Multiple Intelligences

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Howard Gardner’s theory of Multiple Intelligences (MI) began in 1983 with his book, Frames of Mind. He “argued that human beings have evolved to be able to carry out at least seven separate forms of analysis” (Pluralization of Intelligence, para. 2). This has now evolved into nine forms with the addition of Naturalistic and [Existential] (Chapman, 2003-2009, “Additional Intelligences,” chart). Gardner originally intended these studies to be used by the psychology community, and was surprised to see how quickly it spread to the education profession (Gardner, 2010, Foreword). Gardner’s theory has lead to a shift in education. Up until this point, “two…human intelligences, verbal linguistic and logical-mathematical…, have dominated in traditional schooling” (Ozdemir, Guneysu & Tekkaya, 2006, p. 74). Teachers are now considering their practices across North America in light of the nine forms of mental representation. Educators are realizing that to ensure each student’s success they need to present the curriculum in a variety of ways that can engage the various intelligences: bodily-kinesthetic, verbal-linguistic, visual-spatial, logical-mathematical, naturalistic, musical, interpersonal, intrapersonal and existential. With these new approaches, teachers also must consider new ways of assessment. In this literature review we will look at several ways that teachers are effectively imparting course content on students through projects, exhibitions, presentations, workstations or centres, and group work. We will also see how student portfolios and formative assessment can accurately reflect student
progression. Skepticism from the psychology community of Gardner’s theory is prevalent today (Waterhouse, 2006, p. 207-225); therefore, the concept of MI has not been adopted by every school system across North America. Teachers and faculty must be ready to change and it has proven difficult for leaders in this new style of education to tailor curriculum and lesson plans for all the MI.

To begin, teachers can appeal to the different MI through projects, exhibitions and presentations, or PEPs, outlined in Celebrating Every Learner (Hoerr, Boggeman, Wallach & Faculty, 2010, pp. 268-270). PEPs can be used in one or many units from kindergarten through to grade six. In kindergarten, students study the human body including the brain, muscles and bones. The goal is for them to construct a three-dimensional person showing the various systems they have studied such as the digestive, circulatory and respiratory systems. They pull together all kinds of materials to represent the body parts, such as the heart and lungs made from juice boxes, string, and paper, to other things found at home. The students also have what is called a “My Busy Body Book,” where they collect music, poetry, drawings and writing concerning the unit. At the end of these projects they present their books and figures to their parents, sharing what they learned (Hoerr et al., 2010, p. 268). This example clearly demonstrates in-depth learning through many intelligences to help students understand facts and concepts. The students then get to celebrate their success with their parents, helping to positively reinforce the importance of education. Students act as teachers themselves as well, showing their parents how the body works and the interconnectedness through the various mediums. In the second grade, students are able to choose how they will present the theme ‘Westward Expansion’
through MI shares. For example they can choose from a puppet show, a Venn diagram, a diorama etcetera. The students focus on the pioneer’s way of life in responsibilities and what they do in their spare time. Each student teaches the class about a specific game or chore they have studied from pioneer life, they create an original three-dimensional model, they write a paper to describe their work and then they present their findings to the class and their parents (Hoerr et al., 2010, p. 268). Providing different avenues for acquiring the same knowledge, allows students to explore their interests and strengths, which ultimately leads to success in many subjects. In this example students are not only learning the course content but also public speaking skills, how to organize information and clearly communicate it to other people, as well as making connections between themselves and pioneers through history. The role of elementary school teacher is thus changing to become a facilitator of learning.

Bruce Campbell, a teacher in Marysville, WA, exemplifies this new role. He took Gardner’s theory of MI and applied it to his classroom through the curriculum. He created stations representing, at the time, seven of the now nine MI. The stations for his third grade class illustrated the unit on Planet Earth. The building centre represented the bodily-kinesthetic intelligence. Clay was used to create a three layer replica of the earth and then sliced in half for a cross section view. Students at the math centre looked at geometric concepts of concentric circles and radius and diameter where they used the logical-mathematical intelligence. The reading centre made use of the book, “The Magic School Bus,” a story where school children explore the inside of the earth, representing the verbal-linguistic intelligence. At the music centre, for the musical intelligence, music was played while students worked on spelling activities for words like earth, mantle and
crust. The art centre represented the visual-spatial intelligence. Students cut and pasted paper to signify the different earth zones. What Campbell called the ‘working together centre,’ represented the interpersonal intelligence. Together as a group, a fact sheet was read and questions were answered collectively. The personal work centre represented the intrapersonal intelligence. Students wrote about the “things you would take on your journey to the centre of the earth,” a fantasy writing exercise. Campbell admitted it was hard work for him to cater the curriculum to these centre’s consistently, however he could see great results. All the children were able to work at each MI centre for 20 minutes and the interactive, hands-on activities taught each child the unit successfully (Campbell, 1987, p. 7). This form of teaching embodies a variety of intelligences. “This enables students to process information through their strengths and then translate [them] into the less dominant intelligences. The translation process is a way to empower students, enabling them to learn through their dominant intelligences while also strengthening their weaker [ones]” (Ozdemir et al., 2006, p. 75). “Gardner believes that the…intelligences he has identified are independent, in that they develop at different times and to different degrees in different individuals” (Dickinson, n.d., para. 3). The intelligences are however related and it has been seen that children’s success in one form can help them succeed in others (para. 3). The student’s accomplishments increase their level of confidence which has been seen to drive future academic success and can be demonstrated in more ways then the two traditionally valued intelligences. This way of
engaging all the MI is still being used today as we see in Celebrating Every Learner (2010),
where they refer to the stations as MI centres. The centres can be used on a smaller scale
and as only part of the curriculum, complementing a variety of different
activities (p. 269).

Group work is one “station” Campbell used to teach to the interpersonal
intelligence and it can be used across the curriculum. One group of researcher’s found
that, after assessing a group of student’s various intelligences, they could place
individuals into groups of four based on their strengths to complete a science project.
One way to assess student intelligences is through the Teele Inventory of MI. Ozdemi,
Guneysu and Tekkaya (2006) defined the Teele Inventory used to evaluate MI in
individuals:

The Teele Inventory of Multiple Intelligences is specifically designed to examine
the dominant intelligences of students in all grades. The TIMI is a forced-choice
pictorial inventory that contains 56 numbered pictures of panda bears representing
characteristics of each of the seven intelligences: linguistic, logical-mathematical,
spatial, musical, bodily-kinesthetic, intrapersonal and interpersonal. It provides
students with 28 opportunities to make selections between two alternatives. The
different intelligences are matched with one another and students have the
chance to select each of the seven intelligences eight different times in the inventory.
Students are asked to select one of the two choices that they feel is the most like them
– there are no right or wrong answers in this inventory. Each picture
selected by the students represents a score for the intelligence associated with
that picture and the answer sheets were coded in this way. The intelligence or intelligences that were more frequently selected yield the dominant intelligence of the students. The answer sheet enables the student and teacher to determine the students’ most dominant intelligences as indicated by the highest scores…(p. 75)

Each student’s intelligence served a purpose within the group. For this study they used logical-mathematical, linguistic, naturalistic and interpersonal intelligences. The logical-mathematical thinker could understand the concepts and underlying principles for content. The linguist could understand the rest of the group, communicate the goals and put the project together. The naturalist’s ability to discriminate among living things and recognize scientific patterns helped organize the science information. And finally the interpersonal intelligence kept everyone on track and provided structure in the dynamic (Colannino, Hoyt, & Murray, 2004, p. 46-47). When the group results were compared with random groupings of students, the researchers found a higher level of quality and timely completion of the project with the selected groups. It would be helpful for teachers to efficiently evaluate each student’s top three intelligences at the beginning of the year to utilize the organized groupings. Through group work students can promote their strengths and feel valued for their impute leading to higher confidence and ensuring future contributions in class. This way, there are fewer students left out who may be weaker in some intelligences over others.

Assessing student knowledge and skill requires a large scope of samplings to see the big picture and accurately reflect the MI. Student portfolios are a very effective way in which to do this. Student portfolios contain a wide variety of materials to assess
learning. They include lecture notes, project rubrics, group work samples, student journals, and written summaries. They also include teacher observations such as interaction with classmates, in class and on the playground, documentation like take home assignments and worksheets, mentorships where a student mentors another younger student, as well as self-assessment where the student assesses themselves and activities they are taking part in, in the classroom (Rulloda, 2011, pp. 6-7). In Celebrating Every Learner, the New City School has grouped activities under seven of the nine intelligences which can be included in student portfolios and reflect their strengths in various ways. Trust and team building activities, partnering and big buddy activities or mentoring, appreciation statements, and the development of rubrics or rating sheets for activities can be found under the intrapersonal intelligence. Role-playing or creative dramatics, recess, providing a service to a group of people, and sending and receiving messages through gestures or flags for example are under the bodily-kinesthetic intelligence. Under the linguistic intelligence we see debate or panel discussions, ‘person of the week’ interviews, partner poems or group story writing, peer support groups and reciprocal teaching or jigsawing. Under the logical-mathematical intelligence developing a flow chart to show classroom rules, charting interactions during television shows, playing strategy games, sorting activities or personality attributes into favourites and describing patterns while students try to copy them are found. Playing instruments, singing in a group, composing a round, creating rhythmic patterns and matching moods to music are listed under the musical intelligence. Creating a group mural, doing group drawings, creating a group quilt, describing a picture while your partner tries to draw it, redesigning book covers to show different perspectives are found under the spatial intelligence. Eco-
action service projects, group or neighbourhood gardens, outdoor team building activities, group care of classroom pets, and nature scavenger hunts are under the naturalist intelligence (Hoerr et al., 2010, p. 31). Summative assessment also has a place in student portfolios. It is useful for gauging student knowledge, however it should not be the main assessment tool used when reporting progression. It can instead become a piece of the overall picture. “The more information [teachers] have about students, the clearer the picture [they] have about achievement or where gaps may occur” (Garrison, n.d., p. 1). “Formative assessment is part of the instructional process,” (Garrison & Ehringhaus, n.d., p. 1) and is a very important way for teachers to track student progression. It is not graded or assigned marks, but used to track learning. Formative assessment is crucial to discover misunderstandings and areas that may need clarification or elaboration, as the student is learning the material. Otherwise the difficulties will only be reflected in tests or summative assessment when it may be too late to address the troubled areas (Hoerr et al., 2010, p. 272).

While compiling student portfolios, teachers can utilize formative assessment during the collection of the pieces. Through various activities and documentation, teachers can see the point of a lesson, the concept of a unit or the idea behind an activity that was missed or confused. For example, student journals can show self reflection of learning of specific units or activities and is an important tool for finding any gaps. The teacher can then adjust the content and revisit the difficult place to clarify and go further in depth if needed.

Education is undoubtedly changing to cater to the theory of multiple intelligences brought forth by Howard Gardner. We see many effective ways to teach to the various intelligences and forms of assessment to reflect student learning. From catering
curriculum to each intelligence, group work and various activities like projects, exhibitions and presentations, students are using dominant intelligences while strengthening weaker ones. Formative assessment and student portfolios can capture student success across the curriculum. These are just a few examples of classroom practices and such practices will evolve and multiply as more and more educators explore the possibilities. Although there are challenges like any new practice, teachers are seeing positive results in their classrooms. It is clear that the days of simple lecture and memorization will soon be in the past.