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**Case Study: Technology and Time mediating Learning and Literary Practices**

**Background**

Our Lady of the Rosary (OLR) is a small catholic school located in Union City at the center of a low-income community. The school being catholic has many idols of Jesus and Mary, and each of the class has a small table at the entrance/exit with a Bible and other religious texts. This school also has an extensive after school program covering STEM [Science Technology Engineering and Math] area, which has been on the rise in the past few decades. Despite being a part of low-income part of the community, this schools receives aid from both the diocese and the California education department which has enabled OLR to be one of the fast growing schools.With such a modern vision, this site situates itself as an apt choice to explore modern areas of technology in learning practices. This school’s afterschool program has a diverse group of students and teachers which help the study tackle the ethnic problems as well as help it normalize its studies to a vast group.

Additionally, this school’s afterschool program experiments with different kinds of activities in order to help raise interest in academics, as well as different kinds of times: structured and unstructured, to help students focus on different practices distinctly without interrupting their academic learning. This particular setup allows us to focus on how technology disrupts or affords different learning practices at different times and provides us enough space to observe the difference and similarities between academic expectations and student’s interests. These differences in expectation, at times, drive different paths for students where they are either forced to complete an activity or follow their hearts and are free to explore their interests.

**Research Questions**

How does technology disrupt and afford new learning opportunities?

How does structured and unstructured time mediate different kinds of student learning and literacy practices?

What is the influence of sequencing of activities during the structured and unstructured time?

In addition to answering these questions, I would like to pose some of the complex problems and solutions to them, however, these solutions would be derived from thought-experiments instead of direct observations since they would be simulated and thought through.

**Theoretical Framework**

Drawing from “The Zone of Proximal Development”, we see that any individual possesses a knowledge base that makes up their development, and this development has a variety of sources. When this development for some reason is hindered, or when it doesn’t completely align with the societal norms, individuals lag behind and form a zone where they are supposed to be and can be if helped. Despite the existence of this zone the individuals also inherently have a point which is unattainable. The zone that is attainable with help is defined as Zone of Proximal Development (ZOPD), and the help itself can take many forms of which scaffold is most commonly used, and the tools used to help individuals attain new sets of skills are coined as Vygotskian tools after the theorist Lev Vygotsky.

These tools if used properly enables individuals to achieve skill sets that they previously did not possess and would be ideally reflected when they are able to complete a challenge without any outside help. In addition to obtaining a new skill set, individual’s ZOPD would be expanded to cover new areas that were previously marked as unattainable. In a modern world we live in, and at this site the tool was Technology in general, and this included computers, laptops, the internet and the programs in use. The use of these tools enables teachers and tutors to assist students in attaining the skills marked by ZOPD and also opens up a new platform that offers a connected environment to continually support these advancements. That is, in addition to focusing on a particular skill set, these platforms [such as the internet] helps connect different skill sets together so that the students continue their development in ZOPD instead of stopping after the first achievement. And these tools acts as useful resources for students to have access to literacies that they do not yet have mastery of and also as a shared knowledge base.

With the rising of technology in the 21st century, learning theories of the 20th centuries sometimes are seen as out of place due to their basis in the societal norms. As these norms change the theories change as well, sometimes they change radically but at times, they just introduce new additions relevant to contemporary issues. One such theory is “Connectivism: A Learning Theory for the Digital Age” by George Siemens. In his theory, he adds technology to the framework to better encompass relevant issue that teachers face today and to show that technology can act as a better resource by coining a concept of shared knowledge. In using technology, students connect to this vast base that we call the internet through the use of forums or other environments, and in doing so they are able to share their knowledge and contribute as well as ask questions and obtain help from others similar to their peers helping them. This process of sharing literacies and obtaining help creates a two-way flow of information where an individual is able to facilitate a scaffold as well as receive help from others and collectively move towards a better society where the information/knowledge is shared among individuals and at the same time connected through this medium, technology.

This technological medium in its entirety hosts a vast variety of information and is able to facilitate learning and development of different discourses, described as “a socially accepted association among ways of using language, of thinking, and of acting.” by James Gee. In a learning environment such as the field site, we can expect two kinds of discourses at play: academic and certain primary and secondary discourses. Academic discourses can be defined as association towards the traditional academic setting where students learn a specific way of talking and learn certain subjects in order to move forward in their academic career. Primary discourses can be defined as individual’s initial learning in their primary environment [home]. Finally, secondary discourses can be defined as practices that are associated with many different elements ranging from popular culture to baseball games. The existence of these different discourse within an individual gives rise to differences in interests and expectations and results in conflicts.

These conflicts, due to the setup of the after school program at the site, occur at distinct times and give basis to the concept of banking and problem-posing by Paulo Freire. The banking concept as described in the “Pedagogy of the Oppressed” revolves around knowledge as one way flow and restricts the students to learn only what the teachers wants them to learn and also teacher is presented as “necessary opposite” to provide command as to what is appropriate with respect to expectations from academics point of view. The problem-posing concept, on the other hand, provides students the freedom to explore their interest and gain knowledge in secondary discourses they deem important. This model additionally situates the information flow as two-way where the teachers are able to learn from their students as well, similar to that of Connectivism.

How these theorists and their theories come together is very interesting and their theories can be fully appreciated when combined. The rise of technology in the 21st century raises many problems in the classical theories for its extensive use as a resource and as a tool in today’s world but is still able to take the form of Vygotskian tools in helping students attain skills in their ZOPD. Additionally, these tools facilitate disruptions to the expectations of teachers when used since they have the ability to provide for the development of a variety of discourses. And these differences lead to different methods of teaching, where some are teacher oriented while other focus on students interest to learn and develop a particular discourse.

**Study and Method**

I visited the site, Our Lady of the Rosary School, for 13 days, approximately once every week. Over this course, I collected data in the form of seven field notes, and the method of collection was changed after my third visit taking the students reactions into consideration. All of the field notes were taken for the duration of my visit, which was from 3:00 – 6:00 PM, and this was for an afterschool program. This program was divided into 34 parts depending on the day, weather and instructors’ availability. Free time for about 30 minutes, followed by enrichment and homework help, and finally, another set of free time while students wait to be picked up by their parents. The first free time was usually in the playground, but occasionally, it was shifted to the gymnasium, the enrichment was either in Ms. W’s classroom or in a 7th-grade classroom, and homework was usually in the 7th-grade classroom followed by waiting. With this setup being constant, the first and last free time will be used as unstructured time and the enrichment and homework help will be used interchangeably as a structured time for the use of lesson plan during these times.

For my first three visits, I collected data in the form of notes at the site and then transformed them into organized field note. These notes and well as field notes consisted of quotes from teachers’ instructions, students’ conversations, details of the problems/question the students working on etc. However, I did notice that students were somewhat uncomfortable with me being around them and dismissed the thought as it was expected. As the reaction from the students continued, I once approached a teacher to discuss this unusual behavior and she informed me that it was because I was taking notes, some student felt that they were being observed extensively and thus were uncomfortable. In order to increase interactions between myself and the students, I relied on taking mental notes and transcribing them into field notes as soon as possible after the session.

The use of mental notes reduced the details of my field notes, however, it did not affect the accuracy of the notes. The notes transcribed usually within 3 days of the session and mainly involved instance where I was an active participant to minimize recording of uncertain observations. The notes mainly consisted of my interactions with the students, my observations of students using technology, and observations of teacher-student interactions. After the transformation to mental notes, one of the first students to approach me was Alejandro, and therefore, interactions with him are elaborated during my first few sessions. As students got more comfortable some students were more eager to get help from me than others, and as a result, my interactions were limited to the following students: Alejandra, Alejandro, Diana, Mounica, and Jaden. The teacher-student interactions were usually between Ms. A and 8th-grade students, Joshua and Adrian, as a result, these interactions were recorded extensively as well.

Due to varied observations and massive collection of topics, my case study questions started to take its full form toward the end of my observation period and as a result, the initial reflection was based mainly on the general framework of the theoretical concepts. As the case study questions became more concrete, my reflections mainly involved the use of technology and if it aided learning opportunities relevant to the lesson plan. In addition to technology aiding the learning opportunities, my reflections focused on types of scaffolds used and the presence of banking and problem-posing models within a day. With these reflections in mind, my data was coded with different colors as shown in the appendix to account for technology being used, the presence of Freirean concepts, and use aid [scaffold]. The overall field notes were outlined with different colors to reflect structured and unstructured time. The intersections were also coded, for example; if the technology was used as a scaffold then the data would be a blend of both colors. This coding was essential to see the patterns across different field notes and to encounter fascinating correlations.

**Analysis, Results, and Findings**

Technology, in general, has been a great tool for humanity for its efficiency and resourceful nature. It is especially true for this site since most of the afterschool activities rely on the use of technology. It is used as a method of assessment as well as a method of instruction, and due to its reliance, it has also raised some issues within the community in containing them. One of the major issues is that the technology doesn’t always work the way it is intended to work, as in the case of Joshua and Adrian’s use of technology, we see that they disrupt the learning environment for themselves as well as others. In using the technology to access and develop their popular discourses they delineate greatly from the expectations of the teacher to utilize the tools in the development of their academic discourses. In using the technology to listen to new songs of Rihanna such as “Work”, they are not utilizing the tools available to them in the manner they were designed to and therefore are being banked on by the teacher with warnings and punishments. One example of this can be seen in the field note 4, where Joshua’s colleagues were revoked of access to a computer and were forced to work on their homework instead.

Despite difficulties to contain the use to a specific purpose, technology has continued to exist in this site for its use as Vygotskian tool when needed. In the case of Alejandra and her 6th-grade peers, the use of technology has helped them achieve skills in their ZOPD. That is, during the beginning of the year they were unable to master certain skills as laid out by the software but with the help of the software and the teacher, they are now able to complete certain sets on their own. This level of mastery by using a combination of external scaffold and tools is easily observable in the field note 7, where Alejandra, Diana, and others were able to grasp the concept of compound shapes in a matter of a day with the external scaffold being me and the tools mediating the learning experience being the computer software.

Overall it can be said that the technology has been a great help for this site and has helped many students in their academic development. In order to do so, it has required commitment and focus, and when these two elements are not in effect it has led to certain disruptions in the mechanics of the use. Despite these disruptions, the use is prevalent considering the priorities of the school. The school can afford to deal with some exceptions, rather than stop utilizing the benefits of the tool itself. The use of this tool has directly impacted the students connected environment by placing itself as a useful resource when needed. An example of this is observed when the students were engaging in research, the school supported the idea that the internet has a large knowledge base which can be used as a resource. This particular activity was coined, keeping in mind that researching is an important skill in today’s world.

The overall setup of the afterschool program at this site administers some critical concepts as discussed by Freire. During the free time at the beginning and the end of the session, the students engage themselves in a variety of tasks, ranging from talking to playing on a computer to continuing to finish previous homework, and this can be observed across all of the field notes. In field note 4 we can observe Ethan using a laptop to watch trailers for his amusement, and this can be seen as a learning opportunity for him where he is learning different movie genres and actors. In field note 5 we can observe Hannah having a conversation with her peers and teacher and here she was engaged in learning social skills as well as gaining knowledge about her upcoming student body election. During the beginning of the session, in almost all of the field notes, we observe students playing outside helping each other complete a task at hand whether it be shooting a basketball or skipping rope. Within the different paths of enjoyment during the free time we see that the students drive what they learn, i.e. Hannah wanted to prepare for her upcoming speech, Ethan wanted to watch the trailer and so on. As a result, we see that the problem-posing concept was at play, where the students choose what to learn and the teacher cooperated with it, additionally, they learned new things as well. Ethan’s trailers educated Ms. A and me about the new movies coming out.

This method was not always present since the expectations of the teacher change at different times of the session. These expectations have been observed especially during enrichment and homework time where they are expected to focus on their academic discourses. When these expectations are not met, the teachers employ different strategies to get the students on track to their expectations. These deviations can be said to be mediated through sequencing of structured and unstructured time as well as technology. As discussed earlier, technology facilitates distractions and as result, teachers [Ms. A] employ taking away privileges which work for the time being but doesn’t pose a permanent solution. This is observable in repeated distractions, academically, caused by Joshua and Adrian. The sequencing of the structured and unstructured time is observed to be another factor that mediates the transition between problem-posing and banking concepts at this site, since it was observed that the problem-posing method was initially used during the first free time and continued to the enrichment period, similarly, the banking method used during enrichment continued to homework period, and finally, the transition between homework and the last free time turned the setup back to problem-posing. This is clearly observable in field note 6, where the students enjoying their free time were taken to math enrichment where Ms. W asked all of the individuals to perform a certain set of tasks. Some students seem to like the engagement while others were just using the time to talk to their peers, this banking continued to homework time to another room, where Ms. A forced the students to complete their homework. Finally, students transitioned to unstructured time and therefore resumed their problem-posing method of learning where students chose the use of their time. While some, like Alejandro, decided to get extra help on their homework, some decided to play slither on a laptop or a computer.

We can summarize the findings from the observations by saying that the technology in this site both affords and disrupts the learning opportunities depending on the way we consider these opportunities. The school continues to use technology as a central component of teaching since its benefits offset occasional disturbances. Technology in this school is used as a Vygotskian tool, as discussed earlier, as well as a useful resource since it enables the students to connect and contribute to the large knowledge base. The disturbances caused by technology also have a specific pattern, they occur especially during unstructured time due to the conflict between interests and expectations. That is, the interests of students and the expectation of teachers, this directly leads to the use of banking when the expectations and interests do not comply. When the expectations are removed, during the unstructured time, the method resumes to problem-posing.

**Limitations and Future Research**

Valuable observations made during the study has many shortcomings due to the limited amount of time, as well as the nature of note-taking. Since the first few session were generalized notes they were of little help in answering the questions, and since most of the field notes relied on mental note-taking the details might have been lost. Few of the problems this study raises are in the areas of solutions it proposes, when the technology disrupts the learning environment, the solution would be to remove the technology. But in removing the technology we fail to use the tools available to us, and in order to solve this problem it is best to restrict the tools we have to focus on the objective at hand. When using a laptop, for example, we could lock the system to have access to necessary software such as IXL, Khan Academy and Mobymax instead of having access to YouTube, which was barely relevant to the program. When employing a problem-posing method, they can be given access to YouTube.

This study could be improved by utilizing quantitative nature of studies where control groups and certain test groups can be employed over large regions to test certain hypothesis. One such hypothesis would be to have different levels of technology available to students, where the control group would have no technology available, the first test group could have restricted access, and the last test group could have full access. Their actions and their assessment can be analyzed to test whether the level of access changes the learning practices.

Teachers and researchers can further our findings, by developing the concept of the connection between time and technology and how they engage different learning practices. That is, they can experiment using different combinations of these two elements and monitor the learning and their engagement in academic discourses. This study can be further improved by combining these mini-experiments from teachers with that of quantitative studies suggested earlier.

**Appendices**

# References:

Freire, Paulo. *Pedagogy of the Oppressed*. Ed. Myra Bergman Ramos. New York: The Continuum International Publishing Group Inc, 2005. Electronic.

Gee, James. *What is Literacy?* Boston: Journal of Education, 1989. Electronic.

Siemens, George. *Connectivism: A Learning Theory for the Digital Age*. n.d. Electronic.

Vygotsky, Lev. *Mind and Society*. Harvard University Press, 1930. Electronic.

Code:

Use of Technology

Banking at practice

Problem-posing at practice

Scaffold

| - Structured Time

| - Unstructured Time

**Context**

As I entered the class, Ms. America was angry at students for their behavior. They were all gathered inside a gym and the reason for Ms. America’s behavior was comments of Adrian and Joshua. They were all asked to line up where Daniella was leading the line. She asked if anyone wanted to go home and told them if they wanted to they could call their parents. “Who wants to call their parents right now”, phrase was used multiple times with a angry voice and a hand stretched with a phone in her palm.

As the whispers and noise settled down, Joshua and Adrian made a small comment and they were asked to run laps inside the gym and they were later asked to join the group. In order to test their discipline they were told that they’ll have to show her that they can walk in a line. Ms. America ordered them to walk around the playground in a line lead by Daniella and if they continued to “goof around”, she would increase the time.

Daniella led the line out of the gym and into the playground, initially she led the line to the end of the parking lot towards the entrance of the church. She eventually returned around to form a big circle, and Ms. A increased the time they were required to walk since one of the kids, Arturo, decided to leave the line. Eve tough this was supposed to be punishment, the students enjoyed it and some of the other students asked Ms. A is they could join the line. The only thing the students lost in this task was their choice in choosing the activities.

Students were given 10 minutes to enjoy the playtime, however, they decided not to completely utilize the time and were just walking around the parking lot. They were all taken to the 8th grade classroom for math club and waited for Ms. Wolly’s arrival. In the meantime some students started their homework and asked me for help, while other continued to argue with Ms. A for their earlier behavior and other just use this time to chat.

After a while Ms. Wolly arrived and opened the door to her room, this time she accepted all of the students since there were less 20 students. Everyone was asked to login to mobymax for their practice, and after the practice was a contest for everyone in the class. After 5 they were all asked to go the homework session for about 30 minutes, and the last 30 minutes was dedicated to waiting and playing on a laptop.

**Detailing the Interaction**

As we entered the classroom for students’ math club everyone was asked to grab a computer and students promptly did, while most of them took a place at the computer a few 8th graders as well as a few 7th graders used a laptop. Ms. Wolly gave me description of what they were doing as “an enrichment” activity to help them gain interest in math as well as to help them on their hard subject.

She explained that they were all given an assessment test at the begging of the year and based on that the computer decided the objective they would have to focus on. She asked me if I was okay with helping students on their math, and I gladly accepted since math is one of my favorite subjects as well. I was asked to help Alejandra on her work and help any other students that raised their hand.

Each student focused on their own activity and Ms. Wolly helped the students with laptops and I helped students at a computer. Alejandra was working on word problems where she would have to keep track of gaining an object, losing some and finally figuring out what she began with. I started helping her out with an equation and I was quickly stopped by Ms. Wolly and was informed that 6th graders did not have instruction in equations yet.

After gaining some insights onto the knowledge they have, I started out by change the objects mentioned in the problems to everyday objects so that she can easily relate to them. I started changing bicycles to books and pennies to chocolates, Alejandra continued working on the same set of problems and I asked her to try some on her own. I went ahead and helped out Arturo who was having problems with his 3digit subtraction, even though I didn’t teach him the method or tricks, he was able to solve the problems. All I did was, I asked him a series of questions and asked him to “try again”, when he had a wring answer.

Alejandra called me over again to get some help on her next problem set, this problem set was an extension of the previous where she had to deal with number line. I told her, “use the same method and try again, if you can’t get it I can help you”, and she quickly applied the same method and got a right answer. After I knew that the students were having no difficulty answering the problems, but needed help in rephrasing the words, I started helping the students by rewording the questions.

Alejandra, at times, looked over to Adrian’s screen to her right in an attempt to solve some of his division problems, and Arturo’s towards her right to answer his problem set. I let her help her peers for some time but asked her to stay focused so that she can get her work done as well, and assured her that I could help them out.

After about 45 minutes of practice, Ms. Wolly asked the students to complete the last set they were working on and asked the groups to go to a certain URL for a quick game. Students were asked to leave the desktops and take a seat at the table in groups of 3 or 4. Students who were working on the laptop quickly formed a groups with their neighbors and students at a desktops joined some groups on their laptop. The winners were told that they will be given a glue stick as a prize. All of the groups quickly joined the contest and started working on the “matching game”.

**Reflection**

This week’s learning focus was to be able to gain math skills with the use of technology and the internet. In order to practice and gain interest in math, students were introduced to an online community at the beginning of the year and they continued to work in this platform gaining new skills for every problem set they complete. Technology used was of two forms, a computer and a laptop. Each were used for the same purpose, however, one attracted a certain group more than others. Laptops were used majorly by 8th graders and only a few 7th graders, and all of the 6th graders used a desktop computer.

All of the students were on the same website and therefore can be considered as using same technology. Technology here was facilitating [affording] new learning opportunities by providing tools for students to achieve success in their academic discourses. It helped them gain skills in math, and the whole learning experience for them was somewhat mediated through the teacher and the technology itself. We can also see the presence and influence of technology, myself and Ms. Wolly in their learning experience since they actively received help from all three.

All three resources can be considered as Vygotsky’s scaffold for them, but technology takes a special place since it is a blend of both scaffold as well as a tool. In receive help form me and Ms. Wolly, students were being scaffolder in specific ways to help them complete their problem sets. And the problem sets themselves were a scaffold used by the technology to help them attain the skills required as them move forward in their academic career.

In addition to the use of technology in structured time dedicated to academic learning, students were also given an opportunity to use the technology and connect socially with conte3st at the end of learning session. This session used the technology to help students connect with each other in an attempt to solve a particular problem at hand. Students shared their ideas, helped each other analyze the problem and together were able to win their prize. Another scaffold can be observed here, since students were acting as each other scaffold in helping them achieve a certain place.