Maria Montessori
EDUCATION CENTRE

Cosmic Education
and
the Alberta Program of Studies

The following document outlines how the Maria Montessori Education Centre ("the School") meets and exceeds the Alberta Program of Studies in the "Kindergarten", Lower and Upper Elementary programs through Montessori lessons and methods.

In the few instances where Montessori lessons do not cover specific needs of the Alberta Program of Studies, Montessori style materials are created and lessons prepared to cover the subject matter. Examples of areas requiring such adaptation are lessons relating to the Alberta Government, and societies covered in the Alberta program, through adaptation of existing lessons of governance and cultural studies.

English Language Arts

The following is taken from Implementing Montessori in the Public Sector, edited by David Kahn, North American Montessori Teachers' Association and The Montessori Elementary School and Its Curriculum by Jean K. Miller.

All areas of the curriculum are dependent and interdependent on language skills and language appreciation. Geometry, mathematics, science, social studies, music, art and movement are interrelated with the child's understanding and skill in reading, grammar, writing and history of language. Key lessons given in the other areas of the curriculum provide inspiration and stimulate interest in learning through listening, discussion, writing and reading. The study of language arts occurs concurrently with the total Montessori curriculum which requires research and sharing of knowledge and information through informal discussion, written composition, oral reporting, dramatic presentations or artistic illustration.

Since the method is rooted in discovery learning, the children freely explore thoughts ideas, feelings and experiences. As they choose areas of exploration, they are usually eager to seek information and to learn how to communicate it with their peers. The environment provides increased freedom for social interaction and cooperative learning and as such there is an increased flow of language that naturally occurs. As they work with one another the children extend their language skills by listening, asking questions, and articulating their points of view. With the multi-age grouping, children have other competent writers and readers older than themselves who can help them. The older students increase their competencies in written and verbal expressions as they help others. The teacher serves as an overall guide to individual, small group and class activities through lessons and decisions.

Cultural studies give impetus to creative expression in the classroom. Music, art, and drama are integrated into the regular life of the classroom. Children write their

own plays and often write their own music for musical productions. Artistic media are explored as the students illustrate their research. In the classroom, they experience quality literature and poetry read to them by the teacher and read by themselves. The teacher also tells stories and encourages celebrations and the learning of cultural and historical aspects of communication. Through creative productions, the children learn poise and the value of the cooperative effort. They learn to listen and view respectfully. All the language arts skills are practiced in an integrated manner.

Reading skills in a Montessori elementary classroom are learned through content area material. These skills are learned more easily and with more interest when they are needed by the children to understand material for self-selected research projects or through self-selected quality children's literature. They learn to read by reading to learn. There are some prescribed reading and writing activities but these are seen as keys to get the children started. These include activities with phonetics. Resource material at various reading levels if provided in the classroom as well as the school library. If the children need more than this, going out into the community is arranged.

Writing skills are also learned through work in content areas. Children share their knowledge and information gathered in research through written composition. Both hand and computer generated written work is created. Penmanship is developed with special activities which prepare the hand directly and indirectly. Keyboarding skills are given similar guidance. In the early stages of writing, spelling is not corrected unless the child insists so that the flow of ideas may predominate. Spelling is studied separately, as are punctuation, capitalization and grammar. As this study continues, the children's compositions will reflect the increased knowledge in these areas. They are cultivated as tools to help the child in his or her creative expression.

Grammar study and language analysis activities in the Montessori elementary program are learned through the use of unique concrete materials. These are highly motivating and interesting as they emphasize exploration. This study begins with games with the parts of speech. Montessori invented symbols for the parts of speech, each with its own meaning and story. These are used with the study of words in meaningful sentences. Syntax, the order of words in a sentence, is learned by using cut-up sentences and making permutations to discover which order makes sensible sentences. The Montessori grammar boxes isolate and focus attention on the parts of speech and their qualities. Follow-up activities include the exploration of the etymology of the words in sentences, categorization of words by parts of speech in sentences, word study of the root form of words, and later tracing the history of changes in the meaning of words over time.

Grammar box work uses complete sentences. The child always goes from a whole sentence to the study of a part of the sentence. Through this analysis, the child gains greater comprehension of what is read and learns naturally how choice of words helps one write clearly and effectively. Command cards accompany the boxes which provide the child opportunity to practice with passages of more than one sentence in length. The purpose of the commands is to help clarify meanings of words in context. These commands are done cooperatively by groups of children

and thus provide opportunity for discussion and resolution of meaning and interpretation. Grammar boxes are considered keys and are used extensively at the Division I level. At the Division II level, the teacher will extend this study by the use of textbooks and curriculum materials used by the district.

There are also specialized concrete curriculum materials for language analysis in the Montessori program. These materials help the student to learn parts of the sentence such as subject, predicate, direct object, indirect object, clauses, and the type of sentences such as simple, compound, complex, and compound-complex. This material is used throughout the elementary years to lead the child deeper into the understanding of the relationship of words to parts of sentences, and finally to in-depth study of the noun and its attributes and the verb and all its tenses and moods.

These engaging activities with the conventions of language enhance the children's understanding of how language works. They learn the terms and vocabulary of English language arts. Most importantly, they increase their abilities to comprehend the oral and written expression of others and their abilities to express themselves clearly and artistically in speech and in writing. Further work in the social studies areas include the history of language.

Evaluation of the children's reading and writing progress is done in a variety of ways and is based on individual student performance. Teachers use anecdotal records, the children's own records of their work, and the child's use of language and reading in real situations. Provincial achievement tests will benchmark achievement in relation to other district and Alberta students. The Montessori teacher will know the district requirements and will match the Montessori activities to them. He/she will implement the Alberta English Language Arts program of studies using the Montessori materials and activities to meet general and specific learner outcomes.

Mathematics

The Alberta Program of Students states that mathematical meaning is best developed when learners have mathematical experiences that proceed from the concrete to the abstract and from the simple to the complex. It states that the use of manipulatives can enhance the learning of mathematical concepts while supporting diverse learning styles and needs of students. It indicates that a broad goal of the mathematics program is for students to develop a positive attitude toward mathematics and a confidence in its use. Further, students should appreciate mathematics as a science and art and appreciate its contribution to civilization and culture. They should have a base of knowledge and skills related to Number, Patterns, and Relations, Shape and Space, and Statistics and Probability.

Dr. Montessori pioneered the use of manipulatives for mathematics. The Montessori learning materials for mathematics are perhaps the most impressive of all the Montessori materials. Many of these materials have been reproduced and are being utilized in non-Montessori classrooms. A Montessori elementary program, however, also includes a comprehensive plan for their use which ensures that learner outcomes and goals outlined in the Alberta program of studies are met. The

enthusiasm for mathematics and the solid foundation of mathematical knowledge are hallmarks of good Montessori education.

Montessori math activities proceed from the concrete to the abstract and from the simple to the complex. They follow a basic pattern of experience with quality, experience with corresponding symbols and then the association of quantity and symbol. For example, with number concepts 0 1000, students work with cubes of a thousand beads, square of a hundred beads, bars of ten beads, and individual unit beads of one. They work with colour-coded cards representing 1000-9000, 100-900, 10-90 and 1-9. When these are mastered they play games associating the quantity and symbol. The operations of addition, multiplication, subtraction and division are then introduced using these quantities and cards. As they progress to the next level of abstraction, colour-coded stamps replace the quantities and symbols. The four operations are then conducted with the use of these stamps. The next level of abstraction utilizes dots in place value columns. Finally, when the children are ready, they perform the operations utilizing pencil and paper. Simultaneously, the students work on the memorization of facts. With varied activities and concrete materials, memorization is enjoyable and accomplished relatively easily. Memorization will assist the children to freedom from the manipulatives and hence to the higher levels of abstraction.

Regarding the movement from the simple to the complex, Montessori materials isolate focus on the concepts they are designed to present. For example, when introducing geometric solids, solids are used which are identical in colour and proportion so that the focus of difference is the shape of the object. After mastering the concept in isolation and learning its name, the concept is extended into the environment. The students apply their knowledge and identify cubes and spheres etc. in the classroom or community.

When the children enter the elementary, mathematics is put into a historical perspective with the telling of the Story of Numbers. This is one of the key lessons which are given at the beginning of the school year to lead the children forward in their cultural studies. Mathematics is then seen in context of the whole of human life.

The Montessori alternative program teacher will have to include problem-solving activities done in other Division I and Division II classes. He/she will need to incorporate these into the sequence of activities with the students. The use of manipulatives to assist with problem-solving would support the Montessori philosophy and fulfill this requirement. Additionally, the teacher will need to incorporate the use of technology, ie: computers and calculators, to ensure that the students develop skills with these tools. Probability and Statistics would be addressed in the following way: the teacher would develop Montessori-style activities to make sure that portion of the curriculum would be covered.

Evaluation in the mathematics area is ongoing. Montessori teachers informally test the children as they play the games with the various materials. For example, the children play games in a small group bringing the teacher quantities of 1000's, 100's, 10's and 1's as described above. As the children bring what is requested, the teacher is able to evaluate their knowledge and abilities. When they are able to

tell the teacher what they have brought, he/she will introduce the next activity which involves the large symbol cards of these quantities. Once this is mastered, the next exercise in the sequence is presented for work. As the children begin work recording with pencil and paper, they add these to their portfolios which are used as evaluation tools. Provincial test will be given at Grade 3 and Grade 6 as for students in other programs.

Science and Social Studies

The following is taken from Implementing Montessori in the Public Sector, edited by David Kahn, North American Montessori Teachers' Association and The Montessori Elementary School and Its Curriculum by Jean K. Miller.

Montessori programs integrate science and social studies with the rest of the curriculum. They utilize a skeletal framework that is interrelated and open-ended. Montessori educators, using Dr. Montessori's term, refer to this framework as "Cosmic Education". It provides a whole into which details may be placed.

In this way, the student's education becomes a coherent whole rather than a conglomeration of unrelated bits of information. The framework serves the needs of both global and linear thinkers and helps each individual to relate his or her predominant style of thinking to the other style.

Five "great lessons or stories" set the stage for this integrated learning. The stories are given within the first six to eight weeks of school. These stories appeal to the children's imaginations and set the stage for future explorations, discoveries and studies. They are told each year to the new children in the class. Older children who have heard the stories before are also invited to join in. These stories or lessons deal with the development of the universe, solar system and earth, the development of life on earth, the appearance of human beings, and the development of language and mathematics.

Montessori history follows the development of the solar system, life on earth, development of humans, early civilizations and recorded history. The children discover and explore history through the use of key interactive timelines, charts and cards which serve to inspire further research in books, museums and the community.

The study of geography is designed to show how the configurations of the earth contribute to the history of all people. The study of physical geography is the basis of economic geography – which shows the interdependence of all nations and people. Key specialized materials such as geography puzzle maps, interactive pictures and charts encourage exploration in the classroom leading to research in other sources such as books and the community.

Montessori biology activities are structured in such a way as to give the child a means of classification – so that he can structure and relate the facts of biology. The ultimate goal is an ecological view of life and a feeling of responsibility for the environment. The child will see that each individual life on earth, through seemingly selfish in its fight for its own survival, in reality serves the good of the whole. The

activities include the use of key materials, charts, cards, and booklets, experiments and the care of plans and animals.

The first science experiments are designed to give the child the basic knowledge which will make possible the understanding of the development of the solar system, the earth and its configurations, life on earth and the needs of plants and animals.

Additional presentations on the development of language, mathematics, geometry, commerce, architecture, music and art, as well as the great revolutions (agricultural, urban, industrial and information) all contribute to the unfolding drama of life on earth.

The hoped for result in this integrated study is that the children see the struggle of life to develop itself and how this struggle and long labour has benefited them. Recognizing this, they may see the place they have in the development of life and their responsibility to further it. They may also be guided to a discovery of meaning in life.

In the study of history, the fundamental needs are used as a guide for research into how people at various times in history met those needs. In biology, the children look at the contribution of flora and fauna to the needs of humans. In geography, the children examine the influence of physical geography on meeting those needs as well as the influence of climate, seasons, natural resources, etc. The contributions of physics and science are also considered, as are the cultural manifestations of music and art.

The organizing centre provided by the fundamental needs chart, keeps the various areas of the curriculum integrated, promotes an ecological view of life on earth, and helps children assume a responsible place in history.

The Montessori guide will need to integrate the specific topics of the Alberta social studies and science program of studies into these larger outlines with attention to the time frames outlined by Alberta education. As this is an open-ended program, this can be easily done. These topics have their place in the whole outlined above. It will be the teacher's responsibility to guide study on the topics in a time appropriate manner.

Music

Music is a part of the integrated curriculum. It emerges frequently in the Montessori classroom, as a means of expression. Singing, specialized musical bell and tone bars and notation manipulatives, other instruments such as the Orff instruments are used by the children for music theory and ear training, for composition and for performance. In the study of music history, the children may do research on the development of music and express the research in a time line. They may relate the instruments, composers, musical forms, and literature in the country of origin, art, architecture, politics, etc. of a certain time. They may listen to a piece of music and then use it for contemplation, expression of the feeling in movement, to the expression of feeling in writing or art, to research and study of instruments, style, musical form.

Art

In addition to art of its own sake, art is integrated with the rest of the curriculum. The children may use a variety of techniques and media for artistic expression related to other areas of study. The teacher aids the student in the development of skills to enrich their abilities for self-expression. A study of historical development of artistic expression is available within the history materials. Appreciation activities are a natural part of the historical study. Art cards, books, and trips out in the community to museums and galleries are used along with these activities. The art studio should occupy a quiet section of the classroom environment.

Drama

Drama is integrated in the classroom as outlined in the program description of English Language Arts.

Health

The themes of health education of self-awareness and acceptance, relating to others, and life careers may be integrated into the Montessori program by utilizing the Fundamental Needs of Humans. Body knowledge and care may be integrated with biology studies. Human sexuality would be taught in this context as outlined by the district in a specific time frame.

Physical Education

The physical education program would follow the Alberta Program of Studies. Focus would be on skills acquisition and on cooperative games. Attention is paid to the scheduling of physical education activities to impact as little as possible on the large blocks of uninterrupted classroom time needed by the Montessori program to maintain its integrity.

Daily Physical Activity

Alberta Learning has implemented 30 minutes per day of Daily Physical Activity, separate from the Physical Education curriculum. This will be integrated into the day through various classroom activities.

Computers

Computers will be treated as a tool, not a subject.