A Survey of Academic Comprehension Levels in Different Environmental Settings

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**Introduction**

Comprehension is a complex learning process that, extrinsically, is best supported by a positive learning environment. Many students have experienced sitting down to study and simply not retaining information. For example, a student goes to the basement of the library to study in a quiet environment; however, the student finds his comprehension of study materials to be lacking. He is constantly distracted by the sound of a door opening, someone typing, or the elevator pinging. The student chose to study in the library because past experiences dictated that noisy environments decreased his comprehension level. Based on his lack of comprehension in the library basement, it seems that the student probably requires an environment with low noise and minimal distractions.

 Copious research on the topic of comprehension and environmental stimuli seeks to increase efficiency and efficacy in learning.  Lenz (2013) states knowledge of the topic, quality of material, decoding ability, and instruction received can positively or negatively affect comprehension.  Similarly, a relationship exists between study environments and comprehension (Rensselaer Polytechnic Institute, 2013*)*.

        Bronzaft (2013) studied the quality of comprehension comparing a quiet classroom to a noisy classroom.  The study found that a quiet classroom proved more efficacious in comprehension than a noisy classroom.  Similarly, Graetz (2013)  investigated the impact of a classroom setting on learning comprehension.  She found that a quiet learning environment is preferable to a noisy one.  On the other hand, Jerpi (2002) found that outdoor environments provide great comprehension opportunities to those with concentration disorders, such as ADHD.

Establishing the optimal environment for best comprehension is assessed through trial and error.  For most students, this process starts in the first year of college.  However, a once optimal study environment in college, like the library, may prove ineffective in graduate school.   The authors of this research study seek to determine the best comprehension environments for students receiving a master’s degree in occupational therapy. The researchers hypothesize the most efficacious comprehension takes place in a quiet academic environment.

**Methods**

The sample population was comprised of thirty first year Touro University Nevada occupational therapy graduate students. The participants were asked to complete a survey rating comprehension level of study materials in four different environments over a one week period. The survey was a Likert Scale investigating the following environments: quite academic environment, home environment, noisy environment, and nature environment.

**Results**

The sample population surveyed consisted of thirty, first year occupational therapy students. Inclusive in the sample population were twenty-one females and nine males.  A control group and a treatment group were not utilized, due to the nature of the study. Also, demographics were not analyzed in this study.  All thirty students were recruited in a period of one day and agreed to participate in the study.  The participants received a survey through email and were instructed to complete the survey within one week. One reminder email was sent to participants who did not return the completed survey on the requested due date. To ensure privacy, participants were assigned individual numbers during the data retrieval process.

The students were asked to rank four environments on a four point numerical scale, delineating which environment best supported comprehension. The environmental options included a quiet environment, a home environment, a noisy environment and a nature environment. The data results represent statistical incremental ranking, mean, median, mode, and range of each of the environments surveyed. The mean data results for the quiet environment ranked as 2.13, home environment as 2.4, nature environment as 1.13 and noisy environment as 1.36.  The median data results for the quiet environment ranked as 2, the home environment as 3, the nature environment as 1 and the noisy environment as 1.5.   The mode comprehension level for the quiet environment ranked as 2, home environment as 3, nature environment as 1 and noisy environment as 2. The range comprehension level for all four environments ranked as 3.  The statistical data results for the percentage of comprehension in a quiet environment show an excellent comprehension of 33.33%, moderate reading comprehension of 50.00%,  poor reading comprehension of 13.3% and does not apply to 3.33% of participants.  The statistical data results for the percentage of comprehension in a home environment show an excellent comprehension ranking of 56.67%, moderate comprehension of 30.00%, and poor comprehension of 10.00%, not applying to 3.33% of participants.  The statistical data results for the percentage of comprehension in a  nature environment show an  excellent comprehension of 3.33%, moderate reading comprehension of 23.33%, and  poor reading comprehension of 56.67%, not applying to 16.67% of participants.  The statistical data results for the percentage of comprehension in a  noisy environment show an  excellent comprehension of 13.33%, moderate reading comprehension of 36.67%, and  poor reading comprehension of 23.33%, not applying to 26.67% of participants.

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| Table 1. Statistical Incremental Ranking |  |  |
| Environment | Comprehension Rating |
| 3 | 2 | 1 | 0 |
| Quiet | 33.33% | 50.00% | 13.33% | 3.33% |
| Home | 56.67% | 30.00% | 10.00% | 3.33% |
| Nature | 3.33% | 23.33% | 56.67% | 16.67% |
| Noisy | 13.33% | 36.67% | 23.33% | 26.67% |
| Note: Table 1 represents the percentage of comprehension ratings for each learning environment. |

Note: Figure 1 represents the participant’s level of comprehension in the quiet study environment.

Note: Figure 2 represents the participant’s level of comprehension in the home study environment.

Note: Figure 3 represents the participant’s level of comprehension in the nature study environment.

Note: Figure 4 represents the participant’s level of comprehension in the noisy study environment.

Note: Figure 5 represents the mean comprehension level for each study environment.

Note: Figure 6 represents the median comprehension level for each study environment.

Note: Figure 7 represents the mode comprehension level for each study environment.

Note: Figure 8 represents the range of comprehension level for each study environment.

**Discussion**

The hypothesis that efficacious academic comprehension takes place in a quiet academic environment was not supported by the data obtained. First year occupational therapy students attending Touro University Nevada were surveyed to determine best comprehension levels in four accessible environments.  The students reported greatest comprehension in the home environment while the quiet academic environment ranked second best. This is important information for graduate students to ascertain. Graduate school curriculums, especially at Touro University Nevada, are fast-paced and relentless. The curriculum does not provide students time to seek out the most suitable study environments. Therefore, providing students with evidentiary based data to support best comprehension environments can help students more quickly engage in functional learning.

In reflection, the research team extrapolated several factors to explain why the home environment best supports comprehension.  The home environment is malleable. Students can manipulate furniture, noise, and other materials to create an environment that promotes learning. Furthermore, the home environment is financially advantageous for studying. Students save money on gas, food, and drinks by studying at home.

When formulating the hypothesis, researchers enumerated factors from evidence-based research and personal opinion suggesting the home environment to be inundated with distractions.  Distractions were defined as stimuli such as neighbors, roommates, children, construction work, pets, television, and comfortable furniture. Two studies particularly highlight this hypothesis. The [Rensselaer Polytechnic Institute](http://www.rpi.edu/) (2013) states that the home environment may be the most precarious environment for academic comprehension. The home environment signifies a place where sleep, eating, and relaxation take place. “Many students... find that they must leave their room in order to study effectively, because their room equals a place to sleep and play, and not a place to learn. These students have to go through the process of organizing what they want to get done while they study, packing up their backpack, and removing themselves from the "fun" environment, and deliberately going to a quieter study environment…” (Rensslaer Polytechnic Institute, 2013). It is further suggested that the process of packing one’s backpack forces the student to delineate what bare necessities are needed for studying. When packing his or her backpack, the student is more likely to choose to leave behind gadgets that will not be utilized such as an iPod. Furthermore, uncontrollable stimuli like roommates cooking dinner are eliminated in quiet academic environments.

Similarly, Graetz (2013) argues that students are not passive beings. In order for comprehension to take place, students must utilize selective attention to focus on the material at hand while eliminating other stimuli. “Students do not touch, see, or hear passively; they feel, look, and listen actively. Students cannot attend to all the environmental information bombarding them at any given time; their ability to gather and understand incoming information is limited. Through automatic and controlled processes, students select information for consideration” (Graetz, 2013). He further argues that comprehension is coupled with positive emotional responses from the environment. Graetz (2013) specifically discusses the inherent distractions caused by technology. Students spend time engaged in lackadaisical behaviors due to gross access to technology. Based on these findings, Graetz reports that learning is most successful in academic environments rather than home or noisy environments.

The data collected from the survey shows that students are less likely to comprehend study materials outdoors, in comparison to a busy environmental setting. This surprised the research team as the research noted that spending time outdoors is beneficial to one’s physical and mental health; whereas noisy environments promote creativity of the mind making it difficult to focus and comprehend. The warm weather in the summer months of Nevada may have played a factor within the  research results, allowing students to eliminate outdoor environments immediately when responding to the survey. Seasons and weather conditions were variables overlooked by the research team. The results may have differed if the research study was administered in another area of the country or during a different season. The students surveyed were new to the area and may have been unfamiliar with local outdoor locations to study. Another factor that could affect comprehension is  the changing of study habits from undergraduate to graduate school as there is a  decrease in assignment completion, and increase in homework.

A barrier possibly affecting the intervention or procedures for this study is the course work assigned the week the survey was distributed. The study was implemented prior to an anatomy exam, showing that students preferred a home environment to ensure best comprehension. The results may have been different if the research team presented the survey during a less stressful week of studying.

The results show that studying in the home is the most effective environment for students to focus and retain information. A quiet study environment ranked close to the home environment, showing that the majority of students need to be completely focused without distractions. The findings show students prefer a noisy environment rather than an outdoor study environment, further disproving the researcher’s hypothesis.

      **Limitations**

This research study was occluded from being valid by vast limitations. The scope of the study was limited to the opinions of thirty Touro University Nevada occupational therapy students. A sample size of thirty does not represent the opinions of occupational therapy graduate students across the nation. This study did not take into account specific cohort characteristics such as cohort’s size, age, gender, and socioeconomic level.  For example, at Touro University Nevada, the mean age of the 2015 occupational therapy class is twenty-three years old. Students at this age may have different preferences for studying environments, versus cohorts with a greater mean age. Also, gender differences warrant further investigation with regard to the environment and comprehension levels.

At Touro University Nevada, occupational therapy students are limited to two study environments: the classroom and the library. University study rooms cannot be counted as a study environment due to the inconstant availability of rooms.  This is in contrast to large universities with multiple study options including the multilevel libraries, study rooms with different noise requirements, coffee houses, empty classrooms, and shaded outdoor environments.

Furthermore, the environmental options provided to students are not conclusive. The researchers define the home environment as a quiet study environment. However, participants may regard the home environment as a noisy environment. To be conclusive, the survey needs to establish the nuances within the environments discussed. It is arguable to conclude that this study is invalid based on the limitations presented.

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