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# Using Multiple Intelligence Theory to Aid in Reading Comprehension

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Using Multiple Intelligences Theory to Aid in Reading Comprehension

University Honors Program Capstone Project

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### **Abstract**

The main purpose of this study is to determine if using Howard Gardner's Multiple Intelligences Theory to guide activities for literature groups aids in student comprehension. Students in three literature groups at the fifth and sixth grade level were given a survey to determine each student's intelligence scores. After each student's intelligence scores were found, the average of each intelligence score was used to determine the groups' strongest and weakest intelligences. Activities were then made for each group to correlate with their strongest and weakest intelligences and comprehension was tested after each reading assignment and activity was completed via a two-minute recall test. Comprehension test scores for the strongest intelligence activity and scores for the weakest intelligence activity were compared to see which activity led to higher test scores. From the data collected, it was determined that using an activity based on the strongest intelligence for a group led to higher comprehension scores.

## **Introduction**

In education, a variety of instructional strategies are used with the purpose of meeting the different needs of different students. In the early 1980s, Howard Gardner brought the theory of Multiple Intelligences to the public's attention (Gardner, 2011). The Multiple Intelligences Theory, "challenges the classical view of intelligence that most of us have absorbed explicitly (from psychology or education texts) or implicitly (by living in a culture with a strong but possibly circumscribed view of intelligence)" (Gardner, 2011, pg. 5). It looks at the mind as having eight different intelligences, some stronger than others, that dictate our learning and our knowledge. The eight intelligences are naturalist, mathematical/logical, verbal/linguistic, musical/rhythmic, visual/spatial, bodily/kinesthetic, interpersonal, and intrapersonal.

The first of the eight intelligences is verbal/linguistic. This form of intelligence relies on language, whether it be in written-mode, spoken-mode, or some other mode. People who have a strong verbal/linguistic intelligence learn best when they are heavily using language. Visual/spatial learning, on the other hand, focuses on, as its name implies, visual learning. Using graphs, pictures, maps, or making their own visuals and artwork is a valuable way for these learners to process information. Using songs or chants helps those with musical/rhythmical intelligence, while those with a strong mathematical/logical intelligence prefer to stick to problem solving and puzzles. For learners who need bodily/kinesthetic learning, activities that are based on movement or utilize manipulatives are highly effective, and naturalists thrive when they can be outside observing or doing scientific experiments. Interpersonal learners and intrapersonal learners work best when they can work with others and when they can work alone, respectively. These are just a few examples of the types of activities that go along with each intelligence. Every person has different strengths and weaknesses within their intelligences (Howard, 2011).

While the theory of multiple intelligences and their usefulness took off quickly, little research was done to prove that usefulness. This study seeks to explore the effectiveness of teaching using instructional strategies based off of students' varying intelligences. Focusing on reading comprehension in students, this study compares using activities based on students strongest and weakest intelligences while they are in literature groups. By utilizing activities that correlate to students' strongest intelligence, they should have a better understanding of the content that is read, while using the weaker intelligence will lower their understanding. This focus will help determine if Multiple Intelligences Theory should continue to be utilized in regard to reading comprehension. Knowing if matching instructional activities to students' stronger intelligences helps their comprehension will guide teachers as they plan their lessons and help students succeed academically.

### **Methodology**

The research study was looking to determine: Given an instructional activity based on their strongest intelligence area, students will have better comprehension scores than if given an instructional activity based on their weakest intelligence area. It took place in an elementary school where fifth and sixth grade students combined for literature groups. Literature groups are groups of students who read the same book and receive the same assignment. Each student reads and works on their own and then meets to discuss what was read, as well as their work. Student groupings were decided off of MAP reading test scores, as well as reading level in Fountas and Pinnell Leveled Books. In the classroom, there were three groups: the highest group consisted of nine students reading *The Giver*, the middle group was ten students reading *Harry Potter and the Sorcerer's Stone*, while the last group was made up of five students reading *Holes*.

Each student completed a Multiple Intelligence survey which was then used to find the average score of the eight intelligences for each of the three groups. A higher score represents a stronger affinity to that intelligence. The student scores and average scores are shown in *Figure 1* (*Fig. 1*). Student names have been changed to reflect the first initial of their book and a number.

*Fig. 1*

<i>The Giver</i>	Naturalist	Mathematical-Logical	Verbal-Linguistic	Musical-Rhythmic	Visual-Spatial	Bodily-Kinesthetic	Interpersonal	Intrapersonal
G1	13	15	11	9	13	15	6	14
G2	5	12	10	4	11	12	6	5
G3	11	10	13	15	11	15	13	6
G4	8	7	11	13	13	13	13	13
G5	11	10	10	10	15	13	13	12
G6	11	15	11	8	12	4	8	9
G7	5	9	5	11	14	13	12	13
G8	8	8	10	6	8	6	7	7
G9	12	5	11	5	8	13	8	8
Total	84	91	92	81	105	104	86	87
Average	9.3	10.1	10.2	9	11.6	11.4	9.5	9.6

<i>Harry Potter</i>	Naturalist	Mathematical-Logical	Verbal-Linguistic	Musical-Rhythmic	Visual-Spatial	Bodily-Kinesthetic	Interpersonal	Intrapersonal
HP1	13	6	9	9	11	7	11	12
HP2	5	3	5	15	7	8	11	5
HP3	7	7	5	3	6	10	8	7
HP4	10	8	7	15	9	13	14	12
HP5	13	14	8	10	11	9	8	12
HP6	12	15	13	11	14	12	11	12
HP7	10	8	8	9	11	6	9	10
HP8	13	13	8	12	11	15	11	13
HP9	4	7	5	5	12	10	11	12
HP10	11	11	6	3	3	10	8	8
Total	98	92	74	92	95	100	102	103
Average	9.8	9.2	7.4	9.2	9.5	10	10.2	10.3

<i>Holes</i>	Naturalist	Mathematical-Logical	Verbal-Linguistic	Musical-Rhythmic	Visual-Spatial	Bodily-Kinesthetic	Interpersonal	Intrapersonal
H1	11	5	2	10	11	10	7	6
H2	15	12	8	11	1	8	9	6
H3	11	11	10	5	10	11	12	11
H4	14	8	12	9	13	13	12	12
H5	11	11	10	6	13	11	11	11
Total	76	57	49	54	62	68	66	59
Average	12.6	9.5	8.2	9	10.3	11.3	11	9.8

Based off of the averages, instructional activities were picked for each group, first for their strongest intelligence and then for their weakest intelligence. Each activity went along with the chapter(s) they were reading for that week in literature groups. After the reading and activity were completed for the strongest intelligence, students gathered and had two minutes to write down all that they could recall from their reading. They were not required to write in complete sentences, but they did need to be clear in what they were recalling. For instance, for *Harry Potter*, they could not just write '9 ¾'; they needed to be clear that 9 ¾ is the train platform. The same process was enacted after they completed their weakest intelligence activity and reading. The number of items that they had written down that occurred in the chapter(s) that they read was then recorded.

### **Literature Review**

In their study in 2007, Nida Temiz and Ercan Kiraz looked at how multiple intelligences theory affected first grade students' literacy education and the views of the teachers and the students of this course. The course had many lessons that were taught with different intelligences being the emphasis. Students and teachers were then given interviews, the students interview was them drawing a picture about their feelings for the lesson. All of the teachers and a large majority of the students reported that they enjoyed the course and it was found that students' comprehension of literacy grew. They found in their study that "MIT makes its greatest contribution to education by means of suggesting the idea that there are *various ways to learn*" (Temiz, 2007, pg. 111).

This finding is just what Howard Gardner was thinking of when he developed his theory. All students learn in different ways, so what works best for one student may not work for



another. In Mustafa Serdar Koksak and Mustafa Yel's study in 2007, this was proven. The authors looked at two high school science classes studying the respiratory system. One class, the control group, had "normal" activities of lectures and questions, while the experimental group had a variety of MIT-based activities. After completing a post-test and then a retention test two weeks later, it was found that the experimental group who participated in MIT-based activities had higher scores on both the post-test and the retention test. Since these students had a variety of ways to learn the material, ways that fit their strongest intelligences, they were able to learn and remember the content better.

While the study done by Koksak et. al. looked at Multiple Intelligence Theory-based activities for high school students, Sibel Gurbuzoglu Yalmanci and Ali İbrahim Can Gozum focused their study on science in two third grade classrooms. Similar to the Koksak et. al. study, one classroom was the control and the other was the experimental group which had their activities based off of the different intelligences. The authors found that the post-test scores of both groups increased compared to the pretest, but that the test scores for the experimental group had a larger increase than the control group did. Since the authors view multiple intelligence theory as a means to "enable different learning environments to access information, to have an impact on endearing the subject and to arouse interest" (Koksak, 2013, pg. 33), they use their findings to promote use of Multiple Intelligence Theory to engage each individual student in learning and to "make learning more pleasant" (Koksak, 2013, pg. 33).

Gokhan Bas did a study to see the effectiveness of Multiple Intelligence Theory, not just across grade levels but across course type, geographical region, sample size, and the duration of the experiment. Bas looked at a total of seventy-five studies and their findings to determine Multiple Intelligence Theory's effectiveness. His findings show that there were some variances

in grade level, high school being slightly more successful than elementary or college courses, but overall the theory was successful in all areas, with seventy-three out of the seventy-five studies showing a positive effect (Bas, 2016).

When Ramazan Gurbuz did a study of two seventh grade math classes in 2011, he found both positives and negatives to using the Multiple Intelligences Theory. The biggest negative that was found was that the theory was not always applicable to every concept being taught. So, while Multiple Intelligences theory may work for all kinds of courses or subject, it may not work for every concept in those subjects according to Gurbuz. This study did find a positive of the theory increasing permanent learning, just as Koksal et. al. did in their study.

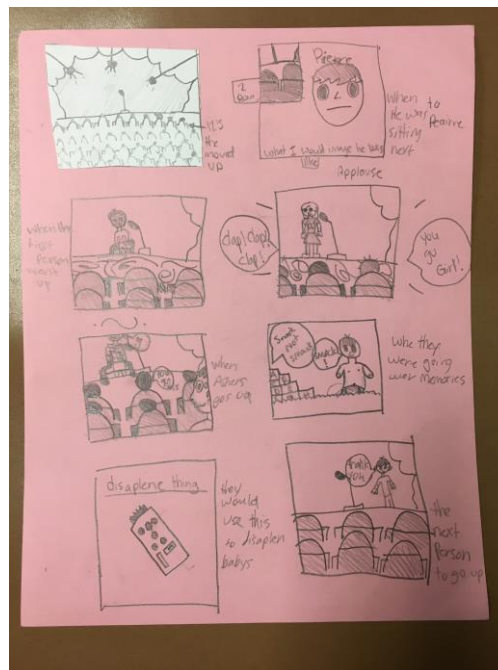
All of these studies show similar findings of the effectiveness of Multiple Intelligences Theory. Multiple Intelligences theory, according to these studies, is effective across grade levels and course types. Given that prior research has come through with such positive results, this is a theory that could have positive impacts in reading comprehension as well.

## **Body**

After giving students the Multiple Intelligences survey, the strongest and weakest intelligence was determined for each group and instructional activities were chosen. The highest reading group, students reading *The Giver*, had visual/spatial intelligence as their strongest intelligence. The instructional activity that was chosen for them was to create a comic strip

drawing of the chapter that they read (*Figure 2*). Each page of the chapter was to have at least one box in the comic strip but could have more if needed. Upon completion of the reading and the drawing, students met with the teacher, as per usual, and were given a notecard and two minutes to write down as much as they could remember from the chapter. The group then discussed the chapter and their drawings before getting their assignment for their weakest intelligence and starting the process over again. *The Giver* had musical/rhythmic intelligence for their weakest intelligence, so their assignment was to change the lyrics of a song that they know to explain the rules

*Fig. 2*



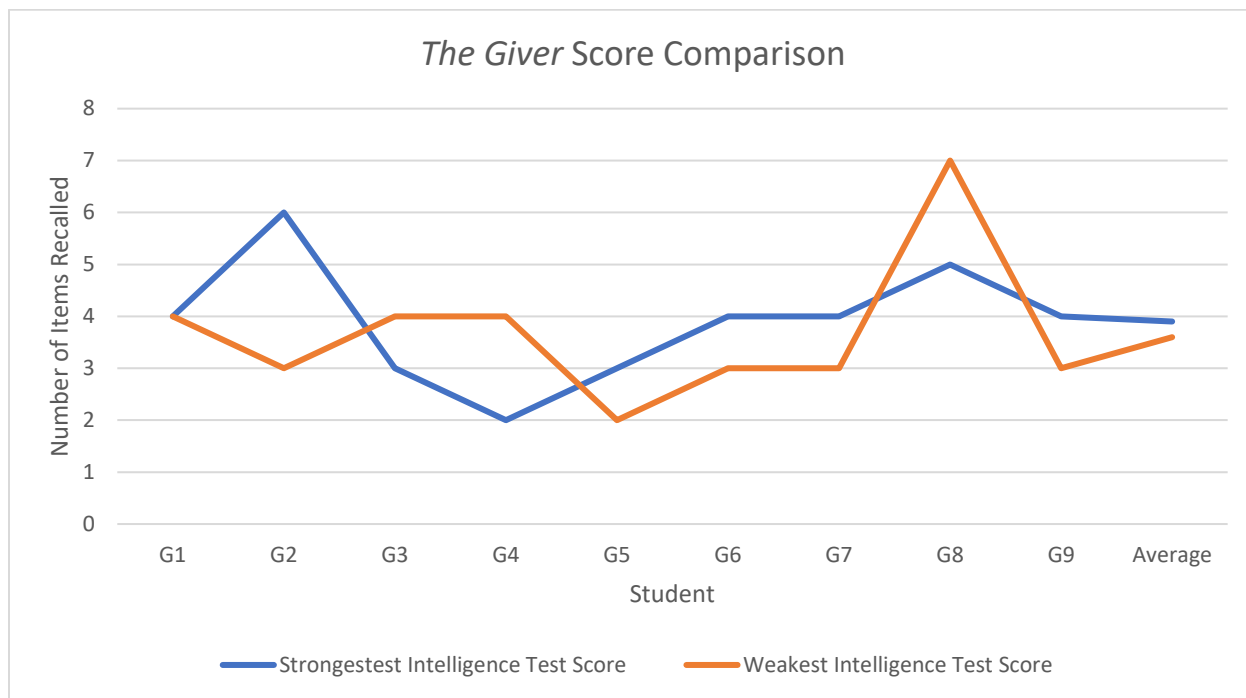
that the character was given for his new job. The next time that the group met, the same notecard comprehension test was taken. Results were recorded for both the strongest and the weakest intelligences and are shown in *Figure 3* (*Fig. 3*) and *Figure 4* (*Fig. 4*).

*Fig. 3*

<i>The Giver</i>	Strongest Intelligence Test Score	Weakest Intelligence Test Score
G1	4	4
G2	6	3
G3	3	4
G4	2	4
G5	3	2
G6	4	3
G7	4	3
G8	5	7
G9	4	3

Total	35	33
Average	3.9	3.6

Fig. 4



Students in *The Giver* reading group had slightly higher scores when they had their assignment for their strongest intelligence. Their average score was 3.9 for the strongest intelligence and 3.6 for the weakest intelligence. With only a 0.3 difference in test scores, the type of intelligence that the assignment is related to seemed to have only a little effect.

For the next group who was reading *Harry Potter*, intrapersonal and verbal/linguistic were their strongest and weakest intelligences respectively. The intrapersonal activity that they completed was working alone to create a map of Diagon Alley, a setting from the book, in a

Fig. 5



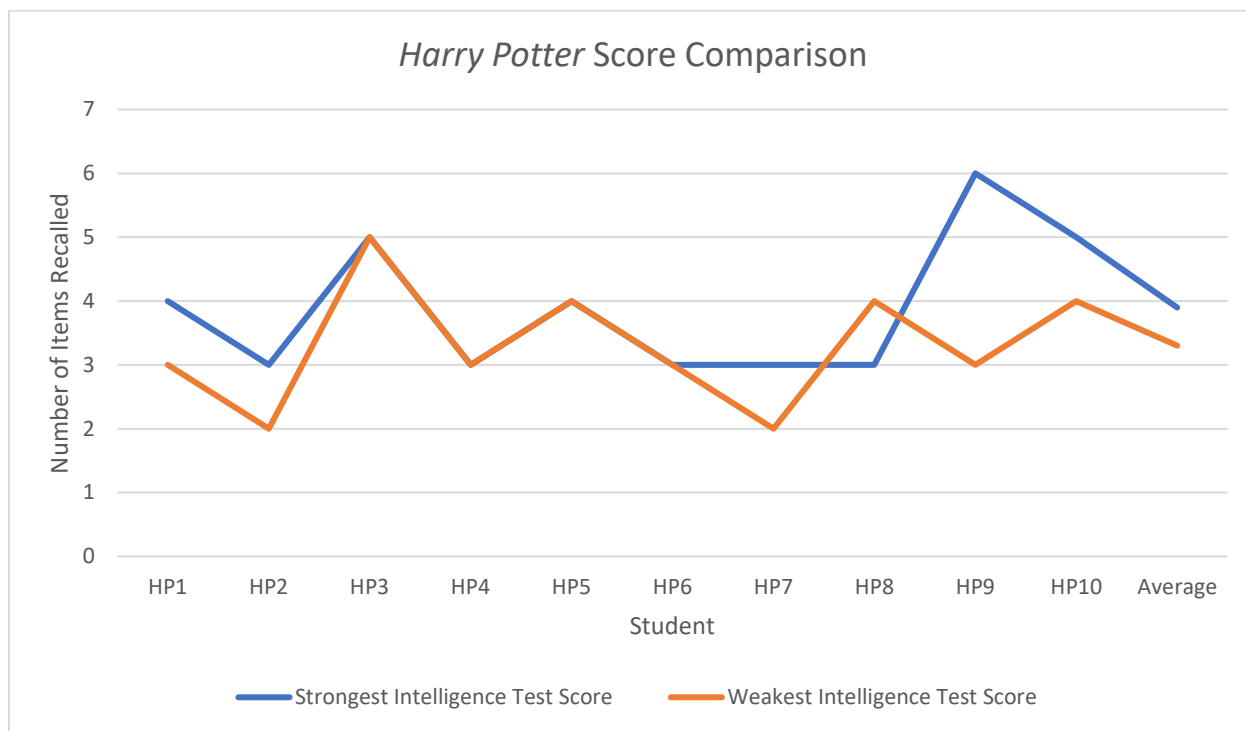
format that they chose; the only requirement was on the buildings that they had to include in their map (Figure 5). Some students simply drew the map while others used construction paper to make the map 3D. The *Harry Potter* group worked on their verbal/linguistic intelligence by writing a letter to Harry Potter to give him advice and encouragement for when he

was going to the train station and riding the train to Hogwarts. They had the option to type or hand-write the letter, although all of the students in this group chose to type it. After each assignment was completed, the group met and took the notecard comprehension test in the same format as *The Giver* group did. Each students' scores on the comprehension test are shown in Figure 6 (Fig. 6) and Figure 7 (Fig. 7).

Fig. 6

<i>Harry Potter</i>	Strongest Intelligence Test Score	Weakest Intelligence Test Score
HP1	4	3
HP2	3	2
HP3	5	5
HP4	3	3
HP5	4	4
HP6	3	3
HP7	3	2
HP8	3	4
HP9	6	3
HP10	5	4
Total	39	33
Average	3.9	3.3

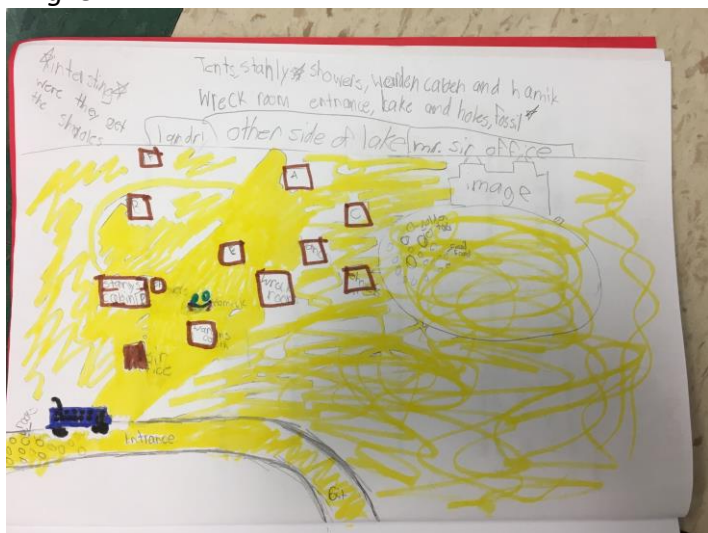
Fig. 7



The *Harry Potter* group showed a slight increase in the difference between the strongest and weakest intelligences average compared to *The Giver* group. The difference between these scores was 0.6 for the *Harry Potter* group.

The last group, those reading *Holes*, had the strongest intelligence of naturalist and the weakest intelligence of verbal/linguistic. The naturalist assignment consisted of the students using a graphic organizer to come up with what a normal day looked like for the main character of the book. They had to decide when he did each activity based off of clues they got in the book. This assignment also included them drawing out a map of the camp, showing where the

Fig. 8



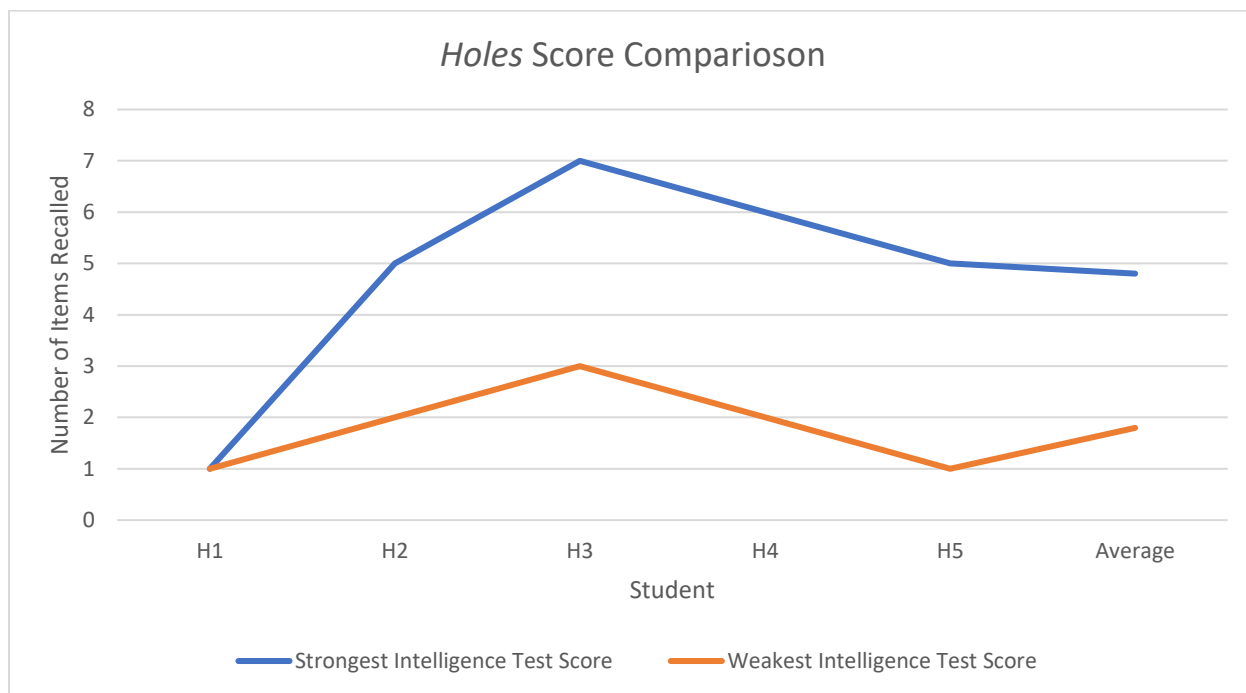
important building are located, and where different events took place (Figure 8). Upon completing this assignment and taking the notecard comprehension test, they wrote a camp newsletter for the verbal/linguistic intelligence. Students could choose whether or not they wanted to write

about what really happened at the camp or come up with things and activities they would like to do at a camp, much like the character did when he was writing home to his parents. Given the amount of time that students had to complete this assignment, the majority of the group ended up writing newsletters from both perspectives. Prior to sharing their newsletter as a group, students completed the notecard comprehension test again. The scores for these tests are shown in Figure 9 (Fig. 9) and Figure 10 (Fig. 10).

Fig. 9

Holes	Strongest Intelligence Test Score	Weakest Intelligence Test Score
H1	1	1
H2	5	2
H3	7	3
H4	6	2
H5	5	1
Total	24	9
Average	4.8	1.8

Fig. 10

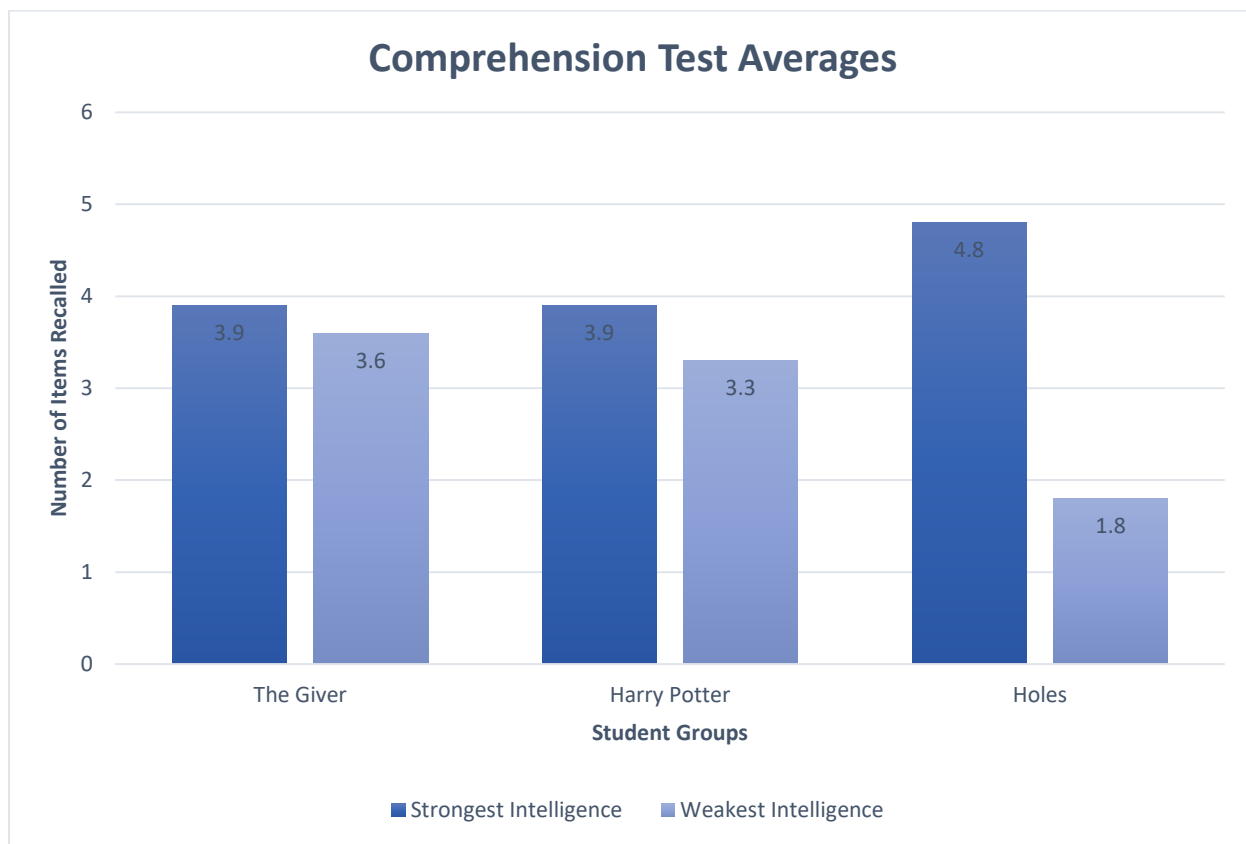


This group had the greatest difference between their strongest intelligence test scores and their lowest intelligence test scores at 3.0. All students with the exception of one made huge leaps in the reading comprehension.

As seen on Figure 11 (Fig. 11), the difference in test scores is greatest for the *Holes* group and the *Harry Potter* group has a slightly greater difference than *The Giver* group. *The Giver* is the highest-level literature group and has the smallest difference in test scores, 0.3. This is also the group that has the smallest difference between their average of strongest intelligence and weakest intelligence, which was 2.6. The next highest literature group, *Harry Potter*, had a difference of 0.6 for their test scores and a difference of 2.9 between their strongest and weakest intelligence averages. *Holes*, the lowest literature group, was at a 3.0 for their difference in test scores and at a 4.4 for their difference between their strongest and weakest intelligence averages. From this data, it is seen that the greater the difference between strongest and weakest intelligence, then the bigger the gap in comprehension test scores.



Fig. 11



With this information, it can be determined that the hypothesis of given an instructional activity based on their strongest intelligence area, students will have better comprehension scores than if given an instructional activity based on their weakest intelligence area is proven correct. The level to which the scores are different seems to be impacted by the variance in how strong the students are in each intelligence.

## Conclusion

Through this study, it is seen that Multiple Intelligences Theory is an effective way of teaching reading. All three literature groups had higher scores when their assignments correlated with their strongest intelligence compared to the weakest intelligence. While the highest level of literature group had only a slight difference of their scores, the difference in their ability at each

intelligence level was small as well. Students who had a higher variance in their intelligences' scores ended up having a greater effect from the difference in assignments. These findings prove the hypothesis, given an instructional activity based on their strongest intelligence area, students will have better comprehension scores than if given an instructional activity based on their weakest intelligence area, true. Students' scores on comprehension directly correlate with the intelligence focused on in the activity.

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