LEVEL EIGHT

Discovery Charter School - Teachers, Students, Families, and Community in a Learning Partnership

Family Guide To Total Learning Objectives: Creating Knowledge Through Questions, Projects, Experiences and Problem Solving

WELCOME TO LITERACY

"Open up the treasure chest
To see what you will find
Answers for your questions
And a fortune for your mind"

METHODOLOGY

All instruction at the Discovery Charter School focuses on total learning. We feature a blended teaching method that engages students in acquiring knowledge and skills through an extended inquiry and experience based process. Learning is structured around authentic questions, carefully designed projects and targeted learning experiences. Teachers, students and families are fully involved in planning and implementing learning experiences and projects. Our instruction blends the processes of thinking, developing skills and gaining knowledge allowing students to "understand", "know" and "do". We support students in learning and practicing skills in problem solving, communication, and self-management. We integrate curriculum areas, thematic instruction, and community issues. Assessment of performance is on content and skills using criteria similar to those in the work world, thus encouraging accountability, goal setting, and improved performance. We focus on meeting the needs of learners with varying skill levels and learning styles and we target individual interests to engage and motivate bored or indifferent students. We highlight the Learning Team Concept focusing on the synergistic power of teachers, students and families working together. We develop Individualized Learning Plans closely aligned with curriculum guidelines, benchmarks, and standards.

LOVE OF LEARNING

_____ understands that each human brain is a powerful learning tool

_____ understands that their brain is growing and adding new brain cells each day

_____ believes in their ability to learn and expresses excitement about learning

_____ applies the process of asking questions and sharing previous gained information

_____ understands that projects and hands on experiences are exciting learning procedures

_____ responds to questions posed by family, teachers, peers and other adults

_____ generates new questions, new problems, new experiences and new projects

_____ identifies areas of interest and curiosity to assist in selecting learning projects.

_____ organizes, records, and shares information using objects, pictures, demonstrations, technology and verbal responses

_____ values personal knowledge skills in light of rapid growth of information base due to technology

_____ understands that their brain is constantly growing and collecting information from all activities and experiences

_____ understands that there are many ways to learn and that different people learn in different ways

_____ identifies personal learning styles, strengths, and preferences

_____ emphasizes expansion of personal learning styles and strengths

PROBLEM SOLVING

_____ strengthens understandings by reviewing and expanding previous knowledge through research and discussions

_____ understands that asking questions, designing projects, and planning experiences are valuable learning tools.

_____ applies previous experience and knowledge to problem solving experiences

_____ explains and verifies results of problem solving experiences through project presentations

_____ continues to apply a variety of strategies when the first strategy proves to be unproductive

_____ identifies a variety of resources and experiences to support the learning and problem solving experiences

_____ develops confidence in the use of technology to assist in solving problems and supporting project presentations

_____ reviews problem solutions, and uses questions to identify new problems and experiences

_____ takes pride in problem solutions and transfers knowledge gained to improve the world around them

_____ develops a wide variety of project presentation tools combining personal learning styles, technology, and experiences to reinforce knowledge gained

ENGLISH

Level Eight English continues to expand students' reading, writing, speaking, listening, and research skills. It strengthens critical thinking and study skills. Grammar, usage, and mechanics are taught as necessary elements of the writing process. Literature serves as a model for writing and critical thinking and is used to provide background and incentive in project subject selection.

WORD ANALYSIS

_____ distinguish between words with closely related meanings

_____ interpret the denotation and connotation of words

_____ apply vocabulary learned in all content areas

_____ read fluently

READING STRATEGIES

_____ select and use strategies before, during and after reading a text

_____ develop and understand the purpose of a text

_____ differentiate between main ideas and supporting details

_____ summarize information from several sources

_____ evaluate the effectiveness of reading strategies

LITERARY TEXT

_____ analyze plot elements in text to determine the effects on climax

_____ make inferences and draw conclusions about plot elements or characters based on the climax of the text

_____ explain the author's use of foreshadowing in text

_____ analyze the author's methods of characterization

_____ make inferences and draw conclusions to compare themes generated by a single topic

_____ determine which of several existing themes the main theme of a text is the main theme

_____ analyze how the author's choice of point of view affects the reader's understanding of a character and/or plot

_____ interpret, make inferences, and draw conclusions to explain the author's use of figurative language

_____ compare tone and/or mood between texts or within a text

_____ make inferences and draw conclusions to describe the use of dramatic irony and/or irony of situation in text

_____ make inferences and draw conclusions to analyze the influence of historical events and cultures on an author's works

_____ make connections to self, other texts, and/or the author's theme

_____ write a logical conclusion for a research paper that relates to the thesis and outcome of the research

_____ determine the usefulness of sources

_____ formulate research questions and develop a plan to gather information for a research paper

_____ evaluate possible sources for credibility and usefulness for a research paper

_____ cite sources of information correctly using a standard form of research documentation

LISTENING

_____ listen for and evaluate the use of public speaking techniques

_____ listen to and evaluate the logic of a speaker's argument

_____ listen to, provide, and evaluate constructive feedback

_____ solve problems by identifying, synthesizing, and evaluating data

_____ expand vocabulary through listening

_____ follow oral directions accurately

SPEAKING

_____ use public speaking techniques to deliver presentations

_____ express and defend an opinion or position by applying and citing evidence

_____ apply Standard English to communicate orally

MATHEMATICS

Level Eight Mathematics builds on the concepts of number operations with integers, decimals, rational numbers, data analysis, probability, geometry, measurement, spatial relationships, patterns, and algebraic concepts. The use of manipulatives, mathematical tools, and technology, including calculators and computer software, are an integral part of this course. Level Eight students plan and implement experienced based projects and community experiences involving the application of number skills. They use the resource of numbers to strengthen their project presentations and to contribute to the solution of problems in the community. They organize their mathematical information to support their presentations.

NUMBERS, NUMBER SENSE AND COMPUTATION

_____ translate among fractions, decimals, and percents, including percents greater than 100 and percents less than 1

_____ explain and use the relationship among equivalent representations of rational numbers in mathematical and practical situations

_____ calculate with real numbers to solve mathematical and practical situations

_____ use order of operations to solve equations in the real number system

PATTERNS, FUNCTION AND ALGEBRA

_____ find the missing term in a numerical sequence or a pictorial representation of a sequence

_____ evaluate formulas and algebraic expressions using rational numbers (with and without technology)

_____ solve and graphically represent equations and inequalities in one variable, including absolute value

_____ add and subtract binomials

MEASUREMENT

_____ identify how changes in a dimension of a figure effect changes in its perimeter, area, and volume

_____ calculate percents in monetary problems

_____ apply ratios and proportions to calculate rates and solve mathematical and practical problems using indirect measure

SPATIAL RELATIONSHIPS, GEOMETRY AND LOGIC

_____ apply the properties of equality and proportionality to congruent or similar shapes

_____ demonstrate dilation using coordinate geometry and models

_____ describe the relationship between the original figure and its transformation or dilation

_____ calculate slope, midpoint, and distance using equations and formulas (with and without technology)

DATA ANALYSIS

_____ organize, display, and read data including box-and-whisker plots (with and without technology)

_____ find the number of combinations possible in mathematical and practical situations

_____ distinguish between permutations and combinations

_____ differentiate between the probability of an event and the odds of an event

_____ formulate reasonable inferences and predictions through interpolation and extrapolation of data to solve practical problems

PROBLEM SOLVING

_____ generalize solutions and apply previous knowledge to new problem solving situations
_____ determine an efficient strategy, verify, interpret, and evaluate the results with respect to the original problem
_____ apply problem solving strategies until a solution is found or it is clear that no solution exists
_____ interpret and solve a variety of mathematical problems by paraphrasing
_____ check the reasonableness of a solution

MATHEMATICAL COMMUNICATION

_____ use formulas, algorithms, inquiry, and other techniques to solve mathematical problems
_____ evaluate written and oral presentations in mathematics
_____ identify and translate key words and phrases that imply mathematical operations
_____ model and explain mathematical relationships using oral, written, graphic, and algebraic methods

MATHEMATICAL REASONING

_____ recognize and apply deductive and inductive reasoning
_____ review and refine the assumptions and steps used to derive conclusions in mathematical arguments
_____ justify answers and the steps taken to solve problems with and without manipulatives and physical models

MATHEMATICAL CONNECTIONS

_____ use mathematical ideas from one area of mathematics to explain an idea from another area of mathematics
_____ use manipulatives and physical models to explain the relationships between concepts and procedures
_____ use the connections among mathematical topics to develop multiple approaches to problems
_____ apply mathematical thinking and modeling to solve problems that arise in other disciplines, such as rhythm in music and motion in science

LEVEL EIGHT ALGEBRA is designed to provide students with the necessary knowledge and skills to be prepared for further studies in mathematics. It is intended to increase mathematical fluency in problem solving, logic, reasoning, and effective communication in the study of patterns, functions, and algebra. This course builds on the concepts of rational and irrational numbers, data analysis, probability, geometry, measurement, spatial relationships, patterns, and algebraic concepts. The use of technology, including calculators and computer software, is an integral part of this course. This course fulfills the Algebra credit required for graduation.

PREPARATION: PROFICIENCY EXAMINATION

_____ review previous-grade topics while preparing for the Nevada High School Proficiency Examination in Mathematics

REAL NUMBER SYSTEM

_____ evaluate formulas and algebraic expressions using multiple strategies

_____ solve problems using real numbers

_____ apply properties of the real number system including exponents, radicals, and scientific notation

_____ solve problems using matrix arithmetic

_____ evaluate formulas and algebraic expressions, including rational expressions, using multiple strategies

FUNCTIONS, EQUATIONS AND INEQUALITIES

_____ solve problems integrating coordinate geometry and algebra

_____ determine solutions for multiple-step linear equations and inequalities involving real numbers

_____ graph and solve linear equations and inequalities

_____ graph and solve absolute value equations and inequalities

_____ graph and solve quadratic equations and inequalities involving real numbers

_____ graph and solve systems of linear and non-linear equations and inequalities, with and without technology

_____ perform operations on polynomials, including factoring

_____ solve problems involving the domain and range of functions and relations

DATA ANALYSIS AND PROBABILITY

_____ organize statistical data in tables, graphs, and matrices

_____ determine the probability of chance events

_____ apply permutations and combinations to mathematical and practical situations, including the Fundamental Counting Principle

PROBLEM SOLVING

_____ generalize solutions and apply previous knowledge to new problem solving situations

_____ determine an efficient strategy, verify, interpret, and evaluate the results with respect to the original problem

_____ apply problem solving strategies until a solution is found or it is clear that no solution exists

_____ interpret and solve a variety of mathematical problems by paraphrasing

_____ identify necessary and extraneous information

_____ check the reasonableness of a solution

_____ apply technology as a tool in problem solving situations

_____ apply combinations of proven strategies and previous knowledge to solve non-routine problems

MATHEMATICAL COMMUNICATION

_____ use a variety of techniques to solve mathematical problems

_____ evaluate written and oral presentations in mathematics

_____ model and explain mathematical relationships using oral, written, graphic, and algebraic methods

_____ communicate and evaluate mathematical thinking based on the use of definitions, properties, rules, and symbols in problem solving

_____ use everyday language, both orally and in writing, communicate strategies and solutions to problems using appropriate mathematical language

MATHEMATICAL REASONING

_____ recognize and apply deductive and inductive reasoning

_____ review and refine the assumptions and steps used to derive conclusions in mathematical arguments

_____ make and test conjectures about algebraic and geometric properties based on mathematical properties

_____ justify the validity of an argument

_____ construct a valid argument

MATHEMATICAL CONNECTIONS

_____ use mathematical ideas from one area of mathematics to explain an idea from another area of mathematics

_____ explain the relationships between concepts and procedures

_____ use the connections among mathematical topics to develop multiple approaches to problems

_____ apply mathematical thinking and modeling to solve problems that arise in other disciplines, such as rhythm in music and motion in science

_____ identify, explain, and apply mathematics in everyday life

SCIENCE

Level Eight Science provides physical science explanations that extend understandings developed in previous science courses. Students will use scientific processes, protocols, and tools, including inquiry, to build understanding of structures, patterns, and relationships explained through the physical sciences. Critical thinking, collaboration, accuracy, and communication skills will be emphasized as students reinforce their scientific literacy. Students plan and implement projects, experiences, problem solving and community involvement activities to bring the world around them into their lives. Students share their ideas, discoveries, and problem solutions with their community.

NATURE OF SCIENCE

_____ identify and critically evaluate information in data, tables, and graphs

_____ critically evaluate information to distinguish between fact and opinion

_____ recognize that different explanations can be given for the same evidence

_____ explain that scientific inquiry includes evaluating results of scientific investigations, experiments, observations, theoretical and mathematical models, and explanations proposed by other scientists

_____ use multiple methods for organizing items and information

_____ describe advantages and disadvantages of using technology

_____ explain that scientific knowledge is revised through a process of incorporating new evidence gained through on-going investigation and collaborative discussion

MATTER

_____ recognize that particles are arranged differently in solids, liquids, and gases of the same substance

_____ explain how elements can be arranged in the periodic table showing repeating patterns that group elements with similar properties

_____ use various methods for separating mixtures based on the properties of the components

_____ describe how atoms often combine to form molecules, and that compounds form when two or more different kinds of atoms chemically bond

_____ explain that mass is conserved in physical and chemical changes

_____ recognize that matter is made up of tiny particles called atoms

_____ describe the characteristics of electrons, protons, and neutrons

_____ explain that substances containing only one kind of atom are elements which cannot be broken into smaller pieces by normal laboratory processes

FORCES AND MOTION

_____ describe the effects of balanced and unbalanced forces on an object's motion

_____ use electric currents to produce magnetic forces and use magnets to cause electric currents

_____ explain that every objects exerts gravitational force on every other object, and the magnitude of this force depends on the mass of the objects and their distance from one another

ENERGY

_____ explain that visible light is a narrow band within the electromagnetic spectrum

_____ describe how vibrations (e.g. sounds, earthquakes) move at different speeds in different materials, have different wave lengths, and set up wave-like disturbances that spread away from the source uniformly

_____ explain that physical, chemical, and nuclear changes involve a transfer of energy

_____ recognize that energy cannot be created or destroyed, in a chemical or physical reaction, but only changed from one form to another

_____ describe how heat energy flows from warmer materials or regions to cooler ones through conduction, convection, and radiation

_____ explain that electrical circuits provide a means of transferring electrical energy to produce heat, light, sound, and chemical changes

ATMOSPHERIC PROCESSES AND THE WATER CYCLE

_____ describe the properties that make water an essential component of the Earth system

GEOGRAPHY

Level Eight Geography is the study of the world's cultures, economics, history, regions, and geographic features from the development of ancient civilizations through the Age of Exploration. Students examine the earth from the scale of states, nations, countries, and continents creating connections to contemporary geographic conditions. Students synthesize concepts, patterns, and interdependent relationships that make our ever-changing world diverse and dynamic. The growth of the interdependence of the world's population and the challenges those relationships present, offers opportunity for a wide variety of experienced based projects. Students are encouraged to share projects, identified problems, and suggested solutions to these problems with the community. This is a required course for all level eight students.

_____ use maps, globes, and other geographic tools and technologies to locate and extrapolate information about people, places, and environments

_____ explain the physical and human features of places and use this information to define and study regions including patterns of change

_____ evaluate how economic, political, and cultural processes interact to shape patterns of human migration and settlement, influence and interdependence, and conflict and cooperation

_____ summarize and predict the effects of interactions between human and physical systems on the resources of the world

_____ compare the different political systems in the world and how those systems relate to the United States and its citizens

_____ cite evidence of the contributions of people and their diverse cultures

_____ apply the content literacy skills necessary to analyze historical documents, artifacts, and concepts

_____ use information, media, and technology literacy skills necessary to research, communicate, and demonstrate critical thinking