to the culture and life style of the Viking Age. Glimpses can also be provided of developments after the last Ice Age, the Stone Age, the Bronze Age and the Iron Age, all in pre-Viking times.

In Grade 6 (5), world history is presented in chronological order for the most part, with a sideways glance at corresponding epochs in Norway. Respect for the ideals and social conditions of earlier times and the adoption of a global rather than a Eurocentric perspective are emphasised. Pupils become familiar with the powerful narratives of advanced civilisations in Ancient India, Persia, Mesopotamia and Egypt through storytelling and their own reading. Two examples of this are legends from Indian-Hindu texts and the Epic of Gilgamesh from Mesopotamia. The same applies to myths about the Greek Gods and heroic legends, not least The Odyssey, which provide a sounding board for knowledge of the culture and social condition of Ancient Greece. The legends of the Middle Ages are included in the history syllabus for Grade 7 (6).

The teacher's presentation of the theme is followed by dialogue, for example by asking *why* questions. One example might be the Age of Migrations: Why was there a period of such large-scale migrations? Was it related to the climate, to the raids and conquests of the Huns, to the ever-growing contact with the Roman culture? And how were the migrations and the Fall of the Roman Empire interconnected? What influence did individual actions and choices have? Such discussions do not necessarily supply all the answers, but the pupils are trained to think about cause and effect and different associations and perspectives, also in respect of ethical reflection.

The use of timelines, map-making and the periodisation of history enables pupils to attain a closer relationship with how cultures develop over time. In relation to Roman Antiquity, a theme in Grade 7 (6), an understanding of time can be achieved through the periodisation of the time of myths, the period of the Kings, the Republic, Imperial Rome and on to the Fall of the Roman Empire. Map-making will allow pupils to see how the Roman expansion can be seen on a time-axis. The same procedure can be followed to illustrate the spread of Christianity and Islam over time, including reception history.

The wide-ranging historical time span with which the pupils will become familiar in each of the three years requires a selective approach to events and biographies representing a particular period of time. The processing of the material can be carried out in many ways. A tried and tested way of working is for pupils to make their own workbooks in which selected historical events are presented through texts, drawings of maps and time axes, historical figures and events. Writing tasks can be based on mediating history where everyday life, for example in Ancient Athens, is the starting point.

Pupils get practice in talking about and reflecting on questions linked to events that take place at a particular period of time, and their impact – perhaps even up to the present day. Pupils can use their knowledge of history to achieve an understanding of current social phenomena, for example:

- Place names, names of objects, and male and female names originating from Norse myths and the Viking Age
- Forms of society in ancient civilisations compared with aspects of modern society
- Hunter-gatherer cultures, settlement, agriculture and animal husbandry, written language, laws
- Aspects of the living conditions and tasks of men, women and children in the cultures of Antiquity and the Middle Ages; gender roles and social classes then and now
- The seeds of democracy in Ancient Athens; characteristic features of Norwegian democracy today
- Citizenship: rights and duties
- The legal system of the Roman Empire as the basis of the present-day administration of justice
- Features of the power balance in medieval society in relation to modern society

Relating to sources is of prime importance in history as a subject. The pupils acquire insight into the written and oral sources on which the teacher's presentation is based and which they will read about. In Grade 5 (4), pupils become familiar with skaldic poetry, and how some skalds also took part in battles and then sang about them to large gatherings. It was only at a much later period – often several generations later – that the oral song and storytelling tradition was converted to the written word. The king's skalds, who were close to the kings and chieftains, composed stories about heroic deeds and recounted them. This raises the question of how this close relationship affected the stories? Did the oral narratives change in the course of the long period of time from oral performance to the written form? The pupils thus acquire knowledge of how both the sagas of the Norwegian kings and Eddic poetry existed in an oral narrative tradition long before they were written down.

In Grade 6 (5), pupils learn about sources such as archaeological findings and written narratives. They examine what the term *history* means, and how the first more comprehensive works on history came into being. Pupils can thus acquire knowledge of how the writings of the Father of History, Herodotus, were linked to journeys he made and events he witnessed. His journeys to Egypt and Persia form a link to the advanced civilisations pupils have learned about earlier in the school year. It is then appropriate to discuss the context of the historical narrative and how, for example, later historians have continued to discuss Herodotus' portrayals even up to the present day. 'Is it true?' is a question frequently raised by pupils. This type of question is a good starting point for dialogue.

In Grade 7 (6), critical awareness of the use of sources for presenting history is reinforced. When describing the Crusades, it is important to consider how they are presented in a European as opposed to an Arabic context. It is also interesting to examine how Tacitus, a historian of Late Antiquity, presents Christianity and the early Christians based on a disparaging attitude that was widespread during his time.

Pupils can become aware that history is presented in different ways depending on the background of the intermediary. Conversations about this add new, interesting perspectives to the narrative and pave the way for understanding how ideas, perceptions and cultural background can influence a particular period of time.

In Grade 5 (4), Eddic poetry introduces an in-depth study of the Norse myths. The terse, concise verse form with repeated alliteration is well-suited to recitation, preferably in Old Norse, movement and dramatisation. The Norse narratives and the sagas of the Norwegian kings are presented by

means of painting, drawing, recitation, writing poetry and dramatization, for example. Writing one's own texts using runic symbols is a challenging, fun task.

In Grade 6 (5), subject matter is processed through a range of artistic activities. The work can conclude with the dramatization of topics from one of the civilisations of Antiquity. Reading lyrical passages from the ancient epics and hymns inspires empathy. Extracts from Homer's epics with their hexameters can be recited, and Greek culture can be experienced through architecture, sculpture and paintings. Greek words that can be rediscovered in modern Norwegian, Greek song and dance as well as the sports of Ancient Greece broaden pupils' perceptions of the classical ideal of beauty. 'The beautiful' as an aim in itself can also be experienced when working with freehand geometry in Grade 6 (5) mathematics.

In Grade 7 (6), pupils can work on short texts in Latin and explore words and terms in Norwegian with a Latin etymology. Calligraphy provides experience of the art of writing in the Middle Ages. Juggling and acrobatics pave the way for another aspect of the culture of the Middle Ages.

### **Continuous assessment**

The core learning methods show how continuous assessment/formative assessment is an integral part of teaching that stimulates learning. Pupils are given the opportunity to show and develop competence in a variety of ways, and the teacher and pupils take part in a dialogue about the pupil's development in the subject. Continuous assessment should help to stimulate learning and develop pupils' knowledge of history through exploration, processing and practical activities as well as reflection and evaluation of historical references and mediation of the subject.

### **Grades 8–10 (7 – 9)**

World History in Grades 8–10 (7-9) deals with key events and development trends from the start of the early modern period and up to the present day. Themes from Norwegian history from 1349 to 1814 and on to the present day are covered throughout these three years.

When considering how the world-view changes throughout the Renaissance, a contrastive perspective is applied through reflecting on everything we now know compared with what was known then. The drivers and preconditions of the European Voyages of Discovery are a central theme in Grade 8 (7). The serious consequences for indigenous peoples and their culture and lifestyle are elucidated and discussed. The High Middle Ages in Norway and the time of the Union are covered, and light is shed on Sami history and the treatment of national minorities by society at large. In Grade 9 (8), the main theme is industrialisation and its social impacts, focusing on England as the starting point. This theme then takes up triangular trade and slavery, as well as the growth of global trade and the exploitation of resources in rich and poor countries. In Grade 10 (9), there is a focus on revolutions and ideologies starting with the French Revolution and modern history. The aim in all three years is to steer the themes towards present-day conditions and questions.

History as a school subject adopts a diverse range of learning methods. Adapting teaching to the theme, to the pupils and to relevant issues provides scope for different ways of working. These must enable the pupil to acquire in-depth knowledge of key historical events as well as the ability to reflect on them and give an account of them. It is vital to develop source awareness and the ability to evaluate sources.

The content of the subject is refined in the class discussion between pupils and teachers, and between pupils. The point of departure for the conversations is the teacher's and/or pupil's oral presentation of a theme, and the pupil's further reading and exploration. The presentations can be concrete and deal with those involved – not just those who give the orders – and provide rich detail



and context for the events in focus. In the follow-up class conversation, specific events can be discussed with the aim of identifying and describing the drivers and impacts of the events, and the underlying reasons. Contrafactual questions can be explored, or the conversation can continue to focus on similarities, differences and connections between the historical events and current conditions.

A further step might be to begin with a cause-effect relationship that has been identified, for example, and try to identify other events in the past or present that exhibit similar conditions.

As a follow-up, pupils usually describe and illustrate the subject matter in their workbook where they write factual information and summaries of the teacher's presentation. This also applies to notes on oral work and the pupil's own reading. The pupils use different kinds of text including texts inviting empathy and identification such as poems, fictional letters, diary entries or eye-witness accounts from the relevant historical period. Or they act as journalists and write reports and fictional interviews.

The pupils also work with subject texts relating to relevant themes. Tasks may include extracting information, writing summaries, answering questions or presenting the content to the class. In Grade 10 (9), or even earlier, the pupils can be asked to present subject matter from the previous day, ask questions about it and promote a discussion of the subject matter in class.

Pupils must be given independent tasks with an increasing level of challenges. They must relate to external sources, either on the internet or in books, and they can download illustrations or design their own. In this connection, pupils get practice in referring to the sources they have used. They must also read, discuss and process sources on the basis of critical source questions.

Globalisation and trade and economy are themes in Grade 8–9 (7-8) and pupils can carry out small-scale investigations. What ingredients have been included in the meals the family has eaten during the past week? What regions do foodstuffs and spices come from? The pupils can be asked to examine the brand labels on their own clothes and shoes, and present the results graphically. They can present the origin of a raw material, its history and current use orally or in writing. Discussions on working conditions, production and transport in a globalised world are linked to the theme.

In Grade 9, the pupils can write about the mode of operation and social consequences of a selection of technological inventions, from the steam engine to digital technology. They can present such technological innovations in class in text and images.

Pupils can also present biographies of important social actors such as researchers, politicians, artists, indigenous people's leaders, women and men who have contributed to their time and society.

The teacher's oral presentation of typical historical events and development trends form a main source for the pupils. The teacher presents the sources they used for their presentations and turns the conversation to the use of sources in further work. Pupils can be assigned texts on the subject for their own personal reading and processing as well as searching for such texts themselves. In Grade 8 (7), for example, this might include letters and diary entries written by those who took part in the Voyages of Discovery. Such eye-witness accounts provide insight into contemporary ideology and views of humanity and promote discussion of the conduct of Europeans. In connection with Norway's history from 1349 to 1800, pupils can study historical sources: letters from Queen Margrete, extracts related to Christian III' taking possession of Norway, and finally a letter from Magnus to the Council of the State about problems with the Hanseatic League. Source criticism must be applied here with a discussion of the source's creator and its purpose. Examples of work on authentic sources in modern history in Grade 10 (9): the announcement by Serbia's president on 1 July 1914, Emperor Franz Joseph's letter of 5 July 1914 to the German Emperor, Wilhelm II, about the

assassination, and the granting of full discretionary authority on 7 June, 1914. Texts by Marx, Darwin, and Cecil Rhodes about imperialism, speeches by Lenin, Hitler and Churchill.

Fictional representations, images and feature films about historic events are important sources for themes in Grades 8–10 (7-9). They inspire discussion on the focus of the presentations and different viewpoints. Implicit and explicit values in literature and film can be identified. Not least, the significance of art and culture for proximity to different human conditions in changing times and social conditions can be discussed. The pupils use books on the subject and online sources for oral and written presentations. They must focus on selecting reliable and relevant sources, choosing from the endless and complex material available on the internet.

Excursions are an experience-based work method that can also be included in source knowledge. The individual school finds suitable destinations for excursions to museums and collections, historic buildings, monuments, institutions and companies on the basis of local/regional conditions.

At lower secondary level also, poetry, songs, music, eurythmy, dramatization and arts and crafts are keys to in-depth immersion in history's subject matter. The individual school determines what should be prioritised and highlighted.

### **Continuous assessment**

The core learning methods show how continuous assessment/formative assessment is an integral part of teaching that stimulates learning. Pupils are given the opportunity to show and develop competence in a variety of ways, and the teacher and pupils take part in a dialogue about the pupil's development in the subject. Continuous assessment should help to stimulate learning and develop pupils' knowledge of history through exploration, argumentation, analysis and reflection on history-related subjects and their interconnections, and also enable pupils to use technical terminology and theories to evaluate historical references and history mediation. On the basis of the competence they exhibit, pupils will be encouraged to verbalise what they feel they master and to reflect on their own academic development. The teacher must give them guidance on future learning and adapt teaching to ensure that pupils can use this guidance to develop competence in history as a subject.

### **Final assessment**

The final assessment/summative assessment should demonstrate the overall competence achieved by the pupil at the end of Grade 10 (9). Overall competence includes the ability to explore using a practical and artistic approach in combination with knowledge, understanding, reflection and critical thinking. The final assessment should also show how and to what degree the pupil demonstrates general knowledge and the ability to apply historical thinking and reflection orally and through the use of text, images and sources.

# History Upper Secondary Level

(Grades 11 – 13, equivalent with Grades 10 – 12 in the German Waldorf plan)

## Common core subjects for general studies

**Scope:** 140 teaching hours per year (5 hours per week)

## Aims and perspectives

The subject will give the pupil an understanding of history as a process in which we can observe continuity in development from one event to the next on the one hand, while on the other hand breaks with the past create change. Pupils must be challenged to reflect on possible cause-and-effect relationships, why systems and phenomena change or remain stable, and to understand that the past was not predetermined, but a result of human beings' choices and priorities. Such reflection is important for both how the individual understands and perceives themselves and society, and how the individual creates their own identity and sense of affiliation with others.

In history as a school subject, pupils are trained to reflect consciously on the past and its significance for the present. This gives pupils an understanding that their own choices will affect the future. History thus helps make the pupils aware of the opportunities they have to be active citizens and to make good choices in order to contribute to a more sustainable society.

## Core elements

### Historical awareness

By exploring history, pupils will develop historical awareness. This means that they must understand that they are created by history and create history themselves with a past, present and future. The past helps explain the present, and provides perspectives for the future. This also entails having the ability to act in relation to the future and to have opinions about it, and be able to take action in relation to a future situation. In addition, pupils should develop historical empathy while acquiring a historical overview.

### Exploring history and critical source awareness

The curiosity of pupils must be awakened, and they should actively seek knowledge and show creativity by conducting investigations and shaping stories. The pupils should be able to obtain, interpret and use historical material as sources in their own history presentations. Through critical use of sources, pupils should be able to show curiosity and reflect on the actions of humans in the past, and evaluate how knowledge of history evolves. This means that pupils must gain insight into the research methods of history, modes of thought, concepts and principles. In addition to acquiring the ability to be critical, focusing on sources will provide insights into the lives and activities of past generations. It will also enable pupils to find, assess and recognise high-quality information in a modern world in which the information flow is continually increasing.

## People and society

Through working on historical perspectives, pupils will gain insight into important history content, themes and periods, and gain an overview of these. How did human cultural understanding and social organisation change in the transition from a hunter-gatherer lifestyle to life in an agrarian society? What political, cultural and economic changes were experienced globally in the period of 1000 years we designate the Middle Ages? How was the world view and view of humanity influenced by the scientific, technological, artistic and social development that began in the 16<sup>th</sup> century? How have humans created, lived with and solved conflicts, and also succeeded in living peacefully in the 20<sup>th</sup> century? How have people organised themselves in different societies and what were their thoughts on this?

## Learning outcomes

*The aim of the teaching is to enable pupils to*

- explore history by asking questions, finding and evaluating relevant sources, formulating questions and assumptions, and drawing conclusions
- account for different kinds of sources and be able to discuss their value
- plan and conduct a historical survey and presentation using digital aids
- discuss causality in relation to specific historical events or courses of events, and assess what makes a past event of significance
- describe the distinctive character of various ancient societies from the point of view of their own preconditions and self-understanding, and how they contrast with our own civilisation; compare their structures and special features in light of the relationship between the natural preconditions and the type of culture
- account for historical periodisation and different types of historical explanation, and reflect on how the view of history changes over time
- account for the biological and cultural development of human life and society from early man to the hunter-gatherer society, in our own time and the preceding millennia
- describe the main features of the growth of agriculture globally, and account for the importance of agriculture in the development of major and differentiated cultures
- describe the importance of religion for social conditions and power relations from the Middle Ages onward to our time, and describe the role of religion in humans' self-concept and views of others
- account for how trade and economic systems have affected power relations and people's lives
- discuss the causes of European world conquests and later withdrawal, and the after-effects of this in the form of world trade, colonialism, imperialism and decolonisation among other factors

- explore key technological and scientific revolutions to see how they have altered human living conditions, ways of life and attitudes
- account for different explanations of important armed conflicts in the 20<sup>th</sup> century such as the World Wars and the Cold War, be familiar with the main features of the warfare, and reflect on attempts to create a new international order in their wake
- describe forms of government at different periods of time, including democracy in Athens, monarchies in the Middle Ages, absolute monarchs and constitutional national states, and evaluate how powers were shared and legitimised within these forms of government
- discuss social and ideological preconditions for communism, fascism, nazism, capitalism and parliamentary democracies, and how these ideologies formed the basis for liberation, growing affluence, repression, terror and genocide
- account for the growth of western welfare states, consumer societies, countercultures and feminism
- analyse how presentations of the past have been used to create identity, particularly in nation states, and discuss the impacts of these on different groups
- explore the artistic expressions of different epochs in visual art, architecture and music
- present important demographic changes and account for the causes and impacts of migration and cultural encounters
- account for nationalism and the different ways it is manifested, including the meeting of traditional Sami culture and wider society in Norway
- compare different phases of history, and account for thoughts and ideologies that have formed the basis of political upheavals from the time of the Enlightenment up to the present, and assess their significance for people's ability to express their democratic rights

## Content and learning methods

History teaching is spread over three years, and although block teaching is suitable, hourly periods are also an option. A history lesson can consist of a rhythmic exchange between explanatory class conversations on the themes and issues covered, and individual work on this material followed by the shared acquisition of new subject material.

History teaching concentrates on phenomena and events that can be understood as symptoms of currents and trends in various historical epochs. As a mediator of history and a facilitator, the teacher should highlight subject material that promotes pupils' understanding of the driving forces and development impulses that are expressed. Pupils must gain an understanding that history is not set in stone but is created and in a state of constant flux, and that it can be communicated in different ways.

Teaching must incorporate interdisciplinarity and in-depth study. It must be varied and allow pupils not only to use their different abilities, but also to demonstrate their competence in a variety of ways. The teacher must make provision for oral, written and practical learning activities, both for the pupils individually and in groups. Pupils must be able to explore history, show curiosity and reflect on

historical conditions and relationships, perhaps resulting in oral or audio-visual presentations or written texts.

Pupils acquire oral skills through presenting their own work, listening to others' presentations and participating in subject-related discussions. Writing about history is practised through planning, formulating and presenting texts that are written concisely and independently in a language suited to the subject, the purpose and the recipient.

Pupils will also be trained to develop and structure their thoughts in writing and learn to understand writing as a way of learning about history. A range of different texts – written texts and images, films, maps and historical objects – give pupils practice in reading history, historical thinking and source criticism. Pupils will also be given practice in using digital communication tools and other technology effectively in order to find information and sources, assess the value and credibility of sources, and apply ICT as a communication tool.

## **Assessment**

### **Continuous assessment**

Continuous assessment should help to stimulate learning and develop pupils' competence in history. This takes place when pupils use subject-related methods and material to find answers, and when they understand human challenges and actions in historical contexts. They also develop and show competence when formulating subject-related questions, and when they find and use historical material critically in reflection and argumentation in order to construct history narratives. Their competence is further augmented through presenting different perspectives of past events, and when reflecting on how accounts of the past are used and how the past impacts on them as humans.

The teacher and pupils must also enter into a dialogue about the pupils' development in history. Assessment must stimulate learning, train the pupils' ability to assess the quality of their own work, and provide good guidance for their further development. The teacher's feedback must promote the pupils' development and competence in the subject. This means that the guidance given must enable them to understand what they master and what they need to do in order to progress in their learning.

### **Overall achievement grade**

The overall achievement grade should demonstrate the overall competence in history achieved by the pupil at the end of the upper secondary level (Vg3). The teacher must plan and pave the way for pupils to show their competence in a variety of ways including understanding, reflection and critical thinking in familiar and unknown situations. The teacher must give a grade in history based on the competence shown by the pupil when using their own knowledge and skills in combination.