

Digital Narrative as a Change Agent to Teach Reading to Media-Centric Students

Robert F. Kenny

Abstract—Because today’s media centric students have adopted digital as their native form of communication, teachers are having increasingly difficult time motivating reluctant readers to read and write. Our research has shown these text-averse individuals can learn to understand the importance of reading and writing if the instruction is based on digital narratives. While these students are naturally attracted to story, they are better at consuming them than creating them. Therefore, any intervention that utilizes story as its basis needs to include instruction on the elements of story making. This paper presents a series of digitally-based tools to identify potential weaknesses of visually impaired visual learners and to help motivate these and other media-centric students to select and complete books that are assigned to them .

Keywords—Cognitive tempo, digital narratives, digital Booktalk

I. INTRODUCTION

THOSE who study the communicative and learning habits of today’s so-called digital generation are beginning to discover that these youths have such familiarity with the digital domain that digital is fast becoming their native and primary form of communication ([1] [2]. Computers, videos, DVDs, and television have long been a part of education. Their relative long-term effectiveness stems from the incorporation of moving pictures and audio that has long been shown to appeal to a variety of learning styles, and especially to those who spend so much time in front of computer video and television screens during leisure time hours [3] [4] [4] [5] [6] [7] [8] [9] [2][10][11]. This ever-increasing daily use of digital media appears to have changed the way these students think and learn that manifests itself in an apparent preference for processing and understanding rapidly-paced visual inputs.

History has also shown that story is the one of the oldest and most elemental forms of knowing that has been shown to have a powerful effect on cognition. Those who study narrative epistemology know that stories “...effect a change in consciousness, a surrendering of defenses, and creative engagement with the imagination” [1]. Many educational practitioners who favor the use of story in the curriculum relate its use to Jerome Bruner’s [1] ideas about situated cognition, in which he exposed the belief that situating information by embedding it in context helps learners retain and understand information for longer periods of time. To extrapolate, it is being suggested here and by others that situating what is to be learned in the context of a story also helps learner select, arrange, and organize information into manageable chunks [13].

Prior to current research into the learning habits and preferences of today’s media-centric students this author already knew that stories were a powerful motivator and that children have a natural inclination for them. What was discovered in these recent interactions in the classroom is that the love of story remains strong –more so than ever [14][15]. Having said that, an apparent contradiction exists in that, even though these students have a strong affection for story (especially personal stories and/or those they can take an active role in), and that the pervasiveness of narrative in the gameplay process is one of the stronger attractions towards video games, they do not possess a strong sense for the basic elements of story constructs and have trouble correlating story from one mode (i.e., story in games) to another (those found in books, for example). While an assessment of cognitive processing preferences yield a strong tendency toward visual inputs, this author agrees with those who suggest that not all students learn best by their preferred method. Further, it appears from our research that preference towards fast-paced, visual inputs has caused an apparent increase in impulsive-like tendencies in children that can interfere with their ability to read and write and hinder general cognitive processing. It should be no surprise that students are becoming increasingly text-averse and more reluctant than ever to read and write. It has long been hypothesized that a direct correlation may exist between impulsive behaviors and general academic achievement [16][17]. It would seem that being able to identify visual processing exceptions would be of great use to an educator who is using visual media as a means to attract students and change their attitudes towards reading and writing.

In spite of these hesitations, this author suggests that enough corroboration in the literature exists and personal experiences dictate that a classroom curriculum that is based on maximizing today’s digital students’ enamor with all that is digital and combining it with their natural inclination towards story should create significant number of positive teaching opportunities of considerable predictive power. This paper presents a description of a series of tools and correlating studies that first identify the potential visual processing limitations and resulting tendencies of today’s so-called visual learners and then utilizes quantitative, qualitative, and mixed methods of analyzing data to demonstrate the effectiveness of a mediated, visually-oriented classroom approach that is based on fantasy, role play, and storytelling as means to change student attitudes towards and skills in reading and writing.

CHANGES IN VISUAL COGNITION

Playing In order to determine the best methods to teach today's visually-oriented, students who live in a media-rich society, it is important to understand what effect their media choices are having on their cognitive processing skills and preferences. To date very little empirical confirmation exists to make that determination. On the other hand, considerable corroborating anecdotal evidence abounds [18][19][15][1][2]. Support for these observations appears to exist in the form of research in the field of child development. Robert Doman [20] and Makoto Shichida [21], child psychologists who worked independently, applied their research to formulate ideas about how toddlers' brains develop under normal conditions. Both suggest that, throughout the early formative years, young children tend to rely heavily their right brain hemispheres to accommodate rapid learning requirements. They claim that, under normal developmental conditions, children naturally begin to progressively rely less on their right brain hemispheres and gradually develop more reliance on the left-brain for cognition and perception. If this maturity is hindered (which many suggest is exactly what is taking place with today's youth as the result of their ever-increasing participation in activities involving rapidly-paced video games and quick-cut television) an imbalance between the two hemispheres may develop, resulting in a tendency towards impulsive behaviors. Doman's and Shichida's views appear to be backed by neurosurgeons, such as Richard Restak [22], who suggests that the high-volume, visual environment in which today's children live is actually rewiring their brains and changing how they process information.

This author submits that, perhaps, those who unquestionably agree with Restak might simply be over-extending his findings. What he is describing may not be the creation of new mental capacities, but rather a cultural phenomenon by which they are developing previously latent but now preferred cognitive processing approaches. In other words, no evidence exists that a *causal* relationship exists between television viewing or computer usage and emerging cognitive processing skills, but anecdotal corroboration suggests that a reasonable assumption would be that further investigation could help researchers formulate accurate conceptualizations as to which instructional strategies would more effectively match the evolving needs, abilities, and attributions of today's media-centric students.

II. MEASURING VISUAL PROCESSING

There are many ways to identify and measure one's processing of visual inputs that would be useful to an educator who is trying to create appropriate instructional interventions. Over twenty years ago, researchers delved into a construct known as cognitive style, specifically cognitive tempo, that classifies differences in individual responses in which subjects decide whether to sacrifice speed for accuracy or vice versa and laid the groundwork for at least some possible, relevant explanations for the apparent increases in ADD/ADHD characteristics of our children [23]. The Matching Familiar

Figures Test (MFFT), the instrument most widely used to measure cognitive tempo, categorizes subjects into one of four classifications: impulsive, reflective, fast accurate, or slow inaccurate. Based on the results of each administration, median cut-offs are established and individual results are placed along intersecting horizontal and vertical axes, resulting in the individuals being placed into a quadrant indicating which of the four classifications the subject belongs.

While cognitive tempo was never intended to be a measure of intelligence but of personal processing preferences, there exists a preponderance of evidence that backs claims that measuring cognitive tempo can be an accurate predictor of skills in cognition, secondary learning, and reasoning [24][25][26]. Campbell and Davis [27] argued that cognitive tempo can be used to determine whether learning performance is actually hindered. Van Merriënboer [29] was able to predict academic performance and to use it to prearrange feedback strategies to increase effective computer usage, especially with younger students. Various follow-up studies investigated the ecological validity of using a 20-item version of the MFFT (the MFFT-20), developed by Cairns and Cammock [29][30] and have continually found it to be the most reliable [31][32]. These researchers also re-confirmed earlier reports that categorizing students as being impulsive or reflective correlated positively with overall student achievement, making the MFFT-20 a valuable prediction tool. In fact, recent studies have shown the MFFT-20 to be an invaluable tool for pointing out potential student achievement in reading activities and for identifying twice exceptional students (those gifted children who also possess specific learning difficulties) [33].

III. COMPARING THE RESULTS OF THE MFFT-20

The fact that impulsive-reflective behaviors can be trainable [34] and mitigate with age [20][21][35], and because cognitive tempo can be a trainable characteristic, [36][5] it is very difficult to use the MFFT-20 on the same groups of individuals in longitudinal studies to compare changes in cognitive tempo over time. On the other hand, the tool can be used to demonstrate potential changes over time of different groups with similar demographics to demonstrate the clearly demonstrate the changes in visual cognition that media educators have been claiming that has been taking place with media-centric youth.

Because median scores calculated for both latency and total number of errors may vary each time cognitive tempo is measured, the medians between test administrations can easily be compared for trend analysis. In order to maximize the reliability of the results, the demographics of the participants need to be tightly controlled. Comparisons between administrations of the MFFT-20 presented in Table 1 are facilitated because in each of the studies and the samples were purposive and controlled for age, sex, and socio-economic status. For each of the administrations of the MFFT-20, middle school aged children were used because, it is at this

point chronologically that the differences in latency and error rates tend to level off [29][30][37][38].

TABLE I COMPARISONS OF VARIOUS ADMINISTRATIONS OF THE MFFT-20

	1984 Study	Study (2002)	2002 Study	2007 Study
Age	11-13	11-13	11-13	11-13
Type	Regular	Regular	Regular	Gifted
M/F	M	M/F	M/F	M/F
N	98	39	204	114
Latency (secs)	13.4	11.28	9.2	11.2
Errors	18.84	16.9	11	3

Table 1 shows four administrations of the MFFT-20. The first was reported by Ed Cairns and Tommy Cammock, who developed the MFFT-20, a more reliable version of the MFFT [39]. While theirs was a paper and pencil version, it has been shown that the reliability between paper and pencil administrations do not account for enough of a variance to significantly skew the results [40]. Cairns and Cammock administered their tests in the late 1970s and early 1980s, before the emergence of the co-called digital age in which students began to spend so much time with digital media. Comparing their results to the more current ones demonstrates first of all that a redefinition of what it means to be impulsive may be warranted, as demonstrated by a definite shortening of time to first response. Secondly, the overall median number of errors committed has also reduced more than six-fold. While correlation cannot be considered causation, the pure size of the reductions is indisputable.

These differences in visual processing preferences suggest that changes in how we approach teaching and learning might be warranted. It also explains how the slow pace of reading for comprehension might be anathema to those used to more rapid inputs and why many students might feel that reading is a boring activity. Using Robert Doman's [20] concept of teaching to one's strengths and then remediating their weaknesses, using digital media to reach otherwise reluctant readers could be an effective initial and integrated instructional strategy. Many traditional reading interventions incorrectly initially focus on students' weaknesses. In other words, if pacing, word recognition, and sentence structure are a student's stumbling blocks, then making these factors the entry point of reading instruction could be a cause for further failures.

IV. STUDENTS AS STORY CONSUMERS; NOT STORY CREATORS

Research and work in the classroom with local schools by this author and his colleagues [36][41] corroborate much of the anecdotal evidence as to why many of today's digital

learners do not like to read. Responses to pre and post reading preference surveys indicate that these adolescents indeed have trouble with reading comprehension, first because they feel it is boring and secondly, because text has little or no meaning to them. Many have trouble visualizing textual content, which makes them reluctant and, worse case, struggling readers. Much of this is confounded by the fact that vocabulary and sentence structure get in the way. Further, our efforts also reveal that, while students are attracted to movies and video games because they enjoy stories, fantasy, and narratives, they are not very good at creating their own.

Fortunately, we have found that these reluctant readers become more motivated to read once they begin to understand the universal, conceptual schema behind stories in general [33]. Those introductory efforts of introducing story schema are more successful if the instructional activities rely less initially on vocabulary and learning sentence structure and reversing the teaching order. In other words, the first activity is to ensure an underlying understanding of the structures, schema, and patterns of story. Students learn to demonstrate their knowledge of these structures through the use of oral mediated presentation methods that do not require an extensive use of text. Only after they learn to communicate their thoughts in mediated form, is instruction on vocabulary and sentence syntax initiated. This reversal of the order of instruction does not denigrate the importance of vocabulary and sentence syntax; it only coaxes otherwise struggling and reluctant literates into the narrative milieu differently and in a way that they do not become stumbling blocks.

Coincidentally, the data we have collected in our studies into the reading habits and tendencies of reluctant and struggling readers indicate that these text-averse, digital learners display many of the same verbal communication deficiencies as those students from generational poverty. A review of the literature suggests that the reading deficiencies experienced by disadvantaged students strongly correlate to their inability to narrate a coherent story, which in turn can predict the lack of future success in other academic subjects. Educational practitioners who have focused on teaching students from lower socioeconomic status suggest that these students typically demonstrate delayed language development, an informal language register, and a limited ability to understand and tell stories [42][43][44][45]. These same students come to school with insufficient skill sets and communication rules that result in their not fully developing the cognitive structures they need to learn at the levels required for successful attainment of appropriate reading and writing scales on standardized and statewide tests. Feuerstein [42], actually demonstrated a causal relationship between a lack of a development of formal language and story structure and general academic failure. Consequently, he concluded that students lacking access to a formal language and story structure generally do not know how to plan and struggle in all academic areas, including reading and writing. Feuerstein's findings support our ideas and assumptions about how focusing instructional efforts on story, narrative structure, and schema can subsequently improve a child's reading and

writing skills and general cognitive abilities, which led us to hypothesize that investigating the use of these concepts was worthy of further research [41]. T

The insights provided by this research suggest that the design of reading instruction can be successfully reordered and refocused to take advantage of the preponderant visual processing characteristics and preferences of digital learners and to positively impact their personal reading struggles and reluctance to read. Digital students need to be taught literacy skills through more creative and diverse pedagogical instructional strategies [46][47]. Teaching vocabulary and sentence structure is the mainstay of many mainstream initial remedial reading interventions (i.e., most start with coding and decoding words). But if these elements are a main weakness of text-averse, reluctant and struggling readers, it would seem that using them as an entry point could be a major stumbling block to their successfully completing reading and writing assignments and lead to frustration and negative attribution.

A STORY-BASED CURRICULUM

Any learning activities that are based on the same kinds of narrative structures that are found in movies and video games seem to make sense to the digital students. After participating in our program, students reported in post-activity surveys that they began to understand that textual communication is only one of the many ways to express their thoughts. Further, they stated that they began to understand the differences between text and other media and appreciate the need for multiple modes of communicating. Our interventions are based on interactive digital media that facilitate a learning experience in which the end products can be easily shared with one's peers. Participants in initial pilot studies reported that they enjoyed the peer-level feedback, and especially that they felt empowered because they did not have to initially rely so heavily on text-based communications (i.e., book reports, essays, and Power Point presentations, etc.) to express their thoughts. They became more incented to complete their assignments. In truth, these students were really learning how to integrate text-based communications and critical thinking through reflective expression but were doing so at what turned out to be appropriate moments, and many times without their even realizing it.

A. *Digital Booktalk™: Matching prospective readers with books*

Digital Booktalk™, which can be located on the Web is located at (<http://www.digitalbooktalk.com>), is an online portal that houses several successful pre-reading organizing strategies that match potential readers to books. There are video book trailers that provide a pre-training visual to help potential readers become familiar with the characters and contexts found in the books. The number of titles on the site now numbers approximately 50 and includes many of those found on state recommended reading lists. A Suggest-a-Book

feature uses automated intelligence to replicate the traditional interest questionnaires developed by librarians, media specialists, and teachers. An optional user profile keeps track of the results of the questionnaire (especially the question concerning previous books they may have read and movies they particularly like) so that in future sessions the system can remind them of their previous choices. The book trailers on the site serve as role models for the videos the students are asked to create.

The portal also includes a UB the Director section containing a curriculum on how students can create their own trailers. The Digital Booktalk™ project is being incorporated into a much larger entity that will eventually include virtual affinity groups and evolving fan-based communities of other reluctant readers. The UB the Director activity answers the inevitable questions as to why students need to read the book rather than watching the movie made from that book. An effective answer is to remind them that a movie is the result of someone else deciding what goes in it, that not all movies remain true to the book, and to suggest that it might be more fun if they could be the director of their own movie about the book; hence the activity's name. Planting the idea that reading the book as if they are going to make a movie out of it is a positive way to implement the composing concept fostered by the CEE Belief Statements about Technology in which students reinforce a personal concept of literacy by creating their own original content [48].

Further, we hypothesized that the initial external and internal cognitive loads associated with developing reading skills would be lowered. Below-level readers lack even a basic structure on which to scaffold newly decoded information. Thus, the act of reading includes the necessity not only to understand the individual concepts being presented, but the struggling reader must also develop an accurate cognitive structure of the material "on the fly" and is forced to do so using an impoverished vocabulary and syntactical schema. The need to develop an appropriate cognitive structure is taxing, furthering the workload demand on the emerging reader. The act of reading requires that readers make inferences based on combining read material with a schema. The literature suggests that poor readers are less able than good ones to make such inferences [49]. It has been shown that interventions designed to improve relevant schema can be effective in improving reading [50]. We suggest that our digital narrative intervention does precisely this.

The intervention is also based on self-determination theory, the very same theoretical foundation that is at the root of the rising success of video gameplay [51][51]. Self-determination theory is a macro-theory of human motivation concerned with the development and functioning of personality within social contexts. The theory focuses on the degree to which human behaviors are volitional or self-determined (i.e., the degree to which students endorse their own actions and engage in the actions with a full sense of choice). We are attempting to replicate this conceptually by providing an external reason for students to read by substituting academic motivation with a self-determination using digital media as the "carrot".

B. *Developing book trailers in the classroom*

Visual thinkers who do enjoy reading often tell us (including Edward Bloor, the author of *Tangerine*, one of the books found on the Digital Booktalk™ site) that while reading, they attempt to imagine how that book would appear in a movie made for the book, what movie star would play specific roles, film locations, and generally how the main plot and subplots would play out. Although making a full-length movie about a book in a classroom situation is not feasible due to time constraints, making a trailer about the book would be. Similar to trailers (i.e., commercials) made about movies, book trailers are short (1 1/2 to 2-minute) movies that encapsulate the essence of the book, its main characters, its metaphors, and so forth. The activity can be best described as page-to-screen, in which, students translate their newly found comprehension of text into visual narratives. In learning how to make the trailers, students learn trans-media storytelling techniques and how to pull important details from the books they read.

C. Curriculum outline - Instructional Strategies

The following outlines the classroom sessions to implement the UB the Director activity in the classroom. Time to implement varies, depending on how long it takes for the students to read the book, availability of editing workstations, and the technical competence of the teacher and/or support staff. The program lasts approximately nine to ten weeks (the length of an average grading period in K-12 classrooms in the USA).

Session 1: Introduce stories and narrative schema and analyzing different ways to communicate.

Students are drawn into short a short discussion about stories and fiction and non-fiction books. Students are asked what is it about movies or video games that they like more than reading. Introduction to the elements of plot construction, based on Edward Brannigan's book: *Narrative Comprehension in Film*.

Discussion/Justification

Usually students' answers have come back like 'reading is boring', or that they cannot seem to visualize the meaning of the words or comprehend what there are reading, that movies and games have more action, and/or that they like being able to interact with the characters. The teacher notes that, if students had the opportunity to make their own movie about the book, how different would the reading experience be? Would they then be encouraged to take a more active role in the reading activity? This introduction is used to set the tone for the remainder of the first session in which students are shown the various techniques used to deconstruct stories and narrative structure and texts in order to be able to make some directorial decisions about what will end up in a trailer.

Producing a book trailer actually initiates the writing process (screen-to-page). Students are encouraged to write reflective journals. Once the trailers have been produced

students are asked to write and reflect upon their projects. They write out the aspects of the trailer, the justification for the plotlines they chose to produce and any editorial decisions that they made. They write out their assessments and utilize selected vocabulary from the book.

Session 2: Fantasy Circle – Story stimulus

Using a book such as *The Grammar of Fantasy*, by Gianni Rodari as a guide, students form teams and create story vignettes using word prompts and information from stories they are familiar, they create short stories in groups.

This is an icebreaker session that sets the stage for group/peer interactions. Rodari first wrote this book in the late 1850s, and contains dozens of ideas. There are other books that attempt to start the discussions, but this seems to have been the most successful over time. We have used this process successfully with all age groups, from 4th grade to 12th grade, with college students, and adults. The result has been the same. This type of activity gets the participants motivated to share, breaks down barriers, and promotes creative thinking. The *Me-Stories* session flows very smoothly afterwards.

Session 3: Me-Stories – (i.e., Story Circle – Peer to peer story creation).

Participants are instructed to create a personal narrative about themselves. They are given 10-15 minutes to write out their notes. Topics include things like best/worst day in school, a day in their life, who they are, etc. Students then gather in a circle and in round-robin fashion, tell their stories.

Discussion/Justification

As a part of learning the seven elements of story, students learn to initialize the writing process and differentiate between fiction and non-fiction schemata.

Session 4: Introduce book trailers

The book selected for producing the trailers is introduced. The entire class is assigned the same book, the purpose of which is outlined in the description of Session 6 below.

Discussion/Justification

Students all read the same book so that they can compare differing treatments of the book by other teams when the videos are presented to the entire class.

Session 5: Technical Lessons – Video production techniques.

Students are introduced to the construct of making short films, based on books like *The Art of Storytelling: Writing for Short Films*, by Linda Cowgill, which discuss movie treatment concepts. Students are then introduced to page to screen steps and storyboard pitches, using Extras videos found on commercial DVDs. Students are then introduced to software editing packages: iMovie, MovieMaker and/or Photostory

Discussion/Justification

Film narrative structure is introduced soon after students are introduced to the chose book in order to draw parallels between film and written grammars. This provides students awareness of the kinds of things they are supposed to be looking for in the books and provides a framework and objective for reading and writing.. The storyboards teach visualization. We teach students appropriate vocabulary development and comprehension skills.

Session 6: Technical Work Sessions

Students are provided time to work on the technology to learn the software. They learn cooperative and collaborative problem solving (NETS-S).

Discussion/Justification

During this time, the teacher can facilitate the process by gathering sets of related imagery and/or video clips.

Session 7: Peer Evaluations

After the trailers are completed, students share their projects with their peers for peer-evaluated using a rubric. Class discussions involve evaluation of each book trailer and evaluation of the differing interpretations of the book.

Discussion/Justification

This session is the culmination of the process. While the production process is very important and the production choices (21st Century Skills) may increase critical thinking skills, it is in this session where students see firsthand how these choices translate into different views of the book. This session reinforces why reading is important and how the reading the book may differ from watching a movie about it. Discussions focus on whether each trailer properly describes the book and treatment differences between the trailers. The class, reflecting on each member/team's interpretation, sees a composite view of the book. A general discussion follows in which students learn that when a book is translated to another medium, different versions evolve based on choices made by the director of the film.

VII. METHOD

A study was designed to validate that these activities actually translate into motivation and result in an increased desire by the participants to read, critically analyze content, and eventually write about the books they are assigned. The initial assumption was that increases in motivation would be significant because students would be attracted to read books in order to be able to make movies (trailers) about them. The MFFT-20 was used to identify those in the class who might be having visual processing problems and to correlate potential impulsive behaviors to reading difficulties. The specific questions addressed in the study included:

- Can the MFFT-20 be used to identify students with specific learning disabilities in regular and gifted classes?
- For those participants who indicate on the surveys that they do not like to read, does the intervention significantly change their motivation for and overall attitudes towards reading?
- Does the intervention significantly improve participants' storytelling skills, which in turn increases their self-efficacy towards critical analysis, reading, and writing?
- Does the intervention significantly improve twice exceptional students' ability to visualize what they read, thereby improving their comprehension of the text and its relationship to story structure?

A. Participants and setting

Participants in the study were a purposive sampling of 133 middle school students over a three-year period from regular, gifted, and reading remediation classes in two K-12 districts in the central Florida region of the United States. Some students had already been identified as having learning exceptionalities but it was suspected that others also possessed learning disabilities that were being somehow masked, especially those in the gifted classes. One of our sub-tasks was to determine if we could utilize the MFFT-20 as a consistent diagnostic instrument to identify gifted students with secondary exceptionalities (twice exceptional). Cognitive tempo classifies subjects as impulsive (those who sacrifice accuracy for speed), reflective (those who sacrifice speed for accuracy), fast accurate (those who sacrifice neither), or slow inaccurate (those who sacrifice both). Students are shown a series of pictures and asked to select the exact match from a group of five distracters. We also wanted to determine if our instructional intervention would change/increase student reading and writing skills through our use of digital narratives.

B. Instrumentation and procedure

Over a period of approximately nine to ten weeks we worked directly with students in cooperation with the school administration and classroom teachers to implement the curriculum. The research team met with students several times a week for 55 minutes each session. During the first week, a Reading Preferences Inventory was administered as a pre-test to measure students' perceptions about the importance of reading, writing, understanding of story, and their ability to visualize test that they read. The instrument contained ten questions that relate to these three areas using a 5-point Likert-type scale. Five qualitative questions were included at the end that asked participants about which medium they preferred to use to communicate ideas, their future plans and the importance of reading in relationship to those plans. After completing the activities, a post-test was administered to compare responses. Both pre and post surveys included open-

ended questions so that participants could explain their preferences and attitudes.

This study used mixed research methods that combined quantitative and qualitative approaches using a survey instrument, classroom observations, and interviews of the students and their teachers. A mixed method approach, or triangulation, allows for more ways that a researcher can verify and interpret data [53].

C. Results

An analysis of the results of the MFFT-20 and comparing the means between the pre-and post questionnaires proved useful. Not only did the administration of the former confirm our assumptions about increased attention deficit issues as indicated through decreasing latency and errors, but it also was very helpful in identifying those with potential learning deficiencies. Although the general results showed that the majority of gifted students were reflective (something that was anticipated), a list of ten students who were identified as impulsive participants was forwarded to their teacher. She confirmed that out of the ten, we had correctly identified the seven students that she had previously known to have some form of learning disability, two who she knew (but didn't know why) were reading below grade level, as measured on standardized reading tests, and one whose academic struggles were being completely masked. Upon further review, this individual was also later found to have secondary deficiencies.

The pre and post questionnaires also proved to be of service. Analysis of the quantitative data from the Likert scores revealed that there was a statistically significant difference (and an important disconnect) between the students' view of reading and writing and their actual ability and desire to do either, especially in the gifted classes. In spite of the fact that seventy-nine percent of these students reported that reading is enjoyable and stimulating, over sixty-seven percent of them also reported that they did not feel comfortable with their ability to read about a subject and then tell others about what they had just read. Further, ninety-four percent of the entire sample group stated they did not like to read because they had trouble visualizing the actions. Sixty-five percent stated they had trouble with visualizing after reading text because they felt their thoughts came to them in pictures not words.

In order to determine if there might be some type of variance between the responses between the regular and gifted classed, their responses were compared separately. While some areas did differ (most gifted students reported that they were already motivated to read and write), over sixty percent of all of them stated that they had difficulties visualizing what they read and that they preferred video as their preferred form of communications. Comparing the open-ended questions, the researchers found that the majority of both groups felt that they would rather watch a movie than read a book, and when they think, thoughts come to them in pictures instead of words. Gifted students further reported that they were able to take advantage of this ability during reading to help with comprehension, whereas a majority of those in regular classes could not (or preferred not to).

D. Discussion

An initial review of these results reveals that students generally prefer, as anticipated, to watch a movie about a book than read it. In general, there seems to be a fairly large disconnect between students liking for, perceptions about, and understanding of narrative and story and their actual abilities to build their own stories. This often translates into problems understanding what they are asked to read, interpreting that reading, and then articulating that information.

Another theme that seemed to evolve was that, although visual communications is their preferred mode, these visual learners actually have some deficiencies in visual processing. In particular, they did not perform particularly well with creating visuals in their heads from the texts that they read. Many of those who reported that they did not like to read also re-stated in the open-ended questions that one of the main reasons was that they were unable to visualize what they were reading. The curriculum had to be adjusted to ensure that visualization techniques were added. This included considerable work using storyboards, and other creative activities.

Students also stated at the end of the activity that they were beginning to understand the differences between movies and books and that one is not 'better' than the other but were simply different modes of communicating. Participants generally conceded that in watching movies the viewer is subject to the director's decisions and that time constraints create situations where literary license is often taken in order to construct a comprehensible movie that runs no longer than two hours. In short, participants stated that they were beginning to understand the role story schema might play in learning and communicating thought. While they expressed an understanding that there are specific differences between each of these media, that, more than anything else, learning about story schema and how to construct their own plots and content was the most meaningful aspect of the entire exercise. This correlates strongly with the conceptual framework behind *Cognitive Reading Theory*, which has been shown to be particularly effective in increasing reading proficiency and comprehension [54]. In this theoretical model, readers actively participate in the process of interpreting, rather than being passive recipients of the text. The act of creating their own stories from the texts that they were reading helped reader/producers change their reading strategies so as to increase their prediction capabilities, something confirmed as lacking in those suffering from generational poverty.

VIII. CONCLUSIONS

In our work in the schools, we are beginning to document the successful use of video and other authentic digital products to motivate a whole range of students (gifted, twice exceptional, struggling, and reluctant readers) to read books and to build cognitive learning techniques based on the use of narrative schema, vocabulary-building, fluency, and comprehension. These narrative-based programs have been successfully implemented in gifted and regular or mainstream classrooms in selected schools during the past three years.

Preliminary research findings gathered in pilot studies in inclusive classroom settings indicate that these activities can be particularly effective in significantly and positively changing student attitudes towards reading and writing, being a factor in increasing completion rates for the books they start, and positively motivating them towards reading in general.

A review of these findings suggests that these activities are particularly attractive to gifted students and those diagnosed with specific learning disabilities. Reluctant readers began to read and write and students with delayed language development began to comprehend. Overall motivation towards reading is increased. In the future the plan is to increase the number of schools to expand these efforts to other local counties, to further refine the curriculum and to scale the adoption of the curriculum.

In addition, efforts will be made to reevaluate the content validity and reliability of the curriculum and associated pre and post activity inventories and booktalk activities. The plan is to begin comparing the results of this curriculum to the results of classroom reading comprehension tests, and evaluate changes in the number of students reading at grade level, as measured by Scholastic Reading Inventory (SRI), and the reading portion of the Florida Comprehensive Aptitude Test (FCAT). These efforts will broaden the generalizability and increase the power of the results by increasing the numbers of participants in the project. A major effort is currently being undertaken to expand the content on the digital booktalk site to include additional books in the trailer index and to expand the functionality of the site using newest tools provided thorough Web 2.0 developments.

Regardless if one agrees with their validity, these programs have resulted in an unintended consequence. A common, positive thread appears to confirm previous research on what is often referred to as area-wide reading: that the increased availability of high interest books and opportunity for their sustained reading and sharing the reading experience with others has accounted for a lion's share of increased reading [55][56]. In other words, if you properly match potential readers to an author or genre and give them a forum to share their positive experiences, even reluctant readers are more than likely to complete the books they start and will read others from the same (or similar) author or genre [57]. The National Reading Panel's [58] subgroup on computer technology and reading instruction stressed research needed to be conducted in the area of integrating technology to increase reading instruction. This reading intervention seeks to increase reading using an integrated method that is empirically shown to be based on sound, theory-based principles.

REFERENCES

- [1] W. J. Ong, *Orality and Literacy: The Technology of the Word*. London, Routledge, 1982.
- [2] M. Prensky, *Digital Games-Based Learning*, New York: McGraw-Hill, 2001.
- [3] K.S. Cennamo, W.C. Saveneye, and P.L. Smith, "Mental effort and video-based learning: The relationship between preconceptions and the effects of interactive and covert practice". *Educational Technology Research and Development*, vol. 39, pp.5-16, 1988.
- [4] N. Cowan, "Children's memories according to fuzzy-trace theory: An endorsement of the theories purpose and some suggestions to improve its application". *Journal of Experimental Child Psychology*, vol. 71(2), pp. 144-154, 1998.
- [5] M.A. Greenwald, "A survey of reading instrument usage in New Jersey Public School Reading Programs, Grades K-12". *ERIC Document Reproduction Service*: ED 056 844, 1972.
- [6] J. M. Healy, *Failure to Connect: How Computers Affect Our Children's Minds and What We Can Do about It*, New York: Simon and Schuster, 1988.
- [7] A. Lang and M. Basil, "Attention, resource allocation, and communication research: What do secondary task reaction times measure anyway?" In M. Roloff (ed.) *Mass Communication Yearbook*. Beverly Hills Ca: Sage, p. 21, 1998.
- [8] Lang, P. Bolls, R. Potter, and K. Kawahara, "The effects of production pacing and arousing content on the information processing of television messages". *Journal of Broadcasting and Electronic Media*, vol. 43(4), pp. 451-468, 1999.
- [9] A. Lang, S. Zhou, N. Schwartz, P. Bolis, and R. Potter, "The effects of edits on arousal, attention, and memory for television messages: When an edit is an edit, can an edit be too much?", *Journal of Broadcasting and Electronic Media*, vol. 44(1), pp. 94-109, 2000.
- [10] D. Tapscott, *Growing Up Digital: The Rise of the Net Generation*. New York: McGraw-Hill, 1999.
- [11] K. M. Bradt, *Story As a Way of Knowing*., Kansas City, MO: Sheed and Ward, 1997.
- [12] J. Bruner, *Actual Minds Possible Worlds*. Cambridge: Harvard University Press, 1986.
- [13] B.W. Mott, C.B. Callaway, and L.S. Zetlemoyer, "Towards narrative-centered learning environments", Available: <http://citeseer.ist.psu.edu/253172.html>. Accessed: October 31, 2007.
- [14] R. Kenny, R. and G.A. Gunter, "Literacy through the arts". Paper presented at the *28th Annual Conference of AECT*, Orlando, FL, 2005, November.
- [15] M. Neiderman, R. Kenny, A. Sanchez, and M. Croft, "A changing narrative paradigm". Presentation made at the *Broadcast Education Association Annual Conference*. Las Vegas, NV, April 22, 2005.
- [16] D. E. Barrett, Reflection-impulsivity as a predictor of children's academic achievement", *Child Development*, vol. 48(8), pp. 1443-1447, 1977.
- [17] M. Spinella, and W.M. Miley, "Impulsivity and academic achievement in college students". *College Student Journal*, 2003, December.
- [18] M. Gladwell, *The Tipping Point: How Little Things Can Make a Big Difference*. New York: Little, Brown and Company, 2000.
- [19] M. McLuhan. *Understanding Media: The Extensions of Man*. New York: McGraw-Hill, 1965.
- [20] R. Doman, "Learning problems and attention deficits", *Journal of the National Academy for Child Development*, vol. 4(6), 1984.
- [21] M. Shichida., *Science of Intelligence and Creativity*. Emigrant, MT: Oatmeal Angels, 1994.
- [22] R.M. Restak, *The New Brain: How the Modern Age Is Rewiring Your Mind*. New York: Rodale St. Martins Press, 2003.
- [23] J. Kagan, B.L. Rosman, D. Day, J. Albert, and W. Phillips, "Information processing in the child: Significance of analytical and reflective attitudes", *Psychological Monographs*, vol. 78(1), 1964.
- [24] L. Cooper., "Strategies for visual comparison and representation: Individual differences", *Advances in Psychology of Human Performance*. R.J. Sternberg, (ed). Hillsdale, NJ: Lawrence Erlbaum, 1982.
- [25] J.G. Hedberg and S.E. McNamara, "Matching feedback and cognitive style in visual CAI tasks", *Annual Meeting of the American Educational Research Association* (ERIC Document Reproduction Service: No. ED 260 105), Chicago, IL, 1985, March 31 - April 4.
- [26] E.H. Ridberg, R.D. Parke, and E.M. Hetherington, "Modification of impulsive and reflective cognitive styles through observation of film-mediated models", *Journal of Experimental Psychology*, vol. 5(3), pp. 369-377, 1970.
- [27] D.S. Campbell and R. B. Davis, "On the validity of reflection-impulsivity as a construct in classroom research", *Annual Meeting of the American Educational Research Association*, New York. ERIC Document Reproduction Service: No. ED 222 502), (1982, March).
- [28] J.J.G. van Merriënboer, "Instructional strategies for teaching computer programming: Interactions with the cognitive style reflection-impulsivity", *Journal of Research on Computing in Education*, vol. 23(1), 1990.

- [29] J. Cairns and T. Cammock, "The development of a more reliable version of the Matching Familiar Figures Test". *Developmental Psychology*, vol. 5, pp. 555-560, 1978.
- [30] J. Cairns and T. Cammock, "The 20-item matching familiar figures test". (ERIC Document Reproduction Service: No. 015681-4), 1984.
- [31] G. Buela-Casal, H. Carretero-Dios, M. del os Santos-Roig, and M. P. Bermúdez. "Psychometric properties of a Spanish adaptation of the matching familiar figures test (MFFT-20)". *European Journal of Psychological Assessment*, vol. 19(2), pp. 151-159, 2003.
- [32] J. Miyakawa, "Performance on Matching Familiar Figures Test, classroom behaviors, and school achievements of elementary school children in Japan", *Japanese Journal of Psychology*, 72, 2001.
- [33] G.A. Gunter and R.F. Kenny, "Digital booktalk: Digital media for reluctant readers". *Contemporary Issues in Technology and Teacher Education - Current Practices, 2008, in Press*.
- [34] D. Siever, "Audio-visual entrainment: Applying audio-visual entrainment technology for attention and learning", Available: <http://www.mindalive.com>. Accessed October 17, 2007.
- [35] D.A. Waring, C.B. Farthing, and P. Kidder-Ashley, "Impulsive response style affects in computer administered multiple choice test performance". *Journal of Instructional Psychology*, 1999, June.
- [36] J. D. Fletcher, "Effectiveness and cost of video disc instruction". *Machine Mediated Learning*, vol. 3, pp. 361-385, 1991.
- [37] M. A. Okun, W.M. Callistus, and L.B. Knoblock, "Adult age differences in cognitive tempo". Annual meeting of the *American Educational Research Association*, San Francisco. ERIC Document Reproduction Service ED 174 632, 1999.
- [38] J.C. Wright and A.G. Vliestra, "Reflection-impulsivity and information-processing from three to nine years of age". In M. Fine (ed.), *Intervention with Hyperactivity*. Springfield IL: Thomas, 1977.
- [39] R. F. Kenny., *The Effects of Cognitive Style and Gender on Verbatim And Gist Memory for Rapidly-Presented Montage Video*. Ph.D. Dissertation, University of Florida, Gainesville, FL, 2002.
- [40] R.F. Kenny, Evaluating cognitive tempo In the digital age, *Educational Technology research and Development*, DOI: 10.1007/s11423-007-9035-8, 2007, March 13.
- [41] R.F. Kenny, G.A. Gunter, "Enhancing literacy skills through digital narrative", *The Journal of Media Literacy*, 2006.
- [42] R. Feuerstein, *Instrumental Enrichment: An Intervention for Cognitive Modifiability*. Glenview, IL: Scott, Foresman and Co, 1980.
- [43] M Joos, "The styles of the five clocks". In R.D. Abrahams and R.C. Troike (Eds.) *Language and Cultural Diversity in American Education*. Englewood Cliffs, NJ: Prentice-Hall, 1967.
- [44] R.K. Payne, "Understanding and working with children from poverty". *Instructional Leader*. Vol. 9(2). Available: <http://homepages.wmich.edu/~ljohnson/Payne.pdf>. Accessed April 24, 2007
- [45] R. Payne, P. Devol, P., and Y.D. Smith, *Bridges Out of Poverty: Strategies for Professionals and Communities* (2nd ed.). New York: Aha Process, 2000.
- [46] G.A. Shelly, T.J. Cashman, R.E. Gunter, and G.A. Gunter, *Teachers Discovering Computers: Integrating Technology and Digital Media in the Classroom* (5th ed.). Boston, MA: Course Technology, 2008.
- [47] M. Squire, "Video games in education", *International Journal of Simulations and Gaming*. Available: <http://simschiilresources.edreform.net>. Accessed October 1, 2007.
- [48] J. Swenson, C.A. Rozema, E. McGraill, and P. Whitin, "Beliefs about technology and the preparation of English teachers: Beginning the conversation", Available Online] *Contemporary Issues in Technology and Teacher Education*, vol. 5(3/4). Available: <http://www.citejournal.org/vol5/iss3/languagearts/article1.cfm>, Accessed June 28, 2007.
- [49] J.V. Oakhill and N.M. Yuill, "Higher order factors in comprehensive disability: Processes and remediation". In C. Cornoldi and J.V. Oakhill (Eds.), *Reading Comprehension Difficulties: Processes and Remediation*, Mahwah, NJ: Lawrence Erlbaum Associates Inc, 1996.
- [50] J.A. Bulgren and B.K. Lenz, "Strategic instruction in the content areas". In D. D. Dreshler, E.S. Ellis, and B.K. Lenz (Eds.). *Teaching Adolescents with Learning Disabilities: Strategies and Methods* (2nd ed.), in E. L Deci, R. Koestner, and R. M. Ryan, "A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation". *Psychological Bulletin*, vol. 125, pp. 627-668, 1999.
- [51] M. Vansteenkiste, J. Simons, W. Lens, K.M. Sheldon, and E.L. Deci, "Motivating learning, performance, and persistence: The synergistic effects of intrinsic goal contents and autonomy-supportive contexts". *Journal of Personality and Social Psychology*, vol. 87, pp. 246-260, 2004.
- [52] C. McKnight, A. Magid, T.J. Murphy, and M. McKnight, *Mathematics Education Research: A Guide for the Research Mathematician*. Providence, RI: American Mathematical Society, 2000.
- [53] D. Reinking, "Multimedia learning of reading". In R.E. Mayer (ed.), *The Cambridge Handbook of Multimedia Learning*. New York: Cambridge University Press, pp. 355-374, 2005.
- [54] K. Eriksson, "Booktalk Dilemmas: Teachers' organisation of pupils' reading". *Scandinavian Journal of Educational Research*, vol. 46(4), pp. 391-408, 2002.
- [55] S. Krashen., "Accelerated reader: Does it work? If so, why?". *School Libraries in Canada*, vol. 22(2), pp. 24-26, 2002.
- [56] R. Kenny, "Growing up digital: Implications for teaching and learning". *The iDMA Journal*, vol. 2(2), 2005.
- [57] National Reading Panel. (2000), "Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction". *National Institute of Health*, Available: <http://www.nichd.nih.gov/publications/nrp/smallbook.cfm>. Accessed July 25, 2007.

Robert F. Kenny received his Ph D in educational media and instructional design in 2002 from the University of Florida in Gainesville Florida. Dr. Kenny is a leader in the digital media movement in the United States and is a founding member of the International Digital Media and Arts Association. He has authored books and articles on media literacy, television production and utilizing digital media in the classroom. He is a member of the Association of Educational Communications and Technology the American Educational Research Association, the International Digital Media and Arts Association, the Florida Association of Media in Education, Florida Institute of Film in Education, and is a board member at Summit Charter School in Orlando, Florida, a school specializing in educating students with specific learning disabilities.

He is an Assistant Professor in and chairs the Undergraduate Curriculum Committee for the Department of Digital Media at the University of Central Florida in Orlando, Florida. Most recent articles include evaluating cognitive tempo in the digital age in *Educational Technology Research and Development Journal* (2007); Enhancing literacy skills through digital narrative, published in 2006 in *The Journal of Media Literacy*, and A case for a formal design paradigm for serious games published in *The Journal of the International Digital Media and Arts Association*.