



2021-23 Course Descriptions Grades 9 and 10

Morning Lesson Blocks - Sciences

Thermal Physics (2021-22 G9)

The intention of this main lesson block was to develop the ability of the 9th grade students to perceive phenomena in the world and then note patterns and relationships that help us to use and organize these observations.

The block began with a few experiential exercises that helped the student develop a more conscious understanding of how different thermal science words are used. We then began a look into the historical development of the thermometer and how the different temperature scales were developed. This was followed by a series of experiments and calculations involving, specific heat capacity of various materials, the latent heat capacity of materials when they change material state, the thermal conductivity of various materials and the phase change diagram. Time was also spent doing illustrations of various equipment, developing and using mathematical equations, learning how to draw a cross-section and graphing data from an experiment.

The final days of the block were spent understanding the working of a 4-cycle internal combustion engine in an automobile. Various other applications of all of these principles in daily life were discussed on a daily basis.

All students were expected to participate in class discussions and experiments, produce a main lesson book and take a final exam.

Science of Cooking (2021-22 G9)

In our 7 lessons of science of cooking, we were able to experiment with the effects of different types and sizes of cuts of vegetables, different types of cooking (frying, boiling, baking and poaching), presence and timing of salt, presence of acids and temperature on food. We explored the science behind making caramelized onions, tasty potatoes, fresh and vibrant looking cooked greens, and red vegetables, bright yellow fluffy eggs, meringue, Carpaccio, sauce injected boiled eggs, kefir, yoghurt and mozzarella. Although our lessons were mostly designed as hands on group work in the kitchen, we also did have some class time where we actually went in depth to the related scientific phenomena, such as denaturation through acids and physical action, osmosis, diffusion, acidity, hydrophobic, hydrophilic, organic compounds (carbohydrates, proteins, and fats), and Maillard reaction. Students were asked to cooperate and actively work within their groups, as well as taking notes, and write a couple essays.

Bio-Chemistry (2021-22 G9)

In this course we pursued the traces of life by examining the metamorphosis of organic substances, how their qualities transform, and their relationship to human beings. We began by examining plant life and



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how they convert non-organic, fluid substances (air, water, and sunlight) into organic, rigid life (sugar, starch, cellulose). We then observe how these organic materials transform as they are combined, distilled, decomposed, or fermented. We looked at the astonishing practice of how odors, aromas, and flavors are formed through esterification and we examined how fats and oils are used to create soap through saponification. Our block concluded with a field trip to a local brewery to see fermentation on an industrial scale.

All students were expected to participate in class discussions and lab work, produce a main lesson book and take a final exam.

Botanical Distillations and Hands-on Herbalism (2021-22 G9)

This block gave the students an opportunity to appreciate the history and practice of herbalism as an accumulation of multiple ancient traditions with modern applications accessible to all people. They gained hands-on experience with practical herbal preparations, maintained a record of 'recipes' made in class, developed sensitivity to their inner sensory experience of a variety of herbs, developed some capacity to describe those experiences, and experienced botanical distillation within the larger context of the history of alchemy and their morning Bio-Chemistry block.

We began each day with a story, lecture, biography, or demonstration that set the context for the daily experience and study. During this time, I shared the history of herbalism, frameworks for approaching healing with herbs, and ways in which herbs can be prepared into medicine. I also introduced the students to the materials, ingredients, and methods required for the hands-on portion, and small amounts of general theory and practice.

Each day the students had the opportunity to experience an infusion or decoction of a single herb that I had prepared in advance. They were encouraged to take time to note the appearance, scent, flavor, texture, and inner experience invoked by the herb, and guess what they thought the herb was. We then prepared an herbal 'recipe' or two from a variety of herbs and plants, with weekly focus on herbs in foods the first week, herbal first aid the second, and herbal skin and body care the third.

In addition, we used a copper alembic still to distill hydrosols. I shared the history and practice of water distillation and we explored this in the context of the water cycle, their other experiences of distillation, the alchemical tradition, herbalism, and the individual plant being distilled. During the distillation process, students sketched the alembic and labeled all the parts and their function. Students also took turns monitoring the heat, output, and water flow through the condensing coil.

Geology (2021-22 G9)

Does the earth change? We watch plants sprout, bud, blossom and go to seed in a single season, so it is hard to imagine the rocks under our feet being in a constant progression of change as well. And yet they are. The focus of this block was for us to recognize that rocks are only at a temporary resting point of



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dynamic activity and that earth change happens on a different kind of a timeline, incredibly slowly or dramatically fast.

The first week of the block focused on geologic time and how we can tell the age of rocks both in relative and specific age. We also learned the biography of Alfred Wegner, who proposed the theory of Continental Drift and the idea of the continents once all being connected in the supercontinent Pangea.

During the second week, we looked more locally to fascinating geological sites in Washington State, dedicating a large amount of time to the Ice Age Floods that shaped much of Eastern Washington. During the third week, we went on a camping trip to visit many important sites in understanding the Ice Age Floods, including the Ginkgo Petrified Forest, Dry Falls, and Saddle Mountain. In our final week, the students presented individual projects on a geological topic of their choice.

Students were evaluated on their class participation, main lesson books, block quiz, and oral presentation.

Classical Mechanics (2022-23 G9 and G 10)

We began this course by asking what makes things sink or float in a surrounding fluid. This led to the study of buoyancy and Archimedes' principle and to the nature of pressure in fluids. We then studied motion in its variety and its properties. The subject is called Classical Mechanics because it surveys knowledge in this field acquired over a period of two millennia up to the creation of quantum mechanics. This science is utilized to run our vehicles on the road, in and on the water, and in space. This is the same science used to understand celestial mechanics, the effect of gravitation on our buildings and bridges, and many more phenomena of the mechanical aspects of life on earth and the universe. Out of a historical survey of thought connected with various scientists, experiments were conducted to allow the students to draw, out of their own observations, the requisite conclusions for understanding the mechanical phenomena of nature. This phenomenological method emulates the path of the scientists who discover the laws of nature without knowing them beforehand! The students created main lesson books, in which some of what they learned in this course was documented. As an independent project, the students researched and presented a topic in this field of knowledge in groups of two. The topics ranged from a mechanical hand to ducks' ability to fly, float, and dive, to the physics of bowling, to airplanes and blimps, gear ratios and clocks, a go-kart, manual transmission, the phases of the moon, and to rocket propulsion. The students also created, or in some cases procured, demonstration models and turned in an accompanying paper. The students practiced taking in each other's presentations carefully, asking intelligent questions arising out of what was presented, and offering one another respectful, honest, and supporting feedback.

Hydrology (2022-23 G9 and G10)

The Hydrology main lesson block began with a series of observations on how different types of water pour and form differently under differing conditions. Through a series of careful observations and

detailed illustrations, students were able to discern differences in the cohesive and adhesive qualities of different types of water. The role that surfactants play in reducing these effects was also demonstrated.

The course then investigated how water expresses differing qualities under the different conditions of the hydrological cycle, how non-artesian springs bring water to the surface, and how water moves in its classic vortex form in most streams, rivers and even sink drains. Many examples of outer water movement were observed.

The final aspect of the block looked at how the qualities of water movement play a key role in the efficiency of the salmon swimming upstream as well as the circulation of blood in the body.

Each student was expected to participate in all class activities and discussions as well as to produce a detailed written and illustrative record of the key observations and discoveries developed in the class.

Inorganic Chemistry (2022-23 G9 and G10)

During these 2 weeks, we looked at the origins of the names of chemical elements, general behaviors of chemical elements with other elements, rules behind names and formulas of ionic and molecular compounds, signs of chemical reactions, concept of catalyst, types of chemical reactions such as synthesis, decomposition, single displacement, double displacement (precipitation and neutralization), balancing chemical reactions, and acids and bases. Students experienced the above phenomena through demonstrations, group experiments, and in-depth class discussions relating the phenomena to daily life. Also, students expressed some of these experiences in their main lesson books, through illustrations and writings while also completing worksheets for practice.



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Morning Lesson Blocks-Humanities

World Drama (2021-22 G9)

We asked ourselves “What is drama?” and “What role does drama play in the history of human beings?” As a response to the first question, we looked quite deeply into what human beings actually do when they create and perform a dramatic presentation; to answer the second question, we looked at the origin and progress of drama in the West and the East for the past 3000+ years. After we replaced the geographical terms West and East with more dramatic and appropriate concepts of Representational (West) and Presentational (East), we attained a global view of human activity for the past 5 Millenia, at least. In the afternoon sessions, we created an evening production of dramatic pieces.

The students were expected to participate in discussions, do all necessary readings, and keep a notebook that contained a record of classroom activity. They also were expected to do whatever was necessary to put our skits, monologs and short one-act play onto the stage.

History of Revolutions (2021-22 G9)

Modern World History through Revolutions is an apt title for this block. By looking at the paradigm of resistance leading to rebellion which can culminate in a revolution, we explored in some detail four political-cultural revolutions, the American Colonial and the French of the eighteenth century and the Russian and Chinese in the twentieth. We looked into the particular characteristics of each; we contrasted them; we tried to understand them within their historical frames. All this we set within a larger evolution of human consciousness.

The students were expected to participate in class discussions, keep a daily record of the class in a notebook, create four images that were emblematic of the four political revolutions we covered in class, and teach their peers about a revolution not otherwise covered in the course.

Biography (2021-22 G9)

“What makes a life meaningful?” With this question guiding our inquiry, we explored the mystery of human biography through a variety of mediums. We worked with biographies presented in the text “Coming of Age in America”, Mountains Beyond Mountains, oral interviews conducted by Terry Gross, podcasts like Memory Palace-Distance on Samuel Morse, et al. We examined the different genres and modes of presentation that Biography can take, and practiced presenting biographies in various formats such as “factual biography” as well as “creative non-fiction”.

Students practiced a variety of other skills in this block: written response papers, group discussion, interviewing skills and learning how to respectfully draw out someone’s story with interest and compassion, etc.

Students learned about 20th century history through exploring these biographies, learned about themselves through class discussions and written responses, and learned how to get involved creatively in their own biographies, as well as in the stories of others. Students were evaluated based upon their class participation, as well as their written and oral work.

Ancient Cultures, Ancient Civilizations (2022-23 G9 and G10)

In this block we spent three weeks establishing the existence and nature of the consciousness inherent in human beings in ancient times and places. This consciousness is called participatory in that human beings felt one with nature, the gods, their social groupings. A major transition to a more critical, analytical kind of consciousness (thinking) emerged with the Greeks, and we began our investigation of that culture as well. We even introduced ourselves to the Romans in their mythological kingly times and the republic. The students were expected to do all the reading assignments so they could participate in the class discussion which, always, necessitated the creation of a large notebook. The students also created a timeline to express on one page what took us weeks to develop. There was an extensive open-book exam as well.

Art History of Ancient Times (2022-23 G9 and G10)

Through a series of slide presentations, research, hands-on projects, and written reflections, this block covered topics and regions of art history from pre-historic times through the Hellenistic period of ancient Greece. We began with the oldest discovered works from around the world including cave wall paintings and artifacts. Students recreated their own cave wall painting with self-mixed pigments in various binders on a slate tile. Groups then created a board or card game with stone age facts and images. They researched and presented in groups the various subregions of the ancient Near East including the Fertile Crescent before we studied the art of ancient Egypt. Each student then completed a watercolor of an Egyptian-style scene of a tomb wall painting or a page from a funerary book. We moved on to cover the art of the Aegean Sea area and each student created their own fresco painting using a wet paint into wet plaster technique to simulate a true fresco wall painting of the time. Students also completed a small clay figurine in the style of the many found in burial sites of Cycladic peoples. Before we completed our final segment, we took a field trip to the Burke Museum at UW, and pairs of students presented findings on aspects of Native art of the Pacific Northwest. We concluded with the study of Geometric, Classical, and Hellenistic time periods of ancient Greece and each student presented information on one piece from the period and completed a pencil drawing of a marble sculpture from the era. This, combined with notes and written reflections in a visual presentation within the lesson book, comprised the work of this block. Assignments included Stone Age art around the world; cave painting on tile; reflection on prehistoric art; board/card game on Stone Age art images and facts; board game reflection; ancient Near East student presentations in groups; Egyptian art; Egyptian painting; reflection on Egyptian art; Cycladic, Minoan, Mycenaean art; Cycladic figurine; fresco painting in wet plaster; classical Greece; single slide background on classical Greece; drawing of Greek sculpture; reflection on Greek art.

Independent Research Project (G9 and G10)

In this block, students were given the opportunity to research a topic of their interest, ideally an aspect of the modern/contemporary world that they wanted to better understand. They spent the first week gathering information and researching, the second week was dedicated to compiling their information and writing an essay, and in the final week of the block, students gave presentations to their peers. In order to be successful in these tasks, the students needed to be able to choose a topic that would be broad enough to allow them to deeply research for a week, while not being so broad that they couldn't possibly go deep enough to gain understanding in the short amount of time they had. They needed to be able to manage their time well, both in school and out to meet deadlines, and they needed to be thoughtful and clear in their presentations to make sure that they could successfully share their learning with their classmates. They also needed to write an essay that held a clear and consistent focus, gave ample supporting evidence, was organized, and paid attention to stylistic details like grammar, punctuation, word choice, and varied sentence structure.

Creation Myths (2022-23 G9 and G10)

In our block on Creation Myths, we spent a few packed weeks comparing creation myths from many cultures around the world, from Africa to Europe, Asia, and North America. We looked for common patterns and themes across the different myths, and tested Owen Barfield's hypothesis that they are evidence for an "antecedent unity" of consciousness and the world. Students also researched and prepared presentations on various contemporary "creation myths" from physics, psychology, biology, anthropology, and the business world.

Cultural Geography (2022-23 G9 and G10)

The focus of this block was to gain an understanding of the many ways in which physical geography impacts and influences culture across the globe, both in the past and the present. We looked closely at a few cultures, beginning with the San people of Southern Africa, as we explored how geology, water access, climate, natural resources, and other geographic elements help shape culture. Late in the block, our focus shifted to recognizing how a culture, in turn, makes drastic changes to geography. In addition to these cultural explorations, we reviewed geography terms and became more confident in sketching the continents and locating countries on the globe.

Morning Lesson Blocks-Computer Science

Computer Science 1 (2021-22 G9)

The goal of the block was to introduce the students to the basic concepts of how to define and solve problems that can be solved by a computer, how to think in computer programming terms and what computers can be useful for. We tried to generate interest and curiosity rather than getting the students to write programs on a real computer at this early phase. The basic concepts covered in the course included variables, operations, hardware and software and various types of algorithms. Usually, the format of each lesson was an outdoor or common indoor activity followed by individual work. Students also worked in small groups. Students expressed a lot of interest in learning how computers work and asked some really challenging questions. At some point we even delved into some ethical issues of AI and uploading one's mind into a computer!

Topics we discussed:

- Order of Magnitude and complexity, and why it is so important
- Learning the subject of encryption and encoding
- History of Computers and of Computer Science
- Computers in our daily life

Computer Science 2 (2021-22 G9)

The goal of this block was to practice what the students had learned in the first block. The students learned a special programming language, Scratch, which is aimed at children and “non-computer-geeks”. This gave them the opportunity to understand some of the major concepts in computer programming (and, as a by-product, some of the concepts of computer science and software engineering). Some students chose to use Python, which is a more advanced programming language that we will use next year. We used the *Everything You Need to Ace Computer Science and Coding in One Big Fat Notebook* textbook as the basis for the block.

The program included data and analysis; considering what software engineering is; and computational thinking including decomposition, pattern recognition, abstraction (as a lead to object-oriented paradigm), and how to design, think and write an algorithm. We also introduced the stages and steps in writing a software program including design and documentation, implementation, testing, debugging, documenting with comments, and collaboration. We covered the following coding components: variables, conditional statements, loops, events, procedures and functions.

The students chose their own projects to program and could either implement problems given by the teachers or implement their own ideas and programs. They learned how to write a small program and had to face a problem, think about the solution(s), design an algorithm and implement it. The project included the following phases: description of the problem, solution as an algorithm (pseudo-code and/or flow-chart), code (including comments), test suite, description of how they debugged the code, reflection and thoughts for the future.

Computer Science 3 (2022-23 G9 and G10)

We started off the year with a review of last year's block and an introduction to Python. Python is one of the most popular programming languages in the industry and is relatively easy to get started with. After working through a few examples, we took on an ambitious project of completing the Hangman game by Halloween!

The students learned how to get user input, process strings of characters, manage lists and run loops with conditional statements to control the flow of the program. Some of them also learned to work with files, containing different words to guess and simple character-based graphics to display. A lot of attention was given to proper design and documentation. They also learned how important it is to make the code concise and readable, so it's easy to understand and change after a while or make it easy for someone else to understand and work on it as part of a team. At the end of their work, the students wrote reflections on all the good work they did.

Computer Science 4 and Physical Computing (2022-23 G9 and G10)

In this course we pulled off a seemingly impossible feat – jumping from pure software development in Python, which we did in the Computer Science 3 block, right into building hardware, and programming it! The students successfully transferred their knowledge from the prior course – Python programming in Linux – to a new platform, Raspberry Pico. Pico is a gumstick-sized computer with ports that you can connect electronic components to. The students started with turning on/off LEDs, and proceeded with more complicated systems, like buzzers, proximity sensors, and external displays. Some even learned soldering. In the STEM community, this area of learning is called Physical Computing, and it gives students a basic understanding of how computers are built and provides them with a chance to venture into Electronics as well. We extended an opportunity for the students to continue with their projects beyond the timeframe of the block until the end of the year with weekly support from the instructors.

Morning Lesson Blocks - Math

Descriptive Geometry (2021-22 G9)

This was mainly a course in drafting three-dimensional shapes, which requires developing both precision and artistic abilities. As objects of our work we chose regular solids of which there are five: the cube, the octahedron, the tetrahedron, the dodecahedron, and the icosahedron.

We learned how to draw these shapes in three-dimensional representations from chosen viewing angles. We also constructed models for four of the shapes out of acrylic Plexiglas and mat boards in a manner that they nested all within one another. During the final week of the course we began exploring the Fibonacci numbers and the golden ratio. We approached these two topics first mathematically and then sought their occurrence in the natural world.

The students produced a portfolio of drawings and models for the cube, the octahedron, the tetrahedron, and the dodecahedron.

Possibility and Probability (2022-23 G9 and G10)

The focus of this main lesson block was to introduce students to methods of counting possibilities (including permutations and combinations) and the fundamentals of probability theory. This subject presented students with a new way of thinking, provided them with opportunities to practice finding a systematic way of solving problems by observing patterns and similarities between problems, and offered them the experience of wonder in the realm of mathematics.

Students learned to answer questions such as:

- How many different lunches (consisting of a sandwich, a drink, and a dessert) can I make given a specified number of choices for each component?
- How many different seating arrangements are there for a class of 20 students?
- How many different committees of three can be formed from a group of 10 people?
- What is the probability that two students in a class of 30 share the same birthday?
- If I have a choice between entering two different raffles, how can I tell which raffle gives me the better chance of winning?

Working both independently and in small groups, students were led through the process of discovering answers to these questions, which were sometimes very surprising. During the first week of the block, the class studied a variety of questions through which they learned several methods for counting possibilities (including the fundamental counting principle, permutations, and combinations). The second week of the block was focused on learning about probability theory through an experiment and games of chance. During the last week of the block, students applied what they learned by completing a project in which they developed their own game of chance. Students were given the choice to work on their project independently or to be assigned to a small group. As part of the project, students were asked to calculate the expected value of an aspect of their game (or of the whole game, if possible) and



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to provide a basic write-up of their game. In addition, students were asked to physically create their game so that their classmates could have a chance to play it during a “game day” at the end of the block.

Fine, Practical, and Performing Arts Blocks

Handwork- Knitting a Colorwork Hat (2021-22 G9)

In this block the students returned to the art of knitting after several years of different studies in handwork. We began by reviewing the basic stitches of knit and purl and looked more closely at the anatomy of a stitch to give the students the ability to correct more errors on their own. They each created a swatch with a 2x2 knit/purl pattern in preparation for knitting a hat. The students were able to choose an offered pattern or design their own using knitting graph paper. This required learning how to read a knitting chart which is written moving left to right, bottom to top as that is how we knit. Perhaps the most difficult tasks in colorwork are managing multiple strands of yarn at the same time, and tacking down floats, the unused color strand, as you continue to knit. The students worked to achieve a successful tension while tacking floats so that their hats were still stretchy and stitches even and consistent. By the block's end, every student had completed or were in the very final step of completing a knitted hat.

Skills developed:

- Knit
- Purl
- Decrease
- Pattern and chart reading
- Pattern creation
- Tacking floats

Fine Arts- Art Journaling through Mixed Media (2021-2022 G9)

During this block, students created art journals through mixed media: collage, stamping, sumi ink, acrylic, watercolor, crayon, and pen. The art journaling process served as an explorative creative journey—an inward process not for display purposes.

Lessons consisted of three components:

1. Inspiration – introduction to various artists and art journal resources
2. Medium Exploration – making a scratchboard, carving a stamp, choosing the right glue, creating texture on the page, stenciling, etc.
3. Application – art journal page crafting using mixed media

Students worked on two books simultaneously:

BOOK A: Notes and Processes



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BOOK B: The ART JOURNAL • notes on materials, tools, and artists • step-by-step guide • sketches and idea space • technique practice • applied mixed media • images guided by prompts such as dreams, memories, favorite quotes

Drama (2022-23 G9 and G10)

In this afternoon block we chose to produce dramatic renderings of an origin myth, Sky Woman, a Greek myth, Persephone, and the tale of Gilgamesh. Once they chose their production, each student was responsible for it! Thus, the scripts were written, scenes developed, blocking established, lines learned, paintings painted, lighting developed and run, programs designed and drawn up. Of course, on the night of the performances, each group became a stage crew and made an evening of drama visible. The students were expected to do what was necessary to accomplish the goal: the evening performance. In the end, the students had quite a success on their hands.

Shibori (2022-23 G9 and G10)

During this short art block, the students learned both about the plant dye indigo, used to dye cloth beautiful shades of blue since ancient times, and the dyeing technique called shibori. In Japanese, the verb shiboru means "to wring, squeeze and press". When dyeing fabric, shibori refers to the Japanese technique of using different resist tools or folds to create beautiful patterns. The high school students learned various traditional shibori techniques, and created some of their own, to dye cotton and silk. They used twine, PVC pipe, wood cut-outs, clothes pins, and rubber bands to create different effects with the indigo dye. They also learned different folds to create different patterns. After using tea towels to practice the various techniques, the students dyed silk scarves and an article of clothing of their choice.

Art in a Box (2022-23 G9 and G10)

During this block, students created two to three assemblage boxes using found objects and mixed media including collage, cloth, string, acrylic paint, wood, metal, beads, ink, epoxy, and more. Each day was an adventure as students found creative ways to bring their many ideas to life. Mistakes led to new discoveries; finding certain objects on the materials/collage table brought inspiration. Students were given journals at the start to keep notes, ideas, and drawings in one place. These were then submitted at the end of the block. The emphasis, of course, was on the box project itself: Students worked on an initial assemblage box project using a model train figure to create scale. This first project gave them a sense of the mediums and objects at their disposal. For their second project, students used wood cigar boxes, various mediums, and found objects to create 3D collages of their dreams, alternate universes, childhood memories, and more.

To showcase their incredible work, we set up a gallery show in the east lobby titled "Art in a Box." Students carefully selected how and where to display their pieces. They worked on information cards to accompany their box collages – some were personal and candid, others were succinct. I thoroughly enjoyed working with this thoughtful, artistic class.

Music and Singing (2022-23 G9 and G10)

In this block, we asked “What is music?”, and explored it phenomenologically. Daily we worked toward an understanding of the inner nature of what we hear in musical tones, intervals, and chords, by listening to them and attempting to go beyond the initial personal impressions of “I like” or “I don’t like”. Our efforts were channeled into “What am I hearing?”, and “What is the experience of what I hear?”, and further characterize these experiences in words that help us bring the unconscious experiences of music into a growing conscious one. The effort was to work together to create an accurate picture of the reality of what we hear, and not to attach associations of other experiences to them. In this aspect of our work, only the effort to participate was expected, and no writing or bookwork was required.

In the afternoons we worked on singing properly, and learned songs to show in two different venues, first at the assembly for Martin Luther King Jr. Day, and second at the end of the block for a small audience. In this aspect of the class, students were again assessed and graded for their effort to engage artistically with one another and create each in their own way the right environment for others to unfold freely in singing. The art of singing is at once both humanly universal, and very individual, which because of its intimate nature has an inherent vulnerability within it. Consequently, it requires the greatest delicacy in a group setting, for all to feel safe to fully sing out of their own being, and not hide.

Fine Arts (2022-23 G9 and G10)

During this 6-week long arts block, students began with ancient Greek, Polynesian, and Norse cultural studies. We looked at how these ancient people used sculpture, patterns, and form to create meaning in their everyday lives with everyday objects. Students created Greek pottery, Polynesian tiki masks, and dinnerware with Norse symbols. Students were encouraged to add a unique element to their work that expressed personal value or meaning and to create it for a practical purpose (vase, cup, intention for themselves, or wish for their life right now). Next, students took part in a visual arts immersion. Studies in Life Drawing included 1-, 2-, and 5-minute gesture poses which brought moving contact with animal and human subjects. The direct translation of the subject to the drawing created excitement and newness to the practice of drawing. These were done in the ‘dry painting’ medium of charcoal. Longer drawings with studies in value and figures concluded this portion of visual arts and students completed a 35- minute figure study in charcoal. The foundation in ‘dry painting’ supported the next leg of the immersion as students completed a monotone oil underpainting and completed it with layers of color. Continuing the theme of meaning in art, students were asked to choose an image for their painting that reminded them of meaningful values, or something of importance in their own life. To conclude our time together, students took a field trip off campus and explored nature art and the idea of art as an offering to something bigger than themselves. Students were asked to create something in nature that could be offered to the earth, or as a blessing for all beings (as in the Buddhist tradition), or simply to create for creativity itself, not its gain. Students also made an offering on campus in small groups. What is play? What is creativity? and where does inspiration come from? These questions were all explored during this assignment. It was a great joy to work with each of the High School students this year.

Track Classes – Math Curriculum

Grade 9 Math (Algebra I)

Block 1: Algebra Basics

This block served as a review of algebra skills learned last year. These included using simple formulas, combining like terms, order of operations, distributive property, and solving simple linear equations.

Block 2: Exponents & Polynomials

This block built a complete knowledge of how to work with exponents: add, subtract, multiply, divide, square, and square root. Students applied this new knowledge to simplify increasingly complex polynomial expressions. This process included using the FOIL technique to multiply binomials.

Block 3: Factoring

We began this block with students by finding the greatest common factors of various polynomials. Students found that this process is the opposite of the simplifying process they had been doing in the last block. We then worked with trinomial equations which did not have common factors and found how to factor them into two binomials. Lastly, we applied this knowledge to find answers to trinomial equations by setting them equal to zero and factoring.

Block 4: Word Problems

Our last block of the semester focused on strengthening students' ability to translate math problems written in English into mathematical notation (algebra). After translating both from English to mathematics as well as mathematics to English, students decoded riddles that consisted of two variables (X & Y) and solved them by first finding one variable in terms of the other.

Block 5: Quadratic Equations

In this extensive block, students began by solving quadratic equations using the “complete the square” method. After recognizing the limitations of this approach, they began studying the writing of al-Khwarizmi, the great 8th-century mathematician. Through studying his work, students were able to transform his written descriptions into algebraic terms and derive the quadratic formula on their own. After deriving the formula, students used it to solve various quadratic equations.

Block 6: Square Roots, Negative Exponents & Fractions

During this block, students worked to simplify square roots using a variety of methods. First, students were presented with square roots with irrational answers and asked to simplify them by removing perfect square factors. Next, students worked with square roots in the denominator of fractions and found ways to remove them. Lastly, students learned how to work with negative exponents and simplify fractions containing them.

Block 7: Year Review

In our final block of the year, students spent time reviewing all of the topics explored this year and strengthened their critical thinking skills by working through a variety of logic puzzles together.

G10 Math (Geometry)

Grade 10 Math included a study of geometry, a review of algebra, and an introduction to trigonometry. One important focus was to work with the question “How do we know what we know?” Other overarching objectives included introducing students to the art of deductive reasoning, strengthening the students’ mathematical thinking skills and ability to work with precision, and providing them with experiences of wonder in the realm of mathematics.

Block 1: Geometry Basics

The semester began with a review of basic geometry topics that students had studied previously in Grades 8 and 9. The purpose of the unit was to refresh students’ memories of these topics and to lay the groundwork for this year’s studies.

Block 2: Greek Geometry and Deductive Reasoning

In this block, the students studied the evolution of Greek mathematics, with a particular focus on the school of Pythagoras (which was founded at the beginning of the golden era of Greek mathematics) and on the Euclid’s elements (which was written towards the end of the golden era of Greek mathematics). The goals of this block were to provide the students with an experience of the revolutionary nature of Greek mathematical thinking, to introduce the concept of proofs and why they were important to the Greeks, to introduce the students to deductive proofs and axiomatic systems, and to help them understand the impact of Euclid’s work on the world of mathematics. Students also learned to do Euclidean constructions (geometric drawings with a compass and straight edge).

Block 3: Circle Geometry

The primary focus of this block was to discover certain geometric relationships related to circles (such as the intersecting chord theorem, the inscribed angle theorem, etc.) and to learn how to solve numerical problems using these theorems. The work of this block also sets a foundation for an introduction to trigonometry which will happen later in the school year.

Block 4: Proofs and Triangle Geometry

This block provided the students with an introductory experience of writing their own proofs and of building their own axiomatic system. Writing proofs requires the ability to think strategically, articulate one’s thought process in a step-by-step logical sequence that can be easily followed by another person, and articulate the reasoning (or justification) for each step. The objectives of this challenging block were to help students further develop the capacities of clear, precise, logical thinking and deductive reasoning and to give them the experience of knowing that something is true through their own thinking. In addition to writing proofs, students also learned to solve numerical problems using triangle proportionality theorems and studied triangle geometry through geometric drawings.

Block 4 Part 2: Proofs and Triangle Geometry



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During the second half of the Proofs and Triangle Geometry block, students continued their study of triangle geometry through geometric drawings and through solving numerical problems related to triangle proportionality theorems. Students also continued to practice reading and writing proofs.

Block 5: Algebra Review

During this block, the students undertook a thorough review of topics from Grade 9 algebra, including skills related to simplifying expressions, evaluating expressions when given values for the variables, factoring, solving simple equations for x , three methods for solving quadratic equations for x (factoring, square rooting both sides, and completing the square), solving for x in terms of y , finding the common solution for two equations with two variables. After spring break, the students built on their knowledge of solving quadratic equations by deriving the quadratic formula and using it to solve quadratic equations.

Block 6: Introduction to Trigonometry

Students were introduced to the concepts of sine and cosine through the study of certain points in the historical development of trigonometry beginning with Ptolemy's chord function and its relationship to the modern sine function. Students were introduced to the thought process employed by Ptolemy to develop the first trigonometric tables and applied his process to derive a portion of the modern table of sines and cosines. Students also engaged in a small project that required them to use trigonometry to solve a practical problem. To finish the unit and to round out this year's study of proofs, students were asked to make a presentation on a proof of one of the trigonometric theorems we learned about in this unit.

Block 7: Introduction to Logarithms

This short unit introduced students to the concepts of logarithms and fractional exponents.

Track Classes - Spanish

Spanish 1 (2021-22 G9)

In the first term of the year, we began Spanish with a brisk but thorough review of beginning Spanish concepts, such as: pronunciation, the alphabet, the use of masculine and feminine and gender agreement in Spanish vocabulary. We also had a brief geography overview to learn all of the countries in the world that speak Spanish and why that is the case. Perhaps different from most Spanish 1 classes, we took a lot of time to compare what we were learning to how we speak in English, finding differences and commonalities that helped the students to solidify their learning. This meant that our first block had less immersion time than we normally would have, but it laid the groundwork for the rest of the year.

Cooking:

Early in the block, we used several afternoon periods to make many types of salsa and to hold a salsa tasting experience. Interestingly, salsa simply means sauce, so soy sauce, worcestershire, and spaghetti sauce would all be called salsa in Spanish speaking countries. For this tasting experience, we made sauces we consider 'salsa' here in the US, using many kinds of chiles, and differing amounts of tomatoes or tomatillos, onions, garlic, and salt.

Skills developed during the first term:

- Pronouns
- Describing people and things: Agreement of nouns and adjectives
- Making nouns plural
- Naming things you like and do not like: the definite article and nouns
- Talking about going places: the contraction al
- Asking and telling what you want: the verb querer
- Asking for information: making questions with verdad and no

In second term of the year, we continued our vocabulary practice and began to learn more verb tenses, beginning with past preterit. With this new knowledge, students were able to engage in conversations about simple events that had happened in the recent past. We moved on to present progressive, allowing the students to talk about actions that were currently taking place, and past imperfect to talk about recurring events from the past. With these new verb tenses, the students were able to participate in much more complex conversations and read short paragraphs with a realistic flow between the past and the present. The students completed both a written final and an immersive experience where they needed to navigate an unfolding scenario in only Spanish.

Skills Developed during the second term:

- vocabulary
- verb tenses
- stem changing verbs
- present progressive
- past preterit

- past imperfect
- use of ser versus estar
- demonstrative pronouns- this, these, that, those.

Spanish 2 (2022-23 G9 and G10 track classes)

This year, the class met less often but for longer periods of time. Grade 9 and 10 each had separate classes twice a week but covered the same content. Then, on Fridays, we met as a whole group for a 'Conversation and Reading' class.

To provide structure for our learning, the students worked with the *Espanol En Vivo Instructional Workbooks Grade 9-12*, and they enjoyed their ability to both review and deepen their vocabulary and grammar understanding at the same time. The seven units covered this year included greetings, colors, numbers, family, common adjectives, body vocabulary, food vocabulary and useful sentences, weather, clothing, days of the week, months of the year, sports and pastimes, and useful classroom phrases. Other grammar units included understanding the difference between muy and mucho, understanding the difference between saber and conocer, how to describe possession, and direct object pronouns.

In addition to these workbooks, the students constantly reviewed present tense, present progressive, past preterite and past imperfect verb conjugations. Every lesson began with conversation, and lessons were almost entirely in Spanish. In the second half of the year, we spent more time working with conversational Spanish and gaining confidence in speaking out loud. The students were assigned two brief oral presentations, which were not meant to be memorized speeches, but instead were put on with very little preparation. The goal was to use whatever vocabulary they had to make themselves understood.

Conversation and Reading Class: On Fridays, when the class meets as a whole, we read articles and books, and have conversations in Spanish about them. Through this weekly practice, the students have greatly strengthened their pronunciation and ability to understand both written and verbal Spanish. The first book that they read was about Felipe Alou, a famous baseball player from the Dominican Republic. They also read *Rival*, a book about the conflict between Spanish and Muslim forces in Spain in the early 1200's.

Track Classes – Humanities

Grade 9 Humanities

G9 2021-22

The goal of the humanities curriculum in the ninth grade is the development of necessary reading and writing skills, with a specific focus on the developmental needs of students at this age. That is why, across the range of our work during this year, we focus on helping students to ground themselves in the world, amidst the many changes that occur for them physically and emotionally.

A Walk in My World

This unit focuses on a collection of short stories from around the world that move in age from being about young children to being about adolescents. We focus during our discussions on the craft of the authors—how do they want to affect their readers, and what tools do they use to do so? The unit culminates with students writing a story in a style that mimics one of those in the book, but with a plot and characters of their own.

Introduction to Literature

This unit also focuses on short stories, this time from different genres, going from horror through mysteries to adventure. I suggest to the students that these genres represent different ways of meeting the world. Students write and share stories in each of these genres.

The Man Who Mistook His Wife for a Hat

This unit is built around a reading of Oliver Sacks’s famous collection of psychiatric studies. They offer a celebratory picture of the diverse range of human thought, feeling, and behavior. Sacks is also a wonderful writer, and a terrific model for a certain kind of scientific writing. At the end of this unit, students write a sample case study of their own, utilizing some of the techniques used by Sacks that they consider especially valuable.

G9 2022-23 – Critical Writing and Critical Thinking

The year began with the students focused on a careful reading of George Orwell’s *1984*, followed by an analytical essay about the novel. Students then worked to develop critical thinking skills, first with a careful reading of Plato’s *Meno* and then with each student writing a philosophical dialogue of their own on some issue in metaphysics, epistemology, or ethics.

During the second part of the year, we worked on three different kinds of writing, and three different kinds of books. First, we read a range of science fiction stories by Philip K. Dick, and took a crack at writing one of our own. Second, we read a memoir by a blind French holocaust survivor, and wrote a memoir based on a powerful personal experience. Finally, we read the African writer and activist Malidoma Some’s *Of Water and the Spirit* and then wrote a research essay about the encounter of an indigenous culture with the “civilized” world. The goal was for students to read works from different



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parts of the world that require different kinds of literacy, and to practice different genres of writing in order to expand their capacity for thought and self-expression.

Grade 10 Humanities

2022-23 G10 - Writing and Poetry

The year began with the students focused on a careful reading of George Orwell's 1984, followed by an analytical essay about the novel. Students then studied a variety of literary genres. They explored the principles and philosophy behind Chinese poetics while reading and writing poems in many verse forms, from the ballad to free verse. Next we turned to the memoir, using the African writer and activist Malidoma Some's *Of Water and the Spirit* as our text. Finally, we explored the roots of English with readings of *Beowulf*, *Sir Gawain and the Green Knight*, and a selection of Chaucer's *Canterbury Tales*. Students ended the term and the year by writing an essay comparing the treatment by some of these poems of a common theme. The goal was to improve literacy, creative and analytical thinking, and the capacity for self-expression.

Movement Curriculum

Movement and Games (2021-22 G9)

Throughout this year's movement program students acquired new skills and techniques, set personal fitness goals to take ownership of their developing physical capacities, learned the rules and parameters of various sports and how to work cooperatively in a team. The program focused on the following sports: cross country, basketball, volleyball, hockey, and soccer.

Movement and Games (2022-23 G9 and G10)

The purpose of this course was to encourage consistent and healthy movement, social collaboration, and individual activity. Students participated in a variety of games and movement activities, from building skills in various athletics such as basketball to developing enhanced spatial awareness and teamwork in various games. Students also participated in a variety of movement activities such as Spatial Dynamics, yoga, and dance.

Eurythmy (2022-23 G9 and G10)

Eurythmy is a new movement art, intended to help human beings harmonize themselves (inwardly and outwardly) with the creative archetypes in the cosmos, artistically revealed through poetry and music. In this block, students learned different movement exercises and choreographies to accompany various poetic verses and musical pieces. The block culminated in a performance of their artistic work to the high school parent community.

Evaluation was based primarily on the quality of the student's participation: their attention in class, their willingness to engage with the exercises and artistic pieces offered, and their contributions toward a positive atmosphere to collaborate and risk growth within.