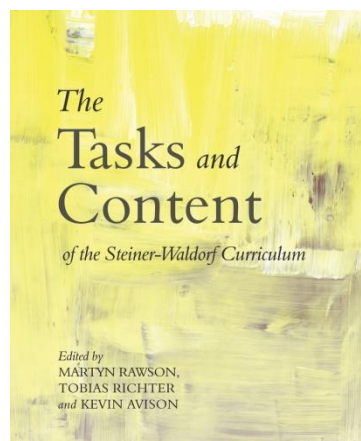


Research and Documentation Informing the Curriculum at the Iona School

1. Early years



The Tasks and Content of the Steiner and Waldorf Curriculum (P.49-51)

The nature of this early learning should be self-motivated, allowing children to come to know the world in the way most appropriate to their age – through active feeling, touching, exploring, imitating and doing. Only when new capabilities appear, around the 7th year, the child is physically, emotionally and intellectually ready for formal instruction. Teaching is by example rather than by direct instruction and is integrated rather than subject-based.

Key aspects of Kindergarten:

Imitation is the prime means of children's learning. Children model their behaviour on what happens around them and adults carry out their daily tasks in such a way as to be worthy of imitation.

Rhythm and repetition: regular patterns of activities both during the day and week are very important to bring in the reassurance of continuity, good habits and in the healthy development of memory. Themes of work related to seasons of the year.

Personal, social, emotional and moral development: children learn through their creative play and their daily social activities, to interact with each other. They learn to share, to work together and to co-operate. Moments of reverence and awe are experienced each day, as well as throughout the year with the celebration of the festivals.

Language and literacy: children develop competence in talking, listening, use words with confidence, they speak freely and learn to listen to others. This includes learning songs in a second language.



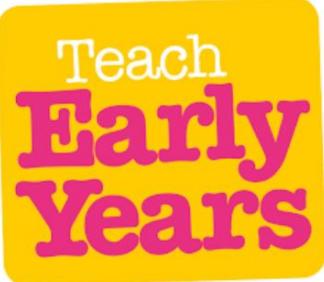
Well told stories create appreciation for the human voice and the beauty and rhythms of language. It also helps to extend vocabulary and to aid the development of concentration and a good memory.

Maths: through movement games, children recognise and recreate patterns. Natural objects are sorted, ordered and counted as part of spontaneous play. Mathematical knowledge is embedded in a social and moral context.

Science: The celebration of festivals, the yearly rhythms of the earth, moon and sun are an integral part of the child's awareness of the world. Also a daily contact with nature during free play and gardening give the child an ongoing experience of the rhythms of natural world.

In kindergarten the foundations for the study of science are laid by:

- Creative free play using natural materials: sensory experiences that cultivate keen observation.
- The beauty and orderliness of the Kindergarten environment nurture a respectful and precise attitude.
- Stories, fairy tales, verses and artistic activities develop the imaginative faculties essential for the understanding of scientific phenomena.

<p style="text-align: center;">THE IMPORTANCE of BEING LITTLE</p>  <p style="text-align: center;">WHAT PRESCHOOLERS REALLY NEED FROM GROWNUPS</p> <p style="text-align: center;">ERIKA CHRISTAKIS</p> <p>https://www.theatlantic.com/magazine/archive/2016/01/the-new-preschool-is-crushing-kids/419139/</p>	<p>The new preschool is crushing kids, 2016 – Article adapted from Erika Christakis's book: <i>The Importance of Being Little: What Preschoolers Really Need From Grownups</i>.</p> <p>“Although children who had attended preschool initially exhibited more “school readiness” skills when they entered kindergarten than did their non-preschool-attending peers, by the time they were in first grade their attitudes toward school were deteriorating. And by second grade they performed <i>worse</i> on tests measuring literacy, language, and math skills.”</p> <p>“The basis for the beginnings of literacy is that children have heard and listened ... They have spoken and been spoken to, people have discussed [things] with them ... They have asked questions and received answers.”</p>
 <p>https://www.telegraph.co.uk/education/educationnews/10302249/Start-schooling-later-than-age-five-say-experts.html</p>	<p>Too Much Too Soon Campaign.</p> <p>Start schooling later than age five, say experts.</p> <p>Formal schooling should be delayed until the age of six or seven because early education is causing “profound damage” to children, an influential lobby of almost 130 experts warns.</p>
	<p>Teach Early Years magazine (UK), 5 (8), 2015, p.33.</p> <p>“Ableness is not readiness. Thus, just because we can get a young child to do certain things, it doesn’t at all follow that it’s either appropriate or healthy to do so”.</p> <p>“Accelerationism” is the assumption that it’s appropriate and beneficent for your children’s development and learning to be accelerated</p>
<p>Stanford</p> <p>GRADUATE SCHOOL OF EDUCATION</p> <p>https://ed.stanford.edu/news/stanford-gse-research-finds-strong-evidence-mental-health-benefits-delaying-kindergarten</p>	<p>A new study on the mental health effects of kindergarten enrolment ages found strong evidence that a one-year delay dramatically improves a child’s self-regulation abilities even into later childhood.</p> <p>According to the study co-authored by Stanford Graduate School of Education Professor Thomas Dee, children who started kindergarten a year later showed significantly lower levels of inattention and hyperactivity, which are jointly considered a key indicator of self-regulation. The beneficial result was found to persist even at age 11.”</p>

The Right Brain Develops First ~ Why Play is the Foundation for Academic Learning

<https://www.vincegowmon.com/the-right-brain-develops-first/>

The right brain develops first, Vince Gowmon.
 It does so by the time children are 3-4 years of age. The left brain, on the other hand, doesn't fully come online until children are approximately seven years old; hence the first seven years being recognized as such a critical period in child development.

The left brain's functionality is one of language, numeracy, literacy, analysis and time. It is the logical, calculating, planning, busy-bee part of us that keeps us anchored in the pragmatic world, and in past and future. The right brain, on the other hand, is responsible for empathy, intuition, imagination and creativity. It is where we wonder, dream, connect and come alive. Through the right brain we dwell in the space of no-time, in being absolutely present. Understanding this we can better appreciate why **play** is so important in child learning and development.

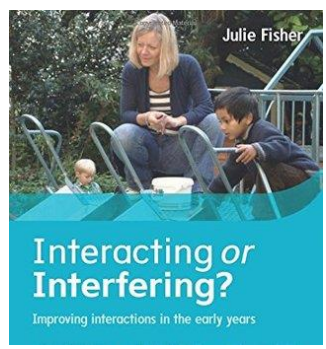
Pushing literacy and numeracy on children before age seven may just be harmful to their little, developing brains. Without the capacity to use their academic minds in the ways that are being asked can cause children to gain what's called "learned stupidity." They believe themselves to be incapable and lose their natural desire to learn.

Let Children Get Bored Again

<https://www.nytimes.com/2019/02/02/opinion/sunday/children-bored.html>

Let Children be Bored Again, Pamela Paul, 2019
 It's especially important that kids get bored — and be allowed to stay bored — when they're young. That is not to be considered "a problem" to be avoided or eradicated by the higher-ups, but instead something kids grapple with on their own. Because things happen when you're bored. Some of the most boring jobs I've had were also the most creative.

We've stopped training children to do this. Rather than teach them to absorb material that is slower, duller and decidedly two-dimensional, like a lot of worthwhile information is, schools cave in to what they say children expect: fun.

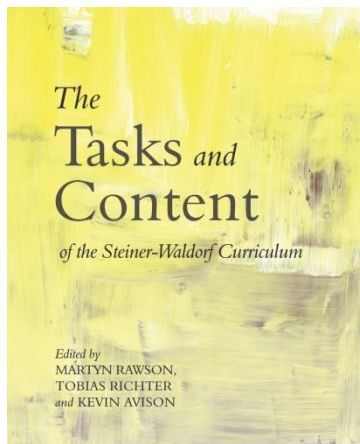


Interacting or Interfering? Julie Fisher, 2016.

The Oxfordshire ACI Project showed that children are most relaxed when they know an adult well, when following their own agenda and when they choose when to speak to an adult rather than be made to respond to an adult's conversation. (p.42, 43)

Strategies to tuning in to children: observation to decide what, when and whether help is needed before intervening; taking notes when the interaction has ended, use of devices only when they will not interrupt their learning; active listening to not interrupt the children's thinking and show respect (p. 74, 75).

1. Reading, writing and speech:



The Tasks and Content of the Steiner and Waldorf Curriculum

Language is our most important means of understanding, it also has a highly significant formative influence in the child's psychological and spiritual development.

Imagination and analytical thinking are two poles of experience that need to be integrated. The cultivation of both the oral and the literate forms of language support this process.

The relationship between movement and gesture, speech and thinking is a key to all aspects of language teaching.

- **Class 1:** recitation of poems alternates with short musical exercises. Children recite longer seasonal poems and perform simple plays.

Stories: Teacher tells folk tales or nature stories. A simple sentence construction and avoidance of dramatic language helps prevent subjective feelings.

Writing: Before the letters are introduced, the children practice form drawing, using sequences or straight and curved lines within a horizontal framework. The shapes of the consonants as capital letters are presented embedded in an artistic drawing made by the teacher with an accompanying story that emphasises the character of the letter. Wax crayons are used to build the strength of hand muscles and will power.

Reading: The children learn to read by reading what they have written or what the teacher has written on the board. Several methods of teaching reading are integrated: the whole word (analytic), phonetic and spelling methods. The moment children learn to read is very individual regardless of the method used, they will learn when they are ready.

- **Class 2 onwards:** progressively more complicated poems, songs and plays are introduced. Children are encouraged to retell the stories they have heard. Speech and articulation exercises such as tongue twisters are practised.

Stories: Fables, legends, folklore, natural stories, Old Testament, mythologies... each topic meets the children in their developmental stage.

Writing: The transition to lower case cursive script is prepared by suitable form drawing exercises. Wax crayons are changed to coloured pencils, and later on to fountain pens. Care and attention is paid to developing a fluid style of handwriting. The children endeavour to make the page beautiful and develop an aesthetic interest in their writing. Free writing is done about the stories that they have been told or the current main lesson topic.

Reading: The children continue practising reading with texts they have written themselves or provided by the teacher. Different methods are encouraged: class reading, child to adult, child to child and solo reading, as well as Individual support to those who need it.

	<p>The Kingdom of Childhood, R. Steiner, 1924 (p. 26, 27).</p> <p>“People will object that the children learn to read and write too late. This is said only because it is not known today how harmful it is when the children learn to read and write too soon. [...] the more a child is blessed with not being able to read and write well before this age (of the change of teeth), the better it is for the later years of life.”</p> <p>“It is quite wrong to teach reading before writing. In writing, developed from painting-drawing, the whole human being is active – the fingers take part, the body is positioned, the whole person is engaged. In reading only the head is occupied and anything that only occupies a part of the organism and leaves the remaining parts impassive should be taught as late as possible.”</p>
	<p>The Sounds~Write Programme: Underlying theory</p> <p>“Literacy is not just being able to read and write: it is also a means by which individuals can expand the parameters of their own knowledge, explore their own thoughts and share them with others.”</p> <p>“Children learn by being presented with developmentally-appropriate challenges, organised in a coherent way.”</p>
	<p>Beginning to Read, Marilyn Jager Adams, 1994 (p.8).</p> <p>“In the process of proficient reading, the processes supporting orthographic, phonological, and semantic identification of words occur interactively and interdependently; without the three, the reader is left with no capacity or support for comprehension.”</p>
<p>The Effects of Storytelling and Story Reading on the Oral Language Complexity and Story Comprehension of Young Children</p> <p>Rebecca Isbell, Ed.D. Joseph Sobol, Ph.D. Liane Lindauer, M.Ed. April Lowrance, M.S.</p>	<p>“Both, storytelling and story reading were found to produce positive gains in oral language. Differences between the two groups indicated that young children who heard the stories told demonstrated improved story comprehension in their retelling, while children in the story reading group improved their language complexity.”</p> <p>“Storytelling also provides an opportunity to experience the difference between listening quietly and listening actively, by participating in the process.”</p> <p>“Storytelling also provides an opportunity to experience the difference between listening quietly and listening actively, by participating in the process.”</p>

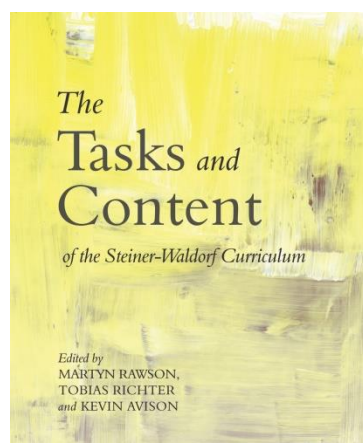
**No Grammar Schools,
lots of play: the secrets
of Europe's top
education system**

<https://www.theguardian.com/education/2016/sep/20/grammar-schools-play-europe-top-education-system-finland-daycare>

In Finland, whose comprehensive school system has sat at the top of Europe's rankings for the past 16 years, the narrow, heated debates on school governance and structure that obsess the UK – free schools, academies, grammars – do not exist.

Central to early years education in Finland is a "late" start to schooling. At Franzenia, as in all Finnish day care centres, the emphasis is not on maths, reading or writing (children receive no formal instruction in these until they are seven and in primary school) but creative play. This may surprise UK parents, assailed as they are by the notion of education as a competitive race. In Finland, they are more relaxed: "We believe children under seven are not ready to start school," says Tiina Marjoniemi, the head of the centre. "They need time to play and be physically active. It's a time for creativity."

2. Maths



The Tasks and Content of the Steiner and Waldorf Curriculum

The teaching of mathematical concepts is connected to the consciousness and activity of the child's movement organism. Counting is inner movement by which outer movement can be observed.

It is possible to avoid confronting children with abstract logical structures, but rather to immerse their whole capacity for experience in mathematics.

- **Classes 1 to 3:** Motivation should be awakened through pictorial description of number qualities. Through pictures, children can grasp internally what is intended. Pure symbolic, logical presentation can never achieve this (at this stage). In order to be able to handle qualitative numbers freely, an inner numerical space needs to be created. This is achieved by a memory developed by learning through rhythmic movement, e.g. times tables through clapping, passing bean bags or skipping. Initially it is important to keep calculations as concrete as possible, and also to work with the principle "from the whole to the parts".

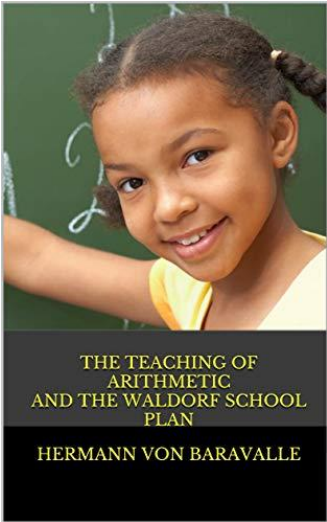

Some topics: Roman/ Arabic numerals, four processes, number bonds, times tables and place value, problem solving.

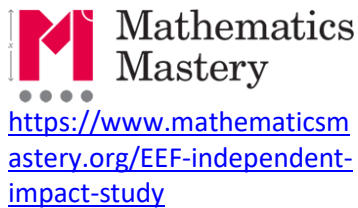
Measurement: length, capacity, weight, money, time,.

- **Classes 4 onwards:** developmentally, the children at this age lose their inner harmony between the inner and the outer world. This is reflected in the Mathematics curriculum when they work with broken numbers: fractions. For this topic it is recommended to teach from the whole to the parts, then from the parts to the whole, and to establish the principle of equivalence. After this the four processes are practiced with fractions. Decimal fractions follow.

Geometry: Developed from form drawing. It's initially free-handed, then, pairs of compasses and rulers must be used. Some topics: mental arithmetic, fractions, decimals, four processes with higher numbers, fractions and decimals, lowest common multiple, highest common factors.

After the twelfth year children can increasingly create order out of what has been gained with the strength of their ability to experience internal logic. In algebra this leads from the activity of calculating to observation of the processes and from there to the discovery of general relationships.

	<p>The Teaching of Arithmetic and the Waldorf School Plan, Hermann von Baravalle, 2020.</p> <p>Intent:</p> <ul style="list-style-type: none"> - Provide the children with a high quality maths curriculum which ensures that each child has secure mathematical foundations translating into learning that can be transferred and applied in different contexts and also ensure success in the Upper School. - Develop a learning community within the class in which the children are capable of fully independent and collaborative learning. - Provide an enjoyable age-appropriate range of mathematical opportunities which develops confident and imaginative mathematicians who are not afraid to attempt problem solving and are able to make connections with maths to real life. <p>Impact:</p> <ul style="list-style-type: none"> - Progress is consistently being made from a child's starting point measured by continuous assessment. - Completion and return of homework is consistent. - Children are seen to be engaged in lessons both in groups and independently, both working alone and helping others or asking for help from others. - Children are able to confidently use mathematical language in real life situations. <p>Assessment: Ongoing assessment will be conducted by class teachers, in the form of questioning, observation by the teacher, informal and formal tests and completion of tasks that embed mathematical skills and concepts.</p>
	<p>Michael Hall Steiner School, Maths curriculum statement.</p> <p>Maths Mastery approach:</p> <ul style="list-style-type: none"> - In depth: each topic is studied in depth and the teacher does not move to the next stage until children demonstrate that they have a secure understanding of mathematical concept. - Whole to parts: children are taught number bonds as two parts deriving from the whole. For example, 5 is made up of a 2 and a 3. Before learning addition, children investigate the different numbers that each number is made up of. - Concrete, pictorial, abstract: teaching maths through concrete physical resources, then moving on to pictorial representations before teaching symbolic representation.



Independent, randomised controlled trial to assess the impact of the mastery approach on pupil attainment in years 1 and 7 (2011-2014):

- On average, Mathematics Mastery pupils made more progress than non-Mathematics Mastery pupils.
- The positive impact was estimated as equivalent to one month’s additional progress. The effect detected was statistically significant, meaning the improvement was likely caused by the programme.



**Mathematics Small Schools Network 2
Autumn Term 2020**

Mathematical reasoning and problem solving questioning (Deepening thinking):

- Step 1&2: Can they describe what they did and explain some reasons for what they did.
- Step 3: Convince me that your chain of reasoning is right.
- Step 4 &5: Justifying and prove it to me.

Fixed Mindset vs Growth Mindset:

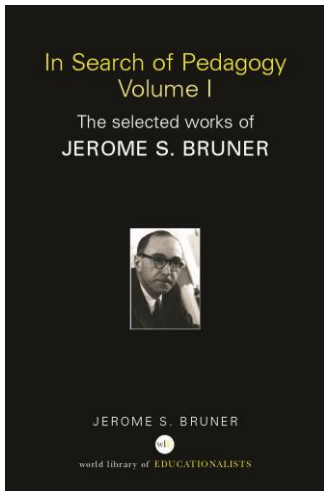
Instead of:		Try Thinking:
I’m not good at this.	1	What am I missing?
I’m awesome at this.	2	I’m on the right track.
I give up.	3	I’ll use some of the strategies we’ve learned.
This is too hard.	4	This may take some time and effort.
I can’t make this any better.	5	I can always improve so I’ll keep trying.
I just can’t do maths.	6	I’m going to train my brain in maths.
I made a mistake.	7	Mistakes help me to learn better.
She’s so smart. I will never be that smart.	8	I’m going to figure out how she does it.
It’s good enough.	9	Is it really my best work?
Plan “A” didn’t work.	10	Good thing the alphabet has 25 more letters!



Concrete-Pictorial-Abstract Approach on Students' Attitude and Performance in Mathematics, D. A. Tan, N. R. Salingay, 2018.

In this research :

- Performance of students in non- CPA group is on average level and students in CPA group are on above average level.
- Confidence in learning Math: students in the CPA group moved from feeling neutral to positive in their confidence.
- Performance in retention test: CPA group is significantly higher than the performance of non-CPA group.



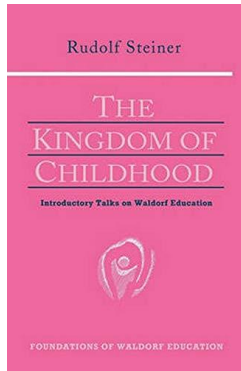
J. Bruner, educational psychologist (1915-2016).

Constructivist theory:

- Concrete, Pictorial, Abstract approach (CPA): new mathematical concepts are taught in this order - bring the problem to life by using physical objects to construct and solve the problem, then move on to visual representations and diagrams, and finally use only mathematical numbers and symbols.
- Students create their own knowledge: students learn better when they use their existing knowledge to create a solution to the problem at hand. Teachers should not just provide the answers because that is not an effective way to learn.

Spiral curriculum:

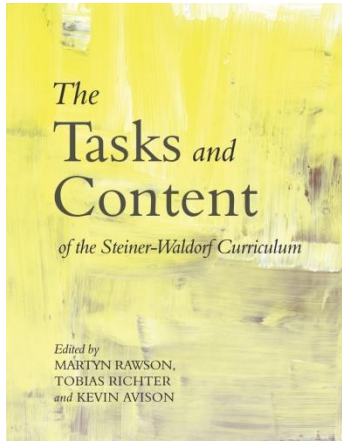
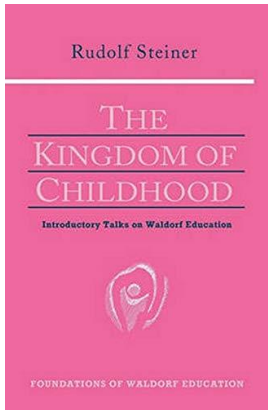
New material is always built upon previous knowledge. Basic math skills will often be revisited to solve more complex problems.





The Kingdom of Childhood, R. Steiner, 1924 (Q&A).

“When we have really seen to it that calculations are not made with abstract numbers, but with concrete facts presented in the form of sums, then we shall see that the transition from the concrete to the abstract in Arithmetic is extraordinarily easy. For in this method of dealing with number they become so alive in the child that one can easily pass on to the abstract treatment of addition, subtraction and so on.”

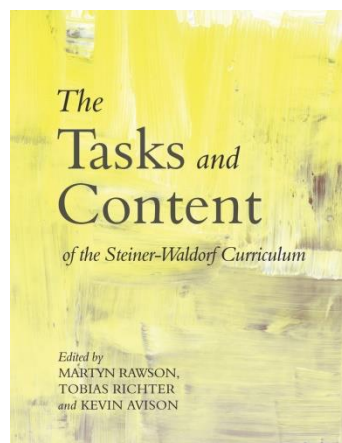
3. Science:

	<p>The Tasks and Content of the Steiner and Waldorf Curriculum (p.271-273):</p> <p>The whole structure of the Steiner-Waldorf curriculum is profoundly ecological. The celebration of festivals, the yearly rhythms of the earth, moon and sun are an integral part of the child's awareness of the world. Also a daily contact with nature during free play and gardening give the child an ongoing experience of the rhythms of natural world.</p> <p>There is a sense of wisdom revealed by the intricate relationships of plants and animals:</p> <ul style="list-style-type: none"> - Classes 1 and 2: the chosen stories include imaginative elements to later on understand concepts such as transformation, metamorphosis, an awareness of different beings and the need to protect them. - Classes 3 to 6: the creation stories from different mythologies give a holistic image of the origins of the earth, plants, animals and human beings from both an experiential and spiritual point of view, essential to later on understand the scientific explanations of the origin of the universe. - Class 3: in the farming main lesson the children learn how the farmer works with the forces of nature. - Class 4: the human and animal kingdom main lesson allow a feeling relationship to the study of different animals and compare them to the human being. - Class 5: the botany main lesson deeply develops the skill of observation of the unique characteristics of different plants through lively description, painting and poetry. <p>Upper school: the threshold between puberty and adolescence gives birth to the faculties of thinking in a new way. There is an appreciation that analytical thinking and holistic thinking each make their different contribution to our understanding of living processes. Study of physics, chemistry and biology as separate subjects.</p>
	<p>The Kingdom of Childhood, R. Steiner, 1924.</p> <p>p.17-19: In the first seven years of age, what you say, what you teach, does not yet make an impression. But it is <i>what you are</i> that matters. If you are good, this goodness will appear in your gestures. [...] Everything that you do passes over to the children and makes its way within them. [...] This is what you must pay attention to during the first seven years of life and not what you express in words as a moral idea.</p> <p>p.23: Between the change of teeth and puberty you must educate out of the very essence of imagination. [...] In your teaching you must work in pictures, in images.</p>

	<p>Science Through Stories – Teaching Primary Science with Storytelling. J. Portle and O. Smith (p.9).</p> <p>Storytelling and storymaking are a great way to develop communication skills, social skills and topic knowledge all at the same time.”</p>
	<p>Science Education through Gardening and Nature-Based Play, Alyse C. Hachey and Deanna L. Butler, 2009.</p> <p>Building scientific attitude involves encouraging children’s natural desire to question and seek answers. Gardening supports children’s curiosity about and exploration of the natural world and provides opportunities to build self-confidence through successful nurturing of plants over time.</p> <p>Science pro-cess skills relate to how children find the answers they are seeking. Such skills include using simple tools like rulers and magnifiers to observe scientific phenomena and documenting findings through graphs and drawings. Children learn these skills through concrete problem solving and discovery that focus on inquiry. Gardens provide a work space for children to raise questions about the natural world, take hands-on action, and seek answers through observation, exploration, and data collection.</p>
	<p>Child Development and the Teaching of Science, David Mitchel, 2015.</p> <p>Waldorf education works with the developmental stages of growth in children. The harmonious unfolding of the personality depends on the healthy maturation of each developmental stage, and each progression builds upon the one before it. Strengthening a child’s later cognition in science begins with the building of a strong foundation in the early years, initially by parents and family and later by teachers.</p> <p>Preschool children are informed about the world through their bodily or sense impressions. The wonder in the world passes directly into their physical, sensory organization through every experience they encounter. To constructively aid development, adults could arrange activities so the children are consciously exposed to different smells, tastes, surfaces and balancing toys. However, parents should be cautious that their efforts do not over stimulate the child through too much structured activity. Additionally, too much conversation with the child regarding conclusions or ideas relating to the sensory impressions should also be avoided.</p> <p>The ages between three and five is the time when the children are learning to comprehend weight (mass)—but understanding it directly through their limbs and senses.</p>

	<p>Try never to answer a child’s scientific questions with dead or fixed concepts. A young child does not have the ability to fully comprehend scientific abstraction. Children need living pictures that fill their souls with wonder and surprise, not dead abstract reasoning. Their inner imaging becomes vitalized when an observation awakens a feeling of reverence. Reverence and a sense of wonder are the groundwork that Waldorf education uses to build its science curriculum.</p> <p>In science knowledge is acquired through observation. The task for teachers and parents of young children is to create the conditions to experience wonder and love from they meet in the world. Some of the activities which help lay a healthy foundation for scientific thinking in the elementary school child involve activities in nature— walks where the child’s observation is stimulated to notice the seeds in the swaying grasses, the pattern of the bark on different trees, the glitter within a rock, the geometry of a particular leaf or flower, the reflection in a puddle, and so on. The important thing at this stage is not to allow judgments or concepts to become fixed. Rather, let the observations stand, expand upon them, and provide opportunities for experimentation and comparison. The children do not require overt adult direction; they need merely to live into the world of nature freely, allowing their own experiences to build.</p>
<p style="text-align: center;">The New York Times</p>	<p>Education for Independent Thought, Albert Einstein, 1952.</p> <p>It is not enough to teach a man a specialty. Through it he may become a kind of useful machine but not a harmoniously developed personality. It is essential that the student acquire an understanding of and a lively feeling for values. He must acquire a vivid sense of the beautiful and of the morally good.</p> <p>It is also vital to a valuable education that independent critical thinking be developed in the young human being, a development that is greatly jeopardized by overburdening him with too much and with too varied subjects (point system). Overburdening necessarily leads to superficiality. Teaching should be such that what is offered is perceived as a valuable gift and not as a hard duty.</p>
	<p>On Cosmic Religion: With Other Opinions and Aphorisms, A.Einstein and L. Infeld, 1931 (p.49).</p> <p><i>“Imagination is more important than knowledge. For knowledge is limited, whereas imagination embraces the entire world, stimulating progress, giving birth to evolution. It is, strictly speaking, a real factor in scientific research.”</i></p>

4. Arts and crafts:



The Tasks and Content of the Steiner and Waldorf Curriculum (p. 155 to 160)

Art Studies:

“Teachers will see how the children grow through their experiences of art. It is art that awakens their intelligence to full life” (R. Steiner).

Painting: We distinguish between painting or drawing as a depiction or illustration (using wax blocks, wax or oil chalks and coloured pencils) and painting with watercolour paints. The former accompanies all subjects working in support of the themes of the lessons. Painting with watercolours usually takes place once a week.

In Painting, the forms arise out of the colour, and the outer form is an expression of an inner experience. In classes 1 and 2, the teacher prepares these experiences by telling “painting stories” that bring the colours to life before they are used. From class 3 onwards, painting can echo or take up the themes of the main lessons, such as Animal Studies, Norse Mythology or Botany.

Form Drawing: The children are initially not expected to draw some external object, but to experience a quality of movement. This kind of drawing leads to free-hand geometry in class 5. Initially the purpose of form drawing is to awaken the sense of form, this is needed and used when they learn to write and read. Exercises develop from simple lines and curves to gradually more complex shapes.

Clay Modelling (class 4 onwards): Modelling is developed from the interplay of the hands, which together form an inner space. It’s about working with a whole lump of clay that can be changed and shaped. It’s the hand that feels the surfaces, thus becoming a kind of organ of perception and formation.

Crafts – Handwork, Woodwork and any other crafts:

Thinking and understanding arise out of activity and movement. Practical work harmonises the child’s soul faculties and thinking, feeling and willing, just as stories work down into the life processes and bodily rhythms in an equally harmonising way.

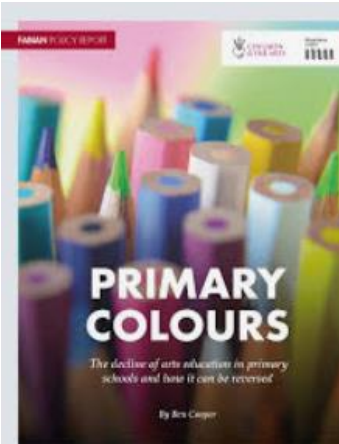
Unless pupils have practiced a craft to a certain level of competence over several years, the creativity and self-directed activity we strive for will hardly be achieved. If we want the students to make real things that serve real needs in the world, they will need to have the time in the timetable to do so. Merely sampling a range of crafts is a form of consumerism.

Reflexion and analysis of what the hands have made, brings consciousness into the intelligence of the limbs.

Materials: Respect for the source of the material and the final handling of worn, used and spent artefacts are the first stages towards individual responsibility for the environment and resourcefulness.

Materials should be sourced locally whenever possible. Learning the sequence from naturally occurring to processed objects and materials. Progression from using the hands to hand tools to machines.

 <p>An Education Manifesto for Craft and Making www.craftscouncil.org.uk/educationmanifesto</p>	<p>An Education Manifesto for Craft and Making, Arts Council, 2014.</p> <p>Our vision is that every child has a chance to discover their practical abilities, develop their creative talents, and become a maker of the future. This vision is rooted in the knowledge that craft skills lead to diverse careers and creative satisfaction throughout life. This Manifesto has been developed by the Crafts Council with, and on behalf of, the whole sector: makers, businesses, students and educators. It embraces craft and making in all their forms. The UK is a world leader in craft. Craft generates £3.4bn for the economy. 150,000 people are employed in businesses driven by craft skills. Craft enriches our society and economy in many ways, from master goldsmiths to makers who build film sets and props, from the small batch production of designer makers to one-off ceramic masterpieces, and from centuries-old traditions to cutting edge digital making. Makers contribute to sectors as diverse as engineering, medicine, technology, architecture, fashion and design. Beyond economic value, education in and through craft contributes to cognitive development and engages learners. Through engagement with materials and ideas, it develops creativity, inventiveness, problem-solving and practical intelligence. And making fosters wellbeing. It is a vital part of being human.</p>
	<p>Knitting Survey, Cardiff University, 2011.</p> <p>Knitting does have a positive impact on mood and feelings. Respondents felt that knitting:</p> <ul style="list-style-type: none"> - Made them happier, helped them to feel calmer and less stressed. - Is good for memory, helps people to think things through more clearly, organise thoughts and improve concentration. - Encourages people to develop new skills in other crafts and transferable skills such as problem-solving and analysis; organisation and time-management. - Helped them to develop patience, persistence and perseverance. Improves motivation and self-confidence, helps relaxation and fosters creativity. - Knitting socially, with others or in groups, gives a feeling of belonging, enjoyment and friendship.
 <p>Department of Psychology, University of Waterloo</p>	<p>The Surprisingly Powerful Influence of Drawing on Memory, M A Fernandes, JD Wammes, ME Meade, 2018.</p> <p>We have shown that gains are greater from drawing than other known mnemonic techniques, such as semantic elaboration, visualization, writing, and even tracing to-be-remembered information. We propose that drawing improves memory by promoting the integration of elaborative, pictorial, and motor codes, facilitating creation of a context-rich representation. Importantly, the simplicity of this strategy means it can be used by people with cognitive impairments to enhance memory, with preliminary findings suggesting measurable gains in performance.</p>

 <p>https://hundred.org/en/articles/the-importance-of-woodwork-in-early-childhood-education</p>	<p>The Importance of Woodwork in Early Childhood Education, Pete Moorhouse, 2019.</p> <p>Woodwork is a wonderful medium for expressive art and creative design and it also has the benefit of encompassing many other areas of learning and development providing a truly cross-curricular activity. Mathematical thinking is developed, scientific knowledge is gained, technological understanding is developed through working with tools, and children become engineers as they construct.</p> <p>Woodwork is exceptional for developing children’s creative and critical thinking skills as children tinker and experiment with the possibilities of wood and tools and then go on to express ideas and resolve their work. But woodwork it is not just about what children make – it is all about the changes that are happening within the child. Woodwork has a significant impact on children’s self-esteem and confidence and it develops a sense of agency – that “can-do” mindset.</p>
	<p>Fabian Policy Report: Children and the Arts, Musicians’ Union, 2018.</p> <ul style="list-style-type: none"> • Cognitive development: Arts education supports cognitive development in children, improving English, language acquisition, and maths. Evidence shows that children are more willing to apply themselves in all subjects and engage in independent learning if arts education is a prominent part of the school day. • Overcoming inequalities: Inequalities in education and attainment resulting from childhood disadvantage can be overcome through arts education. Engagement with the arts can help disadvantaged children catch up with their middle-income peers and close the vocabulary gap that opens up at an early age. • Building confidence and expanding horizons: Arts education can support personal development, help children develop the confidence to adapt in an ever-changing world and give them the ambition to aim for a career in Britain’s booming creative industries. • Social cohesion: Arts education in primary schools helps children to appreciate diversity and realise how much they share with each other. • Accessibility of arts education in primary schools: the survey reveals a dramatic decline in the provision of arts education in primary schools: a decline in quantity, in quality, a lack of support and resources, a lack of skills and experience, not enough emphasis on arts and reduced accessibility of arts outside of the classroom.