



**Book of Abstract**

# **3rd ICTASE**

**International  
Conference on  
Teaching and  
Science Education**

**Virtual Conference  
March 8, 2021**



**Supported by:**



**Book of Abstract**  
**International Conference on**  
**Teaching and Science Education**  
**(3<sup>rd</sup> ICTASE)**

**Virtual Conference**

**8 March 2021**

**Yayasan Sinergi Riset dan Edukasi**



# **Book of Abstract**

## **International Conference on Teaching and Science Education (3<sup>rd</sup> ICTASE)**

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# FOREWORD

**Research Synergy Foundation** is a digital social enterprise platform that focuses on developing Research Ecosystem towards outstanding global scholars. We built collaborative networks among researchers, lecturers, scholars, and practitioners globally for the realization of knowledge acceleration. We promote scientific journals among countries as an equitable distribution tools of knowledge. We open research collaboration opportunities among countries, educational institutions, organizations and among researchers as an effort to increase capabilities.

Known as a catalyst and media collaborator among researchers around the world is the achievement that we seek through this organization. By using the media of International Conference which reaches all researcher around the world we are committed to spread our vision to create opportunities for promotion, collaboration and diffusion of knowledge that is evenly distributed around the world.

## Our Vision:

As global social enterprise that will make wider impact and encourage acceleration quality of knowledge among scholars.

## Our Mission:

First, developing a research ecosystem towards outstanding global scholars. Second, Promoting scientific journals among countries as an equitable distribution tools of knowledge. Third, opening research collaboration opportunities among countries, educational institutions, organizations and among researchers as an effort to increase capabilities. Fourth, creating global scientific forum of disciplinary forums to encourage strong diffusion and dissemination for innovation.

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## **CONFERENCE CHAIR MESSAGE**

We are delighted to welcome you to The 3<sup>rd</sup> International Conference on Teaching and Science Education (3<sup>rd</sup> ICTASE) by Research Synergy Foundation as official partner held virtually on March 8, 2021.

The aim of Conference is to bring together leading academician, researchers and scholars to exchange and share their experiences and research results on all aspects of Teaching, Childcare Management, Technology Education, Vocational Education, Learning In Digital Eras and Science Education. The 3<sup>rd</sup> ICTASE 2021 International Conference shows up as a cutting-edge Research platform to gather presentations and discussions of recent achievements by leading researchers in academic research.

It has been our privilege to convene this conference. Our sincere thanks, to the conference organizing committee; to the Program Chairs for their wise advice and brilliant suggestion on organizing the technical program and to the Program Committee for their through and timely reviewing of the papers. Recognition should go to the Local Organizing Committee members who have all worked extremely hard for the details of important aspects of the conference programs and social activities.

We welcome you to this conference and hope that this year's conference will challenge and inspire you, and result in new knowledge, collaborations, and friendships.

Best regards,

Dr. Hendrati Dwi Mulyaningsih  
Conference Chair of 3<sup>rd</sup> ICTASE 2021

## SESSION CHAIR



**Associate Prof. Marilyn F. Isip** is now the Head of the Academic Programs of the Polytechnic University of the Philippines Sta. Maria Bulacan Campus. Formerly one of the members as Research Coordinator from the Office of the Vice President for Research, Extension and Development where her enthusiasm to engage in the National and International paper presentations, research, and publication challenge her horizons and ultimately motivates her to finish her dissertation for her Doctor of Philosophy in Education major in Educational Management.

Her loyalty to the University gives her inspiration to be more persevere and resilient in everything she accomplished. Assisting colleagues and students to reach their dreams and professional goals is one of her major accomplishments. She is also a board passer of the Professional Board for Educational Teachers (PBET) license no.943355613.

She handles office practicum and student teaching practicum, research, management, and education subjects. While teaching, she loves to mingle and learn stories from the students and in return teach students life lessons to become academically productive and street smart to conquer the global world. Her philosophy in life, “Reaching for your dreams and become successful is always possible as long as you are physically and mentally able.”

**CONFERENCE PROGRAM**  
**The 3<sup>rd</sup> International Conference on Teaching and Science Education (ICTASE)**

**VIRTUAL CONFERENCE**

Monday | March 8, 2021

<i>Time (UTC+7)</i>	<i>Activity</i>
08.50- 09.00	Participant Login and Join Virtual Conference by ZOOM
09.00 - 09.05	Welcome Address
09.05 - 09.25	Global Research Ecosystem Introduction Dr. Hendrati Dwi Mulyaningsih Founder & Chairman of Research Synergy Foundation
09.25 - 09.30	Group Photo Session
09.30 - 09.35	Preparation for Online Presentation
09.35 - 11.50	Online Presentation Session Session Chair : Associate Professor Marilyn F. Isip Polytechnic University of the Philippines Sta. Maria Bulacan Campus.
11.50 - 12.00	Open Research Discussion Session & Participant Testimonial
12.00 - 12.10	Closing and Post-conference information announcement

Monday, 8 March 2021

Session Time : 9.35 – 11.50

Session Chair : Associate Professor Marilyn F. Isip

### Track Cognitive Psychology

Paper ID	Presenter	Media	Paper Title
<b>ASE21113</b>	Piwat Suppawittaya	Virtual Presentation	The Comparison of Chunking Methods to Enhance the Cognitive Capacity of Short-term Memory to Retain Textual Information among High School Students

### Track Science Education

Paper ID	Presenter	Media	Paper Title
<b>ASE21109</b>	Fredyrose Ivan Libosada Pinar	Virtual Presentation	Alternative Learning Modalities in the New Normal Classroom Setting: Grade 12 Students' Perceptions of Distance Learning in General Chemistry
<b>ASE21110</b>	Jerrie-marie Quilantang Quimson	Virtual Presentation	STEM Students' Engagement in Horizontal Transfer from Calculus to Physics and their Difficulties
<b>ASE21112</b>	Haerul Pathoni	Virtual Presentation	Analysis of Student Needs for the Development of Contextual-based STEM Approach Learning Media in Online Learning

### Track Vocational Education

Paper ID	Presenter	Media	Paper Title
<b>ASE21108</b>	Citra Marcella Nazira	Virtual Presentation	Vocational High Schools as Means of Creating Entrepreneurs in Reducing Unemployment in Indonesia

## Track Management Education And Development

Paper ID	Presenter	Media	Paper Title
<b>ASE21101</b>	Ilham Ramadan Pandu Setia Negara Siregar	Virtual Presentation	Proposed Business Growth Management Strategy for Jafa Indonesia Juara

## Track Technologies Of Teaching

Paper ID	Presenter	Media	Paper Title
<b>ASE21106</b>	Nangsamith Each	Virtual Presentation	A Preliminary Study of Students' Needs Towards Learning English as a Foreign Language in Cambodian Context
<b>ASE21111</b>	Tarosh Wangwongwiroj	Virtual Presentation	The Comparison of Students' Perceived Levels of Self-efficacy in Live, Online and Live Online Courses

Track: Cognitive Psychology

# The Comparison of Chunking Methods to Enhance the Cognitive Capacity of Short-term Memory to Retain Textual Information among High School Students

| Piwat Suppawittaya<sup>1</sup>, Pratchayapong Yasri<sup>2</sup>

<sup>1</sup>Bangkok Christian College, <sup>2</sup>Institute for Innovative Learning, Mahidol University

## Abstract

**Background** - *Our short-term memory has a limited capacity of taking in information and retaining it the memory storage. However, this can be enhanced by various memory techniques especially dividing the information into smaller chunks.*

**Purpose** - *To investigate this memory enhancement strategy, this study compared the effectiveness of three chunking methods, namely One-Chunk, Two-Chunk, and Three-Chunk to enhance the capacity to retain information in the forms of letters and numbers in the short-term storage.*

**Design/methodology/approach** - *Participants in this study were 50 high school students who took part in this experiment.*

**Findings** - *The results revealed that the ability to remember 10 distinct alphabets and 10 distinct digits statistically varied, depending on how the information was chunked. To be more precise, the student participants could memorize the information when divided into 2 or 3 chunks more effectively than one full set of the information (1 chunk) as the mean scores gained in the two chunking methods were statistically greater than that of the One-Chunk delivered information.*

**Research limitations** - *However, the findings only relied on single types of information so that further research could be done to explore this with more complicated information.*



**Originality/value** - *Educational implications can be drawn from this present study that in order to assist students to memorize and retain learning materials more effectively, it is essential to help classify them into 2-3 groups of information. This could be done through the use of tree thinking, binary thinking, and computational thinking.*

*Keywords: Cognitive Information Processing, Short-term memory, Chunking, Textual information*

## Track: Science Education

# Alternative Learning Modalities in the New Normal Classroom Setting: Grade 12 Students' Perceptions of Distance Learning in General Chemistry

| Fredyrose Ivan Libosada Pinar<sup>1</sup>

<sup>1</sup>De La Salle University

## Abstract

**Background** - *The onslaught of the COVID-19 pandemic forces institution to close face-to-face classes, thereby resulting to a paradigm shift towards remote learning. Unconventional learning strategies were reinforced to continuously provide education amidst the crisis. This led to the conversion of classroom-oriented learning resources into learning resources adapted to distance learning. At present, the placement of alternative learning modalities in a new normal classroom setting has become a mainstream point of discussion in the education sector.*

**Purpose** - *In light of the new trend in education brought by the pandemic or other similar circumstances, this study aims to identify students' perceptions regarding the utilization of synchronous and asynchronous distance learning resources in the Grade 12 level. It also highlighted students' preferences regarding the synchronous and asynchronous mode of delivering instructions.*

**Design/methodology/approach** - *This study follows a mixed-method research design that utilized some elements of quantitative and qualitative approaches. A dependent sample t-test was used to find out difference between the use of synchronous and asynchronous learning modalities. Conceptual understanding of students was measured based on their performance on summative assessments both in synchronous and asynchronous modalities.*

*Descriptive statistics and thematic analysis were also used to present students' evaluation on the different distance learning aspects particularly on the teaching approach, learning materials and instructions, activities, and assessments.*

**Findings** - *Results revealed that students have a high interest in the teaching approach in asynchronous modality consistent with obtaining better performance in the asynchronous assessment. Students valued the asynchronous threaded discussions, the availability of relevant learning materials, and the teacher's guidance and scaffolding on the learning process as essential components of distance learning (synchronous or asynchronous).*

**Research limitations** - *Results of this study primarily based on students' perceptions about their online learning experience in a private medical school in the Philippines setting. No other intervention was done to enhance the online pedagogy. However, this study provides a clear picture of what areas of distance learning need refinement.*

**Originality/value** - *Despite the gap in space and time between teachers and students, learning still continues within the comfort of everyone's home and is effectively managed through the utilization of alternative learning modalities. It can be suggested that a blend of the best practices in synchronous and asynchronous methods could possibly create an ideal environment for distance learning.*

*Keywords: alternative learning modalities, distance learning, synchronous learning, asynchronous learning, new normal education*

# STEM Students' Engagement in Horizontal Transfer from Calculus to Physics and their Difficulties

| Jerrie-Marie Quilantang Quimson<sup>1</sup>

<sup>1</sup>De La Salle University

## Abstract

**Background** - *Majority of science students are facing different problems in applying their calculus knowledge to physics courses. Researchers started to develop an integrated approach to address this problem however, many schools are still teaching calculus and physics as two separate subjects.*

**Purpose** - *The study investigated the engagement of senior high school STEM students to horizontal transfer from Basic Calculus to General Physics subjects and the difficulties they experience in solving calculus-based-physics problems*

**Design/methodology/approach** - *A correlational study research design was employed to explore the relationship between the students' physics and calculus performance using a physics worksheet. Both qualitative and quantitative methods were also employed to determine the difficulties of the students in calculus-based-physics problems.*

**Findings** - *The Pearson correlation revealed that there is a significant positive correlation between the students' physics and calculus performance. Although this could not serve as strong evidence of transfer, this strong correlation implies that senior high school STEM students were able to construct the similarities between the calculus-based physics problems and their calculus schema. As revealed in the questionnaire and the students' responses in the worksheet and interview, students have difficulty in solving calculus-based physics problems in terms of identifying the variable that needs to be integrated, setting-up the limits of*

*integration, evaluating the limits of integral, and identifying the appropriate rules of integration and applying it in solving the physics problem. These difficulties are rooted in the fact that students have little experience applying calculus in word problems, especially in the physics context.*

**Research limitations** - *Transfer of learning is a dynamic process however, the study only measured horizontal transfer in an actor-oriented perspective. Also, the question of how far students can connect their calculus schema in solving the physics problem cannot be answered in this study.*

**Originality/value** - *There has been no significant research on senior high school STEM students' transfer of learning and difficulties in calculus-based physics subjects. It is crucial because this is when the students first experience applying calculus in a physics context.*

*Keywords: horizontal transfer, calculus-based physics problem, students' difficulties*

# **Analysis of Student Needs for the Development of Contextual-based STEM Approach Learning Media in Online Learning**

| Haerul Pathoni<sup>1</sup>, Rayandra Ashar<sup>2</sup>, Maison<sup>3</sup>, Nizlel Huda<sup>4</sup>

<sup>1,2,3,4</sup>Universitas Jambi

## **Abstract**

**Background** - *In 2020, higher education must implement online learning because of pandemic COVID 19. Learning with the science, technology, engineering, and mathematics(STEM) approach is rarely done in online learning. The first step in implementing the STEM approach on campus in online learning is to develop contextual learning media based on the STEM approach.*

**Purpose** - *This study analyzes students' needs for contextual learning media based on the STEM approach in Basic Physics courses in online learning.*

**Design/methodology/approach** - *This research method is a descriptive study with research subjects are 141 second and third-year students of the Physics Education Program of Universitas Jambi and the State Islamic University of SulthanThahaSaefudin Jambi. The subject has completed basic physics courses. Data collection was carried out from preliminary observations, and the use of a student needs analysis questionnaire.*

**Findings** - *The results showed that students found it difficult to understand several topics in basic physics subjects. It is caused by a lack of instructional media, a lack of descriptions, a less detailed description of formulas, inadequate use of the STEM approach, and a lack of higher-order thinking skills for student practice.*

**Research limitations** - *This research about survey student needs for the development of contextual-based STEM approach learning media in online learning in Jambi Province Indonesia*

**Originality/value** - *From the questionnaire results, it was also found that students needed learning media with a contextual-based STEM approach to help them understand the topics of Basic Physics courses in online learning.*

*Keywords: Students need, Contextual Based STEM Approach, Fundamental of Physics*



**Track: Vocational Education**

# Vocational High Schools as Means of Creating Entrepreneurs in Reducing Unemployment in Indonesia

| Citra Marcella Nazira<sup>1</sup>, Lindawati Kartika<sup>2</sup>

<sup>1,2</sup>IPB University

## Abstract

**Background** - *In many nations, including Indonesia, unemployment is one of the key problems. Indonesia got 8,49% for the percentage rate of unemployment, although it has dropped every year, is still relatively high compared to other countries. Vocational High School (VHS) graduates dominate the largest number of unemployed individuals in Indonesia. Meanwhile, as they graduate with their skills, VHS students are trained to be ready to work. Creative entrepreneurs are one option, since they can build their own work. The entrepreneurial interest of VHS students in Indonesia is still low, unfortunately.*

**Purpose** - *The objective of this research is to develop strategies for creating entrepreneurship in conjunction with the skills needed to become entrepreneurs.*

**Design/methodology/approach** - *Primary data gathered with the twenty-two headmaster of vocational schools in Indonesia through focus group discussion (FGD) and secondary data collected from literature research. The data analysis was processed through stakeholder analysis and the house model to create an effective strategy and decision.*

**Findings** - *The study results indicate that synergistic cooperation from a quadruple helix consisting of universities, entrepreneurial societies, the position of central, regional ministries, and industry is required in order to achieve "one student, one business" mission as the output. Furthermore, organizing talent management to provide the mindset as CEO for*

*vocational students and training school principals is a way out of this issue. Organizing talent management program in order to create link and match VHS student interests and providing the growth of CEO mindset training for the VHS principals. Therefore, VHS Students can establish their own company and become entrepreneurs according to their interests and ambitions, both before graduating and after graduating from VHS.*

**Research limitations** - *The limitation of this study is the data obtained from the FGD. The data obtained through FGD has a high level of difficulty to be analyzed and requires a lot of time. The activities of the individuals in the FGD in asking questions and expressing opinions were quite varied.*

**Originality/value** - *The paper emphasises the importance of being concern of unemployment situation in Indonesia which dominantly contributed by VHS students and then moves on to what is currently being implemented to solve the problem.*

*Keywords: entrepreneur, stakeholder analysis, the house model, unemployment, Vocational High School (VHS)*

# Track: Management Education and Development

# Proposed Business Growth Management Strategy for Jafa Indonesia Juara

| Ilham Ramadan Pandu Setia Negara Siregar<sup>1</sup>, Salfitrie Roos Maryunani<sup>2</sup>

<sup>1,2</sup>Bandung Institute of Technology

## Abstract

**Background** - *Indonesia is a country that has a lower middle income. The Indonesian economy itself is supported by Micro, Small and Medium Enterprises (MSMEs). In 2019, the number of MSMEs in Indonesia reached 99,9 percent of the established business units in Indonesia. Many companies in Indonesia are trying to upgrade from MSMEs to large companies. One company that is growing and trying to develop is Jafa Indonesia Juara (JAFA). JAFA is a MSME engaged in the service of making uniform sports (jersey) football that was established in January 2013. JAFA certainly has the desire to continue to increase the scale of the company.*

**Purpose** - *The purpose on this research will provide results in the form of developing recommendations for JAFA to improve growth management in the future.*

**Design/methodology/approach** - *This research uses qualitative research methods with primary and secondary data observation through literature and document studies. The data analysis approach obtained was carried out with the actual situation of the object under study.*

**Findings** - *Based on the theory of The Five Phases of Growth by Greiner (1998), the business issue in JAFA is at a critical point where it wants to enter a new phase from the 'Creativity Phase' to the 'Direction Phase'. Based on direct interviews conducted by the researcher with the Director of JAFA, in September 2020 was the beginning of the growth of JAFA in the Covid-19 pandemic era where JAFA's revenue of IDR 130 million. This is JAFA's biggest*

*revenue during 2020. This is a turning point for JAJA to continue to grow. Although they have to endure of growing pains, both on the Founder-CEO and Organizational Development side. The researcher in this research is to analyze how effective is JAJA in managing growth.*

**Research limitations** - *The researcher make sure to put it in the research limitation. There are two main concerns of data collection: (1) Regarding the top-level management (C-level) and (2) Regarding the growing pains in the organization.*

**Originality/value** - *This topic descibe an important part of the business unit's sustainability so that the researcher can study a business unit seen from the company side of the "growing" phase.*

*Keywords: growing venture, business effectivity, business growth management*

## Track: Technologies of Teaching

# **A Preliminary Study of Students' Needs towards Learning English as a Foreign Language in Cambodian Context**

| Nangsamith Each<sup>1</sup>

<sup>1</sup>National University of Battambang

## **Abstract**

**Background** - *Doing a preliminary study is one of the best ways which makes the classroom teacher understand more about exact needs and problems of his/her students.*

**Purpose** - *This study aimed at investigating the needs and problems faced by the students who were studying at an English for Adult Program, the National University of Battambang, Cambodia.*

**Design/methodology/approach** - *Data were collected by the means of questionnaire and interview with 208 volunteer students and 5 volunteer teachers in November 2018 to identify and confirm what are the real needs of students in this program.*

**Findings** - *The results revealed that among four macro skills speaking is the most important and practical skills; whereas listening is the most difficult skill and the majority of students strongly agreed that they would like to improve the listening skills. More importantly, the students showed their interest in using technology (eg. Computer and mobile devices) in the process of learning, but a large number of them keened on using mobile devices rather than other tools. The findings from teachers' interview also confirmed that the students had difficulties in listening skills for some reasons: learning materials and the insufficient time of teaching listening. In conclusion, teachers and students agree that listening is the most difficult skill and they all keen on implementing the new teaching methodology in enhancing listening comprehension skills. Teachers believed that*



*understanding students' needs will help them to increase their students' motivation and academic performance.*

**Research limitations** - *The study cannot be generalized to all students in Cambodia because it was only conducted in a university.*

**Originality/value** - *The research suggested that in order to enhance students' listening comprehension and promote life long learning, there should be a main study focusing on integrating mobile, blended and cooperative learning; therefore, students can expose the listening materials at anytime anywhere.*

*Keywords: Preliminary study, EFL, MALL, Cambodian context*

# The Comparison of Students' Perceived Levels of Self-efficacy in Live, Online and Live Online Courses

| Tarosh Wangwongwiroj<sup>1</sup>, Pratchayapong Yasri<sup>2</sup>

<sup>1</sup>Shrewsbury International School, Thailand, <sup>2</sup>Institute for Innovative Learning, Mahidol University, Thailand

## Abstract

**Background** - *Education during the COVID-19 pandemic has been greatly disrupted. While live courses where students meet face-to-face in classrooms are physically limited, online courses become more popular where students learn from pre-recorded videos at their pace. In contrast, live online courses are learning modes where students and teachers meet via webinar tools such as zoom, skype, google meet, webex, teams, to name a few.*

**Purpose** - *This study compared students' perceived levels of self-efficacy in these three different settings. Self-efficacy is defined as the belief in one's own ability to accomplish a task, which can be influenced by mastery experiences, verbal persuasion, vicarious experiences, and physiological states.*

**Design/methodology/approach** - *An online questionnaire with 12 closed-ended statements based on a 5-Likert scale was developed, representing the four factors in the three modes of learning. A total of 105 voluntary responses were received. Statistical differences in the mean scores were determined by a paired sample t-test.*

**Findings** - *The results at the significance level of 95% showed that the mean score of mastery experiences was the greatest in live courses (4.5), followed by live online (4.4) and online courses (3.3). The same was observed in vicarious experiences where live courses gained the greatest mean (4.5), followed by live online (4.3) and online courses (1.7). The means of verbal persuasion between live*

*(4.5) and live online courses (4.3) did not differ significantly, but the lowest was in online courses (1.6). Interestingly, the reverse trend was found in psychological states in which the greatest was found in online (4.7), followed by live online (4.5) and live courses (3.6).*

**Research limitations** - *The analysis above was based upon students who had no technical difficulties accessing live online courses. However, this may not be applicable to contexts where internet connection is problematic.*

**Originality/value** - *For educational implications, these findings revealed that live online courses are proven to be the most appropriate mode of learning during the pandemic. In contrast, online courses are associated with lower levels of mastery experiences, vicarious experiences, and verbal persuasion perceived by learners; whereas live courses lowered psychological states.*

*Keywords: self-efficacy, live courses, online courses, live online courses*

## FUTURE EVENT

April 14, 2021

**5th International Conference on Entrepreneurship Studies, Business, Economy, and Management Science (5th ESBEM)**

<http://esbem.com/index.php/5th-esbem/>

May 5, 2021

**6th International Conference on Management Studies and Social Science (6th MASOS)**

<http://www.masosconference.com/index.php/6th-masos/>

May 31, 2021

**7th Japan International Conference on Business, Management Studies and Social Science (7th JIBUMS)**

<https://www.jibums.com/7th-jibums/>

July 6, 2021 | Virtual Conference

**3rd International Conference on Islamic Education Studies and Social Science (3rd ICISS)**

<http://www.icissconference.com/index.php/3rd-iciss/>

July 28, 2021 | Virtual Conference

**2nd International Conference on Management, Education, and Social Science (2nd MESS)**

<http://messconference.com/2nd-mess/>

August 11, 2021 | virtual Conference

**5th International Conference on Interdisciplinary in Business, Economy, Management, and Social Studies (5th IBEMS)**

<https://www.ibemsconference.com/index.php/ibems-5th/>

August 30, 2021 | Virtual Conference

**7th International Conference on Business, Economy, Management and Social Studies Towards Sustainable Economy (7th BEMSS)**

<http://www.bemssconference.com/index.php/7th-bemss/>

September 14, 2021 | Virtual Conference

**2nd International Conference on Language, Education and Teaching Research (2nd ICLET)**

<http://www.icletconference.com/index.php/2nd-iclet/>

October 4, 2021 | Virtual Conference

**7th Singapore International Conference on Management, Business, Economic and Social Science (7th SIMBES)**

<http://www.simbesconference.com/7th-simbess/>

November 8, 2021 | Virtual Conference

**6th International Conference on Interdisciplinary Research on Education, Economic Studies, Business and Social Science (6th RESBUS)**

<http://resbusconference.com/index.php/6th-resbus/>

December 6, 2021 | Virtual Conference

**7th Japan International Business and Management Research Conference (7th JIBM)**

<http://www.jibmconference.com/index.php/7th-jibm/>



## **3rd ICTASE**

# **International Conference on Teaching and Science Education**

**Virtual Conference  
March 8, 2021**



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