

2023 International Conference on Educational  
Measurement and Evaluation (ICEME2023)

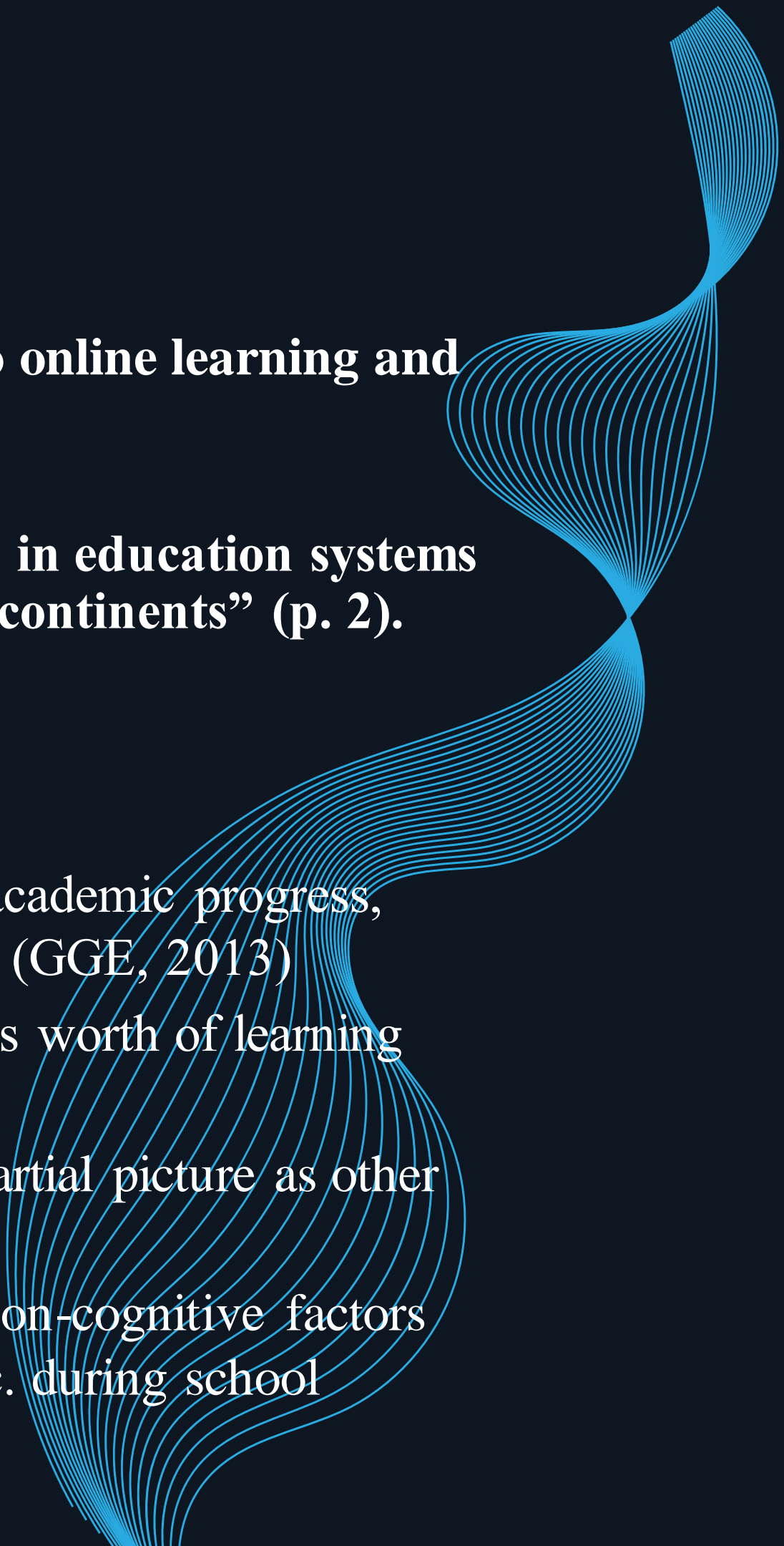
# An Analysis of College Students' Perceived Learning Loss and Gains in Online Learning

**Dr. Violeta C. Valladolid**  
*De La Salle University*

**Mr. Rene S. Valladolid**  
*De La Salle- College of Saint Benilde*

*August 25, 2023*  
*Manila Diamond Hotel*

# INTRODUCTION

- ❖ **School closure during the COVID-19 pandemic has forced schools to shift to online learning and has affected students in all aspects.**
  - ❖ **The United Nations (2020) → “pandemic has created the largest disruptions in education systems in history, affecting nearly 1.6B learners in more than 190 countries and all continents” (p. 2).**
  - ❖ **Learning Loss**
    - refers to “any specific or general loss of knowledge and skills or to reversals in academic progress, most commonly due to extended gaps or discontinuities in a student’s education (GGE, 2013)
    - WB analysis of 36 studies inv. 20 countries → equivalent to roughly half a year’s worth of learning (Patrinos, et al., 2022)
    - Use of achievement test results for analyzing of learning loss/gains → present partial picture as other kinds of learning also occurred (Chen & Kriege, 2022)
    - Learning → can also be presented in terms of development or deterioration of non-cognitive factors such as student engagement, motivation/interest, attendance, communication, etc. during school closure.
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# INTRODUCTION

- ❖ A survey by Leong et al. (2022) among UC-Berkeley UG students to gauge student perceptions on learning loss and gains under COVID-related learning conditions.
- 79% believed strongly to somewhat strongly that they have experienced learning loss.

## Learning Loss

diminished learning skills, decrease in academic confidence, motivation, and focus

(due to lack of opportunity for social interaction, lack of learning structure, excessive screen time/other technical difficulties, and diminished quality of instruction).

## Learning Gains

accessibility, flexibility, convenience, and enhancement of self-efficacy and resourcefulness, resilience, self- and time-management skills,; motivation to prioritize well-being, social and political awareness, and technical skills.

# CONCEPTUAL FRAMEWORK

To determine effects of online learning on college students during the pandemic based on **Bandura's Ternary Learning Theory**.

Bandura (1986) → learning process occurs in a social context with dynamic and reciprocal interaction among three elements: learning behavior, personal factors (e.g., cognition), and learning environment [Fig 1].

- ❖ Learning cognitions (e.g., motivation), behavior (e.g., self-engagement), and environmental factors (e.g., teaching and learning conditions) are mutually interactive influences, such that changing some of these elements will affect the type and extent of learning outcomes.

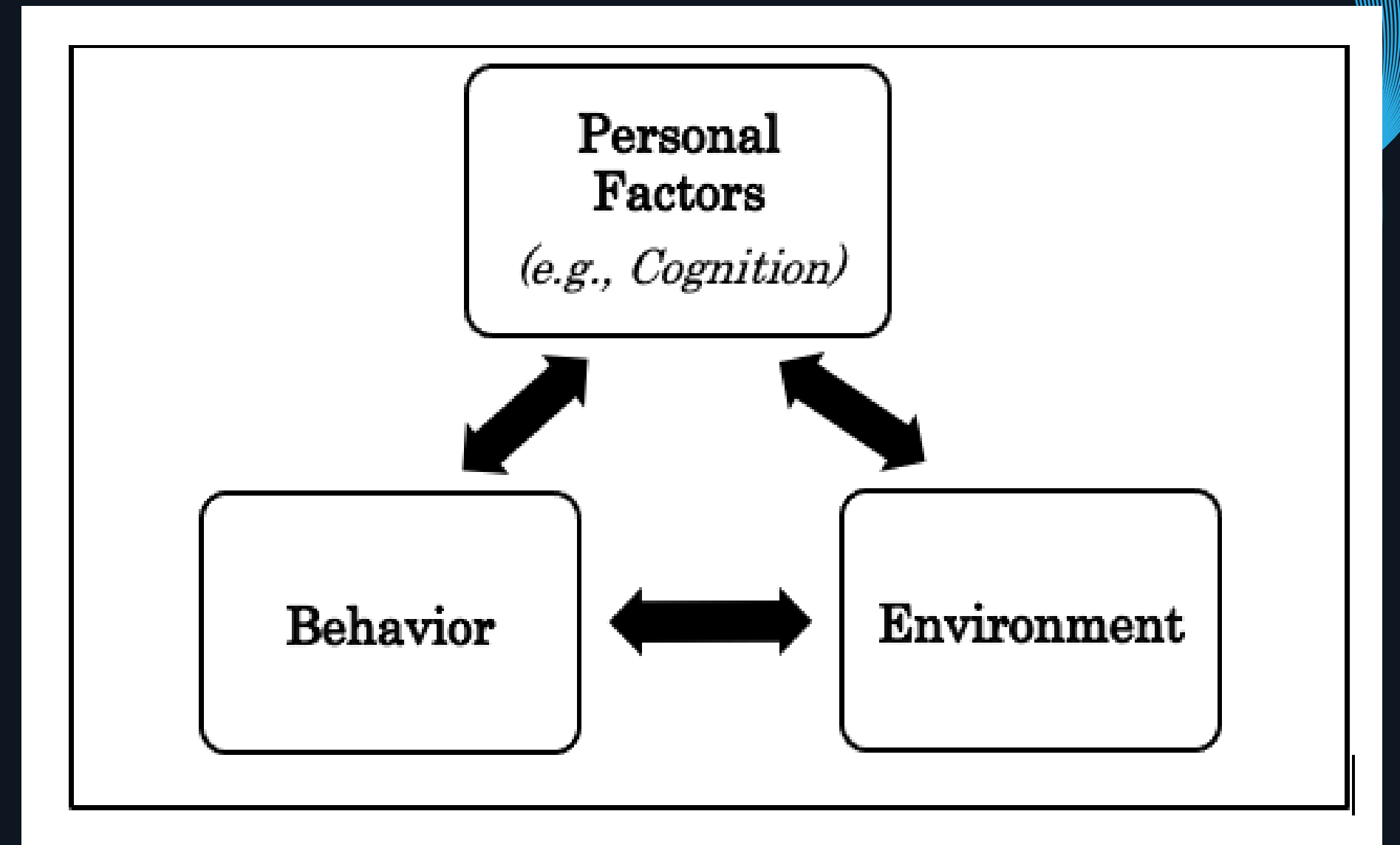


Fig 1: Bandura's Ternary Learning Theory

# CONCEPTUAL FRAMEWORK

Zhu, et al. (2022) → posited that Bandura's framework also applies to online learning of college students.

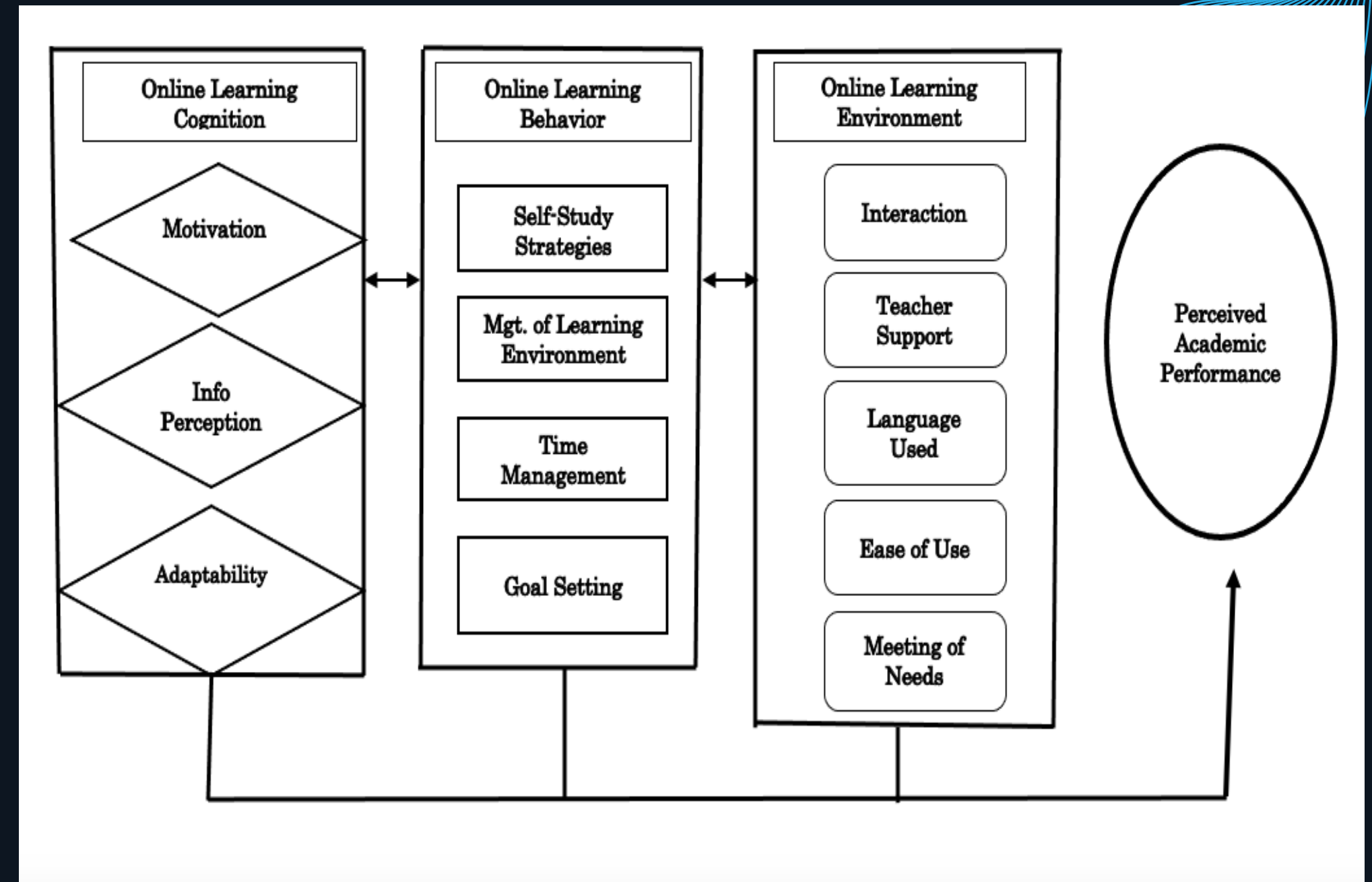
- The online environment, where there is no time and space limitation, allows individual students to learn independently anytime and anywhere. This highlights autonomy of students' learning behavior. At the same time, individual cognition has a guiding effect on behavior. They have reciprocal effects on each other.
- “The key to clarifying the effect of online learning on college students is to accurately analyze and specify the relationship between online learning behavior, learning cognition, and learning environment.”
- Other studies also have shown that learning behavior, cognition, and environment affect academic performance/outcomes in the online courses (Chao, et al., 2018; Gray & DiLoreto, 2016; Moubayed, et al., 2018; Marlina, et al., 2021; Meng & Hu, 2023; Ozer & Badem, 2021; Hayat, et al., 2020); Gray & DiLoreto, 2016); (Marlina, et al., 2021).

# CONCEPTUAL FRAMEWORK

**Online learning behavior** → behavioral dimensions of students' engagement & self-regulated learning strategies, i.e., self-study strategies, management of learning environment, time management, and goal-setting (Prudente & Acar, 2021).

**Learning cognition** → learning motivation, information perception, and adaptability (Zhu, et al., 2022).

**Online learning environment** → communication/interaction; teacher support, enthusiasm, feedback, and language; ease of use of online system; and meeting of students' needs (Bayrak, et al., 2020).



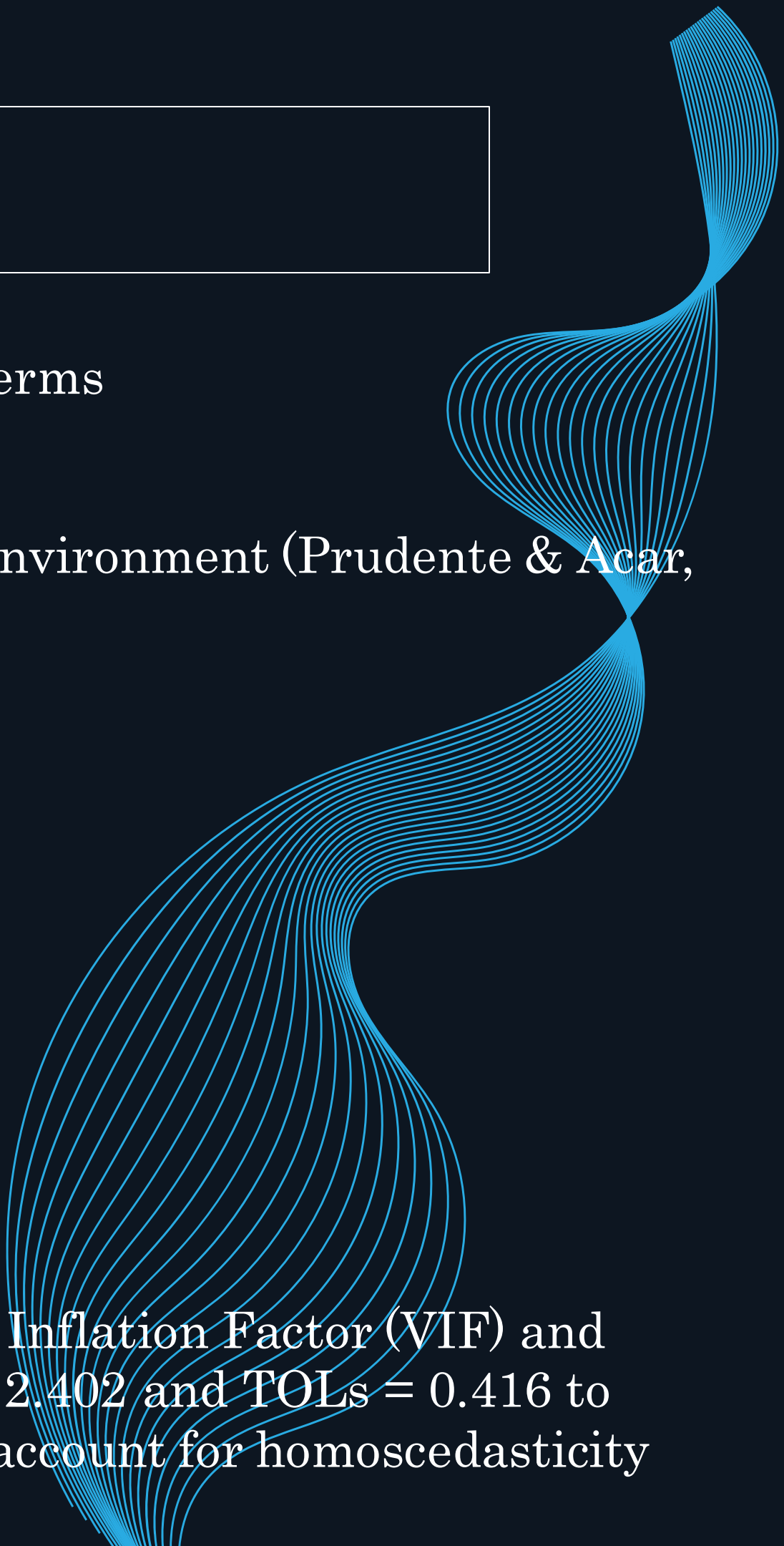
❖ These three variables constitute a learning system that has a profound impact on online learning [Fig 2]

## OBJECTIVES OF THE STUDY

This study aimed to determine the relationships among three elements of learning process and their effects on the academic performance of college students in online classes.

1. Are there significant relationships among students' online learning behavior, learning cognition, and satisfaction with online learning environment?
2. What are the effects of students' online learning behavior, cognition, and satisfaction with learning environment on their perceived academic performance?
3. What are the perceived learning gains and losses of students in online learning?

# METHOD

- ❖ **Respondents:** 360 college students enrolled in hybrid classes for at least two terms
  - ❖ **Instruments:**
    - Questionnaire on Self-Regulated Learning Strategies in Online Learning Environment (Prudente & Acar, 2021)
    - Online Course Satisfaction Scale (Bayrak, et al., 2020)
    - Perceived Academic Performance Scale (Verner-Filion & Vallerand, 2016)
    - Online Learning Cognition Scale
    - Perceived Learning Effects Scale
  - ❖ **Data Gathering:** through Google form
  - ❖ **Data Analysis:**
    - Descriptive statistics
    - Correlation
    - Regression analysis
    - Diagnostics for regression analysis; Presence of multicollinearity [Variance Inflation Factor (VIF) and Tolerance (TOL) = VIFs below 4.0 and TOLs above .25; i.e., VIFs = 1.857 to 2.402 and TOLs = 0.416 to 0.539] indicating no multicollinearity.); Weighted Least Square model - to account for homoscedasticity
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# RESULTS

**Table 1: Correlations Among Variables**

<b>Variables</b>	<b>LBeh</b>	<b>LCog</b>	<b>LEnv</b>
<b>Learning Behavior (LBeh)</b>			
<b>Learning Cognition (LCog)</b>	0.670		
<b>Learning Environment (LEnv)</b>	0.534	0.681	
<b>Perceived Acad. Perf. (PAP)</b>	0.637	0.658	0.495

- ❖ Regression analysis showed that predictive model was significant [ $F(3, 323) = 121.80, p < .001$ ].
- ❖ The three independent variables significantly predicted perceived academic performance, explaining 53% of the variance in the dependent variable.
- ❖ The results showed that online learning behavior, learning cognition, and learning environment are significant positive predictors of academic performance.

# RESULTS

**Table 2: Regression Analysis Results**

	<b>Estimate</b>	<b>Std. Error</b>	<b>t-value</b>
<b>(Intercept)</b>	3.101	0.991	3.13**
<b>LBeh</b>	0.119	0.019	6.28***
<b>LCog</b>	0.159	0.026	5.82***
<b>LEnv</b>	0.082	0.370	2.22*

- ❖ Results show significant and positive relationships among the three variables, i.e.,:
  1. learning environment with learning behavior [ $r(327)=.0.534, p<.001$ ] and learning cognition [ $r(327)=.0.681, p<.001$ ], and
  2. between learning behavior and cognition [ $r(327)=.0.670, p<.001$ ].
- ❖ The three variables also posted significant & positive relationships with perceived academic performance [ $r(327) = 0.495$  to  $p.658$ ].

# RESULTS

## ❖ More learning gains than losses in online learning set-up

- Engaged in online learning to a **great extent**
- **Highly** motivated, receptive, and comfortable/adept in e-learning
- **Satisfied** with the online learning environment
- **High** academic performance in the online learning set-up

LEARNING GAINS AND LOSSES	M	VI
<b>Online Learning Behavior</b>		
<i>Set self-study strategies</i>	3.92	GE
<i>Managed learning environment</i>	3.99	GE
<i>Exercised time management</i>	3.84	GE
<i>Set online learning goals</i>	4.14	GE
<b>Online Learning Cognition</b>		
<i>Motivation</i>	3.51	H
<i>Information Perception</i>	3.77	H
<i>Adaptability</i>	4.10	H
<b>Online Learning Environment</b>	3.85	S
<b>Perceived Academic Perf.</b>	4.01	H

GE=Great Extent

H=High

S= Satisfied

# RESULTS

LEARNING GAINS	M	VI
<i>Enhanced communication skills</i>	3.48	T
<i>Learned to collaborate</i>	3.89	T
<i>Improved critical thinking</i>	3.94	T
<i>Discovered new hobbies</i>	4.18	T
<i>Learned new skills/ interests</i>	4.13	T
<i>Re-evaluated priorities in life</i>	4.23	T
<i>Learned a lot about self</i>	4.30	T
<i>Learned doing things independently</i>	4.30	T
<i>Managed time wisely</i>	3.86	T
<i>Gained new ways to earn</i>	3.58	T

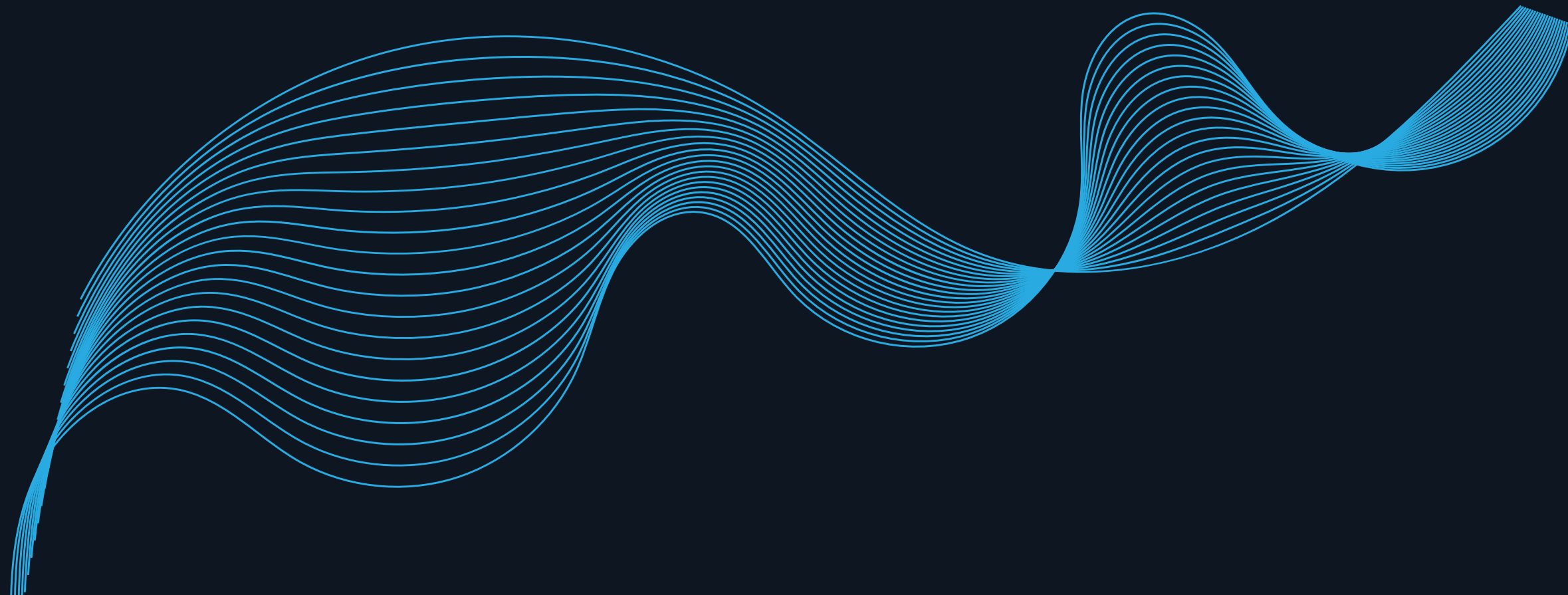
LEARNING LOSSES	M	VI
<i>Academic performance improved</i>	2.74	MT
<i>Often skipped classes</i>	2.34	ST
<i>Cannot concentrate in learning</i>	3.21	MT
<i>Felt less motivated in online</i>	3.22	MT
<i>Enrolled in less subjects</i>	2.25	ST
<i>Unable to enroll in OJT</i>	2.16	ST
<i>Applied for LOA</i>	1.78	ST
<i>Not able to graduate on time</i>	2.06	ST

T= True MT=Moderately True ST=Slightly True

- Enhanced communication, collaboration, critical/logical thinking, time mgt, and self-study skills
- Learned to do things independently, and discovered new hobbies, skills/interests & ways to earn money
- Did not experience learning losses as online set-up did not affect their academic perf., attendance, focus and concentration, motivation, and academic load


# CONCLUSION

1. There are **significant and positive relationships** among learning environment, learning behavior, and learning cognition, indicating significant effects of online learning environment, students' online learning behavior, and cognition on each other.
2. Online learning behavior, cognition, and learning environment **significantly predict academic performance**, suggesting that students who manage their online learning behavior, cognitive processes, and learning environment are more likely to perform academically well in their online courses.



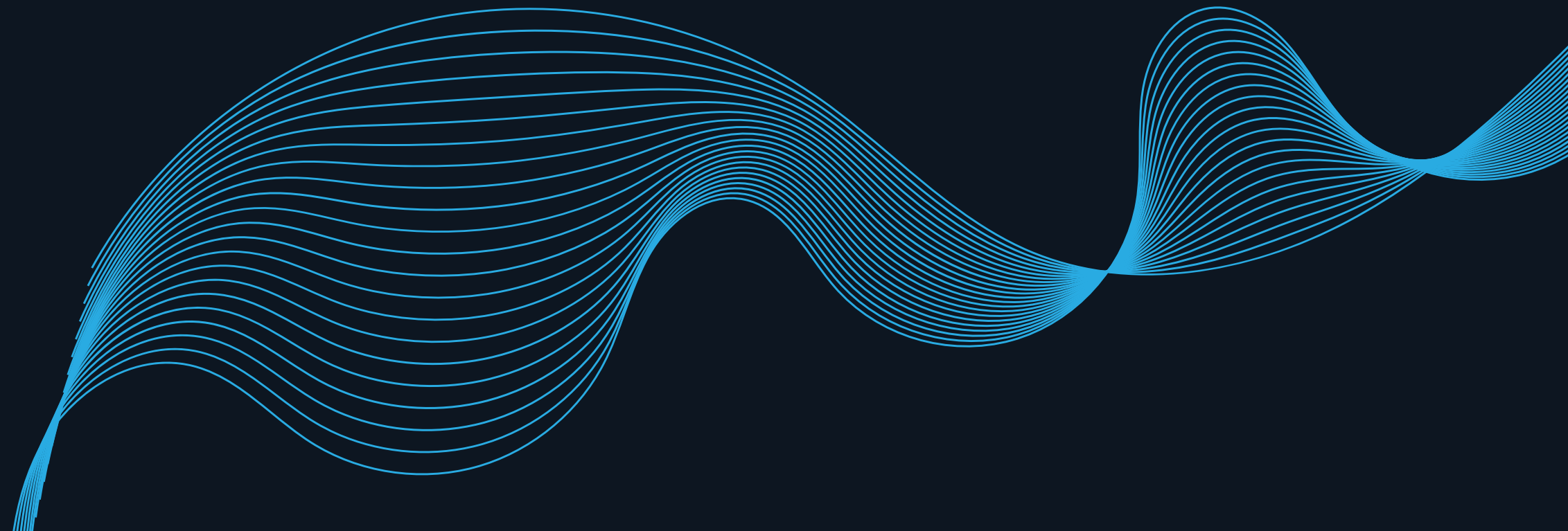
# CONCLUSION

3. Online learning is here to stay and will **make stronger contributions and impact** on higher education and students in the years to come. Teachers should:

- ❖ come up with learning strategies, activities, requirements that will best motivate students in online learning.
  - ❖ encourage students to:
    - be extensively motivated, engaged and willing to learn in their online classes
    - create conducive learning environment at home
    - observe productive learning behavior
    - be receptive to every information discussed in class, and
    - be adaptable to new opportunities and challenges brought about by ever changing learning conditions and environment.
- 

# CONCLUSION

4. Researchers have put some suggestions on how to enhance learning in an online set-up. Their suggestions pertain to the **curriculum** (e.g., instruction, content), **infrastructure** (e.g., ICT and learning support), **teachers** (e.g., pedagogical and technical competency, efficient use of technology), and **students** (e.g., well-being, self-efficacy, motivation) (Martin, 2020; Dhawan, 2020).
5. **More studies need to be conducted to determine how to fully motivate and engage students in an online learning setup.** While applying various motivational theories to traditional F2F learning environments has proven to be productive and effective, studies on how these learning theories can be adapted in a complex, multifaceted, and technology infused online learning environments are still under-investigated (Chiu, et al., 2021).



The image features a dark blue background with decorative, wavy, light blue lines that flow across the top and bottom, framing the central text. The lines are composed of many thin, parallel curves that create a sense of movement and depth.

*Thank You!*

