

Differentiated Reading Instruction:
Using the Multiple Intelligences and The MIDAS to Enhance
Comprehension, Enthusiasm and Strategic Reading Approaches

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Abstract

The MIDAS Differentiation Pilot study was intended to streamline intervention planning and implementation for all regular education, special education, gifted and at-risk students as organized by each student's self-rated multiple intelligence. By categorizing reading intervention service along the Multiple Intelligence spectrum, academic strategies were be refined to incorporate the relative strengths of individual students. As such, the study provided a delivery model for Response to intervention planning by outlining both a framework and materials for tiered intervention. Participants included 43 5th grade students in two classrooms at Parkview Elementary and reflected students in each of the following categories Gifted, special education, IAT (at risk), regular education. Results of the study indicated both teachers and students to respond positively to strength-based reading intervention. Focus on student interest and preferred learning modalities promoted motivation and autonomy that served to enhance students' response to academic intervention.

Executive Summary

Given the present educational lexicon of buzzwords like “differentiation,” and “response to intervention, ” many Ohio school districts are bringing aboard new processes to identify, diagnose, and monitor student progress. As such, the shift towards encompassing the needs of all learners can sometimes be overwhelming to teachers, administrators, and psychologists.

In an effort to maximize effectiveness and make the RTI process more palatable, Parkview Elementary of Wooster City Schools adopted a strength-based approach to differentiation. In the winter of 2010 fifth grade teachers Kimberly Summers and Patrick Lindeman piloted a project to align student strengths with reading intervention strategies. Rather than merely identifying student deficits to drive instruction, each student was administered a MIDAS multiple intelligences inventory to gauge areas of relative strength that would be mobilized to increase reading skill.

The results of this study were surprising. The class overall (n= 37) maintained its Proficient level of reading skill according the mean test results. However, 18 students progressed by at least one reading level, 13 students remained the same and six students regressed. Also, noticeable differences are observed when subgroups are examined.

The greatest amount of change was for the Regular (n=24) and Gifted (n=2) readers. Both of the Gifted readers improved by one level from Accelerated to Advanced. The Regular readers overall improved from Proficient to Advanced.

The most notable result is that of the 16 Proficient readers where seven improved to Accelerated, one improved two levels to Advanced and one regressed to Basic. Seven remained the same.

The At Risk reading group (n= 6) as a whole remained in the Basic reading level. However, there are mixed results requiring further investigation:

Three of the five SPED students improved their reading comprehension by one level while the other two students remained at the same level. These two students have moderate scores on their MIDAS Linguistic scale. Two of the students who improved have high Linguistic scale scores while the third student who improved has a low Linguistic score.

The Gifted readers made a dramatic improvement from the Accelerated to Advanced level. This may have occurred because the MI-inspired strategies magnified the students’ already strong “metacognitive” approaches to reading that maximize their comprehension of a text. An alternative explanation is that these readers who are naturally gifted linguistically maximized their involvement and enthusiasm with the small group activities through the use of a preferred cognitive strength.

Drawn from this study is the conclusion that many students benefit from participation in strength-based reading activities. They also benefit from teachers who recognize their strengths and are able to categorize reading intervention on the basis of these individual aptitudes. Resulting from this focus, students not only display greater reading skill but also greater enthusiasm for reading and enhanced motivation. Teacher Patrick summarizes it well, “*The students always seemed to have a positive outlook on learning during this study. I believe that this was due to us*

knowing and strengthening their calibrated Multiple Intelligence. This allowed each student to learn his or her own way."

Differentiated Reading Instruction

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The groups of participating students were enrolled in typical fifth grade classrooms comprised of 19 girls and 18 boys. Thirty seven of the original 40 students completed all parts of the pilot project. The average age of students was 12 years old. Parkview is located in a working class neighborhood and 42% of the group qualified for free or reduced lunches.

Kimberly and Patrick were chosen to participate in this study because of their enthusiasm for trying something different to enhance their students' success. They both brought to the project a moderate degree of familiarity with multiple intelligences. Kimberly is a veteran teacher and Patrick has been teaching for 4 years. This was their first year co-teaching together.

The MIDAS inventory is a multiple intelligences assessment given either orally or self-completed where the student (or a parent) rates the student's abilities in the cognitive areas of: logical-mathematical, linguistic, spatial, musical, bodily-kinesthetic, intrapersonal, and interpersonal. The MIDAS has been described by Dr. Howard Gardner as representing "the first effort to measure the Multiple Intelligences, which have been developed according to standard psychometric procedures." Dr. Branton Shearer, author of the MIDAS

assessment provided consultation regarding administration, data management, and design of the above study.

The intent of the project was to personalize the process of Response to Intervention, by identifying student strengths and matching those strengths with research based interventions for tiered, small group instruction. Like many, Kim and Patrick felt that whole classroom differentiation seemed daunting and was too much work to systematically personalize instruction for an entire classroom. The MIDAS inventory proved to be a measure by which to group students as well as a menu by which to motivate them.

In preparation for the study a selection of research-based Reading Enhancement activities were gathered and categorized according the dominant intelligences activated. For this study, small group reading interventions were chosen in only four intelligences for two reasons. First, these four intelligences are most directly related to reading skill, and second, simplification of management was necessary due to the novelty of the study. As teachers are learning new instructional strategies it is important to focus on a limited number of variables to maximize success.

During the process of completing the surveys, Patrick and Kim found that their students were very interested in knowing the outcome of their Multiple Intelligences Profile. The culture of the entire class shifted towards a positive focus on strategy use. Both teachers found themselves developing many of their lessons around a “King Midas” theme, enthusing students with a challenge to independently modify instruction to utilize their “golden touch” or highest of their multiple intelligences.

Additionally, Patrick and Kim reported their instructional styles changed on the basis of their new understanding of each individual students’ needs and strengths. *“Previously, I was teaching students with **my** learning style,” said Kim. “I looked at strategies in areas that were not aligned with my personal Multiple Intelligences and thought, that won’t work..... But, when I attempted the interventions personalized for each student, it worked in a way I never expected.”*

The MIDAS intervention project followed a four-step process. First, MIDAS “All About Me” surveys were completed by each student and their responses were entered into the online MIDAS system. Individual MIDAS Profiles were generated and printed for each student participant. Second, the teachers organized students into the following subgroups on the basis of their highest self-rated multiple

intelligence: Interpersonal, Intrapersonal, Linguistic, and Logical-Mathematical.

Next, using the above four multiple intelligence categories, research-based reading comprehension interventions were selected from the menu for implementation with the student participants. Each intervention was chosen to complement strengths specific to each of the above MI categories. Interventions included: Intrapersonal: Prior Knowledge Strategy, Linguistic: Key Words Strategy, Interpersonal: Reciprocal Teaching Strategy, and Logical-Mathematical: Question Generation Strategy.

Third, MIDAS results were distributed to student participants. The students were then told to group themselves according to their highest MI strength among the four (Interpersonal, Intrapersonal, Linguistic, Logical-Mathematical). Once in their subgroups, students were given a reading passage followed by a worksheet scaffolding them through the intervention correlated with their strength. Teachers and aides modeled and then supervised the implementation of the research based reading interventions for each group. Following the ten to fifteen minute intervention procedure, students completed reading comprehension questions related to the text. Additionally, exit slips were completed by student participants rating their opinion on: 1) instruction prior to the MIDAS intervention, 2) the MIDAS intervention, and 3) their opinion of the usefulness of the intervention to their reading improvement. Teachers also completed exit surveys regarding their opinion of the level to which each group could negotiate the interventions independently.

Student MI subgroups met to repeat the above intervention procedure with different grade-level readings one to two times daily for four weeks. Finally, at the conclusion of four weeks, the comprehension question and exit slip results were entered into an Excel system for analysis.

At the end of the four week research period, students were administered the Ohio Achievement Assessment in reading. This score was compared with pretest performance given at the beginning of the year prior to the MIDAS project.

Results

All Students: N= 37

Pre and Post Reading Comprehension Mean Test Scores

| | Mean | Std. Deviation | Level |
|-----------|---------------|----------------|------------|
| Pre-test | 29.50 | 9.0 | Proficient |
| Post-test | 409.16 | 24.36 | Proficient |

Pre and Post Reading Comprehension Levels

| Level | Pre-test n | Post-test n |
|-------------|---------------|----------------|
| Limited | 7 | 3 |
| Basic | 3 | 9 |
| Proficient | 20 | 10 |
| Accelerated | 5 | 10 |
| Advanced | 2 | 5 |

Regular Students: n= 24

Pre and Post Reading Comprehension Tests

| | Mean | Std. Deviation | Level |
|-----------|---------------|----------------|-------------|
| pre-test | 32.33 | 7.65 | Proficient |
| Post test | 416.29 | 19.48 | Accelerated |

Pre and Post Reading Comprehension Levels

| Level | Pre-test n | Post-test n |
|-------------|---------------|----------------|
| Limited | 1 | 1 |
| Basic | 2 | 3 |
| Proficient | 16 | 7 |
| Accelerated | 3 | 10 |
| Advanced | 2 | 3 |

'At risk' Students: n= 6

Pre and Post Reading Comprehension Test Mean Scores

| | Mean | Std. Deviation | Level |
|-----------|---------------|----------------|-------|
| Pre-test | 22.50 | 5.89 | Basic |
| Post test | 382.17 | 11.58 | Basic |

Pre and Post Reading Comprehension Levels

| Level | Pre-test n | Post-test n |
|------------|---------------|----------------|
| Limited | 2 | 2 |
| Basic | 1 | 3 |
| Proficient | 3 | 1 |

At Risk Students Test Scores and MIDAS Scale Scores(1)

| # | sex | lvl | | scr | | MIDAS Scale Scores | | | | | | | |
|---|-----|-----|------|-----|------|--------------------|-----------|-------|-----------|-----------|-----------|-----------|-----------|
| | | pre | post | pre | post | MUS | KIN | LOGIC | SPAT | LING | INTER | INTRA | NAT |
| 1 | F | 3 | 1 | 27 | 373 | 42 | 14 | 4 | 39 | 29 | 38 | 13 | 32 |
| 2 | F | 3 | 2 | 26 | 383 | 41 | 38 | 55 | 68 | 65 | 64 | 30 | 54 |
| 3 | F | 2 | 3 | 19 | 402 | 68 | 57 | 63 | 43 | 53 | 18 | 32 | 79 |
| 4 | F | 3 | 1 | 30 | 369 | 64 | 55 | 45 | 48 | 30 | 32 | 25 | 60 |
| 5 | F | 1 | 2 | 17 | 386 | 64 | 68 | 33 | 53 | 50 | 25 | 28 | 83 |
| 6 | F | 1 | 2 | 16 | 380 | 70 | 68 | 55 | 84 | 83 | 80 | 80 | 77 |

Reading levels: 1= Limited, 2= Basic, 3= Proficient, 4= Accelerated, 5= Advanced.

SPED Students, n= 5

Pre and Post Reading Comprehension Test Mean Scores

| | Mean | Std. Deviation | Level |
|-----------|---------------|----------------|-------|
| Pre-test | 20.20 | 8.22 | BASIC |
| Post-test | 391.00 | 16.52 | BASIC |

Pre and Post Reading Comprehension Levels

| Level | Pre-test n | Post-test n |
|------------|---------------|----------------|
| Limited | 3 | 0 |
| Basic | 1 | 3 |
| Proficient | 1 | 2 |

SPED Students Test Scores and MIDAS Scale Scores*

| # | sex | lvl | | Scr | | MIDAS Scale Scores | | | | | | | |
|---|-----|-----|------|-----|------|--------------------|-----------|-----------|-----------|-----------|-------|-------|-----------|
| | | pre | post | Pre | post | MUS | KIN | LOGIC | SPAT | LING | INTER | INTRA | NAT |
| 1 | F | 1 | 2 | 11 | 386 | 77 | 66 | 39 | 57 | 73 | 57 | 39 | 66 |
| 2 | M | 2 | 3 | 19 | 407 | 48 | 45 | 56 | 48 | 70 | 55 | 27 | 71 |
| 3 | F | 1 | 2 | 16 | 376 | 31 | 45 | 17 | 28 | 25 | 10 | 10 | 30 |
| 4 | M | 3 | 3 | 33 | 410 | 53 | 59 | 65 | 75 | 56 | 43 | 34 | 52 |
| 5 | M | 2 | 2 | 22 | 376 | 43 | 55 | 53 | 39 | 53 | 40 | 38 | 38 |

Reading levels: 1= Limited, 2= Basic, 3= Proficient, 4= Accelerated, 5= Advanced.

Gifted Students: n= 2

| | Mean | Std. Deviation | Level |
|-----------|--------|----------------|-------------|
| Pre-test | 40.00 | .00 | Accelerated |
| Post test | 450.00 | 16.97 | Advanced |

| Level | Pre-test n | Post-test n |
|-------------|---------------|----------------|
| Accelerated | 2 | 0 |
| Advanced | 0 | 2 |

Discussion

Reading Skill:

The class overall (n= 37) maintained its Proficient level of reading skill according to the mean test results. However, 18 students progressed by at least one reading level, 13 students remained the same and six students regressed. Also, noticeable differences are observed when subgroups are examined.

The greatest amount of change was for the Regular (n=24) and Gifted (n=2) readers. Both of the Gifted readers improved by one level from Accelerated to Advanced. The Regular readers overall improved from Proficient to Advanced.

The most notable result is that of the 16 Proficient readers where seven improved to Accelerated, one improved two levels to Advanced and one regressed to Basic. Seven remained the same.

The At Risk reading group (n= 6) as a whole remained in the Basic reading level.

However, there are mixed results requiring further investigation:

- 3 students improved 1 level
- 1 student regressed 1 level
- 2 students regressed 2 levels.

The exact reasons for the regression of these few students are unclear, however, there are three possibilities for consideration:

- 1) The reading post-test was of a greater difficulty level than the practice pre-test.
- 2) Small group reading activities did not make full use of the students' particular MI strengths. This is evident for two of the three regressed readers who have strengths in the Musical, Spatial and Naturalist intelligences, which were not activated during this pilot study.

- 3) There were time-on-task and attentional problems that interfered with the students' involvement with the group activities. Two of the three regressed readers have very low Linguistic scores on the MIDAS and thus any reading activity may be inherently unpleasant and result in 'avoidance behaviors' by the student.
- 4) Due to the above problems these regressed students may benefit from IEPs that explicitly make use of the students' unique MI strengths to manage attention and improve reading skill.

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Summary

We learned from this study that many students benefit from participation in strength-based reading activities. They also benefit from teachers who recognize their strengths and are able to categorize reading intervention on the basis of these individual aptitudes. Resulting from this focus, students not only display greater reading skill but also greater enthusiasm for reading and enhanced motivation.

We were pleased to see that many regular and all of the gifted readers made significant progress but are perplexed why the 'at risk' group displayed such mixed results. This group of students was of particular concern to the researchers at the onset of the project. The progress of a majority of the SPED students' reading skill was gratifying but left room for improvement as two students failed to reach the next level.

We were also pleased that teachers responded very positively to the MI-inspired reading activities. This suggests that the "activity menu" holds great promise as a research-based catalog that can be easily adopted by other teachers. It is a limitation of any new type of approach if there exists a requirement to invent instructional activities independently. If MI is to be a viable form of classroom reading instruction then high quality, systematically employed materials need to be made available.

We were also happy that the small group instruction format could be successfully employed in a busy classroom setting. Perhaps with additional experience with these types of activities more students will benefit to a greater degree. We also need to learn

what is the ideal length of time for this type of instruction to occur. Is a four-week trial period too short, or too long?

Lastly, how can we maximize the impact of this program so that students will develop greater ‘metacognitive’ strategic reading skills so that they may become the ideal of the “lifelong learner” and reader? Can these skills be transferred to enhance learning in other subject areas and thus improve academic achievement overall?

Conclusions

Beyond measured reading comprehension improvement for many of the students, the following benefits were also found to stem from the above project:

1. Reading improvement was measured for students in each educational population (gifted, regular education, at-risk, and special education). See details below.
2. Student motivation towards independent strategy use was rated to improve.
3. Parent perception regarding RTI and individualized curriculum was observed to be more positive overall.
4. Student knowledge about individual multiple intelligences strengths was rated to improve confidence in reading.
5. Multiple intelligences-based instruction was rated to improve teacher confidence with whole group differentiation.

Limitations and Recommendations

Of course, this was a small pilot study so it is difficult to judge its effectiveness conclusively when the subgroups included so few students. There are a number of recommendations for improving this work in future efforts:

- 1- Provide teachers with additional training and time to practice implementing the MI small group reading activities.
- 2- Provide students (especially those with low Linguistic scores) with personalized Reading Instruction Home Plans that accentuate their unique MI strengths, e.g., using Music, Visual-spatial and Naturalist activities.
- 3- Differentiate reading content to encompass high interest topics related to MI strengths

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*Note.

MIDAS scales range from 0% to 100%. The following categorical labels are used to facilitate interpretation.

> 100 - 80 = Very High

> 79 - 60 = High

> 59 - 40 = Moderate

> 39 - 20 = Low

> 19 - 0 = Very Low (a Zero can indicate missing information due to an

incomplete answer sheet)

MIDAS Research Based Interventions Linked with MI Intelligences

| Intelligence | Tier II Intervention | Link |
|---------------------|------------------------------|---|
| Linguistic | Keywords Strategy | http:// www.interventioncentral.org/htmldocs/interventions/ rdngcompr/keywords.php |
| Interpersonal | Reciprocal Teaching Strategy | http:// www.interventioncentral.org/htmldocs/interventions/ rdngcompr/reciptchnng.php |
| Math | Question Generation Strategy | http:// www.interventioncentral.org/htmldocs/interventions/ rdngcompr/qgen.php |
| Intrapersonal | Prior Knowledge Strategy | http:// www.interventioncentral.org/htmldocs/interventions/ rdngcompr/priorknow.php |