Appropriate Processing Time: Valuing Process over Product

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Abstract

This article views appropriate processing time through various lenses considering diverse needs of students/children. After noting significant differences between school cultures of Italian (Reggio Emilia and Montessori) and U.S. schools, the researchers conducted a qualitative case study where they collected data from a heterogenous group of participants. The participants logged "hurry up" commands given to students/children over the course of two weeks. While the number of "hurry up" commands dramatically decreased from week one to week two, and the participants realized that using imperatives to hurry students/children along were ineffective, merely illustrating these points to the participants was not enough to create lasting change. The researchers propose for U.S. classrooms to truly increase depth of learning and collaboration, the competitive nature found in these classrooms must be eliminated, and students/children must have increased processing time to consider learning from a meaningful and relevant stance.

Keywords: Processing time, wait time, collaboration, process, product, locus of control.

Introduction

Does faster always mean better? After observing schools in Italy and comparing them to experiences in American public schools, the researchers questioned whether the frantic pace in U.S. schools is producing the desired outcomes. In an article in the *New York Pos*t, psychologist and author, Dr. Stephanie Brown (2014) reports:

Researchers note that this push for speed is changing the way people think. The need for efficiency and instant response leads to the dumbing down of information intake so that people become scanners and "decoders" of information, cruising horizontally across the screen to pick up bytes, rather than delving towards a deeper understanding (para. 13).

The fast-paced American society pushes to achieve more and more, often times sacrificing depth for breadth. As professional educators, students, and parents, the participants of this study all realized the benefits of wait time and increased time to process information and learning; however, societal norms necessitate pushing students/children to complete tasks faster, without pausing to think, process, or consider outcomes critically. This investigation juxtaposes observations of Italian educational programs with American public schools. The research study provides evidence that allowing increased processing time may facilitate the development of a stronger internal locus of control and help children establish more ownership of their learning. This study was purposefully designed to examine these issues by looking at processing time, locus of control, and collaboration through various lenses.

The researchers acknowledge that processing time will vary according to different situations and various outcomes; however, when reviewing the literature on this subject, they found that appropriate processing time is critical for some specified groups of learners.

Literature Review

Wait Time in ESL Methodology

Wait time is an integral part of any lesson; it is a simplistic component that when added pays dividends by providing incredible impact. Wait time is the difference between full engagement and participation versus students reaching a level of frustration and checking out (Gonzalez, 2018).

Wait time is a key component found in Sheltered Instruction (SI), and similar to all Sheltered Instruction techniques and strategies, it is simply good pedagogy across the board for all students. SI supports multiple learning styles; it is a method of integrating both content and language learning through instructions by using a variety of non-linguistic supports such as visuals, multi-media, gestures, realia, and a host of other supports that do not solely rely on language to make content comprehensible. Krashen (1985), is credited for the theories behind these concepts. Besides second language learners, these techniques are especially effective for students in special education, students who are more visual or tactile kinesthetic learners, students who struggle academically, students with dyslexia, and students with a myriad of other specialized learning needs (Echevarria, Vogt, & Short, 2017).

Students learning new content or a new language benefit from time to listen to the question and then to process what they have heard (Gonzalez, 2018). Many Culturally and Linguistically Diverse (CLD) students need additional time to either translate or process the words they have heard in order to comprehend the message being presented in the learning process. Once the student understands the question being asked, then they have to formulate a response (Gonzalez, 2018).

After formulating a response, the CLD student must gather the courage to relay the response in front of the class. In an effort to help lower the affective filter (Krashen, 1987), educators should allow responses that may not be grammatically perfect; then recast (Gonzalez, 2018) the responses to illustrate the response in standardized English as needed.

Example:

Student: "I eated dinner last night."

Teacher: "You ate dinner? What did you have?"

Kathleen Mohr and Eric Mohr (2007) suggested that for English Language Learners to be successful in the classroom, the teacher should "Allow sufficient wait time, including patient pauses that support students' possible need for code switching (i.e., thinking or speaking in one language and switching to another). Repeating the question or prompt allows more time for processing while engaging more students" (p. 1). Knowing that sufficient wait time is necessary is the first step in providing it to students. However, the next consideration is how much wait time is currently being provided versus how much wait time is actually needed?

Rowe (1974), Garigliano, (1973), and Gambrell (1983) found that the average length of time between a teacher posing a question and requiring a student response was between 1-1.5 seconds. Rowe (1974) describes this as Wait Time 1. However, one second does not provide sufficient processing time to consider and then process a response. Rowe (1974) suggested that teachers increase the length of time between the proposed question and the student response to 3-5 seconds at least. The positive effects of doubling the amount of time provided to students to process the information provides several positive benefits:

- Length of responses increased
- Correctness of responses increased
- More students volunteered answers
- Responses consisting of "I don't know" decreased
- Student confidence increased

Additionally, increased wait time benefitted classroom teachers as well. The quality of teachers' questions increased while the sheer quantity of questions asked decreased. Gonzalez (2018) suggested this benefit illustrated the concept of quality over quantity.

When there is not a sufficient amount of wait time given, CLD students do not have enough time to translate, process, and then understand what is being asked before moving on to other concepts or questions. This can cause CLD students to become frustrated and shut down (Gonzalez, 2018). Additionally, if they are not provided enough time to participate, they will begin to assume that the questions are not for them and that they are not being

included in the discussion. "Wait Time is a clear message to all of our students that the lesson and the learning are for them. They are important, and we will not give up on them" (Gonzalez, 2018, p. 1).

Wait Time 2. Rowe (1974) introduced the concept of Wait Time 2. This is the time after the student responds to the proposed question to the teacher's reply back. Rowe (1974) also proposed waiting an additional few seconds to encourage students to extend responses and continue processing the information.

Wait Time in Literacy

Donald Graves (2002), considered to be the father of the process approach to writing, points out that "slow thinking" allows for critical thinking and creativity to blossom. Some of the great self-avowed slow, but very effective thinkers, such as Charles Darwin, Thomas Jefferson, and Albert Einstein displayed their ability to stay focused for long periods of time in order to find and solve problems. Long, slow thinkers exhibit some common positive characteristics, such as: being "problem finders," enjoying their own company, exhibiting a sense of play, remaining highly focused for extended amounts of time, and having the ability to sustain thought. Many of these individuals were mentored by other long thinkers (Graves, 2002, pgs. 54-55).

Likewise, Kahneman and Egan (2011) describe two systems of cognition known as the "dual processing theory" (p. 10). System 1, the subconscious and intuitive system, relies on fast thinking and instinct, which is important in many dangerous or critical situations, but may result in faulty thinking. While System 2 thinking refers to slow and deliberate thinking. This type of cognition requires time for deep, rational and logical thought; however, individuals may tire easily of this deeper thinking and default back to System 1 cognition (Kahneman & Egan, 2011). Could this phenomenon be what is occurring in the current educational system? Are teachers and students able to devote the time and energy necessary to extend System 2 thinking throughout the day? For example, Graves (2002) used the term *"kairos"* (meaning "the fullness of time") to describe how teachers enter into the teachable moment when conferring with students on their writing. Graves (2002) further explains this interaction by saying, "Power is much more fully exchanged in the "kairos moment," when both persons are fully present and sense there is no hurry and know their hearts beat together" (p. 13).

Wait Time in Early Childhood Education

The National Association for the Education of Young Children (NAEYC) (2009) recommends extended blocks of time for young children to engage in sustained play, investigation, exploration, and interaction (pg. 18). Renowned early childhood programs, such as the Reggio Emilia

approach and the Montessori method recommend large blocks of time for student exploration to develop the pleasure of learning. The Reggio Emilia Approach incorporates time for both individual and corporate expression through many "languages" (Reggio Children). Rathunde (2001) describes the "flow experience" as a time "when a person is fully concentrated on a task at hand, relatively oblivious to the passage of time, and feeling clear about what needs to be done from one moment to the next" (pg. 14). Maria Montessori, well-known Italian educator, physician, and scientist, also believed that periods of deep concentration motivate children to further spontaneous learning activities (Montessori, 1917). Thus, her ideas on the prepared environment included liberal amounts of processing time to help young children develop a stronger internal locus of control (Montessori, 2013).

Locus of Control

This spectrum of internal regulation involves individual's belief that they have control over the outcome of events in their lives (Rotter, 1954). The development of this discipline takes significant time and positive interactions with parents, caregivers, and teachers. Joelson (2017) explains that "children with a more internal locus of control behave healthier as adults because they have greater confidence in their ability to influence outcomes through their own actions" (para. 5). This confidence is important, not only for young students, but adolescents as well. Hunter and Csikszentmihalyi (2003) found that involvement, interest, and curiosity in daily life positively impacted adolescents' global self-esteem, their internal locus of control, and emotional well-being. On a recent study abroad trip to Italy, the researchers and university student participants experienced a poignant example of young students who exhibited internal locus of control and demonstrated their ability to control their behavior. The researchers watched as a teacher in the Italian Montessori school rang the "silence bell." All the children stopped what they were doing, stood still, and waited an extended amount of time until the teacher released them by ringing the bell again. In the study abroad debriefing sessions, the researchers were left wondering if students in the United States would have been capable of similar control.

Background of the Study

In the aforementioned study abroad, the researchers observed at both Reggio Emilia and Montessori schools. At Reggio Emilia, the researchers observed children's created art projects in the form of statues—an individual task. However, the students then took these individual art projects and combined them to create a collaborative community work of art. This illustrated a collaborative environment instead of a competitive one as noted in the classrooms observed in the U.S. The researchers also observed children

working on tasks independently and diligently on tasks that they chose. Quality was promoted over quantity in this environment as well. The culture of U.S. classrooms is in direct opposition to what ESL research suggests is needed for CLD learners as suggested by the Sheltered Instruction Observation Protocol (Echevarria, Vogt, & Short, 2017). The authors illustrate necessary sheltered instruction components such as increased wait time, comprehensible input, and adapted speech. Another element that greatly impressed us was the students' locus of control. The researchers witnessed evidence of this in several ways at the Montessori schools.

Methodology

Statement of the Problem

The researchers observed that as Americans, that students are being rushed through life. "Children age 8 to 17 say they worry about doing well in school, getting into good colleges and their family's finances. They also report suffering headaches, sleeplessness and upset stomachs" (Munsey, 2010, p. 22). This is in direct contrast to the Italian culture and educational system where the researchers observed a slower pace where children could sit and critically think and process without being rushed to the next task. Through the development of self–efficacy, the Italian students seemed to value completion of work and intrinsically valued learning. The researchers wanted to see if that was their own perception, or are educators asking students/children to hurry through tasks without having enough time to process or critically think.

Hypothesis: A collaborative learning environment allowing plenty of processing time is more effective than a fast-paced competitive learning environment.

Design of the Study

This research study was conducted as a qualitative case study. Throughout the fall semester of 2018, the researchers collected data from the participants. In addition to considering the issue of processing time through a variety of lenses, the researchers considered the amount and types of processing time different audiences may require. For example, how much time do parents give to their children in comparison to what an English Language Learner (ELL) might need as they are learning a new language and trying to process language and content simultaneously? What type of processing time does an Early Childhood student need as s/he is beginning to develop internal locus of control versus adolescents who may frequently engage in multitasking?

The researchers conducted a study where they had participants track how many times, they told a student/child to "hurry up" in a variety of contexts for one week. The participants were required to keep a journal of these phrases

that equated to a command that meant to accomplish something faster. Then in week two, the researchers instructed the participants to consciously try to limit the number of "hurry up" prompts they gave and to provide students/children as much time as they needed to complete required tasks. The researchers then had all participants reflect on the changes in the student/child behavior from week one to week two and if the modification in processing time made any noticeable differences.

Research Questions:

1. How many times in the span of a week do participants prompt their children/students to "hurry up" during a learning task?
2. How does conscious effort in providing ample processing time affect learning outcomes?
3. What are participants' reflections concerning processing time and learning outcomes based on their responses in reflective journals?

Participants

The participant pool included a convenient, targeted, representative sample of five. This was a unique group not typically represented in conjunction with one another. The researchers believed that considering the phenomenon from various perspectives, such as different educational programs with varying experiences, would enrich the findings. The different subgroups represented include one participant from each of the following:

- Classroom Teacher
- Pre-Service Clinical Teacher
- Special Education Teacher
- ESL/Bilingual Teacher
- Parent

Data Sources

- Participant Journals
- Lesson Plans/Weekly schedule
- Tally Charts
- Interviews

Participants tallied the total number of times in weeks one and two that they requested the students/children to "hurry up" and noted the context and result of this imperative. Completing a Task—pick up toys, complete a meal, brush teeth, get out or put away materials, etc. Physical Movement—walk to another room, get into the car, move from point A to point B, etc. Academic Learning Task—finish a homework paper, read a passage, write a paragraph,

or other type of task. Other Task—any other task that they requested the child/student to complete faster.

Participant Journals

Week One: Each day of the first week the participants took notes in the journal provided by the researchers how many times they asked a student/child to "hurry up" on a task. This included any form of coaxing a student/child to complete a task more quickly. Participants made tally marks in the journal for each date. They also noted the types of tasks they asked the student/child to complete more quickly (i.e. getting dressed, getting into a vehicle, lining up for lunch, getting materials out, etc.).

Week Two: In this week, the participants consciously tried to limit their prompts for students/children to "hurry up." The participants were instructed to provide them as much processing time as needed. Then the participants journaled about what the task was, how they felt providing as much time as needed, and what the outcome was after providing additional processing time. The participants were asked: Is this more effective? Why or why not? How did the student/child respond to the additional processing time? What was the learning outcome of each task? The participants then answered these questions and provided any additional thoughts concerning this week.

Findings

Week One

The findings of Week One indicated that participants asked students/children to "hurry up" many times in a variety of contexts. Over the course of the week, the five participants gave 135 commands to complete a task more quickly. Most of these commands occurred in the areas of completing tasks and physical movements while fewer "hurry up" commands were given in conjunction with academic tasks.

Table 1: Week 1 Compilation of Participant Tallies Requesting a Child to Hurry

Participant	Complete A Task	Physical Movement	Academic Learning Task	Other Tasks	Total
1-Classroom Teacher	20	24	6	1	51
2-Student Teacher	2	2	1	0	5
3-ESL/Bilingual	16	7	9	0	32
4-SPED Teacher	12	3	1	0	16
5-Parent	22	9	0	0	31
Totals:	72	45	17	1	135

The comments in Table 2 illustrated that the participants realized that giving "hurry up" commands were ineffective; however, they continued to do so even when desired results were not actualized. Participants stated that they did this out of habit and even threatened punishment if students/children did not complete tasks more quickly.

Table 2: Week 1 Context and Results of Requesting Children to Hurry on Tasks

Context	Result
Put away or pass out class supplies Students moving from one area Bathroom breaks	Students comply to teacher command to hurry and complete task—multiple instances of request to accomplish.
Students were asked quickly to write grammar examples from mentor sentences and notes	Some gave up and waited for examples to be shared; others completed the task.
Asked a student to stop getting off task and to hurry up and finish his writing sample before it was time to end class.	Teacher initialed where he was when she checked on him and told him she was excited to see how much more he could get by the next check.
Asked a student to quickly work to complete his paragraph that he started on.	Teacher helped the student walk through what he wanted to say. As she walked away the student gave up.
Most of the time the students were told to do something because of our rushed schedule. With 23, I feel like that is all I am doing every day is rushing these students to ensure that we meet our minutes and follow the schedule.	"Most of the time when I ask students to hurry up nothing really happens".
This day was a little different; we had tons of people coming in and pulling students out for assessment, so that did throw our day off a bit.	"Students quickened their speed a little bit. I think they are just used to me saying hurry, and students are immune to it".
I asked students to hurry and finish their multiplication monster.	"I threatened to take away Friday store, and students fixed behavior".
I typically tell my child to "hurry up" a lot on a lot of different tasks…	"It's like a default mode".

Week Two

When the participants were instructed in Week Two to limit the number of "hurry up" responses given to students/children, the number of

these imperatives decreased dramatically. When explicitly attempting to limit these commands, participants were able to reduce the number of "hurry up" commands by 37%. Most of the commands still occurred in the columns of completing a task and physical movement while most participants ceased or decreased the "hurry up" requests for academic learning tasks most significantly.

Table 3: Week 2 Compilation of Participant Tallies Requesting a Child to Hurry

Participant	Complete A Task	Physical Movement	Academic Learning Task	Other Tasks	Total
1-Classroom Teacher	8	3	3	0	14
2-Student Teacher	3	3	0	0	6
3-ESL/ Bilingual	5	8	0	0	13
4-SPED Teacher	2	3	2	0	7
5-Parent	5	5	0	0	10
Totals	23	22	5	0	50

The comments in Table 4 illustrate the participants' realizations that many times requesting students/children to "hurry up" is ineffective. The participants also noted that they were surprised by how many times they gave "hurry up" commands once they started keeping track of this. Participants recognized that continuously rushing students/children created more anxiety in the learning environment. While others realized that providing students/children more processing time can be highly effective; however, most still believed that the students/children needed redirection at certain times. Finally, this exercise reminded participants to slow down and provide additional processing time for the students/children; they even began to notice when others were requiring the students/children to hurry on tasks and realized the potential negative impact.

Table 4: Week 2 Context and Results of Requesting Children to Hurry on Tasks

Context	Results
"I do notice that I tend to hurry students when I am giving support in the general education classroom, and they are unfocused on the task at hand."	"When I am able to give more processing time, I would say 80% of the time it is successful where the other 20% of the time the student needs redirection."
Teacher tells students to hurry during transition.	Causes more anxiety in the students.
Teachers/parent kept tally logs and documented the number of times they requested the child/student to complete tasks faster.	"This tally log has reminded me to take a breath before saying something to the student and allow them a little more time to transition."
The child has no concept of time, "so the only way she knows we need to complete something or leave is by me telling her."	"I have to prompt her to complete a task. I am not sure I honored the assignment as I replaced hurry up with, 'we are leaving in 5 minutes.'"
"I gave the child all the time she wanted to complete a task."	"She just sat there."
"I jotted down the times I asked students to hurry up; I thought this would be easy."	"I was surprised by the number of times I asked students to hurry up."
Teacher had students writing in class and conferred with them on their writing.	The day was stressful; the new assistant kept telling the students to hurry up or "let's go." The participant noted, "I was saddened. I don't like rushing my students when it comes to writing because I know that can shut down the creative flow; not to mention breaking their concentration.
Teacher did not rush tasks and allowed students as much time as they needed.	"I'm not sure if it was more effective when I didn't hurry them. For example, most students are responsible enough that they know what they should do. However, some still need structured reminders."

While there is a positive correlation between allowing more processing time and collaboration, accomplishing tasks in a specified time frame doesn't appear to garner the desired long-term results. Participants cited issues of control, consistency, lack of understanding of the "end goal," and thus not being able to get past accomplishing the "task" as reasons that they were not always successful in eliminating "hurry up" commands. Some participants cited directing the students/children to complete tasks quickly without using

the words "hurry up." These actions illustrated societal norms: changing words didn't change actions, which led them to realized that shedding light on the issue of processing time does not necessarily mean that societal changes will occur even when the participants realized the benefits from making these changes. Several of the participants noted that students/children do not have the same concept of time as an adult. "When I intentionally started thinking before I asked them to hurry, I began asking myself if they were really moving at a slow pace or just not my self-imposed time frame."

Conclusion

Having students all frantically working in a classroom does not equate to successful learning; in fact, commanding students to constantly hurry causes continuous and undue stress. For example, while on the study abroad in Italy, the researchers asked the guide from the Montessori Foundation about bullying and school violence in Italian schools; he reported that it is a non-issue in Italy. The researchers' hypothesis concerning this difference stems from the varying environments. The Italian schools observed were more collaborative versus competitive.

As the researchers drew conclusions from the findings, three dichotomies emerged: quality over quantity, process over product, and collaboration versus competition.

While considering the first dichotomy, quality over quantity, the researchers recognized that there may be numerous minutes of instruction, one must truly consider what is occurring during that time? As the literature and research have both indicated, there is a need for more processing time to achieve deeper understanding. Therefore, the researchers assert that when educators talk of "engagement," what they are referring to is involvement in System 2 thinking.

In the second dichotomy, process over product, the findings also illustrated that there could be punitive consequences given for not completing a task within the teacher/parent specified timeframe with no thought to the process or quality of the product. When considering process over product, the researchers were able to conclude that simply requiring a product of some sort to merely check off a box of completion did not lead to engagement or quality in the process of learning.

In the final dichotomy, collaboration versus competition, the researchers witnessed a more collaborative environment in both Reggio Emilia and Montessori schools observed. This was evident in the example of students creating a work of art or statue and then bringing all the individual pieces together to create a communal composition. While the participants in this study did not specifically mention collaboration, the researchers noticed more that even though collaboration is stressed in U.S. classrooms, and

research indicates this is considered to be best practices (Chickering & Gamson, 1987), there is an obvious disconnect between theory and practice as evidenced by none of the participants including or discussing additional collaboration in their logs and observations even when attempting to provide more processing time and fewer "hurry up" commands. Whereas collaboration was observed in the Italian educational settings.

In summation, the researchers found that the culture of U.S. classrooms is in direct opposition to what research indicates is needed for CLD students, children with special needs, early learners, and children in general. For true and lasting change there needs to be a systemic transformation where educators move away from checking off the boxes in a certain time frame to valuing process, quality, and depth of learning.

Limitations of the Study and Considerations for Future Research

The findings of this research study should be viewed in light of some limitations in the data collection. The researchers acknowledge that the participants were given only a brief window for collecting the data and some of the information may be biased since the participants were self-reporting their own responses. Additionally, due to common human error, some of the "hurry-up" requests may have gone unreported in the hustle and bustle of everyday life at home or in the classroom.

The identified limitations and conclusions drawn from this study unearthed some possible areas for future research on this topic. Since the data collection window was so short, additional data could be gathered for longer periods of time to strengthen the conclusions about the value of appropriate processing time for various groups of individuals. Additionally, the study highlighted the topic of developing the locus of control in students. The researchers are interested in discovering more about early childhood classroom strategies that may support student's internal regulation of behavior. The researchers also believe more research is needed to document effective strategies that promote slow critical thinking that lead to true engagement and love of learning.

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