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ABSTRACT

This paper explores the similarities between Orff's Schulwerk, Montessori's philosophy, and Gardner's theory of Multiple Intelligences in an effort to explore how to best teach a child. In the late 19th century, specific learning theories began to emerge. Maria Montessori and Carl Orff each developed innovative teaching theories during the first half of the twentieth century. In the 1980s Howard Gardner presented his theory of Multiple Intelligences. The paper begins with a description of the work of each of these educators. The Schulwerk process is described in detail and its four activities of exploration, imitation, improvisation, and creation are discussed. Montessori's method of creating a teaching method to provide the child with all the tools necessary for becoming an adult are then presented. Next, Gardner's seven intelligences of linguistic, musical, logical-mathematical, spatial, bodily-kinesthetic, and personal are explored. This is followed by a section showing how these three ideas can work together in one classroom to provide a complete and whole education of the mind, body, and spirit. The paper concludes by noting that a child educated in a combination of these three philosophies has the opportunity to develop all of his or her abilities. Contains 10 references. (Author/SD)

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Supporting the Development of the Whole Child

through

Orff Schulwerk, Montessori

and

Multiple Intelligences

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Knowledge is transferred from one generation to the next in many different ways. In the late 19th century, specific learning theories began to emerge as important factors in the education of young children. Maria Montessori, (Montessori, 1972) and Carl Orff (Orff, 1976) each developed innovative teaching theories during the first half of the twentieth century. Though they did not work together or at exactly the same time, their philosophies have many similarities. Much later, in the 1980s, Howard Gardner (Gardner, 1983) presented a theory of Multiple Intelligences, similar to the learning theory of the Ancient Greeks but in a modern format, Gardner's theory can easily be implemented by teachers of the Schulwerk and Montessori method.

Carl Orff, a German composer, developed a magical pedagogy for teaching music and movement, Orff Schulwerk. This pedagogy overlaps with the teaching of 'academic' subjects and personal development. Maria Montessori was one of the foremost researchers and educators of her time . Originally trained as a physician, Montessori later became an innovative educator. In 1983, Howard Gardner outlined his theory of Multiple Intelligences. Gardner's theory can be applied to the teaching and learning of all things in life: academic, artistic, spiritual, and psychological.

When considering how best to teach a child, one needs to do several things. Montessori observes the child, Orff listens and observes, and Gardner believes all the 'intelligences' of the child should develop to their fullest potential.

This paper will explore the similarities between The Schulwerk, Montessori's philosophy, and Gardner's theory of Multiple Intelligences (hereafter referred to as MI). First, a description of the work of each of these educators will be presented. These will be followed by a section showing how these three ideas can work together. Let us consider the child like the colors of the spectrum, with infinite possibilities. If we teach her using a combination of these three ideas, we allow the child to create herself combining the colors into infinite combinations.

The Schulwerk

Orff Schulwerk or, the Schulwerk, is a process for teaching music to children. Carl Orff developed his elemental approach while at the Guntherschule in Munich between 1924 and 1936. His goal was the "regeneration of music through movement, through dance" (Orff, 1976, p.17).

Gunild Keetman, a student at the Guntherschule, was an indispensable partner in the creation of the Schulwerk. Orff felt there should be a way to teach and create music using the elements that are basic to music and dance. Orff had a conversation with his friend, music historian Carl Sachs about his plans. Sachs' parting words to Orff were ".. in the beginning was the drum" (Orff 1976, p. 17). This comment became the basis for Orff's work.

The Schulwerk was originally designed for teaching adults, but over the years Orff adapted the process to the teaching of young children. Now the Schulwerk is exclusively used to teach children.

The voice, (speech, chanting and singing), movement, (dance and body percussion), and instruments are the media used in the Schulwerk. Children naturally sing and chant rhymes while they move through the day. The Schulwerk uses children's rhymes. Children speak the words, then chant with a steady beat, usually patchen, (hands slapping thighs lightly). When the rhythm is steady and the children maintain an even beat while chanting, other unpitched percussion is added.

The words are set to a melody using the interval of the falling minor third. This interval is used around the world in children's chants. The pitches above and below this interval are added as the children get comfortable singing. For the young children, Orff used the pentatonic, five note scale.

There are no dissonant pitches in this scale making anything the children sing or play sound consonant immediately. The pitched instruments are also tuned to this scale.

Movement is added in whatever form is appropriate to the rhyme. The children have had experience with movement independently from the creation of the music. Experimentation with moving the body in space to different kinds of music is an essential part of the Schulwerk. Free movement to drums and other instruments allows children to feel how the body can encompass the rhythm without words. Children may learn to move to music with contrasting sections of fast, slow, or smooth, jerky. As they acquire a movement vocabulary, they are able to combine dance movement with the music they are creating.

The third medium in the Schulwerk is the barred instruments. These pitched percussion instruments can be tuned to the pentatonic scale or the diatonic scale. Wooden barred xylophones, metal barred metalaphones, and small metal barred glockenspiels make up the Orff instrumentarium. As a basis for the music, Orff uses ostinati, a repeated rhythm or melody that continues throughout the piece. The ostinato usually occurs in the lowest pitched instruments, but can be played by any.

The Schulwerk process can be divided into four areas; exploration, imitation, improvisation and creation. These four activities are used in various ways. not necessarily in this order. It is important to have solid experience in the first two to execute the second two. When the child has experienced all four, any combination and order can be used to facilitate a lesson plan (Shamrock, 1995).

Exploration:

The children explore all aspects of the Schulwerk. Each instrument, including the voice, is played, trying all the possible ways of making a sound. All kinds of movement are used, sometimes accompanied by music sometimes not. Children love to try different kinds of locomotion, as well as movement with certain restrictions. Moving like different animals is a way for children to experience different body placement and form. All these can be put together in endless combinations for the children to explore.

Imitation:

The ability to learn aurally is not valued in our culture as it was in the past. The Schulwerk is taught using the echo technique. Children learn to repeat what they hear and see. This is a technique that has been used for

centuries to transmit knowledge of all kinds. First the fragments for learning are very short. As the child gains ability, the phrases to imitate become longer and more complicated.

Improvisation:

The child can learn to improvise in all the media of Schulwerk. It is more comfortable for the child to do this after time is spent acquiring a 'vocabulary' of movement, and rhythm and melodic motifs. The first kinds of improvisation will be in a group, short sections in-between set sections that repeat. Eventually solo improvisation can be done using the larger group as refrain sections, or background.

Creation:

This process begins with the first exploration of sound and movement. As an end product, the children can use all their knowledge of rhythm, melody, movement, and speech to create an entire piece. The frameworks for the first creations are rhymes or stories the children already know. Older children may make up their own stories and songs and set them all to music of their own making.

This ability to create a piece from material that is well known, or completely new is what makes the Schulwerk process unique (Shamrock, 1995). The children learn the elements of music and movement, making them

a part of themselves. From this, the imagination flourishes.

> Spontaneous teaching that comes totally from improvisation is and remains as excellent starting point.....It is a play of their imagination that can be achieved through the building-up of the most simple rhythms and melodies, drones, and ostinati, with the inclusion of all possible kinds of instruments, and it is the imagination that should be awakened and trained by these means (Orff 1976, p.131).

The Schulwerk is not an end but a process. The children learn from the doing. They are able to combine the elements they learn - simple rhythms, melody, and movement - into something completely unique each time. It is the learning of the parts that gives the child the ability to put them together in her own creative way. Schulwerk gives the child the tools to free her imagination and make connections. This is similar to what the Montessori environment provides the child. The child learns the parts and discovers how to put them together herself.

The Schulwerk teaches literacy. By teaching through imitation, echo, the child sets the knowledge internally. Reading notation comes after the child has the knowledge of melody, rhythm, and movement, as reading letters comes after learning to speak. This follows the natural process of learning language.

The role of the Schulwerk teacher is to provide the tools for creation.

The child is free to explore sound and movement with the guidance of the teacher.

> The Schulwerk teacher ideally is willing to recede more and more, as the students gain in confidence and ability, from a leadership role to that of facilitator. A class able to function completely without the teacher bears witness to her ability and effectiveness.
> (Shamrock, 1995, p.21)

This description of a Schulwerk teacher is comparable to Maria Montessori's description of how a teacher in the Montessori classroom should conduct herself.

Montessori Philosophy

Maria Montessori was born in 1870 in Italy. She developed a philosophy for teaching children that was innovative and very effective. Montessori's initial training was in medicine. She was the first woman in Italy to receive a Doctor of Medicine degree. She became interested in treating children and eventually went on to study anthropology and psychiatry. In the late 19th century she studied 'deficient' children. She designed materials to teach them using their hands. She was very successful in her endeavor to teach these

children academic skills originally thought to be beyond their limited capacity. Montessori wanted to continue her studies with school age children in the normal school environment. Her ideas were too radical for the Italian Ministry of Education so she was denied access to the public school children. In 1907 she was offered the opportunity to care for a group of very young children in San Lorenzo, a ghetto of Rome (Massello-Chiacos, 1996). Montessori had learned a great deal from her 'deficient' children. Her early training as a scientist taught her the art of observation. She used this skill to discover how to teach young children.

Montessori believed the adult was there to assist the child and remove obstacles to the learning and growing process. The child functions best in "an environment which will enable him to develop freely" (Montessori, 1988). Respect for the child is the basis for the Montessori philosophy. The 'new' education developed by Montessori is child centered. Prior to Montessori, the teacher had been the focus of the classroom. The teacher in the Montessori classroom is often called a guide. Her job is to guide the child in her discovery of the world. The environment is an essential part of the Montessori education. Montessori created an environment for the children that allowed them to move freely and choose their own work through out the day. Everything in the room is built to the child's size. Even the shelves are

open and low to enable the children easy access to the materials. The classroom Montessori created in the tenement building belonged to the children. She called it Casa dei Bambini, the Children's House. The children swept and cleaned everything and took pride in 'their house'.

"The hands are the instruments of man's intelligence" (Montessori, 1995). The materials Montessori had made for use in her classrooms were designed with this basic principal in mind. Montessori believed the child learned through movement, especially the hand.

> The human hand, so delicate and so complicated, not only allows the mind to reveal itself but it enables the whole being to enter into special relationships with its environment. Through the hand the child takes possession of his environment.
> (Montessori, 1972, p.81).

The Montessori materials became known as manipulatives and similar materials are used in many classrooms today. The idea of movement in education is now accepted in most educational philosophies.

The Montessori curriculum is divided into four main areas. The practical life area is movement education (Massello-Chaicos, 1996). The sensorial area is where children learn to use all the senses. Language and mathematics are

the two main academic areas. Both language and mathematics are taught using what the child has learned in the practical life and sensorial areas.

In practicle life, children learn the movements of everyday life. Cleaning, cooking, polishing, and dressing are included in this area. The movements of pouring, twisting lids, spooning and tweezing all prepare the child for the task of writing. Before a child can write, the hand and body need to be prepared. A child's hand is not strong enough to hold a pencil and draw letters and numbers when she is young. The works in the practical life area strengthen the hand and arms for the later use.

In the sensorial area, children explore all their senses to their fullest. The child explores the use of sound, smell, taste and touch as well as sight. Montessori wanted the child to fully develop her potential. If the child has the opportunity to develop in all aspects when very young, the older child will have endless possibilities to explore. The materials in the sensorial area begin with visual discrimination, length, height, and width become part of the child's vocabulary. There are works to isolate the child's sense of smell and taste. These are helpful for many things, including the cooking done in many Montessori schools. The tactile sense is used throughout the Montessori curriculum. Children use textured letters and numbers to learn to write. The fingers are used to trace the rough outlines of the symbols. This movement

of the hand and arm sets the shape of the symbol into the body of the child. The process of writing becomes organic. The movement is absorbed and can then be used as a tool for further learning.

Language is an extension of the practical life works, where the child has gained hand strength and coordination. Children love to do things for the process not the outcome. They will repeat the spooning, pouring and other works many times. When their hands have become strong and fine motor skills are developed, the child moves to more specific movements. They naturally are drawn to writing and drawing. The use of the hand becomes more refined and the desire to develop their skills is satisfied by the creation of letters. Children love to tell stories and delight in writing them down to share with others. The learning process naturally evolves. They are soon wanting to know other children's stories and begin to recognize the sounds of the letters. They explode into reading. The process began with the hand and in the end it is the hand that creates the symbols to communicate with others.

Mathematics is a natural extension of the sensorial area. Children first use their eyes and hands to learn dimension. They match pieces to specific places and arrange parts in sequence of large to small, long to short, thick to thin. Eventually the child wants to know how much longer, taller, or

thicker something is. The concept of quantity is first taught by giving the child objects to hold in the hand. She feels with the hand how much 1 or 2 is. Counting involves the use of the hand and eyes, (touch and sight). When the child has an understanding of the quantity, the symbol is introduced. The writing of numbers is taught the same way as letters, using touch and movement. Once the child can write the numbers, the four basic mathematical functions are taught. The child is able to write her own problems and answers. The learning process involves the whole child, drawing on the movements learned in practical life and the discrimination abilities developed with the sensorial materials.

Montessori's goal in creating her teaching method is to provide the child with all the tools she needs for creating the adult she will become.

Multiple Intelligences Theory

The idea of several different aspects to human learning and knowledge is as old as the ancient Greeks. Plato seemed to be aware of the existence

of multiple intellectual aspects of the human mind. "...do not use compulsion, but let early education be a sort of amusement; you will then be better able to find out the natural bent" (Quigley, 1994). The Greek educational system included nine muses, each personifying one of our predispositions. Literature in the form of rhetoric, lyric and heroic poetry was represented by Polimnia, Erato, and Calliope. Euterpe is the muse of music. Athletic ability is represented by Terpsicore. Mathematical abilities are brought forth by Urania, the muse of astronomy, and Clio, logic through history. Our personal intelligences are represented by Melpomene and Talia, the muses of comedy and tragedy (Goodkin, 1996). Throughout history, societies differentiated between human capacities. In the Classical years, education was commonly divided between reason, will and feeling. Medieval education had two main divisions, the trivium of grammar, logic, rhetoric, and the quadrivium of mathematics, geometry, astronomy, and music (Gardner 1983). These two divisions were narrowed to mathematics and linguistics in our modern system, thus leaving out the richness and variety of the original divisions. More recently, Fredrich Froebel, Maria Montessori and John Dewey developed teaching curriculum based on the idea of hands-on learning, using all the senses and individualized teaching (Quigley, 1994).

Howard Gardner presented his theory of Multiple Intelligences in his

book Frames of Mind (1983). He believed the western definition of intelligence was too narrow, isolating linguistic and mathematical abilities as the criterion for determining intelligence. Through his studies of a large variety of people, including prodigies, gifted individuals, brain-damaged patients, *idiots savants,* normal children and adults, experts in different lines of work, and individuals from diverse cultures, Gardner isolated seven specific areas of human capacities. He calls these multiple intelligences. Gardner's definition of an intelligence is that it "must be genuinely useful and important, at least in certain cultural settings" (Gardner p. 61, 1983). The seven intelligences defined by Gardner are, linguistic, musical, logical-mathematical, spatial, bodily-kinesthetic, interpersonal, and intrapersonal.

Cultures have different expectations and needs, and therefore people from one culture may have one intelligence more highly developed than people from an other. Island peoples have highly developed spatial skills used to navigate the waters at night. Native peoples who are hunter gatherers will have not only good spatial skills, but highly developed bodily-kinesthetic skills. Western cultures value mathematical-logical and linguistic skills, and we develop these intelligences more strongly as a culture than the other intelligences.

The Seven Intelligences

Linguistic Intelligence

"Linguistic competence is, in fact, the intelligence-the intellectual competence-that seems most widely and most democratically shared across the human species" (Gardner 1983, p.78). Gardner defines linguistic intelligence as "A sensitivity to the meaning of words, whereby an individual appreciates the subtle shades of difference between (words)..... a sensitivity to the sounds, rhythms, inflections, and meters of words...." (Gardner 1983, p. 77). According to Gardner, there are four aspects of linguistic intelligence that are of great importance in human society. First is the ability to use language to persuade a person to follow a specific course of action. Second, the capacity to use language as a tool to remember information, or the mnemonic potential of language. Language is used as one of the main learning tools, for explanations, oral instructions, and the passing on of cultural heritage. The last aspect of linguistic knowledge is the potential to engage in metalinguistic analysis, the use of language to reflect upon language.

The development of language skills begins at birth when a child hears human speech. Several weeks later the infant begins her first attempts at language, babbling. Usually around the age of two years, children exhibit reasonable competence in communicating with language. This process of

learning continues for several years. The elementary school child has complete oral language skills. The ability to attach a pattern of symbols comes later. The gift of linguistic skills is developed as one gets older and acquires proficiency with the written form of language.

Linguistic intelligence is used in combination with all the other intelligences in some way. Language is not confined to oral or written (symbol) form. Auditory and oral elements of language are usually thought of as central to linguistic intelligence, but individuals who are unable to hear or speak can communicate by gesture. The Musical intelligence is more closely tied to the aural-oral elements than linguistic capacity. Linguistic and musical are the two intelligences not tied to the physical world of objects. Both may have arisen from the same roots thousands of years ago, but have taken different paths.

Musical Intelligence

Musical intelligence emerges earlier than any of the others. Mechthild Papousek and Hanus Papousek (Gardner, 1983) claim children of two months are able to match pitch, loudness and melodic contour of their mother's songs. By four months old, children are able to match rhythmic structure. By the age of two children begin to experiment with pitch intervals while singing,

beginning with seconds thirds and fourths, (the intervals Carl Orff chose to begin teaching children in the Schulwerk). Three and four year old children are able to accurately reproduce songs they hear (Gardner, 1983). The exceptional child as young as three years old can perform traditional repetoir, and on rare occasion, children begin to compose not long after that. Mozart is an example of this.

Studies have shown a child's ability to audiate is at its peak between the ages of 5 and 7 years old. If the child does not receive musical stimulation in some form by the time she reaches nine this ability will atrophy (Boyd, 1989). Musical intelligence needs to be trained and educated to reach full development.

The three central elements of musical intelligence are pitch, rhythm, and timber. The auditory sense is central to musical development, but Gardner points out that even individuals who are for some reason unable to use this sense, can experience music with the visual sense or through the tactile sense, by the feel of vibrations.

There have been many attempts to associate music with mathematics. There is undeniably a physical connection between the production of tones and their relationship to each other. This was first recognized by Pythagoras. To consider music and mathematics so connected is to ignore completely the

emotional component. Socrates recognized the modes as having specific "human character traits, associating the Ionian and Lydian modes with indolence and softness, the Dorian and Phrygian modes with courage and determination" (Gardner, 1983, p.106). Music is a vehicle to communicate emotion of all kinds to the listener by the composer through the performer. The ability to express the emotional component requires more than the correct mathematical execution of the pitches and rhythms on the page. Stravinsky describes the relationship between mathematics and music:

> [Musical form] is at any rate far closer to mathematics than to literature...certainly to something like mathematical thinking and mathematical relationships...Musical form is mathematical because it is ideal, and form is always ideal... though it may be mathematical, the composer must not seek mathematical formula.
> (Gardner, 1983).

Musical intelligence shares the existence of a symbol system with mathematics and linguistic intelligence. The connection to physical objects that occurs in mathematics is missing in music. As with all the intelligences, the making of music on all levels can be combined with any or all the intelligences.

Logical-Mathematical Intelligence

Logical-mathematical intelligence is probably the most highly valued in our western culture. Similar to linguistic and musical intelligences, mathematical thought is represented by a symbol system. "...[O]perations of logic can be (and routinely are) carried out quite apart from commonsense applications of ordinary language" (Gardner, 1983, p.133). Unlike musical and linguistic capacities, logical-mathematical competence does not depend on the auditory-oral sphere. Action on and with the world of objects is the basis for the logical-mathematical thought process.

Jean Piaget, (1896-1980) a Swiss psychologist, developed a theory of cognitive development based on logical-mathematical capacities. For the last part of the twentieth century, western culture has used Piaget's theory for measuring cognitive development. The result is a culture that overvalues logical-mathematical abilities and undervalues all other human capacities. Gardner seeks to balance the importance of all human abilities with MI theory.

Mathematical thinking begins with the concept of number and counting, moves through increasingly more abstract formal systems moving farther away from observation into pure logic. Perceiving the patterns in the universe and organizing them into meaningful forms is the logical mathematical mind working.

Spatial Intelligence

> "Central to spatial intelligence are the capacities to perceive the visual world accurately, to perform transformations and modifications upon one's initial perception, and to be able to recreate aspects of one's visual experience, even in the absence of relevant physical stimuli"
> (Gardner, 1983, p.173).

Spatial intelligence is not totally based on the visual sense. Gardner points out that blind people have a highly developed sense of space. Just as musical and linguistic abilities are not totally dependent on the auditory sense, spatial competence uses several senses when well developed. Gardner describes the "blind" chess player, who uses a highly developed spatial sense. All the information is kept in the player's mind.

The ability to move one's own body through space is especially important to the athlete and dancer, and is also essential for all people in all cultures. The ability to move through an intricate environment, or a vast area like the south seas or frozen tundra, requires the use of the spatial intelligence.

People of radically different cultures use spatial competence in very different ways. In the Caroline Islands, the sailors are taught to navigate the

waters by watching the placement of the stars on the horizon. Those with the ability to memorize all the points of the stars and unerringly travel from one island to the other are highly respected in the society.

The use of spatial intelligence has a vast range of capacities, from the artist who creates miniature sculpture to the native peoples who use this competence to move through their environments, oceans or frozen tundra. Although the art produced by persons with the gift of spatial intelligence is greatly valued by western cultures, the artists are not considered 'intelligent'. The masters of the sea in the Caroline Islands and the tracker of the north are the elders, the most respected members of their respective people.

Spatial intelligence is closely tied to the concrete but logical-mathematical capacity develops increasing abstraction in its more complex form. Those able to achieve high levels of spatial intelligence do not loose the ability with age. Artists of all mediums and people who use this ability to navigate vast spaces retain their ability or perhaps even increase their capacities with age.

Bodily-Kinesthetic Intelligence

Bodily-Kinesthetic intelligence manifests in a range of abilities, similar to

those gifted in spatial intelligence. The mime exemplifies the bodily-kinesthitic (hereafter, bodily) characteristics: "The ability to use one's body in highly differentiated and skilled ways, for expressive as well as goal-directed purposes" (Gardner 1983, p.206). Gardner describes the core capacities of bodily-kinesthetic intelligence as the ability "[to] control of one's bodily motions and capacity to handle objects skillfully" (Gardner, 1983, p.206). The capacity to express emotion with the body is an important aspect of this competence; this is similar to the musical intelligence. Bodily competence is not merely the moving of the body in space or interacting with objects, the emotional component makes this ability a special gift. Again, our western culture does not adequately respect his ability, although our society does admire the work of a mime, dancer or something made by hand. All are the result of the large and fine motor competence of those gifted in this capacity.

The infant begins to explore these abilities at birth. All humans possess these abilities, but it usually takes several years before a person especially skilled in bodily intelligence develops enough to stand out as exceptional. Perhaps the acquisition of verbal skills, (symbolic competence) effects the development of bodily intelligence. Once a direction or goal can be stated in words, or a performance evaluated, the realm of linguistics enters the forum

of movement.

Dance is one of the highest forms of bodily skill. Humans have used dance for thousands of years and in almost all cultures some form of dance exists. Dance has been used for many different purposes throughout history. Secular enjoyment, religious expression, initiation rite, education, and invoking the supernatural in a healing capacity are only a few.

Bodily intelligence completes the trio (logical-mathematical, and spatial) of object related intelligences. People can use their whole bodies as objects, like athletes and dancers, or parts of the body, particularly the hands, to manipulate, create, transform or change objects. The body is also the place we store our sense of self, our personal feelings and the qualities that make us unique human beings.

The Personal Intelligences

The personal intelligences, intrapersonal and interpersonal are presented together. Although different, they depend on each other for development. Gardner defines the core capacity of intrapersonal intelligence as a person's ability to access one's own feelings. Freud's psychoanalytic theory exemplifies the qualities of intrapersonal intelligence. A person with developed intrapersonal intelligence can discriminate among feelings and

label them in symbolic codes, placing them in a category of pain or pleasure. On the basis of this categorization, a person can become more or less involved in the situation.

The core capacity of interpersonal intelligence is "the ability to notice and make distinctions among other individuals and in particular, among their moods, temperaments, motivations, and intentions" (Gardner, 1983, p.239). The theories of William James, (Gardner, 1983) an American psychologist slightly older than Freud, are based on the development of interpersonal intelligence, the relationships a person has to other people and the world.

Both of these capacities are based on the importance of the self and self-knowledge. Intrapersonal competence promotes one's personal agenda, and interpersonal intelligence works to ensure the smooth functioning of the wider community.

The personal intelligences are the only capacities that vary greatly from one culture to another. Each society values different abilities and attributes in a person, although the sense of self is the most important aspect of the personal intelligence anywhere in the world.

The development of the two personal intelligences is interdependent involving "the ability to apply lessons learned from the observation of other people, while knowledge of others draws upon the internal discriminations the

individual routinely makes" (Gardner, 1983, p.241). The newborn infant begins to use these capacities immediately. Even the very young infant is able to distinguish moods and feelings of the mother. As the child gets older, the knowledge acquired through the interpersonal capacities helps the child to develop interpersonal capacities. The adult acquires some balance between inner feelings and the pressures imposed on them by other persons.

Gardner distills the personal intelligences to information-processing capacities, one directed inward and the other directed outward. These are available to all humans from birth. Learning and use of the symbol system of one's own culture allows the full development of the personal intelligences.

The seven intelligences put forth by Gardner are one possible way to view human abilities. There may be other capacities that will, in the future come to be included in this group. This theory provides a framework to use when teaching children and interacting with others in the world. For western cultures it provides a broader look at human capacities than we have had in the past several hundred years. Perhaps there will be greater understanding of humans with all these various abilities and those gifted in each capacity will be respected and honored for their gifts.

Conclusion

It is possible to use all three of these theories in one classroom. The Schulwerk teacher and the Montessorian automatically nurture all the seven intelligences. While Orff and Montessori do not specifically address the different facets of the child's intelligence as Gardner does, certainly we can see both processes encompass all the human capacities. As one becomes familiar with these theories, it is obvious they share a common goal of educating the whole child. Gardner's MI theory is not only helpful in the realm of education, but in all relationships in life. Maria Montessori had a vision of world peace, beginning with the education of the child. She believed in educating the whole child, enhancing all abilities and using all the senses. In considering the whole child Montessori was developing all of Gardner's intelligences. Carl Orff had the idea of elemental music education that included many more aspects of human capacity than just music. Movement and speech are the basic elements of the Schulwerk, but a child in a Schulwerk class develops all of Gardner's intelligences.

The Montessori Method and the Schulwerk are both child centered forms of education. Montessori told her teachers to follow the child, allowing the child to point the way. In a Schulwerk class the teacher uses what the children create in the teaching process. Music and movement are

spontaneous and then built on with the help of the teacher. The four areas of the Schulwerk described by Mary Shamrock, (Shamrock, 1995) exploration, imitation, improvisation, and creation can be woven through the Montessori philosophy. Gardner's Multiple Intelligence theory provides the framework for the success of the Schulwerk and the Montessori Method.

Exploration is the beginning of all learning; a child explores with movement. Movement is essential to both methods. In the Schulwerk class movement is a vehicle for learning and an end in itself. The Montessori child uses movement to learn, the whole body when moving around the room and the hands when working with the materials. Movement requires the use of spatial skills and bodily-kinesthetic intelligences. Exploration is the beginning of learning. The child needs to move to explore.

All the materials in the Montessori classroom are presented and learned by imitation. For the very young child, only the visual sense is used to imitate the use of the materials. For the child in the Schulwerk class, imitation is visual for movement, and aural for music. The child learns by echo technique, imitating the teacher. The musical, spatial, bodily-kinesthetic, linguistic, logical-mathematical, and the personal intelligences are all used when learning a dance and song by imitation.

Improvisation comes when the child has mastered the use of the

Montessori materials in the classroom. Once the child understands the original purpose of each material, she will begin to improvise her own patterns and ways of combining different materials. The Schulwerk student naturally begins to improvise with voice, instruments, and body as soon as she feels at ease with them. Again all the intelligences come into play when a child improvises. Each child will use the capacities with which she feels the most comfortable.

Creation comes as a result of exploration, imitation, and improvisation. In the Montessori environment, the child creates the person she will become. She uses all her senses and all her capacities. The child's job is to create herself. A Montessori education provides the opportunity to do that. The Montessori philosophy seems to have its roots in the ancient Greek philosophy of human development, but she arrived at the same ideas from a totally different point of view. The Montessori child develops not only the capacities considered most valuable in western culture, but also all the others. All Montessori classrooms provide music education, including the bells; a material with which children learn to identify pitch, read and compose music. The spatial abilities are continually being developed by the children moving about the room carrying materials and navigating around other

children and furniture. The constant movement of whole body and hands provides opportunity for the bodily-kinesthetic capacities to develop. Both the personal intelligences are addressed in the Montessori environment. Children learn to respect themselves and others, as well as their environment.

The Schulwerk student creates a performance. The child has the opportunity to use all the human intelligences to her fullest capacity. Linguistic competence is used by learning poems, songs and stories. The joy of singing and playing the instruments brings out the musical abilities. Keeping a beat and learning rhythms is the logical mathematical mind at work. Dance and movement are the essence of spatial awareness and bodily-kinesthetic competence. The awareness of oneself in performance and the relationship to others demonstrates the personal intelligences coming into play.

These three philosophies can be interwoven and provide the child with a complete education of the mind, body, and spirit. Each of these educators believed in the whole person, and created theories that include all the people of the earth. Montessori, Orff, and Gardner all arrived at the same conclusion about educating, each at a different time and in very different environments. A child educated in a combination of these three philosophies has the opportunity to develop all her abilities to the fullest and the world is open to her.

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