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# The Assessment of Learning Styles in E-Learning Set-Up of Physical Therapy Students

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## ABSTRACT

**Background and Purpose:** COVID 19 has greatly impacted higher education around the world. Teaching and learning are affected in 98% of all HEIs surveyed and are forced to transition to e-learning. According to studies, knowing the preferred learning style will aid in determining whether or not an activity will be beneficial. Students are regarded to be in a better position to make learning easier, more pleasant, and more effective after knowing their preferred learning style. The purpose of the study was to identify the majority of learning styles of Honey and Mumford's within the FEU-NRMF's School of Physical Therapy student population in the E-learning setting.

**Methods:** This descriptive research had 350 enrolled students from the School of Physical Therapy A.Y. 2021-2022 selected through convenience sampling. Accompanied by a informed consent form, the Honey and Mumford's Learning Style questionnaire was distributed to the respondents through google forms. After data collection, results were interpreted via descriptive statistics.

**Results:** A majority (55%) of Physical Therapy students are highly inclined towards the Reflector type of learning style. By year level, the majority of the students favor a Reflector learning style as well. The inclined preference of learning style per year level are the following: 1st Year (110 students) - Reflector (60.90%), 2nd Year (24 students) - Reflector (54.16%), 3rd Year (36 students) - Reflector (44.44%), 4th Year (30 students) - Reflector (50%).

**Discussion:** Majority of medical students were prefer the Reflector Style of Learning. Reflectors are learners that contemplate what they learned and tend to solve a problem by analysing different points of view and gathering information as much as possible before arriving at an agreeable conclusion. Through virtual learning environment, learning activities can focus on problem based learning, presentation of the topic or content with different points of view, and discussion group to better aid these students.

**Key words:** e-learning, physical therapy

Honey & Mumford employ a Learning Style Questionnaire to help students and their carers figure out what learning style they prefer. Students are regarded to be in a better position to make learning easier, more pleasant, and more effective after completing the questionnaire. It also helps young students become better all-around learners by increasing their adaptability and allowing them to learn from a variety of events. The Styles are said

to boost learning skills and processes because it is believed that knowing how one learns allows him to improve and scrutinise his knowledge absorption process.<sup>1</sup>

There are four main learning styles in the Honey and Mumford LSQ. *Activists* are those who learn through doing. Activists must get their hands filthy in order to be effective. They have a receptive learning approach, fully immersing themselves in new experiences without apprehension.

Brainstorming, problem-solving, group discussion, puzzles, competitions, role-playing, and other learning activities are examples. *Theorists* are the students who need to know the rationale behind the actions that they are doing in order to excite them. They need models, concepts, and truths with a definite aim in mind in order to take part in the learning process. Breaking down and integrating fresh data into a rigorous and consistent “hypothesis” is something they enjoy doing. Models, data, anecdotes, and background information are among the learning activities they have adopted. *Pragmatists* have the ability to see how to use what they’ve learned in their current situation. Conceptual ideas and recreations have limited utility unless individuals can see a way to apply the principles in their daily life. Their way of operation is to test new ideas, hypotheses, and methodologies to see if they work. They learn better when they take the time to consider how to apply what they’ve learned in the classroom to real-life situations, such as through case studies, problem-solving, and conversation. *Reflectors* get knowledge by observing and reflecting on what has occurred. They may choose to remain on the sidelines rather than participate. They aim to stay in the background and observe meetings from all angles, gathering information and using the time to work toward a satisfactory ending.<sup>2</sup>

The use of Internet technology to improve knowledge and performance is known as e-learning. Learners may adapt their experiences to fit their particular learning objectives using e-learning tools, which provide them choice over material, learning sequence, pace of learning, time, and often media. Despite the fact that e-learning looks to be at least as good as conventional instructor-led approaches like lectures, students perceive e-learning as a supplement, part of a blended-learning approach. This is why, through the Honey and Mumford Learning Style Questionnaire, innovations in e-learning technologies should point toward a revolution in education by allowing for adaptive learning, enhancing collaborative learning, and transforming the role of the teacher.

Due to the uncertainties of the coronavirus disease (COVID-19) pandemic, Marinoni G, et al. (2020)<sup>3</sup> conducted a study to know the impacts of COVID-19 on higher education institutions (HEIs) around the world. In this study, teaching and learning are affected in 98% of all HEIs surveyed and are forced to transition to e-learning. Although the majority of

the respondents indicated they have the necessary infrastructure and tools to facilitate e-learning, they also stated the challenges it brought. One is ineffective and unclear communication streams that hinders both students and teachers in learning and providing proper education.

The research will serve as evidence on what major learning style students of physical therapy per year level. The findings of the study are significant to the professors that teach in the School of Physical Therapy to be able to adjust their teaching approach on specific year levels by following Honey and Mumford’s Learning Style Questionnaire results on students that classifies them in either activist, reflector, theorist, and pragmatist learning style. Through this, students and teachers would have knowledge on one’s learning style and be able to adapt teaching approaches that benefit both parties for overall production in learning.

## **MATERIALS AND METHODS**

### **Study Design**

A descriptive research design with a total number of 350 respondents was used to identify the major learning style accede to Honey and Mumford’s learning style questionnaire within the school of Physical Therapy student population in the E-learning setting.

### **Target Population**

The respondents of the study are students of the School of Physical Therapy of Far Eastern University - Nicanor Reyes Medical Foundation enrolled in Academic Year 2021-2022. The respondents of the study are 18 years old, enrolled in FEU-NRMF A.Y. 2021-2022, and have studied in an online setting for at least 1 year.

### **Sampling Methodology**

The researchers will use convenience sampling to recruit respondents for the study. The study will consist of 184 School of Physical Therapy students of FEU-NRMF computed with 95% confidence interval from n. A survey questionnaire including the informed consent and Honey and Mumford’s Learning Style Questionnaire was given to the respondents, which are utilized through google forms.

## Instrumentation

The Honey and Mumford's Learning style questionnaire is used to determine the respondent's learning style in the E-learning setting. The instrument has been pilot tested and applied in various studies for its reliability and validity.

## Study Procedure

The respondents have received an informed consent letter along with the Honey and Mumford questionnaire. The Honey and Mumford Learning Style questionnaire will be distributed through online google forms to the student body of the physical therapy students of FEU-NRMF. The population of the whole student body is 350, at least 184 respondents' answers will be collected and analyzed. After data collection, the results are interpreted via descriptive statistics of the learning style mean and standard deviation.

## Data Management and Analysis

The data gathered and collected by answering the Honey and Mumford learning style questionnaire (LSQ) through an electronic survey, specifically, google forms. All collected data will be tallied using the Microsoft Excel software. Descriptive statistics of learning style, mean, and standard deviation will be used to describe the respondents.

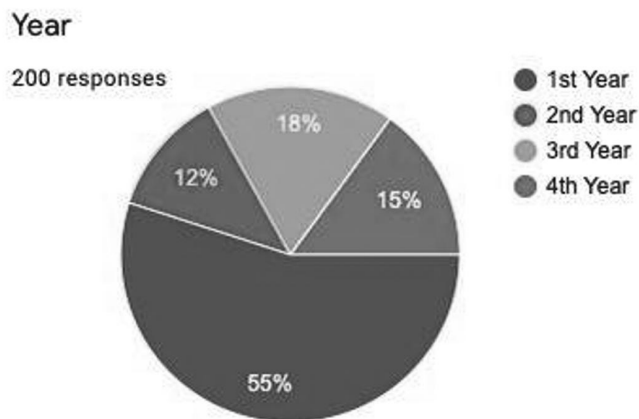
## RESULTS

The responses received were from a total of 200 Physical Therapy Students of FEU NRMF. Out of the 200 respondents, 110 (55%) students came from the 1st Year level, 24 (12%) from the 2nd year level, 36 (18%) from the 3rd year level, & 30 (15%) from the 4th year level. The results found in this study indicate that the Physical Therapy Students of FEU NRMF show a very strong preference towards the Reflector Style of Learning followed by the Activist Style of Learning. The results per year level also indicates that students in the 1st, 2nd, 3rd, and 4th year level each show a very strong preference towards the Reflector Style of Learning. These results support the study conducted by Sattar A. (2015) which concluded that with the utilization of Honey and Mumford Learning Style Questionnaire, the majority of medical students were found to have a preference towards the Reflector Style of Learning.

Reflectors as its name suggests are those who contemplate on what they're learned or studied by watching first from the side, these types of students tend to solve a problem by analysing different points of view and gathering information as much as possible before arriving at an agreeable conclusion. Teachers and professors can cater to these types of students during face to face classes by doing activities that give them appropriate feedback or criticism afterwards like paired discussions, coaching, observing activities, self analysis questionnaires, personality questionnaires, time out and feedback from others; For an online or virtual set-up, its best if the approach utilized is problem-based learning with lots of discussion groups that can allow asynchronous communication which give time for the student to contemplate before contributing, and lastly a presentation of the topic or content with different points of view.

**Table 1.** Demographics

| Demographic | Respondents |
|-------------|-------------|
| Age Range   | 18-27 y/o   |
| Male        | 77          |
| Female      | 123         |



**Figure 1.** Percentage of responses per year level

## DISCUSSION

The results of this study agrees with the results of the study by Mwangi & Muchiri (2019)<sup>4</sup> conducted for Physiotherapy Students in the Kenya Medical Training College & a study by Nizami, et al. (2017)<sup>5</sup> conducted for Bachelor of Medicine, Bachelor of Surgery, & DPT students at Azra Naheed Medical

**Table 2.1.** Learning style preference of whole School of Physical Therapy (Percentage)

| Total Response | Very Strong Preference | Strong Preference | Moderate Preference | Low Preference | Very Low Preference |
|----------------|------------------------|-------------------|---------------------|----------------|---------------------|
| Activist       | 22.50%                 | 21%               | 46%                 | 10%            | 0.50%               |
| Reflector      | 55.50%                 | 34%               | 7.50%               | 2.50%          | 0.5 %               |
| Theorist       | 22%                    | 27%               | 34%                 | 14%            | 3%                  |
| Pragmatist     | 9.50%                  | 26%               | 47.50%              | 13.50%         | 3.50%               |

**Table 2.2.** Learning style preference of Whole School of Physical Therapy (Population)

| Total Response | Very Strong Preference | Strong Preference | Moderate Preference | Low Preference | Very Low Preference | Mean Score | Standard Deviation |
|----------------|------------------------|-------------------|---------------------|----------------|---------------------|------------|--------------------|
| Activist       | 45                     | 42                | 92                  | 20             | 1                   | 10.190     | 3.21               |
| Reflector      | 111                    | 68                | 15                  | 5              | 1                   | 17.225     | 2.37               |
| Theorist       | 44                     | 54                | 68                  | 28             | 6                   | 13.270     | 2.78               |
| Pragmatist     | 19                     | 52                | 95                  | 27             | 7                   | 13.570     | 2.58               |

The results indicate that the majority of FEU-NRMF Physical Therapy students are highly inclined towards the Reflector type of learning style which comprises 55.5% of all study participants (200 students).

**Table 3.1.** Learning style preference per year level (Percentage)

| By Year  |            | Very Strong Preference | Strong Preference | Moderate Preference | Low Preference | Very Low Preference |
|----------|------------|------------------------|-------------------|---------------------|----------------|---------------------|
| 1st Year | Activist   | 23.63%                 | 20.90%            | 43.63%              | 10.90%         | 0.90%               |
|          | Reflector  | 60.90%                 | 28.18%            | 8.18%               | 1.82%          | 0.90%               |
|          | Theorist   | 22.72%                 | 25.45%            | 36.36%              | 12.72%         | 2.72%               |
|          | Pragmatist | 9.09%                  | 24.54%            | 49.09%              | 15.45%         | 1.81%               |
| 2nd Year | Activist   | 20.83%                 | 20.83%            | 54.16%              | 4.16%          | -                   |
|          | Reflector  | 54.16%                 | 37.50%            | 8.33%               | -              | -                   |
|          | Theorist   | 8.33%                  | 41.66%            | 37.50%              | 8.33%          | 4.16%               |
|          | Pragmatist | 8.33%                  | 33.33%            | 37.50%              | 16.60%         | 4.16%               |
| 3rd Year | Activist   | 22.22%                 | 19.44%            | 50%                 | 8.33%          | -                   |
|          | Reflector  | 44.44%                 | 44.44%            | 8.33%               | 2.77%          | -                   |
|          | Theorist   | 27.77%                 | 33.33%            | 22.22%              | 11.11%         | 5.55%               |
|          | Pragmatist | 8.33%                  | 30.55%            | 47.22%              | 8.33%          | 5.55%               |
| 4th Year | Activist   | 20%                    | 23.33%            | 43.33%              | 13.33%         | -                   |
|          | Reflector  | 50%                    | 40%               | 3.33%               | 6.66%          | -                   |
|          | Theorist   | 23.33%                 | 13.33%            | 36.66%              | 26.66%         | -                   |
|          | Pragmatist | 13.33%                 | 20%               | 50%                 | 10%            | 6.66%               |

**Table 3.2** Learning style preference per year level (Population)

| By Year  |            | Very Strong Preference | Strong Preference | Moderate Preference | Low Preference | Very Low Preference | Mean Score | Standard Deviation |
|----------|------------|------------------------|-------------------|---------------------|----------------|---------------------|------------|--------------------|
| 1st Year | Activist   | 26                     | 23                | 48                  | 12             | 1                   | 10.32      | 3.5                |
|          | Reflector  | 67                     | 31                | 9                   | 2              | 1                   | 17.41      | 2.44               |
|          | Theorist   | 25                     | 28                | 40                  | 14             | 3                   | 13.31      | 2.79               |
|          | Pragmatist | 10                     | 27                | 54                  | 17             | 2                   | 13.56      | 2.55               |
| 2nd Year | Activist   | 5                      | 5                 | 13                  | 1              | -                   | 10.08      | 2.78               |
|          | Reflector  | 13                     | 9                 | 2                   | -              | -                   | 17.13      | 1.7                |
|          | Theorist   | 2                      | 10                | 9                   | 2              | 1                   | 13.25      | 2.31               |
|          | Pragmatist | 2                      | 8                 | 9                   | 4              | 1                   | 13.38      | 2.78               |
| 3rd Year | Activist   | 8                      | 7                 | 18                  | 3              | -                   | 9.83       | 2.84               |
|          | Reflector  | 16                     | 16                | 3                   | 1              | -                   | 16.89      | 2.24               |
|          | Theorist   | 10                     | 12                | 8                   | 4              | 2                   | 13.56      | 3.03               |
|          | Pragmatist | 3                      | 11                | 17                  | 3              | 2                   | 13.83      | 2.42               |
| 4th Year | Activist   | 6                      | 7                 | 13                  | 4              | -                   | 10.23      | 2.98               |
|          | Reflector  | 15                     | 12                | 1                   | 2              | -                   | 17.03      | 2.72               |
|          | Theorist   | 7                      | 4                 | 11                  | 8              | -                   | 12.80      | 2.82               |
|          | Pragmatist | 4                      | 6                 | 15                  | 3              | 2                   | 13.43      | 2.81               |

The inclined preferences of learning style per year level are the following: 1st Year (110 students) - Reflector (60.90%), 2nd Year (24 students) - Reflector (54.16%), 3rd Year (36 students) - Reflector (44.44%), 4th Year (30 students) - Reflector (50%).

College Lahore found that the respondents lean towards the Reflector Learning style. However, with the presence of the other three learning styles: Activist, Pragmatist, & Theorist, according to Nizami, et al. (2017)<sup>5</sup>, it is still important to have multiple teaching manners that can accommodate the entire population. It is important also to follow the changes of learning style in the different levels to know if majority of the learning style transitions from one to another. Future researches can look at the different factors that lead towards a reflective type of learning and whether it is an ideal learning style for medical courses.

Only a number of Physical Therapy students were selected as participants of the study thus less time and data were collected as compared to if this was to be applied for the whole university together with different schools/departments. Another limitation to is that not every Physical Therapy student has participated in the study. It is best to provide more time for data gathering and data interpretation. There was no follow-up investigation done to the participants due to time and scheduling concerns. According to a study by Akbar S. (2020)<sup>6</sup>, changes in learning styles of students happen over time, thus a periodic assessment of learning styles is recommended in order for the data to be updated and help the professors have better instructional material depending on the updated data gathered.

## CONCLUSION

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The use of the Honey and Mumford learning style questionnaire showed that the majority of FEU-NRMF Physical Therapy students are highly inclined towards the Reflector type of learning style.

This suggests that these students can learn most by doing paired discussions, observing activities, feedback from others like coaching and one-on-one discussions, as well as self analysis and personality questionnaires. This can also be done in an online set-up by the professors in-charge and organize problem-based learning, presentation of content from different perspectives, and creating discussion groups to allow students to brainstorm on specific activities and reflect before contributing. There was no follow-up investigation done to the participants due to a limited time to analyse and compile all relevant data. Therefore, it is recommended for future researchers to further explore the available data provided in this study.

## REFERENCES

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1. Ohara S. (2016). Learning styles: Activist, pragmatist, theorist, reflector - Which one is your child. Retrieved from <https://www.futureschool.com/blog/learning-styles-activist-pragmatist-theorist-reflector-one-child/>
2. Ruby (2017). The Honey & Mumford Learning Styles Questionnaire. Retrieved from <https://www.eln.co.uk/blog/honey-and-mumford-learning-styles>
3. Marinoni G, et al. Influence of COVID-19 on the perception of academic self-efficacy, state anxiety, and trait anxiety in college students. Retrieved from <https://www.frontiersin.org/articles/10.3389/fpsyg.2020.570017/full>
4. Mwangi M & Muchiri W. (2019). Learning style preferences of physiotherapy students in the Kenya Medical Training College. Retrieved from <https://www.rsisinternational.org/journals/ijrias/DigitalLibrary/Vol.4&Issue3/61-67.pdf>
5. Nizami, et al (2017). Preferred Learning style of medical and physiotherapy students. Retrieved on [https://www.researchgate.net/publication/314305088\\_PREFERRED\\_Learning\\_Styles\\_of\\_Medical\\_and\\_Physiotherapy\\_Students](https://www.researchgate.net/publication/314305088_PREFERRED_Learning_Styles_of_Medical_and_Physiotherapy_Students)
6. Akbar S. Changes in learning style: Does it change? South-East Asian J Med Educ 2020; 14(2). <https://doi.org/10.4038/seajme.v14i2.249>