ITEN 2022

New Paradigms in Education in the Post-COVID-19 Era

The 1st International Teacher Education Network Conference

16 – 17 MARCH 2022

Bangkok, Thailand

PROCEEDINGS

Hosted by:

Faculty of Education
Kasetsart University, Bangkok, Thailand

Association of Southeast Asian Teacher Education Network (AsTEN)

AsTEN Members

Kolej Universiti Perguruan Ugama Seri Begawan
Brunei Darussalam

National Institute of Education
Cambodia

Universitas Pendidikan Indonesia
Indonesia

National University of Laos
Laos People's Democratic Republic

Universiti Pendidikan Sultan Idris
Malaysia

Yangon University of Education
Myanmar

Philippine Normal University
Philippines

National Institute of Education
Nanyang Technological University
Singapore

Kasetsart University
Thailand

University of Social Sciences and Humanities
Vietnam

Reviewers

Curriculum and Pedagogy

Assoc.Prof.Teerachai Nethanomsak	Khon Kaen University, Thailand
Asst.Prof.Parinda Limpanont Promratana	Chulalongkorn University, Thailand
Asst.Prof.Pongsatorn Mahavijit	Kasetsart University, Thailand
Assoc.Prof.Kok-Sing Tang	Curtin University, Australia
Asst.Prof.Chaninan Pruekpramool	Srinakharinwirot University, Thailand

Early Childhood Education

Assoc.Prof.Sasilak Khayankig	Chulalongkorn University, Thailand
Asst.Prof.Worawan Hemchayart	Chulalongkorn University, Thailand
Asst.Prof.Chalatip Samahito	Kasetsart University, Thailand

Teacher Education and Teacher Professional Development

Asst.Prof.Udomluk Koolsriroj	Kasetsart University, Thailand
Assoc.Prof.Sonya N. Martin	Seoul National University, South Korea

Educational Measurement and Evaluation

Thananun Thanarachataphoom	Kasetsart University, Thailand
Asst.Prof.Ruangdech Sirikit	Srinakharinwirot University, Thailand
Asst.Prof.Chalie Patarapichayatham	Southern Methodist University, U.S.A.

Educational Technology and Innovation

Asst.Prof.Niwat Srisawasdi	Khon Kaen University, Thailand
Assoc.Prof.Issara Kanjug	Khon Kaen University, Thailand
Asst.Prof.Watsatree Diteeyont	Kasetsart University, Thailand
Asst.Prof.Edmund Guevarra Centeno	University of the Philippines Los Baños, Philippines
Asst.Prof.Suthida Chamrat	Chiang Mai University, Thailand

Lifelong Learning Education and Vocational/ Non formal Education

Assoc.Prof.Archanya Ratana-Ubol	Chulalongkorn University, Thailand
Pimsiri Taylor	Thammasat University, Thailand
Asst.Prof.Choosak Ueangchokchai	Kasetsart University, Thailand

Psychology and Special Education

Assoc.Prof.Jittinun Boonsathirakul	Kasetsart University, Thailand
Pattaraporn Jamsai	Kasetsart University, Thailand
Prof.Te-Sheng Chang	National Dong Hwa University, Taiwan

Educational Leadership and Policy

Thomrat Siriparp	Chulalongkorn University, Thailand
Prof.Darren Hanson	National Institute of Education, Singapore

Health and Physical Education

Prof.Thanomwong Kritpet	Chulalongkorn University, Thailand
Prof.Aim-utcha Wattanaburanon	Chulalongkorn University, Thailand
Assoc.Prof.Sonthaya Sriramatr	Srinakharinwirot University, Thailand
Assoc.Prof.Sombat Onsiri	Kasetsart University, Thailand
Prof.Bradley J Cardinal	Oregon State University, U.S.A.
Assoc.Prof.Lim Boon Hooi	University of Malaya, Malaysia

Organizing Committees

Dr.Ahmed Bukhori Muslim (Indonesia)	Advisory Committee
Assoc.Prof.Pattamavadi Lehmongkol	Dean of Faculty of Education, KU
Asst.Prof.Ouaypon Tungthongchai	Associate Dean for Academic Affairs, Faculty of Education, KU
Asst.Prof.Udomluk Koolsriroj	Associate Dean for International Affairs, Faculty of Education, KU
Assoc.Prof.Chatree Faikhamta	Head for Academic Affairs
Assoc.Prof.Pattarawat Jeerapattanatorn	Head for Proceedings Affairs
Assoc.Prof.Nongluck Manowaluilou	Head for Ceremonial Affairs
Asst.Prof.Wandee Kasemsukpipat	Head for International Affairs
Asst.Prof.Chanisvara Lertamornpong	Head for Public Relations
Dr.Nutwichida Lertpongrujikorn	Head for IT Affairs
Dr.Thananun Thanarachataphoom	Head for Evaluation Affairs
Assoc.Prof.Chanon Chuntra	Head for Financial Affairs
Asst.Prof.Chalatip Samahito	Secretary
Asst.Prof.Autumporn Intachak	Assistant Secretary
Dr.Nart Srilapo	Assistant Secretary
Pattanan Manmek	Assistant Secretary

Welcome to ITEN 2022

Dr. Chongrak Wachrinrat

President of Kasetsart University

Honorable Guests, Ladies and Gentlemen,

It is my great pleasure to join all of you today during the opening ceremony of the *International Teachers Education Network Conference: New Paradigms in Education in the Post-COVID-19 Era*, presented by the Faculty of Education at Kasetsart University. I extend my warmest welcome to all of you, especially the visitors who are joining from abroad.

The International Teacher Education Network Conference (ITEN) provides the opportunity for educational professionals and practitioners to come together and exchange views about the needs, challenges, and trends in education. The theme this year is *New Paradigms in Education in the Post-COVID-19 Era.*

I am pleased to know that quite a large number of educators and teachers are participating in this international teacher education network conference. I am confident it will be a valuable opportunity for your professional development. I hope that the knowledge gained from this conference will help teachers keep pace with the latest trends in education and motivate them to prepare for forthcoming challenges.

“Tomorrow's Learning” is being showcased today. The foundation of this concept is the recognition that we all have the potential to become “change agents” ... to offer our creativity and to pursue innovation as we move into the future. The key to societal growth is a well-educated society, with high-quality education made available at every level of society.

I believe that the presentations, the discussions, and the collegial contacts you make during the conference with people who have shared common goals will be beneficial to you.

Thank you for attending, and best wishes for a successful conference.

Keynote Speakers

"New Paradigms in Teacher Education"

Anthony Clarke

Professor at the University of British Columbia
Expertise: Qualitative Research Methods; Teacher Inquiry and Schooling in Comparative Perspective; The Practicum in Teacher Education with a focus on the professional development of mentor teachers

"Assessment using Learning Progressions: An Important Concept in Teacher Education"

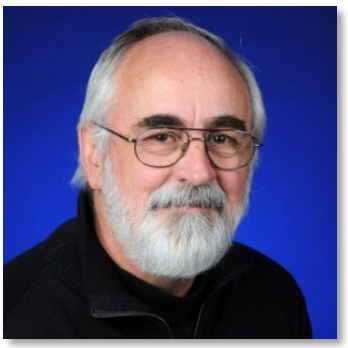
Mark Wilson

Distinguished Professor of Education at the University of California, Berkeley, and also a Professor at the University of Melbourne
Expertise: Measurement across the social sciences, focusses on educational applications

"Fostering Learner Autonomy: Key to Advancing Learning in Post Covid-19"

Gary John Confessore

Professor Emeritus at George Washington University. He received the Malcolm Knowles Memorial Self-Directed Learning Award in 2007.
Expertise: Adult and continuing education



"New Paradigms in Technology Education"

John Williams

Professor of Education and the Director of Graduate Research in the School of Education at Curtin University, Australia
Expertise: STEM, mentoring beginning teachers, PCK and electronic assessment of performance

Panelists

Dr. Te-Sheng Chang

Professor at the Department of Education and Human Potentials Development, National Dong Hwa University, Taiwan
Expertise: Educational psychology, university classroom experience, interdisciplinary learning, gender equity education, LGBT education

Niño D. Naldoza

Director of Institute of Knowledge Management & Concurrent Head of the School of Information and Knowledge Management at Philippine Normal University-Manila
Expertise: Educational Technology and Professional Education

Dr. Udomluk Koolsriroj

Assistant Professor & an Associate Dean for International Affairs, Faculty of Education, Kasetsart University, Thailand
Expertise: Scaffolding techniques, teacher professional development and diversity and equity in education.

Dr. Tang Wee Teo

Associate Professor, the Natural Sciences and Science Education, National Institute of Education (NIE), Nanyang Technological University, Singapore
Expertise: Cultural sociology, lower track learners, social equity, sociocultural studies, STEM and STEAM education

Keynote Speakers' Abstracts

New Paradigms in Teacher Education

Anthony Clarke

University of British Columbia

Abstract

Prior to the pandemic, e-learning and e-learning assets were an established but often an optional part of university and school education. COVID-19 and the closure of schools meant this was no longer an option as teachers across the world were compelled to embrace this digital shift. This unprecedented upheaval of teaching and learning lasting two years meant that the field of education in general, and teacher education in particular, was challenged to re-examine existing assumptions and practices. This presentation attempts to situate the current conversation about COVID-19 and its impact against the backdrop of four distinct paradigm shifts in the history of teacher education. To add practical flesh to these theoretical bones, the discussion will draw upon the broader international literature and local responses from within my own university. The question that this conference poses for us all is: Will the seismic shifts in educational policy and practices occasioned by COVID-19 continue to persist post-pandemic?

New Paradigms in Technology Teacher Education

P John Williams

Curtin University

Abstract

There is no shortage of rationales in the world today which demand the need for a new paradigm in education: climate change is dramatically and more regularly effecting the lives of more and more people; poverty receives occasional media attention but is ubiquitous; inequality of wealth is becoming more pronounced every year; as technology develops rapidly, the digital divide exacerbates divisions along social, economic and cultural lines; the world order is shifting, and the future of work is unclear. There is little evidence that our current discipline-based teacher centred approaches to education are preparing students adequately for these environments.

In Technology Education, there are a number of contemporary developments which present opportunities for the implementations of new paradigms: the rise of makerspaces, links with Engineering, a focus on a set of generic skills, STEM and the Industrial Revolution 4.0.

This presentation will explore some possible new paradigms which are evolutionary rather than revolutionary, and which build on current trends in education related to pedagogy, curriculum and how teachers work.

Assessment using Learning Progressions: An Important Concept in Teacher Education

Mark Wilson

University of California, Berkeley

Abstract

Due to the Covid-19 pandemic, students all over the world are experiencing disruptions to their education, which has been delivered in a stop-start and inconsistent way, via online and face-to-face contexts, at-home and at school. This means that there is a need for teachers to have supports for adopting a *longitudinal and developmental* perspective on their students' progress through the curriculum. This leads to a measurement/assessment strategy in the form of a *learning progression* (LP). In a LP, assessments are developed so that teachers can track their students' progress in these different contexts and across time. Typical tests take a "snapshot" of student performance across a wide range of topics. In contrast, assessments developed within a learning progression emphasize individual change over a longer time and within a deeper developmental framework. To illustrate this assessment strategy and describe how it can be developed using the BEAR Assessment System, I will give an example in the topic area of data-modeling. Typical outcome results will be examined. I will also give an example of a teacher learning progression, and implications for teacher education will be discussed.

Fostering Learner Autonomy: Key to Advancing Learning in Post Covid-19

Gary J. Confessore

George Washington University

Abstract

The pandemic has made us rethink how teaching should be carried out to ensure effective learning takes place despite all the constraints faced. To do this in ways that will be most supportive of the learner's readiness to learn and the teacher's capacity to understand and capitalize on that readiness, this paper proposes fostering learner autonomy as the key to advancing learning in post Covid-19. Theories related to the premises of learner autonomy were presented based on Fishbein and Ajzen's work on the relationship between beliefs, attitudes, behavioural intentions, and behaviour and Bandura's self-efficacy. Three models which emphasize on understanding learner's learning readiness and teacher's instructional constraint form the basis for

ITEN 2022 Program

16 March 2022

8:30 - 9:00	Registration and Opening Remark by President of Kasetsart University and Dean of Faculty of Education, Kasetsart University
9:00 - 10:00	*"New Paradigm in Teacher Education"* Keynote speaker: **Prof. Dr. Anthony Clarke** University of British Columbia, Canada
10:00 - 10:10	Coffee break
10:10 - 12:00	Parallel sessions (1)
12:00 - 13:00	Lunch break
13:00 - 14:00	*"New Paradigm in Technology Teacher Education"* Keynote speaker: **Prof. Dr. John Williams** Curtin University, Australia
14:00 - 15:50	Parallel sessions (2)
15:50 - 16:00	Coffee break
16:00 - 17:00	Panelist Session: 1. **Prof. Dr. Te-Sheng Chang** Department of Education and Human Potentials Development National Dong Hwa University, Taiwan 2. **Dr. Niño D. Naldoza,** Institute of Knowledge Management, Philippines Normal University, Philippines 3. **Asst. Prof. Dr. Udomluk Koolsriroj,** Department of Education, Kasetsart University, Thailand 4. **Assoc. Prof. Dr. TEO Tang Wee,** National Institute of Education, Nanyang Technological University, Singapore

17 March 2022

9:00 - 10:00	*"Assessment Using Learning Progressions: An Important Concept in Teacher Education"* Keynote speaker: **Prof. Dr. Mark Wilson** University of California, Berkeley, USA
10:00 - 10:10	Coffee break
10:10 - 12:00	Parallel sessions (3)
12:00 - 12:45	Lunch break
12:45 - 13:45	*"Fostering Learner Autonomy: Key to Advancing Learning in Post Covid-19"* Keynote speaker: **Prof. Gary John Confessore** The George Washington University, USA
13:45 - 14:00	Closing Remark and Presentation Award Session
14:00 - 16:00	Collateral AsTEN meeting for international collaborations

Table of Contents Page no.

16 SOFT SKILL THOUGHT TEACHING AND LEARNING IN FUTURE OF WORK

Kanidta Chairattanawan

Institution of General Education, Sripatum University, Bangkok, Thailand
*E-mail: Kanidta.ch@gmail.com, Tel. +66869749750

Abstract

Suitable soft skills in professional career working in Thailand are important in post COVID-19 Era. The research aims to 1) find the most essential soft skill for employment and 2) study alternative guideline to development soft skill for higher education management. There were 2 phase of data collection in this study. The first phase was documentary research, And the second phase was conducted qualitatively using an in-depth interview and two focus group interviews were conducted with 27 participants consisting of 3 job mentor, 16 cooperation advisor/job mentor and 8 representatives of establishment respectively. All information was analyzed by using content analysis. The results revealed 16 soft skills as follows: 1) communication skills 2) leadership 3) negotiation skills 4) work ethics 5) decision-making 6) design thinking 7) innovation skills 8) analytical and synthetic skills 9) problem solving 10) teamwork 11) media and technology skills 12) professional skills 13) environment life skills 14) emotional skills 15) time management and 16) willingness to learn skills. Both cooperation advisor and representatives of establishment present the development of soft skill by using general education curriculum to implement a volunteer project based on subject education in three ways: 1) integration through various activities 2) integration through the mission of the higher educational institution with participate course and 3) cross-curricular and cross-disciplinary integration. Finally higher education and enterprises must be collaboration for development of soft skills together.

Keywords: soft skills, future of work, career success

Background

National Education Plan (B.E. 2017-2036) in Thailand has stated that all Thai people should have the ability to work with the needs of the job market and the development of the country. In addition, the National Thai Strategy (B.E. 2018-2037) also mentions the goals of human resource development in all dimensions to be good, competent, and qualified.

Higher education management aims to produce qualified human resources in accordance with labor market needs and national development. In addition, all of higher educational have prepared learner to meet the needs of the establishment. It is; therefore, Cooperative education is a form of education management in higher education programs to develop the quality of learners to meet the needs of the establishment or labor market. If learners have entered cooperative education, then we can be said that all of them prepared for career development. Representative of Thai cooperative education (Wichit Srisa-an) had said that “Learning by doing” make learners gain more direct experience by working in the workplace than other method.

Mitchell et al. (2010) believed that employers usually prefer to find blend of competencies in their staff and in addition to discipline-based knowledge and skill, adequate levels of soft skills are considered desirable for moving forward in the career. So enterprises need more and more

learners with soft skills. (Balcar, 2014; Carnevale, 2013; International Labor Organization, 2008) And the literature review showed that 75% of success employee results from soft skills and only 25% comes from technical skill.(Doyle, 2019) It is, therefore soft skills is the beginning of success in work.(Glenn, 2008; Mitchell et al., 2010; Perreault, 2004) And soft skills itself impact on the increase in productivity of employee, business productivity and the success of organization. (Benjamin, Gulliya & Crispo. 2012; Kyllonen, 2013)

Therefore, this research focus on the most essential soft skill for employer needed especially caused by the world's pandemic COVID-19 and find the alternative method to improve soft skill of the employee.

Objective

1. To find the most essential soft skill for employment.
2. To study alternative guideline to development soft skill for higher education management.

Method

The research contains a qualitative approach to gather information. There were 2 phase of data collection in this study. The first phase was documentary research. And the second phase was conducted qualitatively using an in-depth interview and two focus group interviews were conducted with 27 participants consisting of 3 job mentor, 16 cooperation advisor/job mentor and 8 representatives of establishment respectively.

The study used purposive sampling which selected willing both roll cooperation advisor, job mentor and willing representative of establishment for develop soft skill.

The instrument in this study is a semi -structured interview. All information was analyzed by using content analysis.

Results

From documentary research can measure the significant and development of 10 soft skills (Pratchayaporn et al., 2020: 97; Rattanawat and Kongsab, 2021; and the second study has a result that the important soft skills as identified by cooperation advisor, job mentor and representative of establishment accordance with labor market needs are the followings:

1. Communication Skills
2. Leadership
3. Negotiation Skills
4. Work Ethics
5. Decision-making
6. Design Thinking
7. Innovation Skills
8. Analytical and Synthetic Skills
9. Problem Solving
10. Teamwork
11. Media and Technology Skills
12. Professional Skills
13. Environment Life Skills
14. Emotional Skills
15. Time Management
16. Willingness to Learn Skills

"Learners must practice soft skill through activity of general education curriculum as a base for learning". Both cooperation advisor and representative said together because learners can be the right skills and qualities to accomplish their role and contribute by practice and experience. Alternative guideline to development soft skill for higher education management have 3 ways: 1) integration through various activities 2) integration through the mission of the higher educational institution with participate course. For example: participate in research of professors, participate in academic services to society, participate in preservation of arts and culture. And finally, 3) cross-curricular and cross-disciplinary integration. By using activity as a middleware. This method will provide a connectivity of job and soft skill. Learners will learn across subject and skill and know how to solve problems in different part of society, such as in the marketing academics of the Faculty of Business Administration. We can use activity that can make learner learn Presentation skill about How to make online sales materials, which require knowledge related to Thai for communication, Personality development and information technology in online media, etc.

Discussions

The purpose of this study was to investigate soft skill of the important for education and employment. The results showed that generally 16 soft skills in Thailand were aware for employment and career advancement. Shaheen et al. (2012) was also found that soft skills has be important for education and employment. As well as Shaheen et al. (2012: 1037-1038) was reported in Singapore that the six top importance soft skills for employment were communication skills, leadership, teamwork, decision-making, problem solving and time management. However, for work ethics, Rattanawat and Kongsab (2021: 66-67) in Thailand was confirmed that employers in the workplace prefer people with ethical soft skills because their integrity reflects the characteristics of person in terms of diligence honesty and integrity and positive attitude towards work. Other skills such as negotiation skills, design thinking, innovation skills, analytical and synthetic skills, media and technology skills, environmental life skills, emotional skills, willingness to learn skills and professional skills are neutral level without affecting their employability status from their employers' perspectives (Succi and Canovi, 2020). However, on the contrary, Cheng et al. (2021: 31-32) advocated that soft skills integration in communication and problem-solving is the most supported skill the support employability skill levels. That is the prove that soft skill from this research is suitability and be needed for employer in Thailand

For 3-way alternative guideline to development soft skill for higher education management as follow: 1) integration through various activities 2) integration through the mission of the higher educational institution with participate course and finally 3) cross-curricular and cross-disciplinary integration. As same as Barbara (2016) had said that some alternation methods to teach soft skills for example: integrating soft skills in different subject of a degree, setting up different subjects for each soft skills and integrating them in programs with different teachers, who are only dedicated to teaching of soft skills and train soft skills.

Conclusions

The change has occurred during and post COVID-19 to make important soft skills more than hard skills. So higher education must be innovative teaching and learning experiences to develop soft skills for learners

References

Balcar, J. (2014). Soft skills and their wage returns: Overview of empirical literature. *Review of Economic Perspectives, 14*(1), 3-15.

Barbara, C., (2016). Definition, development, assessment of soft skills and their role for the quality of organizations and enterprises. *International Journal for Quality Research, 10*(1), 97-130.

Benjamin, B., Gulliya, T. & Crispo, A. (2012). Emotional intelligence and organization culture. *Insights to a Changing World Journal, 1*, 52-64.

Carnevale, A. P. (2013). *21st century competencies for college and career readiness*. Broken Arrow, OK: National Career Development Association.

Doyle, A. (2021, December). *Top Soft Skills Employers Value with Examples*. Retrieved from https://www.thebalancecareers.com/list-of-soft-siklls-2063770.2019

Glenn, J. L. (2008). The "new" customer service model: Customer advocate, company ambassador. *Business Education Forum, 62*(4), 7-13.

International Labour Organization. (2008). *Skills for improved productivity, employment growth and development*. Paper presented at the International Labour Conference.

Kyllonen, P. (2013). Soft skills for the workplace. *Change, 45*(6), 16-23.

Mitchell, G. W., Skinner, L. B., & White, B. J. (2010). Essential soft skills for success in the twenty-first century workforce as perceived by business educators. *Delta Pi Epsilon Journal, 52*, 43-53.

Perreault, H. (2004). Business educators can take a leadership role in character education. *Business Education Forum, 59*, 23-24.

Pratchayaporn, T., Sakarin, Y., & Akkarat, P. (2020). The development of a soft skills model through self-Learning for front-line service employees in service's business. *Journal of Humanities and Social Sciences Thonburi University, 14*(2), 97-108.

Rattanawat, P. and Kongsab, T. (2021). A survey of soft skills needed in the 21st century workplace. *Rajabhat Rambhai Barni Research Journal, 15*(1), 59-69.

Shaheen Majid., Zhang Liming., Shen Tong and Siti Raihana. (2012). Importance of soft skills for education and career success. *International Journal for Cross-Disciplinary Subjects in Education, 2*(2), 1036-1042.

Succi, C. and Canovi, M. (2020). Soft skills to enhance graduate employability: comparing students' and employers' perceptions. *Studies in Higher Education. 45*(9): 1834-1847. doi: 10.1080/03075079.2019.1585420

A STUDY OF PRINCIPAL'S LEADERSHIP STRATEGIES TO FUTURE EDUCATION IN THE POST -EPIDEMIC ERA

Chang Wen-Cheng[1]*, *Fan Chih-Wen*[2]

[1]Department of Educational Administration and Management,
National Dong Hwa University, Hualien, Taiwan
[2]Center of Teacher Education, National Dong Hwa University, Hualien, Taiwan
*Corresponding Author E-mail: runboy0423@gms.ndhu.edu.tw
Tel. +886 38323847*31

Abstract

In early 2020, the COVID-19 pandemic shocked the world. The world is faced with a great crisis due to the pandemic spread. As a school leader, we need to emphasize action to make the change as quickly and smoothly as possible. Because elementary and middle school education, as the starting point and foundation for further and more advanced learning, plays a crucial role in social development. This paper aims at principal's leadership strategies to future learning in the time of post-pandemic. The method of this paper is theoretical analysis and literature review. Generally, the purpose of a review is to analyze of a published body of knowledge through summary, classification, and comparison of reviews of literature, and theoretical articles. Within the basic framework of this topic, we propose innovative solutions to future education in the time of post-pandemic. Results/conclusions: The COVID-19 crisis is continuously reshaping principal instructional leadership. How to effective learning for student in the post- pandemic environment becomes the important issue for the school leaders. In other words, modem computers and learning devices will be accessible to every student. Educators' main task is to help students develop key skills required to survive the society, be imaginative, creative with the world. In a word, school principal should promote capable of resilience and positive leadership, emphasize distance education and on-line teaching and autonomous use of technology.

Keywords: future education, principal leadership, post-pandemic

Forward

Social change is an on-going process; we find the evolution in almost every aspect—technology, materialistic development, value/virtue, social structure, etc. For example, technology makes it possible to perform everyday tasks faster and with less energy on our part. The internet of things (IoT) is a computing concept that describes the idea of everyday physical objects being connected to the interne. Artificial intelligence has already changed the trend of scientific research, enabling new creative and technological milestones. These social change can change attitudes, behaviors, laws, policies and institutions in order to reflect values of justice, diversity and opportunity.

The COVID-19 pandemic is a huge challenge to every education systems (Egan, 2020). On 11 March 2020, the World Health Organization (WHO) declared the COVID-19 a pandemic. This viewpoint offers guidance to school teachers, principal and officials on addressing the crisis management. Thousands of school closures are implemented the world over due to COVID-19. UNESCO (2020) reported that there has been 1, 576, 021, 818 affected learners out of 91.3% total

enrolled learners in 188 countries in all levels of learning. Its drastic impact on the global population and school students health care is swift and unpredictable. Educational systems are preparing for the post COVID-19 era. The larger number of learners required to stay at home due to the closure of their educational institution on all levels. Online learning is the only alternative as a solution to keep teaching and learning activities (Murphy, 2020；Zimmerman, 2002).

With the emergence of COVID-19, it has caused a downward spiral in the world economy and caused a huge impact on the higher education system. They must provide a new mechanism for learning—one that can adapt to the needs of a changing workforce and align closely with organizational objectives (Darling-Hammond, & Hyler, 2020). Future learning has been meant to cover a plethora of topics, in particular the subjects' impact on the trend in educational policies. Ideally, educators should assume an active role in training individuals who may contribute their expertise, originality and creativity to the development of the society to push the society forward (Rohrbeck, 2012). Futurism in education, with the future in mind, is intended to guide students towards identifying their selves and values in this on-changing society so that students may make necessary adaptations in accordance to the accelerating change (Wu, 2010).

Wells and Claxton (2002) indicated that education is about developing minds that are ready to thrive in the complex uncertainties of the postmodern world. Because elementary and middle school education, as the starting point and foundation for further and more advanced learning, plays a crucial role in social development (Beauchamp, Hulme, Clarke, Hamilton & Harvey, 2021; Elmer, Mepham, & Stadtfeld, 2020). There is still a lack of relevant research on primary and secondary school principal of future education. This paper will propose leadership strategy of future education in the post -epidemic era. First, it explores meaning of future education; Second, it reflects learner's important abilities for e-learning and virtual education. Third, it provides principal's leadership strategies of future education in the post -epidemic era. Finally, the paper argues students develop core competency connected with the world with the capacity to be aware of cultural differences in this global community.

Principal's leadership strategies of future education in the Post -epidemic Era

Leadership meant the leaders could influence the members' attitude and assumed significant change which constructed the members' vision on organization and commitment to targets and further led to organizational reform. The COVID-19 crisis is continuously reshaping principal instructional leadership. School leaders have to deal with school closures, often at very short notice, while also planning to move teaching online, and coping with the impact of the virus on staff and student welfare (Barth,1991). With the coming of post -epidemic era, the school needs more competitive advantages by acquiring the partners' resources, techniques and manpower. Darling-Hammond and Hyler (2020) pointed: increased digitalization will be part of the future school, and as teacher educators, it is our responsibility to prepare student teachers for the reality they will face. How to survive in the post -epidemic era environment becomes the important issue for the school managers. According to the above research conclusion, our major suggestion are below (Darling-Hammond, & Hyler, 2020; Fan, & Chen, 2016; Murphy, 2020; Wu, 2015; Wong, 2008):

First, this study apple the administrative leadership strategies to provide relate points:

(1) Have class and administrative information go viral

An instructor may construct Internet blackboard, cyber-classroom, classroom cyber-network through which he/she may guide students towards collecting the most up-to-date information related to a given lecture. Digitalization of administrative documents is an unavoidable trend. Personnel files, compensations/salaries, student files, etc. should all be filed through computers so that we can see a complete digitalization of the school.

(2) Put in practice knowledge management

Nowadays, the role of knowledge management within schools as an organizational context has received more attention due to its potential to encourage innovative practices and to avoid knowledge loss within school teams (Thambi & O'Toole, 2012). Administratively, through examination of operation process, the school is expected to do information transferring, making sure that information can be commonly shared. In order to make the information transferring flow more smoothly, school administrators are supposed to create a safe environment where subordinates may feel comfortable enough to speak freely and openly, and one way to do that is to allow conversations through workshops where subordinates may discuss questions and concerns on teaching and through study groups where subordinates may enrich their knowledge.

(3) Put together teachers' communities

In recent years, student learning has been in the center of efforts for educational reforms. For this reason, teachers' performing professional behaviours towards improving student learning is of great importance task. Community is a concept and practice that people discuss administrative strategies, share resources, and connect with each other (Darling-Hammond, & Hyler, 2020). The community is the common ground where all members can learn together through shared goals and civil critiques. Teacher professional learning community is a group of educators that meets regularly, shares expertise, discuss teaching and works collaboratively to improve teaching skills and the learning performance of students. Establishing learning communities where active research is conducted may be the best way to enrich one's knowledge (Barth, 1991；DuFour, 2004). The professional learning community is seen as a powerful staff development approach and a potent strategy for school change and improvement. Teachers may participate in professional collaborations more frequently, such as co-developing, co-learning and co-teaching.

(4) Promote global education

Today, we experience an era in which the dynamics of the world are constantly changing in many areas. It is an active learning process based on the international values of tolerance, solidarity, equality, justice, co-operation. With the fact that we are living in a global village, educators are to help students expand their horizon. Experience by foot is better than experience by book—school should create arenas where students may explore and interact with others. For that, school needs to arrange cross-nation exchange, trips abroad, collaboration with sister schools, international volunteer programs so that it can be better connected with institutions overseas.

(5) Build administrative team and stimulate members

Administrative employees are the backbone of most school organization. A well-trained administrative staff is equipped to handle a wide variety of workplace responsibilities. Administrative teams handle both inbound and outbound educational policies. Leadership emphasizes the encouragement and stimulation to the members. Stimulation means the leaders satisfy the members' needs by proper material or spiritual encouragement to increase work morale, fulfill individual potential and maintain the development of the organization and accomplish specific targets (Fan, & Chen, 2016).

Second, this study apple the Instructional leadership strategies to provide relate points:

(1) Encourage students to study on their own and to learn at their own pace

Students will have more opportunities to learn at different times in different places. eLearning tools facilitate opportunities for remote, self-paced learning. Adaptive learning is a methodology that breaks traditional models and allows employees to learn at their own paces (OECD, 2005). It has gained popularity with educational institutions, referred to as "adaptive teaching," where a teacher will gather information on individual students to learn what they need to do to improve their learning. MOOCs is the mainstream model for future learning. Learn on the Internet is a new learning and teaching web site. With good materials and internet system, students

will work independently and will persist at their work. School should teach students to take advantage of the Internet so that they may eventually learn on their own and eventually achieve the goal of life-long learning where learning takes place beyond classroom. Students will have more opportunities to learn at different times in different places. eLearning tools facilitate opportunities for remote, self-paced learning.

(2) Instigate critical thinking and creativity

Critical thinking is the intellectually disciplined process by observation, reflection, reasoning, and communication (OECD,2005). Creativity is the ability to transcend traditional ideas, rules, patterns. Teachers informed by future learning should espouse originality and pluralistic education. Excellence in critical thinking and creativity, however, must be systematically cultivated. In an open environment, they should encourage students to think critically and creatively.

(3) Implement action research

Action research is known as Participatory Action Research (PAR), community-based study, co-operative enquiry, action science and action learning. Meyer (2000) describes action research as a process that involves people and social situations that have the ultimate aim of changing an existing situation for the better action research may be a teacher's best approach to given problematic. Through immediate feedback on issues identified through observation, documenting, interview and self-reflection, a teacher may correct those issues on site and come up with solutions should the same issues come around a second time (Fan, & Chen, 2016).

(4) Pay attention to students' core competency

Educators who are building a professional learning community recognize that they must work together to achieve their collective purpose of learning for all. School must shift the way they view students and consider focusing on the individual and his or her unique learning needs. Core abilities is a good base when an economic collaboration and development organization wants to determine what abilities are better preferred than others; it also is the reference PISA checks out. Future learning is designed to help students achieve the ultimate goal of living a good life and implementing their duties as citizens through critical look on themselves, sound decision making and harmonious communication and cooperation with others.

(5) Implement the goal of life-long learning

The European Commission (2001) found that lifelong learning has "Four broad and mutually supporting objectives: personal fulfilment, active citizenship, social inclusion and employability/adaptability. Lifelong learning is the process of keeping your mind and body engaged—at any age—by actively pursuing knowledge and experience. Lifelong learning may be broadly defined as flexible learning that is pursued throughout life, it is a learning process that is flexible, diverse and available at different times and in different places.

Finally, this study apple the teacher teaching strategies to provide relate points:

(1) Personal learning:

Learner autonomy can be briefly defined as the set of skills that allows students to be willingly responsible for their own learning process (Benson & Voller, 1997). Students will learn with study tools that adapt to the capabilities of a student. Personalized learning or individualized instruction all refer to efforts to tailor education to meet the different needs of students. Autonomy makes learners become motivated and enthusiastic towards learning. It's a solution for keeping up with the rapid pace of knowledge change. Students will be positively reinforced during their individual learning processes.

(2) Project-based learning:

The concept of project-based learning (PBL) has garnered wide support among several K-12 education policy advocates and funders. It is a student-centered pedagogy that involves a

dynamic classroom. PBL is motivated by a "driving question" that students explore and answer through a project and continually revisit as they discover new information and concepts. When engaged in project-based learning, students will typically be assigned a project that require them to use diverse skills—such as communication, collaboration, critical thinking, complex problem solving, creativity, public speaking.

(3) Interdisciplinary fields teaching:

It is areas of study that involve the interaction of two or more academic discipline. Individuals demonstrate disciplinary understanding to create products, raise questions, solve problems. Interdisciplinary instruction entails the use and integration of methods and analytical frameworks from more than one academic discipline. Effective interdisciplinary learning is based upon experiences and outcomes drawn from different curriculum areas.

(4) Critical thinking instruction

So, what is creative learning – and why is it important? Throughout the 21 Century, critical thinking instruction was part of the mission of our educational system at all levels. The most fundamental reason for teaching critical thinking is that good thinking skills are essential for making appropriate decisions. Creative thinking can be stimulated both by an unstructured process such as brainstorming, lateral thinking.

(5) E-learning instruction

With the help of technology, the way knowledge is passed on will undergo significant shift towards online platforms. Students will have more opportunities to learn at different times in different places. E-Learning tools facilitate opportunities for remote, self-paced learning (Kidd & Murray, 2020). Principal must fully utilize technology and the internet as a means and infrastructure in implementing online learning.

References

Barth, R. (1991). Restructuring schools: Some questions for teachers and principals. *Phi Delta Kappan, 73*(2), 123–128.

Beauchamp, G., Hulme, M., Clarke, L., Hamilton, L., & Harvey, J. A. (2021). People miss people: A study of school leadership and management in the four nations of the United Kingdom in the early stage of the COVID-19 pandemic. *Educational Management Administration & Leadership, 49*(3), 375–392.

Benson, P., & Voller, P. (Eds.). (1997). *Autonomy and independence in language learning*. London, UK: Longman.

Darling-Hammond, L., & Hyler, M. E. (2020). Preparing educators for the time of COVID and beyond. *European Journal of Teacher Education, 43*(4), 457–465.

DuFour, R. (2004). What is a "professional learning community"? *Educational Leadership, 61*(8), 6-11.

Egan, S. (2020). *Play and learning in the early years survey: Impact of the COVID-19 crisis on children*. Limerick: Mary Immaculate College.

Elmer, T., Mepham, K., & Stadtfeld, C. (2020). *Students under lockdown: Assessing change in students' social networks and mental health during the COVID-19 crisis*. PsyArXiv Preprint.

European Commission. (2001). *Making a European area of lifelong learning a reality*. Brussels: European Commission.

Fan, C. W., & Chen, H. H. (2016). The main connotations and implementations for the future education. *Journal of Education Research, 270*, 68-84.

Kidd, W. & Murray, J. (2020). The Covid-19 pandemic and its effects on teacher education in England: how teacher educators moved practicum learning online. *European Journal of Teacher Education, 43*(4), 542–558.

Lauder, H. (2012). *Education: In search of a future*. London: Routledge.

Meyer, J. (2000). Using qualitative methods in health related action research. *British Medical Journal, 320*,178–181.

Murphy, M. P. A. (2020). COVID-19 and emergency eLearning: Consequences of the securitization of higher education for post-pandemic pedagogy. *Contemporary Security Policy, 41*(3), 492-505.

OECD. (2005). *The Definition and Selection of Key Competencies*. Paris: OECD.

Rohrbeck, R. (2012). Exploring value creation from corporate-foresight activities. *Futures, 44*, 440-452.

Thambi, M., & O'Toole, P. (2012). Applying a knowledge management taxonomy to secondary schools. *School Leadership & Management, 32*(1), 91-102.

UNESCO. (2020, December). *Global monitoring of school closures caused by COVID-19*. Retrieved from https://en.unesco.org/covid19/educationresponse

Wang, R. J. (2008, September). *College and university ranking of the new generation* Retrieved from http://epaper.heeact.edu.tw/archive/2008/09/01/723.aspx

Wells, G., & Claxton, G. (Eds.). (2002). *Learning for life in the 21st century: Sociocultural perspectives on the future of education*. Blackwell Publishing.

Wu, Y. M. (2010). Idealistic future education: Focus interviews. *Taichung University of Education Journal, 24*(2),1-21.

Zimmerman, B. J. (2002). Becoming a self-regulated learner: An overview. *Theory into practice, 41*(2), 64-70.

EXPERIENCES OF VOCATIONAL EDUCATION AT COMMUNITY LEARNING CENTERS IN CAMBODIA DURING COVID-19

Borey Bun and Choosak Ueangchokchai*

Department of Vocational Education, Faculty of Education
Kasetsart University, Bangkok, Thailand
*Corresponding Author Email: borey.b@ku.th, Tel. +66291924422

Abstract

This study is survey research aimed to explore the experiences of instructors and learners in vocational education at community learning centers in Cambodia during Covid-19. The sample of this study was instructors and learners who have been experienced and involved closely in their academic conduction. The research instrument was the in-depth interview form which five intellectual experts examined. Data were analyzed by component analysis. The findings of this study showed the following: Learning conduction of community learning centers in Cambodia during Covid-19 consists of 3 types: 1) Onsite learning management of vocational education, instructors had to limit the number of learners for each class. The learners had kept their distance during the educational performance. 2) Distant learning management of vocational education uses online learning platforms such as National Khmer TV, National Khmer Radio, MoEYS Learning Application, and some other social media to conduct education performance. The digital literacy and digital accessibilities were issued and faced for instructors and learners. 3) On-hand learning management of vocational education, instructors had to find the needs and conduct learning programs for specific targets. In contrast, learners had to integrate learning programs. This study offers several directions to profound implications for future vocational education studies in Cambodia. Furthermore, it may help solve the problem of academic conduction, thereby contributing experiences of facilitating and learning to support technical and strategical vocational education for the future development in Cambodia.

Keywords: Experiences of vocational education, community learning center in Cambodia, during covid-19

Introduction

In the context of Sustainable Development Goals, the royal government of Cambodia has a long-term vision to transform Cambodia from an upper-middle-income country by 2030 to a developed country by 2050. To achieve this, it must be fueled by labor forces who have strong technical skills and 21st-century skills to contribute to the effective workforce for every sector of social services (National Policies on Lifelong Learning, 2019). Therefore, Cambodia's vocational education at community learning centers (CLCs) is playing an essential role to build skilled workforces to respond to the needs of the labor market in the ASEAN region and beyond (Cambodia's Education Roadmap, 2019). Notably, CLCs implemented short-term courses of vocational education between 1-4 months, and focus on sectors such as agriculture, construction, motor repairs, and basic food processing (TVET Country Profiles: Cambodia, 2020). As result, vocation education has equally central roles to play in the development of technical skills for employability (Brewer & Comyn, 2015).

However, all educational institutions are currently running abnormally in the presence of Covid-19, which has hit almost every country. In this context of the global epidemic, Cambodia has also ordered lockdowns, including the closure of all educational institutions, such as community learning centers for an indefinite period of time. As an alternative, the government ordered the learning process in the classroom to be conducted from home. This is the impact of Covid-19 which has triggered all teachers and students to turn to online learning models (Syauqi et al, 2020). Therefore, distance learning is one of the main programs in responding, through the directive on distance learning, to a full list of platforms (both online and television) broadcasting. Moreover, the Ministry of Labour and Vocational Training has committed to designing the National Technical and Vocational Education and Training E-Learning platform to access online. This national system was created to address the distance learning or online teaching and learning of trainers, students during a global epidemic of Covid-19 as well as new learning avenues. This national system contains content, lessons, videos, tutorials, e-lessons, self-assessment, general knowledge, and other information related to technical and vocational education and training in Cambodia. more aimed to facilitate a broader and easier vocational education (Ministry of Labour and Vocational Training, 2021).

Challengingly, Cambodia's online learning is a new platform for vocational education which teachers and students have to face many difficulties such as digital literacy, the lack of accessibilities for information, communication, and technology, and especially internet connections. As a result, the low internet access and lack of equipment among poor students in rural areas as key impediments for this kind of learning platforms such as remote learning, online learning, or distance learning (ILO-UNESCO-WBG Joint Survey on Technical and Vocational Education and Training and Skills Development during the time of COVID-19, 2020). On the other hand, Amanda Miller (2020) had also defined the additional challenges faced by, Cambodia's vocational education including lack of financial resources and quality assurance, inexperienced trainers, and outdated training methods and equipment (Miller, 2020). Furthermore, many other students could not afford mobile phones or tablets to attend school online for classes of vocational education. And some couldn't even afford the internet connection to access the classes and many of those students effectively dropped out of school. Therefore, it's also expressed concerns that the current situation is likely to lead to increased drop-out rates as some students become demotivated at training online classes of vocational education in Cambodia. As worried, it will effectively risk the future development of Cambodia to achieve national Sustainable Development Goals.

In the period of lockdown, online learning was ordered to conduct the form of distance learning or learning from home in an undermined time. As illustrated, Cambodia's vocational education challenged and experienced a new trend of academic conduction, especially teachers and students of community learning centers have to face experiences of accessing online classes and digital learning platforms. As a result, teachers must switch to online teaching methods, while students must adapt to the online learning environment in a short time. However, vocational education profitably emphasizes not only the mastery of academic knowledge but also practical skills. Therefore, the learning process of vocational education emphasizes significantly that students have to enhance the effectiveness of practical skills and competencies through the development of manual work. Moreover, the domain of the learning process, especially in vocational education, must include cognitive (knowledge), psychomotor (skills), and affective (attitude) for an effective learning outcome of human capital invested in vocational education (Cambodia's Education Roadmap, 2019). However, online learning was experienced to face various challenges for vocational training and its conduction during Covid-19 in Cambodia. As result, it's experienced that the teacher was lower competencies of digital skills in providing

mentoring, response, feedback, discussion, and sharing information in online learning. On the other hand, it's also experienced for the students to face the difficulties of digital skills and efforts, errors of internet and digital accessibilities during classroom training which they must struggle in learning twice to compare with face-to-face classroom (Syauqi et al, 2020).

Research questions

The researcher would like to address the research question as follows:

1. How is learning management of vocational education at community learning centers in Cambodia during Covid-19?

2. What are the experiences of instructors and learners of vocational education at community learning centers in Cambodia during Covid-19?

Research Methodology

The qualitative research was designed to explore the experiences of vocational education within the Cambodian context during the Covid-19 pandemic with further details as follows:

Target Group

The purposive sampling was targeted a) the current instructors who conducted learning management with more than 3 years of experience in teaching and b) learners who enrolled and learned from the academic year of 2019 to 2021. Significantly, they were directly involved in teaching and learning at vocational education at community learning centers during the Covid-19 infections interrupted in Cambodia.

The Quality of Research Instrument

The research instrument was designed as an in-depth interview which was studied from reviewing literatures and related documents, including Cambodia Covid-19 Development Response Plan and Cambodia Education Response Plan to Covid-19 Pandemic (2020). Significant, the evaluation of the research instrument was checked by 5 experts for the research validity and consistency of the study.

Data Collection Methods

Firstly, the researcher had created a research instrument that was evaluated for the effective validity of this research objectives. Secondly, the researcher targeted and selected the research sample who were qualified and influenced for this study. Thirdly the researcher has coordinated to appoint the samples for interview. Finally, the researcher had processed online interviews by using the Zoom application and Google Meet. The duration of the interview was 60 minutes of limitation for each, the researcher had introduced himself, research objectives, and the importance and outcome of the research to interviewees.

Data analysis

The exploratory survey data were analyzed several times to follow up on a particular issue, clarify concepts or check the reliability of data from instructors and learners. The researcher conducted the cording for studying the components of learning management consisting of characteristics, the role of instructors, the role of learners, learning activities, learning resources and media, and evaluation.

Findings

The survey research has described the experiences of vocational education and its learning management. The research finding was shown that there were 3 types of learning management at community learning centers in Cambodia during Covid-19, consisting of 1) onsite learning management, 2) distant learning management and 3) on-hand learning management which was discussed as follows:

Table 1: Onsite learning management

Elements of Learning Management	Data Analysis
Characteristics	- The number of learners were limited, not more than 8 learners of each class and they had to keep distant during learning activities. It was not more than 90 minutes for each class. "…after Covid-19 pandemic infected, teaching activities were conducted for only 50 percent in classroom and other 50 percent is for learners to practice at home. And learners were increasingly absent and limited only 5 to 8 learners of each class during Covid-19..." (1st instructor was interviewed on January 17th, 2022) "…it was hard to learn during Covid-19, I had to keep distant and wear face mask every time and I felt worry to attend classroom which can be infected, we, everyone felt bored and lazy to learn because we had issued with losing jobs and earning during this time…" (1st learner was interviewed on January 18th, 2022)
Role of Instructor	The instructors had play essential important roles to access learning activities and to support learners as follows: Lecturing, instructors worked as team to give lecture at classroom and support learning activities. Monitoring, team of instructors had monitored and guided learners to respect the movement policies of Safe Operation of School (SOS), it was secured and safe for everyone of classroom. Empowering, learners were empowered and inspired to develop the capacities of self-directed learning and experimental learning which they can indecently learn at home after schooling. "…before instructors just only lectured and trained but now after Covid-19 we, instructors had to monitored to guarantee safety to communities and support to empower learners apply self-directed learning rather than classroom learning with instructors…" (1st instructor on January 17th, 2022) "…instructors had supported to train learners but we, ourselves, were issued to learn because we had no passion to learn, learners lose their incomes, occupational careers which could not be empower to learn…" (1st learner on January 18th, 2022)
Learning Activities	Lecture based which instructors gave lecture at classroom and the main contents of lessons were only lectured. Self-directed learning and experiential learning which instructors empowered learners to access their self-directed learning and learning from their life experiences after classroom lecturing. "…learning and teaching activities were changed, it was decreased for lectured based and teachers-centered but increase learning based and students-centered..." (1st instructor on January 17th, 2022) "...learners had to independently learn by themselves rather than learning with instructors, trainers had only explained purposes and main concepts of lessons but learners had to read for self -directed learning after classes…" (1st learner on January 18th, 2022)

Table 1 (cont.)

Elements of Learning Management	Data Analysis
Learning Resources / Media	Printed books were playing essential sources for learning and teaching during Covid-19 in Cambodia. Learning videos were sourced for learners to access self-directed learning and experiential learning at home. "...teachers and trainers take pictures of printed books and let learners read for more detials and then summary to sumbit for thier homework..." (1st instructor on January 17th, 2022) "…we learned from printed books and watched videos to understand more after school…" (1st learner on January 18th, 2022)
Evaluation	Teaching evaluation is checked by school administrators to define useful concepts for classroom activities. Learning evaluation is tested and scored at classroom but it's inspired to support more 25% of full score for learning tests. "…after Covid-19, teaching activities were not evaluated strictly, we worked as team to support learning together between teachers and administrators…" (1st instructor on January 17th, 2022) "…learners had to submit homework and test was easier than previous, however everyone of learners were supported to pass all test…" (1st learner on January 18th, 2022)

Table 2: Distant learning management

Elements of Learning Management	Data Analysis
Characteristics	Online classroom which instructors and learners accessed learning together but learning activities were decreased, it's one hour for each class. Digital learning applications and social media were designed for learners to access self-directed learning from videos of lessons, practicing homework and assignment. "…distant learning is new environments of learning in Cambodia, it has online and learning applications such as national TV and Radio, MoEYS E-learning, Facebook lived, Youtube etc.…" (2nd instructor on January 17th, 2022) "…learners faced online learning, they are digital literacy but videos of lessons and practices were helpful to learn at home…" (2nd learner on January 18th, 2022)

Table 2 (cont.)

Elements of Learning Management	Data Analysis
Role of Instructor	Monitoring, which instructors had to monitor learners to be able to access online learning classroom and lecturing was not applied but the learning discussion was applied for instructors' roles. Empowering was playing essential role for instructors to access distant learning; they had to inspire and empower learners to continue learning and learning from digital learning applications. "…the role of instructors played to monitor learners to access online learning and empower them to independently learn and not to drop out of school…" (2nd instructor on January 17th, 2022) "…my trainers and facilitators supported learning accessibilities and inspired us to continue learning…" (2nd learner on January 18th, 2022)
Learning Activities	Learning discussion between instructors and learners were active promoted for online learning. Question and answering were significantly applied for online learning activities. "…instructors supportively assigned questions and answers related to lessons for online learning…" (2nd instructor on January 17th, 2022) "…learners and instructors share and exchange idea and experiences to reflect learning concepts…" (2nd learner on January 18th, 2022)
Learning Resources / Media	Digital accessibilities and internet connection were significantly sourced for online learning environments. Printed books and videos of lessons were essential resources for distant learning. "…printed books and documents, digital devices and internet accessibilities were useful to access online and distant learning during Covid-19…" (2nd instructor on January 17th, 2022) "…we access internets and download videos to learn and printed books were to answer the question…" (2nd learner on January 18th, 2022)
Learning Resources / Media	Digital accessibilities and internet connection were significantly sourced for online learning environments. Printed books and videos of lessons were essential resources for distant learning. "…printed books and documents, digital devices and internet accessibilities were useful to access online and distant learning during Covid-19…" (2nd instructor on January 17th, 2022) "…we access internets and download videos to learn and printed books were to answer the question…" (2nd learner on January 18th, 2022)

Table 2 (cont.)

Evaluation	Teaching evaluation is checked from video recorded of online learning which was supported for team discussion. Learning evaluation is scored from learners' homework, and assignments there was no final test, but learners' attention was empowered to give extra score for their tests. "…teaching and learning evaluations were not regulated but it was motivated and supported to implement learning conduction during this Covid-19…" (2nd instructor on January 17th, 2022) "…just submit all homework assignments, no final test but have to attend online classroom regularly then instructors give score to pass…" (2nd learner on January 18th, 2022)

Table 3: On-hand learning management

Elements of Learning Management	Data Analysis
Characteristics	Learning group was proposed and targeted depending on maximizing the needs of local people. Time of learning is scheduled and limited for classroom learning but promote experimental learning from learners' practices. "… local people proposed learning program, then instructors and administrators designed organized learning materials and traveled to conduct learning activities in the rural area and local community…" 3rd instructor on January 17th, 2022 "…learning is based experiences and practices rather than theories or concepts understanding…" 3rd learner on January 18th, 2022
Role of Instructor	Traveling from one place to place, instructors had to travel from one place to place where learners were targeted and scheduled. Monitoring, which instructors monitored learning activities and protection and safety of Covid-19 infections during learning activities. Training and empowering, instructors had guided learning-based practices and experiences, and empower local learners commit apply learning concepts to occupational works or lives. "…had to travel from one village to one village which to teach targeted groups of local learners…" (3rd instructor on January 17th, 2022) "….my trainer tried to empower us to learn and reflect learning concepts from our experiences and practices…" (3rd learner on January 18th, 2022)

Table 3 (cont.)

Elements of Learning Management	Data Analysis
Learning Activities	Discussion is active promoted for on-hands learning in local villages, instructors share learning concepts while learners share their experiences. Practice is applied between academic concepts and practical experiences; learners had to learn and practice their learning projects to improve their learning outcome. "…learning from experiences were discussed for learners' practices which is significantly applied for classroom activities of on-hands learning…" (3rd instructor on January 17th, 2022) "…we discussed lesson and share experiences then trainers monitor us to practice and do projects of learning…" (3rd learner on January 18th, 2022)
Learning Resources / Media	Pictures and related concept written which were important for learners to understand concepts and to see the pictures of concept practiced. The learning materials of practicing were essentially sourced for leaners to do their leaning based projects and practices. "...pictured boards were important sources which learners can understand and see pictures to follow every step of practices their learning projects..." (3rd instructor on January 17th, 2022) "…trainers showed pictures and explained the learning concepts and processes of practice…" (3rd learner on January 18th, 2022)
Evaluation	Teaching was evaluated from learning activities and learners' practices toward learning goals. Learning was evaluated to score by checking their learning projects and practices of learning activities. "…learning activities were applied to learners' practices, it was important to empower learners to practice their experiences and project related to learning…" (3rd instructor on January 17th, 2022) "…learning and teaching were not about theories or academic knowledge, but it was learning based practiced and experiences…" (3rd learner on January 18th, 2022)

Conclusions, Discussions and Implications

The researcher was able to conclude and discuss to implicate the research findings of this study as follows:

The researcher would conclude that the first finding is onsite learning management of vocational education at community learning centers in Cambodia during Covid-19. Onsite learning management is conducted under policies of the Safe Operation of School (SOS) which instructors and administrators properly regulated to guarantee the safety of their learning community. Therefore, among of learners was limited, and learners had to keep their distance, keep their hands clean, wear face masks all the time and it is less than 90 minutes of class activities. However, adult education was essentially an effective method for vocational education learners who had to strengthen their active learning while teamwork or group discussion was not allowed during the Covid-19 pandemic in Cambodia. Therefore, adult education was a suitable method applied to instruct vocational education learners, because adults are self-directed and problem-centered than subject-centered, internally motivated to learn, and they are self-concept to understand the purpose of their learning (Finn, 2011). However, adult learners of vocational education at community

learning centers in Cambodia draw from life experiences, learning how to learn, real-life learning, and self-learning strategies (Bear, 2012). Significantly, instructors and administrators had to train learners how to improve the concepts of adult education, self-directed learning, or andragogy much more than the pedagogical approach.

The researcher defined that the second finding is distant learning management of vocational education at a community learning center in Cambodia during Covid-19. Distant learning management is designed and conducted to access online learning platforms in which instructors and learners attend online classroom learning through using digital devices and internet connections such as applications of Zoom, Google classroom, MoEYS E-learning, etc. Moreover, distant learning management is also conducted by using National TV and Radio channels which learners could access learning independently. According to Knowles defined self-directed learning is a "process in which individuals take the initiative, with or without the help from others, in diagnosing their learning needs, formulating goals, identifying human and material resources, choosing and implementing appropriate learning strategies, and evaluating learning outcomes (Knowles, 1989). However, digital literacy is still issued and information, communication technology is usually limited and supported to conduct distant learning or online learning in Cambodia. Therefore, it was argued that teachers need to model learning strategies such as predicting, questioning, clarifying, and summarizing so that students will develop the ability to use these strategies on their own (Many, et al., 1996). Notably, distant learning management is taken more time and further developed to access the modern learning platform. It needs financial and technical support from many shareholders locally and internationally to improve the distant learning platform in Cambodia.

The researcher concluded the final finding is on-hand learning management of vocational education at community learning centers in Cambodia during Covid-19. On-hand learning management is designed and implemented at local villages where local people proposed the needs of learning, and they could availably attend learning. The instructors had to travel to meet learners and conduct learning classrooms at local communities outside of community learning centers. On the other hand, learners had to access learning by doing and practicing for their classroom activities which is a kind of collaborative and social learning methodology that allows learners to develop the feelings of group belonging, cohesion, and membership so important to create more responsible and engaged citizens who will develop sustainable social communities (Wales, 2020). Indeed, the roles of the teacher and learners are not traditional at all, and participants are challenged to translate theoretical course content into real-world applications, thus bringing the subject closer to professional practice. Further, this will allow the development of skills that will enable the construction of a more sustainable society (Granado-Alcón, et al., 2020). However, the motivation to learn is still issued for learners and teachers because their occupational and life opportunities, especially incomes were limited and challenged for them during Covid-19.

Recommendations

This study has contributed to the understanding of experiences of vocational education at community learning centers in Cambodia during Covid-19. As the study progressed, a few areas surfaced as suggested areas for future studies. The recommendations are as follows:

1. This study was on instructors and learners of vocational education which was applied to underpinning the Theories of Adult Education. It is reasonably recommended to conduct a similar study, in a few other institutions to examine if these findings still reflect the future study.

2. The finding of this study has shown that digital devices and internet connections were playing an important role to conduct in academic performance in the new era. It is reasoned to

recommend enhancing the competencies of digital skills among instructors, learners, and related shareholders.

3. The experiences of vocational education at community learning centers in Cambodia were recommended to apply both academic knowledge and practical knowledge to conduct learning for local people.

References

Asia Development Bank. (2018, December). *Cambodia's new technical and vocational education and training policies*. Retrieved from https://www.adb.org

Donald Finn. (2011). Principles of Adult Learning: An ESL Context. *Journal of Adult Education, 40*(1), 34-39.

Ghost Bear, A. A. (2012). Technology, Learning, and Individual Differences. *Journal of Adult Education, 14*(11), 27-42.

Granado-Alcón, M.C., & Gutiérrez, E.H., (2020). Project-Based Learning and the Acquisition of Competencies and Knowledge Transfer in Higher Education. *Sustainability, 12*(23), 10062. doi: 10.3390/su122310062

Knowles, M.S. (1989). *The making of an adult educator*. San Francisco: Jossey-Bass.

Royal Government of Cambodia. (2019). *National policy on lifelong learning*. Phnom Penh: Royal Government of Cambodia.

Luara, B., & Paul C., (2015). Integrating core work skills into TVET systems: Six country case studies. *International Labor Organization, 13*(2), 6-8.

Many, J.E., Fyfe, R., Lewis, G. & Mitchell, E. (1996). Traversing the Topical Landscape: Exploring Students' Self-Directed Reading. *Reading Research Quarterly,31*(1), 12-35.

Ministry of Education, Youth and Sport (2017). *National Technical Vocational Education and Training Policies 2017-2025*. Phnom Penh: Royal Government of Cambodia.

Ministry of Education, Youth and Sports. (2020). Cambodia Education Response Plan To COVID-19 Pandemic. Phnom Penh: Royal Government of Cambodia.

Shdaifat, K., Khateeb, A. (2020). The Reality of Using E-learning Applications in Vocational Education Courses During COVID 19 Crisis from the Vocational Education Teachers' Perception in Jordan. *International Education Studies, 13*(10), 13-15.

Syauqi, K., Mandi, S., & Triyono M. B., (2020). Students' perception toward vocational online learning during the COVID-19 pandemic. *International Journal of Evaluation and Research in Education, 9*(4), 881-886.

UNESCO. (2020, November). *TVET country profile: Cambodia 2020*. Retrieved from https://unesdoc.unesco.org/ark:/48223/pf0000373699?locale=en

Wales, A.E.J. (2015). *In Education and Learning for Socio-Ecological Sustainability in the Anthropocene*. Wageningen, the Netherlands: Wageningen University.

HIGHER EDUCATION TEACHER TRAINING INSTITUTIONS HOW TO SCREEN OUT THE QUALITY OF TEACHING AND PARACTICE OF FUTURE TEACHER

Haung Fong-Rong

PhD Student, Department of Educational Administration,
National Dong Hwa University, Taipei, Taiwan
E-mail: 810988123@gms.ndhu.edu.tw, Tel. +886915176903

Abstract

As the saying goes: "Good assistants help the country, good teachers cultivate talents", in the early stage of training teachers and students, teaching and practical courses are the key elements in the initial stage. Teaching and practice are an important part of teacher and student development in the curriculum and professional development. The subject of this research is to use domestic teacher training institutions as the screening criteria, aiming to understand the screening mechanism of domestic teacher training institutions and how to select suitable future teachers for the current teacher training institutions. The results of the study found that domestic teacher training institutions have established teacher selection practices, with written tests, interviews and education-related tests as the main content of cognitive tests. The study found that teachers' institutions felt they were indeed "inadequate" in selecting the right teachers. Through interviews and research, it is found that there is still room for improvement in the selection mechanism of teacher training institutions. According to the research results, the following suggestions are put forward: 1. The organizational responsibilities of the unit are assigned by full-time professionals; 2. The reference basis for the implementation of the self-adaptive assessment tool; 3. Teaching teachers' courses are suitable for educational scenarios. 4. Teacher training institutions set up professional teachers. Teacher training institutions are a responsible window, many affairs are related to higher education, and higher education is on the side of the university, the actual implementation level is two parallel, the two are in the same institution, and sometimes there is a lack of superiors to issue instructions. Integration, without first coordination, even the primary and secondary schools managed by the State Education Bureau have the same situation. The school integrates the opinions of higher education and teacher training institutions through school affairs research, assists students in consulting on work values and interests, helps students explore suitable careers, and enhances self-awareness. For teachers and students, if they can decide to have clear screening criteria before admission, they can directly exclude unqualified applicants and attract high-quality talents; the most substantial significance is that high-standard selection indicators for teachers and students ensure that Teachers and students can be compared with a group of students of the same level and ambition. Partner learning and cooperation can indirectly improve the status of teachers and ensure the implementation of educational policies and the quality of teachers. (Organization for Economic Cooperation and Development [OECD], 2011)

Keywords: Teacher education, future teachers, quality

Introduction

As the saying goes: "Good politicians help the country, good teachers cultivate talents", in the early stage of training teachers and students, teaching and practical courses play a key role in the early stage. Teaching and practice are important components that teachers and students develop in curriculum and professional development. However, the new situation brought about by the epidemic has tested teacher training institutions. In doing so, it plays a key role in helping teachers and students meet needs and challenge the future. When evaluating the teaching profession and practical ability of teacher colleges, the key is the relationship between theoretical knowledge and practical knowledge in problematization, planning, experimentation, and coordination. It is expected to promote the continuous excellence of teachers from a practical perspective. In 2001, the 8th "World Teachers' Day" organized by the United Nations Educational, Scientific and Cultural Organization (UNESCO) also clearly and explicitly mentioned that "there are quality teachers and only quality education". (Qualified teachers in quality education) (quoted from Ye Wanling, 2015: 1); it can be seen that every advanced country attaches great importance to the training and quality maintenance of school teachers at all levels in order to improve the quality of education in the country.

Throughout the world's social and cultural changes and teacher reforms, all countries are sparing no effort to improve the "quality" of human resources, national competitiveness and soft power, and are committed to improving the essence of education. Education has basically returned to the beginning of "people" and improving the teaching and practice of future teachers is the future reform direction of teacher training systems in various countries.

Research questions

In the future, teachers should have good quality in teaching and practice? Before that, teachers' institutions were the gatekeepers. How to do a good job in the basic project of national education construction is even more important for the selection system of teachers and students. Teachers are higher education teacher training institutions. Educational administrative institutions must think deeply. The following is an outline of the topics for this interview:

1. What kind of screening system (tool) do you think can be used to ensure the attitude and responsibility of teachers towards this career? (As far as university teacher education institutions are cultivating teachers)?
2. Do the education and training institutions think that they are excellent teachers recommended by you through written tests and interviews?
3. Do you think you will be a future teacher after completing the trainee teacher qualification course and half a year's experience?
4. Do you think the increase in the number of "practice" courses in teacher training courses will help to screen out good teachers? If so, please explain. (Please write your thoughts or suggestions)
5. Do you think teacher education institutions and the implementation of nurturing practices can improve the quality? If there is a reason, why not? (Please write your suggestion or opinion?)
6. Do you think the current evaluation institutions can effectively evaluate high-quality training centers? If not, why? (Please write your suggestion or suggestion?)

Research Methodology

This research adopts qualitative research and uses semi-structured interviews to understand the high-risk control mechanism of higher education institutions in cultivating future teacher teaching, and the high-risk control mechanism before selection. the mechanism that the device has. The following describes the method of this research from the selection of

research cases and methods, data collection, data coding and analysis, research reliability and ethics.

Selection of interview objects and methods

The study wanted an objective understanding, so choosing a Northern National University in Taipei City was a problem. It is an educational university specializing in training primary school teachers and one of the national universities of the East. A public research university located in the Eastern Rift Valley. It is the first national university after Taiwan's democratization. Known for his open-minded style of study, he studied at 1 National Higher Vocational College, a national technical high school located in Hualien County, Taiwan. The president also serves as the president of Changhua Normal University.

In this study, the interview method and the method of teachers in different regions are the important responsibility of teachers in the whole country, and the selection of teachers is the responsibility of the country. Structured training, with structure as the unit, supports the suggestion of colleges and universities to cultivate future teaching and practical ability, but there is a uniform law in teacher training. However, there are also dissertation studies discussing the results of policy development, evaluation, management, and organizational analysis implemented by faculty funding agencies. It adjusts the organization within the appropriate range. If you want to understand the actual situation, you can choose the research method of teacher professional training teachers and students, and normal colleges do it on the spot. (Lincoln and Cuba, 1985).

Data Collection

The author used semi-structured interviews in this study. The content of the interview focuses on the teaching and practice of teachers and students. First, it is discussed whether the written test and interview that have been passed for a long time cannot be deleted or changed, and whether there are other possibilities to make adjustments; secondly, teachers and students are adding practical courses through the curriculum arrangement. The course provides teachers and students with sufficient practical ability. The interviewees included 3 professors and 1 principal. The data of the interviewees are shown in Table 1. The interview method is carried out one-on-one, so that the interviewees can go from the shallow to the deep, and directly analyze the problems faced by the teaching institutions. Each interview will convert the verbatim script, continue to screen and compare, further implement classification and coding operations, and cross-analyze and review the interview data, and then focus on the integration of the data like a funnel, and then put forward opinions and suggestions.

Table 1. Summary table of beneficiary codes

編碼	訪談對象	日期	時間
L-20220113-訪	教授	2022-01-13	60 分鐘
P-20220117-訪	教授	2020-01-17	60 分鐘
S-20220117-訪	教授	2020-01-17	60 分鐘
F-20220121-訪	校長	2020-01-21	60 分鐘

Data coding and analysis

In terms of data collation, interviews were first converted into verbatim transcripts, followed by numbering and coding of interview data, observations, and documents. The numbering principle is "code-interview date-interview". Professor Q conducted an interview on January 17, 2022. Encoding refers to assigning a concept to some textual data. Up to the

text of qualitative research proposed by Denzin (1994) must be interpreted by the researcher to be meaningful. Document data collection and analysis.

Research Integrity and Ethics

In this study, in order to determine the reliability of the study, the study process was detailed so that the study steps could be replicated and examined. Triangulation, etc. In addition, study results were sent to interviewers for assistance in cross-checking, faithfully expressing their original intent. This research truthfully informs the respondents of the research purpose, seeks their consent before the interview, and respects their willingness to be interviewed and recorded. Posts and replies are anonymous, and the collected files are integrated into article analysis to protect individual schools. In addition, after completing the first draft of the study, participants were allowed to review and read information that was confirmed to be publicly available.

Research Limitations, Suggestions for Future Research

This research takes the choice of teachers and students as the research direction. Due to time and space constraints, interviewees for this study included professors, principals, and former teacher center leaders, as the interviews were conducted as part of the analysis. The number of copies is still insufficient to conduct comprehensive interviews in schools with teacher training centers in the northern, central, southern and eastern regions such as normal schools, national universities, and private universities. Therefore, in future follow-up studies, it is hoped that the number of interviews can be adjusted. The development of teacher training is currently inconclusive, allowing future research findings to be more accurate.

Findings

In recent years, there has been a significant increase and emphasis on improving the quality of teachers' teaching in the world, and the teaching style and practical courses have changed under the impact of the epidemic. Focusing on teaching and practice, in order to ensure the quality policy of teachers in the future, the first is from the selection system, the establishment of high-standard entry conditions, and the selection of applicants with high performance; Institutional quality and curriculum content plan; finally, after obtaining the qualifications of the funded training institutions, they will enter the teaching site after verification. In the strict selection system, how to ensure the quality arrangement of teacher education in the future? Continue to bring upward energy to the teacher training system.
Establish an adaptive psychological testing mechanism other than
the written test

There are few researches on teacher-student selection topics in our country, but there are many researches and discussions. Gao Xunfang (2002) conducted an empirical study on pre-service teacher selection and teacher training institutions in 48 primary and secondary education programs in China. Its research found that due to the limited number of students enrolled in educational programs, schools were gradually weeded out of a large number of applicants and selected those who met the admission threshold; the written test of general education was answered with standard-answer multiple-choice questions. The ratings seem to be fairly fair. Through this written test, only teachers and students who have the ability to recite fixed answers can only be selected, and talents with teacher characteristics cannot be selected.

Written test and oral test, I think this part of the oral test is very important. Another important thing that I think is the student's tension is that the child is very willing to do it during the course. Apart from the exam, the attitude of the course itself is also a way of judgment. This is the part of the university. Don't go to the teacher screening test. You must

select teachers through oral and screening tests. First, the teaching inspection is in the teaching screening. I think there is a premise. can be prepared. (L-20220113-visit)

It is absolutely not enough. It is very difficult to select a so-called good teacher only through written test and interview.

The way to judge whether a student is suitable to serve as a teacher is unreasonable. There is a way to operate, using educational psychology to test, but this operation needs to be very careful. (S-20220117-visit)

As mentioned above, "a suitable teacher" will not be determined by a written test or a few minutes' test, and a future teacher will have the teaching quality and practice of the teacher. The teacher training center is the first level of checkpoint before the future teacher enters the education scene. , entering the training will have the opportunity to realize the practice. In 2014, the Ministry of Education commissioned the National Taiwan Normal University to develop a method for measuring the potential characteristics of teachers and students, to understand whether students who want to take elective education programs have appropriate teacher characteristics, and to use multiple evaluation methods to improve rigorous teacher training. screening mechanism (Ministry of Education, 2014).

The transformation of teacher institutions is supplemented by the empowerment of local teachers. The development of Taiwan's teacher training system has a history of more than 100 years since 1896. The earliest can be traced back to the Japanese occupation period, when the Governor's Office set up the National Language School Normal Department to train the teachers of the National Language Institute. At that time, the Japanese normal students were recruited first. In the reform of teacher training after the Restoration, it is obvious that there is no turning back from the domestic one-dollar to more openness. In the teacher organization, facing the future training, the unit headed by the task is bound to move towards full-time dedicated professional work.

Ideally, of course, it should be changed, but in reality, it is necessary to find an appropriate time to make changes. This has many different meanings. Why? In terms of substantive level, it should be that all study groups will be changed from one group to one group, and there is no need to make changes in all programs. The relevant learning programs are being integrated into one group. I am talking about the ideal level now. The internship group is one group, and the special responsibility is to manage the internship. There is a group that is doing the so-called empowerment of the current teachers, and the local education counseling of the current teachers. Is it just three groups, and then another group, the general business group, what about those things? Items temporarily assigned by the ministry, such as evaluations to be done by the center, there should be a group to manage these matters, and admissions-related matters can be found in the general business group. (P-20220117-Interview)

It is obvious that the organizational structure of the teacher center itself needs to be adjusted in a timely manner to face the heavy responsibility of cultivating students in the future. If there will be some changes in the selection method, it can handle one of the center selection work professionally and effectively, and at the same time, it is also responsible for the education of local incumbent teachers. With the leader of counseling, it is enough to see the adjustment of the teacher center, and it is not urgent to delay.

References

Akyeampong, K., Lussier, K., Pryor, J., & Westbrook, J. (2013). Improving teaching and learning of basic math and reading in Africa: Does teacher preparation count? *International Journal of Educational Development, 33*(3), 272-282. doi: 10.1016/j.ijedudev.2012.09.006

IDENTIFYING SOCIAL JUSTICE ISSUES THROUGH PRESCHOOL TEACHER'S PERCEIVED STRESS ON ONLINE SCHOOLING DURING THE COVID-19 BREAKOUT IN INDONESIA

Amsalt Adya Kusumah[1] and Te-Sheng Chang[2]*

[1] Universitas Pendidikan Indonesia/ Early Childhood Education, Bandung, Indonesia
[2] National Dong Hwa University/ Education and Human Potentials Development, Hualien, Taiwan
*Corresponding Author E-mail: amsalt@upi.edu

Abstract

Teacher burnout and stress are associated to a number of disadvantages on teachers, students, and the educational system (Herman, Reinke, & Eddy, 2020), and understanding how teacher stress can inform prevention and intervention efforts to support teachers (Herman, Hickmon-Rosa, Reinke, 2018). This study was built on the assumption that preschool teachers have been greatly impacted by the educational policies during the COVID-19 outbreak in Indonesia compared to educators from other levels. This condition could lead to the finding of emerging social justice issues among educators from different levels. Thus, the purpose of this study is to identify emerging social justice issues among educators from different levels as a result of the typical stressors experienced by teachers during online schooling. To do that, research questions were developed, which include [1] what makes teachers stressed during online schooling; [2] how to measure teachers online schooling perceived stress; and [3] how the stress level among teachers from different grade levels might differ. Through participative observation, group discussion, and quantitative approach scale piloting ($N = 150$, $r > 0.60$), two dimensions of stressors were identified as quality teaching pressure and conflict of interest on a nine-item scale. The sample for this study is represented by 470 Indonesian teachers. The collected data was then analysed using SPSS (the Kruskal-Wallis H test). The key findings of this study were that early childhood education teachers perceived the highest stress levels in both stressor dimensions. Conflicts of interest contributed more to early childhood teachers' high stress levels.

Keywords: social justice; early childhood teachers; covid-19; SDGs; educational policy.

Background and objectives

The declaration of Covid-19 breakout as public health emergency of international concern by the World Health Organization (2020a) has affected educational systems worldwide and Indonesia was no exception. With the issuance of circular letter Nomor 4 Tahun 2020 tentang Pelaksanaan Kebijakan Pendidikan dalam Masa Darurat Penyebaran Coronavirus Disease (Covid-19) by the Minister of Education and Culture of the Republic of Indonesia, Nadiem Anwar Makarim on March 24, 2020, the face of Indonesia's education system was facing a drastic change from the conventional mode to online mode of education. This fact has created additional stress for teachers due to the fact that most teachers are not ready for the online teaching approach in many ways and the chances of interaction are low for a variety of reasons, this creates a sense of isolation which negatively affects teachers' well-being (Satriana

et al., 2022). Not to mention the additional workload which leads to stress, and this makes online classes the leading cause of occupational stress during the COVID-19 school closure for teachers (Chitra, 2020).

Teacher's burnout and stress are associated with a number of disadvantages for teachers, students, and the educational system (Herman, Reinke, & Eddy, 2020), and understanding how teacher stress can inform prevention and intervention efforts to support teachers (Herman, Hickmon-Rosa, Reinke, 2018). According to a study done by Alves et al. (2020), the COVID-19 outbreak has impacted teachers' well-being in their work. Nonetheless, even before the pandemic, teachers were troubled by stress (Arens & Morin, 2016; Bhatti et al., 2011; Grayson & Alvarez, 2008; Hoglund, Klingle, & Hosan, 2015; Kyriacou, 2001; Nilufar et al., 2009; Oginska-Bulik, 2006; Ramberg et.al, 2020). Despite its reputation as a noble occupation, teaching has a long history of dissatisfaction and dilemma (Alves et al., 2020).

This research was built based on the assumption that educational practices during the COVID-19 outbreak in Indonesia had a greater impact on preschool teachers than on educators at other levels. This assumption is based on preschool teachers' discourse, which can be divided into two categories. First, low student engagement, which leads to increased workload and time-consuming professional development; and second, low student enrolment, which leads to layoffs, pay cuts, school bankruptcy, and additional workload to promote the school. Most of this condition is correlated with government policy in excluding preschool as mandatory and a lack of policy that supports the preschool system during the school closure.

This condition could lead to the discovery of emerging social justice issues experienced by preschool teachers, as social justice includes a vision of a society in which resource distribution is equitable and all members are physically and psychologically safe and secure (Pillay, 2020). Thus, the purpose of this study is to identify emerging social justice issues among educators from different levels as a result of the typical stressors experienced by preschool teachers. To do that, research questions were developed, which include (1) what makes teachers stressed during online schooling; (2) how to measure a teacher's online schooling perceived stress; and (3) how the stress level among teachers from different grade levels differs.

Theoretical framework

The concept of stress

Stress has been characterized as a state that happens when people are confronted with expectations from the environment that require them to adjust in some way (Veitch & Arkkelin, 1995). People must adjust to changes as a result of natural and technical events such as natural disasters, major personal life events, being unemployed or daily hassles that affect a person's daily functioning (Bhat, 2015). Covid-19 breakout can be seen as a type of stressor consisting of sudden, unique, and powerful single life-events requiring major adaptive responses from the population groups sharing the experience. Lazarus and Cohen (1977) identify this event as cataclysmic phenomena, these kinds of events, affecting large numbers of people, are usually outside of the control of individuals or groups, and are assumed to be more-or-less universally stressful.

Stressor in online schooling / Quality online teaching pressure

According to preschool teachers, one of the most difficult challenges of educating young children online is keeping the students sitting and paying attention to the screen. Preschoolers frequently experience attention issues. As many as 40% of children demonstrate adequate attention issues by the age of four, causing anxiety among parents and preschool teachers (Palfrey, Levine, Walker, & Sullivan, 1985). How can teachers instill knowledge and

skills in students when they are unable to see them on the screen? As a way out, teachers have been encouraged or even demanded to be able to construct an engaging online learning environment to captivate students' attention in order to overcome this issue (Suhendro, 2020). To do that, teachers need to overcome an uncertain future, information overload, and technological changes to fit the job responsibility, which might be sources of stress (Jahanzeb, 2010; Holmlund-Rytkönen and Strandvik, 2005).

Conflict of interest

According to Badan Pusat Statistik Indonesia (2020), the National Early Childhood Education gross enrolment rate for children aged 3-6 years who attend preschool before the pandemic only reached 41.18 % out of the 19,118,894. In addition, according to the Director General of Early Childhood Education at the Ministry of Education and Culture, Jumeri, the number of preschool participants in the beginning of the pandemic fell by around 600 thousand children. The decrease in the number of students also causes a decrease in the amount of income earned by schools to finance school operations and also to pay teachers. Lack of school income means that schools have to cut salaries or lay off their teachers (Dermawan, 2021, August, 23). In some cases, schools even had to close. Since the COVID-19 epidemic, teachers have had to attend to a new form of demand from school stakeholders. They are unable to spend time with their families, and they are unable to spend time with themselves due to social restrictions. Not to mention the pressure to do extra work for the school in order to keep their source of income.

Social injustice

It is difficult to universally define social justice because of variations in personal experiences (Todd & Rufa, 2013). However, in order to give a sense of direction for this study, a definition was built. Social justice includes a vision of a society in which the distribution of resources is equitable and all members are physically and psychologically safe and secure (Bell, 1997) through the full and equal participation of all groups in a society that is mutually shaped to meet their needs. (Schulze et al., 2017). Related to social justice, Prilleltensky (2013) highlights retributive procedural justice in relation to social justice, which refers to having a say and the ability to participate in procedures and decisions that affect our lives, or, in other words, fairness within the legal system. Without proper policy for the physical and mental security of preschool teachers, it is possible this condition might create an issue of social justice among teachers from different grade levels, and this COVID-19 epidemic works as a reflection to uncover that issue.

Methodology

The design of the study is exploratory design which refers to analysis of qualitative and quantitative data in a sequential order (Srnka & Koeszegi, 2007). The sample for this study is represented by 470 Indonesian teachers from different grade levels (preschool N=135, elementary school N=151, junior high school N=94, and senior high school N=90). Perceived stress was measured using Teacher's Online Schooling Perceived Stress Scale (two dimensions: quality online teaching pressure – conflict of interest), nine item, pilot study N=150, $r > 0.81$). The collected data was then analysed using SPSS (the Kruskal-Wallis H test), and the result was compared among different grade levels to see which grade level teachers perceived the most stress and how significantly they differed from the other grade level teachers.

Result, discussion, conclusion and recommendation

Table 1: Teacher's online schooling perceived stress rank

Grade level	Mean rank	
	Dimension 1 Quality online teaching pressure	Dimension 2 Conflict of interest
Preschool	255,15	284,87
Elementary school	246,23	218,82
Junior high school	212,74	210,79
Senior high school	211,80	215,24

Notes: Kruskal-Wallis H test. N=470.

Based on the analysis, preschool teachers' perceived stress scores had the highest mean rank in both dimensions. This result showed us that compared to other grade-level teachers, preschool teachers perceived more stress in both dimensions. This condition shows us that preschool teachers' well-being is not yet safe and secure. Looking at dimension 1 mean rank, the gap score among grade levels is relatively small. Meaning, that the demand for quality online teaching is relatively experienced by teachers at all grade levels and that all teachers have been asked to create an engaging online learning environment to capture students' attention (Suhendro, 2020). Preschool teachers participating in this study have reported that they feel pressured because the parents and administrators can now easily evaluate the learning process in real time. Teachers need parents to be able to assist their children during online lessons, and it's already becoming a burden for parents. Not to mention, if their child seemed not interested in the lesson, parents could observe everything and immediately file a complaint to the school's administrator questioning the teacher's ability to teach online. Moreover, preschool teachers were also expected to be able to teach in an interesting way to keep the children entertained and engaged in a very short time, but at the end of the day, the expectation was not only about interesting and engaging online lessons, but also mastering all the common core. Creating an engaging online lesson for young children is quite a new practice in Indonesia, and incorporating digital technology into teaching and learning is not a common practice in most preschools. This condition pushed preschool teachers to learn many things that were connected to digital technology, which was not easy for some teachers, especially those from the older generation. To make this approach possible, engaging and give result, teachers need to overcome an uncertain future, information overload, and technological changes to fit the job responsibilities, which might be sources of stress (Jahanzeb, 2010; Holmlund-Rytkönen and Strandvik, 2005).

On the other hand, dimension 2 contributed more stress to preschool teachers. The gap in dimension 2 between preschool teachers and other grade-level teachers is significantly higher than the gap in dimension 1. Dimension 2 is related to stress caused by a conflict of interest due to low student enrolment. The decrease in the number of students causes a decrease in the amount of income earned by schools to finance school operations and also pay teachers. Lack of school income means that schools have to cut salaries or lay off their teachers (Dermawan, 2021, August 23). In some cases, schools even had to close. Since the COVID-19 epidemic, teachers have had to attend to a new form of demand from school stakeholders. Preschool teachers participating in this study have reported that they feel pressured by the fact that they need to do extra work for the school in order to keep their source of income. Extra work means that they are given many additional tasks, such as creating additional free trial classes to attract more new students, being responsible for creating social media content as a

part of the school's marketing effort, and giving more extra services to satisfied parents. Teachers even feel more pressured when all the extra work is linked with the understanding that giving more for the benefits of stakeholders means teaching with heart, which sometimes puts teachers in a dilemmatic situation that can create guilt and judgement. The participants also reported that it is difficult to practice self-care because of all the pressure, additional responsibilities, and the vacation restriction. Which resulting preschool teachers perceived a higher stress in dimension 2. Most of this condition is correlated with government policy in excluding preschool as mandatory and a lack of policy that supports the preschool system during the school closure.

Conclusion and recommendation

The result of the study was in line with the assumption that educational practices during the COVID-19 outbreak in Indonesia had a greater impact on preschool teachers than on educators at other levels. Therefore, we can conclude that through this study, an emerging social justice issue has been identified. In order to achieve social justice in terms of the vision of a society in which the distribution of resources is equitable and all members are physically and psychologically safe and secure (Bell, 1997), recommendations must be made to promote social justice for preschool teachers. This study recommends that Indonesia's government look into the urgency of making preschool age gradually mandatory and creating a policy that can support preschool teachers' income in relation to low student enrolment. Hopefully, this study and recommendation can support not only the fairness in Indonesia's legal system, but also SDGs 8 on decent work and economic growth, SDGs 10 on reducing inequalities, and SDGs 4 on quality education.

Limitation and further study

The empirical results reported herein should be considered in the light of some limitations. It lacks previous research studies on the topic, particularly seeing stress in social justice perspectives, which may affect the depth of the analysis. A systematic review on the topic of stress from the standpoint of social justice will be useful for future research. Further study on perceived stress comparison between when the online teaching starts and after two years of online teaching, also how do preschool teachers cope with the stress.

References

Arens, A. K., & Morin, A. J. (2016). Relations between teachers' emotional exhaustion and students' educational outcomes. *Journal of Educational Psychology, 108*(6), 800–813.

Badan Pusat Stasitik. (2021). *Angka Partisipasi Kasar (APK) Anak Yang Mengikuti Pendidikan Anak Usia Dini (PAUD) Menurut Jenis Kelamin 2019-202*. Retrieved from https://www.bps.go.id/indicator/28/1441/1/angka-partisipasi-kasar-apk-anak-yang-mengikuti-pendidikan-anak-usia-dini-paud-menurut-jenis-kelamin.html

Bhat, R. H. (2015). Environmental stressors and its impact on human being. *International Journal of Humanities and Social Sciences, 5*(1), 37-40.

Bhatti, N., Hashimi, M. A., Raza, S. A., Shaikh, F. M., & Shafiq, K. (2011). Empirical Analysis of Job Stress on Job Satisfaction among University Teachers in Pakistan, *International Business Research, 4*(3), 264-270.

Chitra, A. (2020). Study on Impact of Occupational Stress on Job Satisfaction of Teachers during Covid-19 Pandemic Period. *Global Development Review, 4*(2), 52-62.

Dermawan, S.M. (2021, August). *Republika.co.id. PAUD, Yang Bertahan dan Terempas Selama Pandemi.* Retrieved from https://www.republika.co.id/berita/qy9vzu483/paud-yang-bertahan-dan-terempas-selama-pandemi

Grayson, J. L., & Alvarez, H. K. (2008). School climate factors relating to teacher burnout: A mediator model. *Teaching and Teacher Education, 24*(5), 1349–1363.

Herman, K. C., Hickmon-Rosa, J. E., & Reinke, W. M. (2018). Empirically derived profiles of teacher stress, burnout, self-efficacy, and coping and associated student outcomes. *Journal of Positive Behavior Interventions, 20*(2), 90-100.

Herman, K. C., Reinke, W. M., & Eddy, C. L. (2020). Advances in understanding and intervening in teacher stress and coping: The Coping-Competence-Context Theory. *Journal of school psychology, 78*, 69-74.

Hoglund, W. L., Klingle, K. E., & Hosan, N. E. (2015). Classroom risks and resources: Teacher burnout, classroom quality and children's adjustment in high needs elementary schools. *Journal of School Psychology, 53*(5), 337–357.

Holmlund-Rytkonen, M. & Strandvik, T. (2005). Stress in the business relationship. *Journal of Business & Industrial Marketing, 20*(1), 12-22.

Jayawardana, H. B., Zahro, I., & Pertiwi, E. P. (2020). Identifikasi Kesulitan Guru Paud Di Masa Pandemi Covid-19 Dan Solusinya. *PAUDIA: Jurnal Penelitian Dalam Bidang Pendidikan Anak Usia Dini, 9*(2), 40-50. doi: 10.26877/paudia.v9i1.6647

Kyriacou, C. (2001). Teacher Stress: Directions for Future Research. *Educational Review, 53*(1), 27-35.

Lazarus, R. S., & Cohen, J. B. (1977). Environmental Stress. *Human Behavior and Environment, 2*, 89–127. doi:10.1007/978-1-4684-0808-9_3

Nilufar, A., Zaini, A., David, Y. G. F., & Syed, S. A. (2009). A Study of Job Stress on Job Satisfaction among University Staff in Malaysia: Empirical Study. *European Journal of Social Sciences, 8*(1), 121-131.

Oginska-Bulik, N. (2005). Emotional intelligence in the workplace: exploring its effects on occupational stress and health outcomes in human service workers. *International Journal of Occupational Medicine and Environmental Health, 18*(2), 167-175.

Palfrey J. S., Levine, M. D., Walker, D. K., & Sullivan, M. The emergence of attention deficits in early childhood: a prospective study. *Journal of Developmental and Behavioral Pediatrics, 6*(6), 339–348.

Pillay, J. (2020). Social justice implications for educational psychologists working with orphans and vulnerable children in South Africa. *School Psychology International, 41*(1), 37-52. doi: 10.1177/0143034319893005

Ramberg, J., Brolin Låftman, S., Åkerstedt, T., & Modin, B. (2020). Teacher stress and students' school well-being: The case of upper secondary schools in Stockholm. *Scandinavian Journal of Educational Research, 64*(6), 816-830. doi: 10.1080/00313831.2019.1623308

Schulze, J., Winter, L. A., Woods, K., & Tyldesley, K. (2017). Investigating the significance of social justice in educational psychology practice – A systematic literature review. *Educational and Child Psychology, 34*(3), 57–73.

Simbula, S. (2010). Daily Fluctuations in Teachers' Well-being: A Diary Study Using the Job Demands-Resources Model. *Anxiety, Stress & Coping, 23*(5), 563-584.

Suhendro, E. (2020). Strategi Pembelajaran Pendidikan Anak Usia Dini di Masa Pandemi Covid-19. *Golden Age: Jurnal Ilmiah Tumbuh Kembang Anak Usia Dini, 5*(3), 133-140. doi: 10.14421/jga.2020.53-05

World Health Organization. (2020). *Mental health and psychosocial considerations during the COVID-19 outbreak (No. WHO/2019nCoV/MentalHealth/2020.1)*. Retrieved from: https://apps.who.int/iris/handle/10665/331490

ONLINE-LEARNING MANAGEMENT FOR MATHEMATICAL COMMUNICATION DEVELOPMENT BY USING DISCORD APPLICATION IN COVID-19 PANDEMIC SITUATION

Chatchawal Chaisawang, Chanisvara Lertamornpong, Songchai Ugsonkid*

Department of Education, Faculty of Education, Kasetsart University, Bangkok,
*Corresponding Author E-mail: Chatchawal.c@ku.th, Tel. +66910544607

Abstract

The educational situation around the world has been changed since 2020. It is because the pandemic of COVID-19 that causes the learning management change to online-learning. Since then, students have learnt through online-learning for more than 1 year. It has been noticed that most of students lacked learning interaction and mathematical communication. Thus, to create the learning atmosphere in online-learning classroom through the familiar platform can encourage students in communicative interaction. This quantitative-qualitative research aims to develop mathematical communication of students and study students' satisfaction after online-learning management by using Discord Application to create online-learning classroom that let students have freedom in learning with their friends. The researcher designed the learning management to make students have time for their systematical self-study and have time for classroom activities participation to develop mathematical communication skills on the topic of "Vector in Three Dimension" for 28 Grade 11 students who studied in gifted education program. The researcher assessed students' mathematical communication skills from students' answers in the online classroom, students' test and interview. The findings revealed that the students developed their mathematical skills with the level that they could make their own question item. They were brave to communicate with their friends and their teachers and to promote students' reflection and content understanding. Besides, most of students were satisfied with online-learning management by using Discord Application because they were familiar with it. The Discord Application is convenient for communication and use that students can manage their learning time on their own.

Keywords: Discord, Mathematical Communication, Online-Learning

Background and Motivation

The educational situation around the world has been changed since 2020. It is because the pandemic of COVID-19 that causes the learning management change to online-learning. Many educational institutions in Thailand have a policy to adjust the teaching and learning style in response to the situation. Therefore, a teacher has to find an application that help students study online. Moreover, the application should help the teacher develop new learning management styles in a low cost. (Rattawongnara, 2020; Wannakairot, 2007).

Since then students have learned through online-learning for more than 1 year. Therefore, the researcher, who is a math teacher teaching intensive mathematics courses to students in grade 11 in Gifted Education Program at a high school in Bangkok, noticed that most of students who study online lack of learning interaction and mathematical

communication. This issue should be developed to help students be more confident to communicate mathematically with their friends and their teacher which can be extend to develop mathematical communication.

Thus, to create the learning atmosphere in online-learning classroom through the familiar platform can encourage students in communicative interaction. (Jiyasak, 2020). The researcher has noticed that most of students know and use Discord Application, which is a group-chatting platform originally built for gamers. (Webb, 2018) Therefore, the researcher would like to use Discord Application in online-teaching in order to encourage students in studying collaboratively with their classmates. Students can join in a group in Discord Application themselves so that students have time for their self-study. Furthermore, the researcher can use the application for the activities in the classroom which helps students develop their mathematical communication.

In this semester, the researcher teaches "Vector in Three Dimension", which is about the connection between pictures and text and the use of mathematical symbols that helps develop students' mathematical communication. Due to the lack of mathematical communication of the students, the researcher would like to develop students' mathematical communication using Discord Application in COVID-19 pandemic situation. The research findings will be guidelines for online-teaching in the future.

Objective

This quantitative-qualitative research aims to develop mathematical communication of students and study students' satisfaction after online-learning management by using Discord Application to create online-learning classroom.

Statement of Contribution

The findings in this research can be guidelines for teacher in planning online-teaching lessons to develop mathematical communication using Discord Application.

Methods

This research was quantitative-qualitative research which collected data from the target group of grade 11 students in Gifted Education Program in a high school in Bangkok. There were 28 students, comprising 12 male students and 16 female students. The researcher divided learning management into 2 sections, 10 lessons, and 50 minutes per lesson. The lessons included 5 lessons in phase 1: self-study and 5 lessons in phase 2: in-class activity. In phase 1: self-study, students were able to study from videos themselves. In phase 2: in-class activity, students had to participate in the classroom in order to do activities in mathematical communication.

The manipulate variable is an online-teaching using Discord Application in Vector in Three Dimension in 2021 academic year. The dependent variable is mathematical communication skill of students using Discord application.

Research Instruments

1. Lesson plans of online-teaching in Vector in Three Dimension to improve mathematical communication using Discord Application in COVID-19 pandemic situation consisted 10 lesson plans.

2. The feedback worksheets and videos

3. A mathematical communication ability test in Vector in Three Dimension for posttest with 10 items. There was also the recorded interview of the students after studying each lesson. The value of the Index of Item Objective Congruence (IOC) was 1.00 for every item.

Research methodology

This research consisted of two sections in data collection.

Section 1: There were two phases in this section.

Phase 1: Self-study

In this phase, the lessons were conducted in order to let students study by themselves. The students were able to watch videos any time. They were able to watch videos individually or watch videos together with their classmates. This phase was to build the basic communication for students.

Phase 2: In-Class Activity

In this phase, students had to participate in the class with the teacher. There were activities which were group project, vector creation, navigation, and etc.

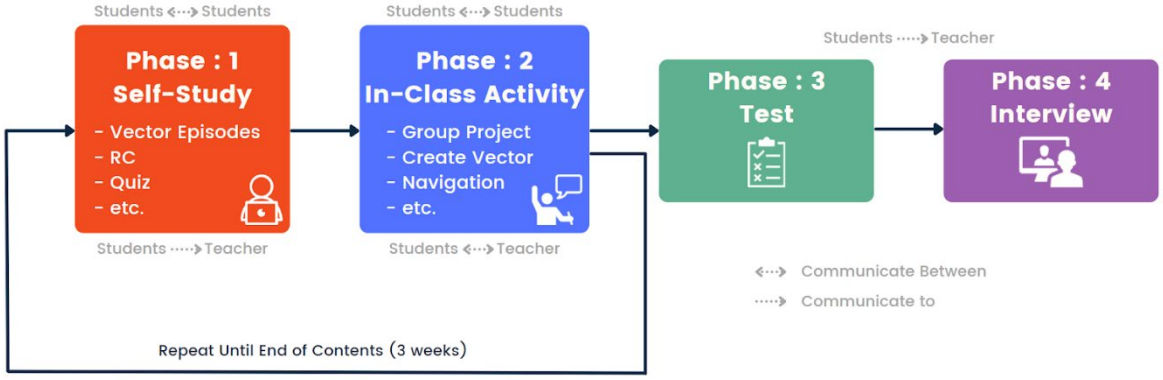


Figure 1: A diagram of online learning management using Discord Application

Section 2: The assessment of mathematical communication

After studying Vector in Three Dimension, students had to do posttest. Moreover, they were interviewed by the teacher. Therefore, students were tested both writing and speaking. The teacher used the answers from the posttest while doing the interview. The answers were analyzed and compared to the criterion which were good, average, fair, and poor.

Results, Discussions and Conclusions

The researcher divided the research findings into two topics which were mathematical communication skill and the students' satisfaction on online-learning management by using Discord Application.

Mathematical communication skill of the students

Mathematical communication skill consisted two topics included mathematical communication skill of the students while having online-learning classroom using Discord Application and mathematical communication skill of the students after having online-learning classroom using Discord Application

1. Mathematical communication skill of the students while having online-learning classroom using Discord Application

The researcher collected data on the students' mathematical skill while having online-learning classroom using Discord Application by considering the students' answers from posttest and interviews. Moreover, students' behaviors while doing self-study, group activities, and feedback worksheets were also considered. The findings were divided into two phases which were self-study phase and in-class activity phase. The results were as followed:

Phase 1: Self-study

In this phase, the researcher found that most of students communicated with their classmate while watching videos and after watching video. Moreover, some of students also communicated with the researcher. However, students' mathematical communication skills were low as shown in Figure 2.

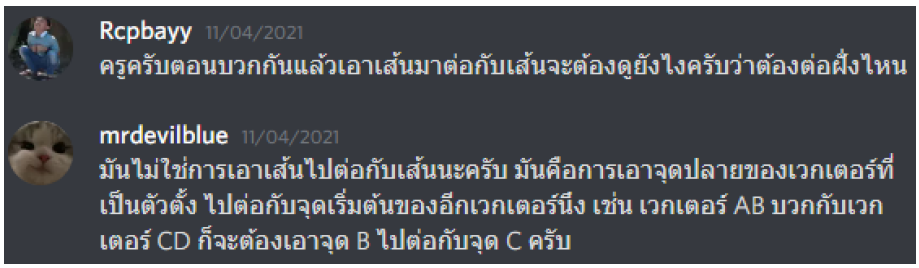


Figure 2: A conversation between a student and the researcher

Furthermore, the lack of students' mathematical communication skills were shown in feedback worksheets as shown in Figure 3.

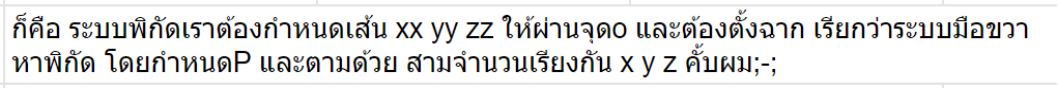


Figure 3: a students' the feedback worksheet after watching video

Phase 2: In-class activity

Students effectively participated the classroom activities. For example, students asked for advices from the researcher in order to prepare themselves for group activity. It was fund that the language that most students used to communicate was improved from the early stages of learning management. The students were able to use the vocabulary and symbols correctly. Moreover, they were able to discuss and give advices to other groups as shown in Figure 4 and Figure 5.

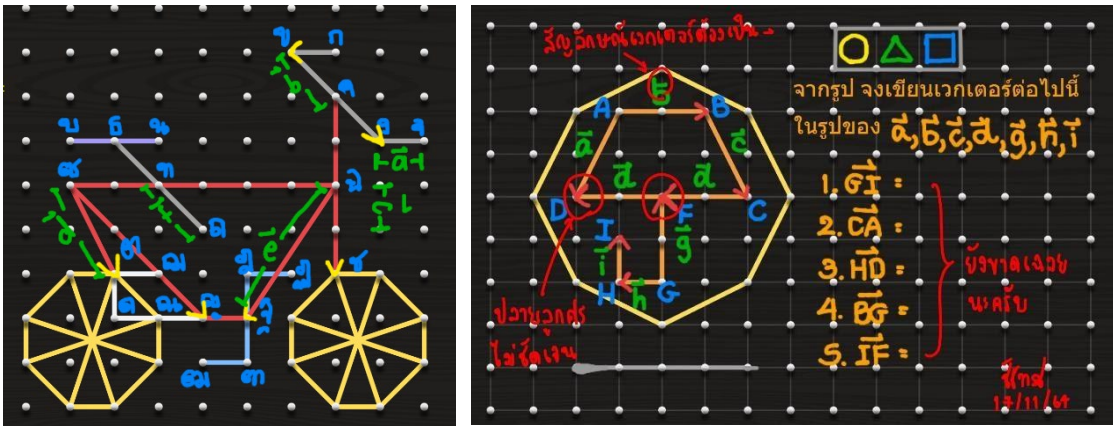


Figure 4 and 5: the examples of works that students discussed and gave advices

2. Mathematical communication skill of the students after having online-learning classroom using Discord Application

The researcher considered mathematical communication skill of the students after having online-learning classroom using Discord Application from three factors which were posttest, a recording of students' conversations throughout the research process, and interviewing. The result showed as followed.

The posttest mean score was seven points higher than the set of criterion which also related to students' behaviors throughout the research process. Moreover, the result from the interviewing showed that students with good skill in mathematical communication accounted for 35.71 percent. These students were able to answer questions, explain how to do questions precisely, use symbols correctly and give advices to their friends. Students with average skill in mathematical communication accounted for 42.86 percent. These students were able to answer questions, explain how to do questions precisely, use symbols correctly. However, they could not give advices to their friends. Students with fair skill in mathematical communication accounted for 21.43 percent. These students were able to answer questions; however, they could use symbols properly. There was no students in poor skill in mathematical communication.

The researcher found that using Discord Application in online-learning management helped students communicate with their friends and their teacher more than the previous semester. Moreover, students' mathematical communication skill was improved. It was at average to good level.

2. Students' satisfaction after online-learning management by using Discord Application.

Most of students were familiar to Discord Application therefore they were able to use Discord Application proficiently. Moreover, students mentioned about BOT function which helped students in self-study. Students were able to manage themselves while doing self-study. The researcher could also use BOT function to track students' learning hours. However, some students said that self-study resulted in less enthusiasm.

Conclusions

It was found that online-learning management for mathematical communication development by using Discord Application in COVID-19 pandemic situation in vector in three dimension could improve students' mathematical communication skill in the level of creating questions, encouraging and reflecting the understanding in the lessons. Most of students were able to do the posttest and interviewing at the set of criterion. Students were more confident to communicate with their friends and also their teacher. The results of the research which shows the development of mathematical communication skill of students support the work of Fonseca who states that a classroom where teachers can always interact with students like Discord Application can improve communication skills, participation and potential of students. (Fonseca, 2020). Moreover, students were also satisfied with online-learning management for mathematical communication development by using Discord Application because students were familiar to Discord Application. They could manage their learning time themselves. This result supports the work of (Jiyasak, 2020) that using familiar online tools in online-learning affects students' satisfaction in learning. (Sirinthon, 2020). However, the researcher suggested that the purposes of the activity should be told before starting the activity. Therefore, students were able to follow the guidelines correctly. Besides, the teacher should give students more time in creating questions because those questions should be precise and creative. The teacher should carefully monitor the process of the work so that students would be able to produce great works.

Lastly, Discord Application has a number of functions that can be used in online-learning. The teachers are able to choose functions which are proper to their online classroom. Thus, teachers can create the most effective online classroom using Discord Application.

References

Fonseca Cacho, J. (2020, April). *Using Discord to Improve Student Communication, Engagement, and Performance*. Retrieved from https://digitalscholarship.unlv.edu/btp_expo/95

Rattanawongnara, R. (2020, April). *7 ways to do social distancing in COVID-19 pandemic*. Retrieved from https://www.sanook.com/health/21205/

Wannakairot, S. (2007, April). *The meaning of online-learning e-learning*. Retrieved from https://sites.google.com/site/pi070733chaieam/bth-thi-5-e-learning

Webb, K. (2018, April). *Business Insider*. Retrieved from https://www.businessinsider.com/discord-funding-2-billion-value-2018-12?IR=T

PHYSICAL EDUCATION TEACHERS NEED TO BECOME PROFESSIONAL DEVELOPMENT INNOVATORS IN THE POST COVID-19 ERA

Suvimol Tangsujjapoj

Department of Physical Education, Kasetsart University, Bangkok, Thailand
E-mail: fedusut@ku.ac.th, Tel. +6629428672, Fax. +6629428671

Abstract

As the world continues to deal with the ongoing COVID-19 pandemic and its impacts on teaching sport skills, professional development (PD) innovation becomes of crucial importance to help physical education teachers (PETs) to be skillful and prepared to teach students effectively. The purpose of this concept article is to describe how to help PETs become PD innovators. PETs need to be able to constantly grow by learning new knowledge. PD required for all PETs. It is necessary to learn everything in teacher preparation program. Meanwhile PETs require knowledgeable about the latest physical education (PE) content, standards, initiatives, policies and best practices in their field. Teaching and learning technology now provide PETs with new platforms to organize information, collaborate electronically, and perform many of these tasks right from their smartphones, the time has come to apply these advances to the professional learning of teachers. PETs can be become innovators and develop their PD, including- 1) organize community of practice, 2) brainstorm a PE issue to address, 3) consult local PD policy and gain support of supervisor, 4) create questions that if answered would lead to solving problem, 5) collaborate, discuss, research, read, explore, ways to answer the questions, and 6) seek out local university PE faculty as partners. Essential factors lead to PETs PD are: 1)adult-centered learning, 2) personalized and contextualized PD, 3) ongoing PD support, 4) community-based learning, and 5) inclusion of informal and formal PD experiences. In conclusion, professional learning holds the keys to unleashing the collective capacity that PETs have in schools in the post COVID-19 era.

Keywords: physical education teachers, professional development innovators, post COVID-19

Introduction

As the world continues to deal with the ongoing coronavirus disease (COVID-19) pandemic, COVID-19 forces schools to shift from in-person instruction to remote learning. Many physical education teachers felt unprepared to teach physical education online. Online teaching physical education was a novel concept that many teachers were unprepared for because the conceptual framework for online physical education is either absent or inadequately incorporated in traditional physical education teacher education programs (Varea &Gonzalez-Calvo, 2020).

Teaching online physical education under pandemic condition affect the physical education discipline both in terms of its identity(objectives and skills) and in terms of its practical modalities (organization and methods of intervention) in the midst the sanitary protocol. The specificities related in particular to the weakness of infrastructure for the practice of sports. In general, physical education contributes through the practice of sports and artistic physical activities, to the development of a student's abilities, as well as the acquisition of

motor skills and knowledge. Physical educators have to confront the reality that in comparisons to remote instruction, physical education is more effectively taught in person (Goh, 2021).

Professional development (PD) innovation becomes of crucial importance to help physical education teachers (PETs) to be skillful and prepared to teach students effectively. The purpose of this concept article is to describe how to help physical education teachers become professional development innovators in the post COVID-19 era.

Professional development

Teacher development is widely recognized as a key ingredient of successful school improvement strategies (Reynolds & Teddlie, 2000). Professional development is an essential component in both researching and promoting physical literacy (Durden-Myer & Keegan, 2019). It is described as the specialized training or advanced professional learning to help teachers and other educators improve their professional knowledge, competence, skills and effective (Abbott, 2014). The realm of professional development is assessment, which underpins educators' tracking of student progress in all subjects (Green, Roberts, Sheehan, & Keegan, 2018).

The broad definition of professional development includes informal and formal types of professional development that occur following teacher education program, such as workshops, courses, observations of other teachers, teacher networks, mentoring/coaching, collaborative teaching and planning, beginning teacher programs, and sharing of teaching practices (Caena, 2011).

In the broadest sense, professional development has been defined as activities that develop one's skills, knowledge, expertise and other characteristics as a teacher (Organizations for Economic Co-Operational Development, 2009).

Physical education teachers need to be skillful and prepared to teach each of their students effectively, as well as need to be able to constantly grow by learning new knowledge. The content and experiences required to meet their responsibility for all students is vast and becoming skillful in all areas is challenge- in shapes, sizes, interests, backgrounds and motivation levels.

Professional learning for physical education teachers needs to be more reflective of the existing research, which suggests that physical education teachers should lead their own professional development, which is relevant, meaningful, personalized and supports the learning of students in their particular schools.

Professional development is required for physical education teachers (SHAPE, 2016). It should be longitudinal in nature. The process should make a long-term impact on teacher's pedagogy and understanding of physical literacy, as this provides clear evidence of the influence of professional development (Durden-Myer & Keegan, 2019).

Physical education teachers required to become knowledgeable about the latest physical education contents, standards, initiatives, policies, and best practices in their fields. Several components of effective professional development for physical education teachers (Colburn et al., 2019) include:

1. Professional development needs to consider how physical education teachers learn and like to learn (Patton, Parker, & Pratt, 2013).

2. Professional development should be personalized and contextualized (Goodyear, 2017).

3. Ongoing support is need for real teacher development to take place (O'Sullivan & Deglau, 2006).

4. Professional development that takes place in a trusting community of practice leads to greater professional learning (Deglau & O'Sullivan, 2006).

5. Professional development can be informal as well as formal, and often informal professional development is not fully taken advantage (Armour & Yelling, 2007).

Physical education teachers need effective professional development, particularly since many educators have become confident and competent at the standards/ norm-based means of assessing physical education. They also need opportunities for professional development in order to enhance their teaching skills, as well as learn new teaching techniques, adapt to increasing heterogeneous groups of learners, and stay current with education research (Cardina & James, 2018). Professional development enhances teachers' content knowledge and pedagogy in ways that are associated with improved learning for all students. These professional development opportunities may include learning activities such as workshops, courses, observations of other teachers, teacher networks, and mentoring / coaching.

Professional development has shown to improve teachers' content knowledge and pedagogy that are associated with positive effects on student outcomes (DeMonte, 2013). This evidence base for professional development that improve teaching and learning include the quality and effectiveness of professional development activities, such as coaching, mentoring, observing and discussing classroom practice, and collaborating with colleagues.

In general, physical education teachers need professional development that enhances their skills to establish and maintain classroom behaviors, as well as the ability to create rules and routines that teach students to manage their behaviors. Additionally, physical education teachers need managerial skills specific to their teaching environment.

Tasks (Cardina & James, 2018) that a physical education teacher can do related to engaging in professional development that improves instruction and enhance learning for all students:

1. Regularly observe highly-effective physical education teachers, possibly by using video if release time from teaching is not available.

2. Subscribe to physical education journal that cover new developments in the profession and offer examples of best practice.

3. Regularity attend physical education conference that offer professional development opportunities, works with a mentor to identify specific sessions to attend that would be most helpful with improving one's instructional effectiveness.

4. In addition to traditional professional development opportunities, create a personalized learning networking to enhance professional practice that includes social media connections and online resources.

5. Look for opportunities to learn about other cultures represented in one's school district in order to create a supportive learning environment and to select activities that represent cultural diversity.

6. Look outside the field of physical education to access ways to create an environment that is inclusive and supportive of all students, regardless of race, gender, ethnic origin, sexual orientation, religion or physical ability.

7. Advocate for professional development opportunities specific to physical education and equal opportunities for physical education professional development as compared to other subjects.

8. Apply for grants in order to secure financial support to attend professional development workshops or conferences.

Factors Lead PETs to Professional Development

Colburn, Stephenson & Keating (2019) indicate five factors that lead to physical education teacher professional development.

1. Adult-centered learning- professional development for PETs should relate to the individualized purposeful goals of each PET. Adults like to direct their own learning and prefer learning that is related to solve real problems rather on accessing general content (Knowles, 1980)

2. Personalized and contextualized professional development- PETs have a passion to improve the physical literacy and love of physical activity in their students. PETs also have unique educational content and activities about which PETs are especially passionate. Tipping into PETs interests, passions, experiences and strengths can serve as a powerful engine for their ongoing professional learning.

a. Identify their students; needs and interests

b. Understanding their school professional development policy is important as they plan their own professional development.

3. Ongoing professional development support- is vital for true authentic, professional learning to take place, because it assists leaners when they encounter barriers or have questions that need clarification. It would be wise to establish a new way of thinking about professional development. Professional learning is an ongoing pursuit of new knowledge, skills and experience that has meaning for physical education teachers and their students. Professional development is an ongoing interplay of new knowledge, new experience, reflections, and overall development (Freire, 1970).

Ongoing support refers to the various ways that physical education teachers are assisted as they learn overtime. It can be emotional, financial and physical support. The supports can be both formal and informal and could include:

a. Use of online resources

b. College courses

c. Mentor teachers

d. Knowledgeable experts

4. Community-based learning- emphasize the establish of a group learning team in which the professionals have come together for the purpose of professional learning on a regular basis (Wenger, 2015). There are two community-based learning models include professional learning communities (PLCs) and communities of practice (CoPs). PLCs (DuFour, DuFour, & Eaker, 2008) have a specific structure that can be summarized as:

a. a focus on learning rather than teaching

b. shared purpose and vision

c. emphasize on collective inquiry regarding best practice about teaching and learning

d. action-oriented

e. committed on ongoing improvement

f. results-oriented outcomes

PLCs provide a unique space when PETs can have more in-depth and ongoing discussion about their practice and maintain a more sustained inquiry focused on ways to support their learners.

5. Inclusion of informal and formal professional development experiences- PD opportunities are generally considered to be formals. However, the informal learning takes place in a variety of formal (Adam, 2017). Watching videos on YouTube and communicating in a social media can lead to powerful learning (Goodyear, 2017). Developing an informal Professional development portfolio containing all informal professional development materials can help document PETs professional development.

Strategies help PETs Become PD innovators

The emergence of smartphone and mobile application has revolutionized the way individuals access information and could greatly impact how instructors present, share and mange content and course material (Wick, 2010). Mobile learning has the potential to transfer the way in which online physical education (OLPE) content is delivered. Mobile application provides an array of instructional tools and resources to present fitness information, create assignment, assess fitness levels, and track physical activity participation. Exergaming is a type of interactive video game (e.g., smartphone) that requires kinesthetic movement by the player to progress through the game. Online exergaming allows students explore a wide variety of physical activities with peers who share similar interests

Teaching motor skill in online and virtual setting, by mobile devices utilize multi-media (e.g. images, video, audio, augmented reality) to capture and portray physical movement and skills, and supplement demonstration of skill cues normally performed live in a traditional physical education lesson. Meanwhile the research show cases the potential of an instructional technology tool to address students' accountability, motivation, and social support in OLPE (Good et al., 2019)

OLPE has become more important during COVID-19 pandemic. The function of innovative technologies currently available for use in OLPE, include recommendations for their integration into professional practices. Document physical activity participation in OLPE includes activity logs, discussion broads, video submission, and self-reported completion of activity (Daum & Wood, 2015).

Teaching and learning technology now provide physical education teachers with new platforms to organize information, collaborate electronically, and perform many of these tasks right from their smartphones, and time has come to apply their advances to the professional learning of teacher (Colburn et al., 2019). Innovation techniques in physical education often promise to make work in the classroom more efficient, stress-free and interactive. In addition, innovative instructional design and technologies must align with course goals and learning outcomes.

Physical education teachers become innovators and develop their professional development, including (Colburn et al., 2019):

1. Organize community of practice- Email your colleagues and ask them to join you in leading your own professional development plan.
2. Brainstorm a "physical education issue" to address- improve curriculum, add a new unit, improve recess.
3. Consult local professional development policy, and gain support of supervisor.
4. Create questions that if answered would lead to solving your "issue" – short term goals, and objectives that the group can work on.
5. Collaborate, discuss, research, read, explore, ways to answer the question- plan days to work as individuals, or as a group, utilize email threads and other cloud-based communication.
6. Seek out local university physical education faculty as partners- always looking to support physical education in the local schools.

Conclusion

Online physical education continues to grow, it will become critical for current and future online physical educators to consider appropriate uses of technology to enhance student learning in virtual environment. Professional learning holds the keys to unleashing the collective capacity that physical education teachers have in schools. As we look forward a post-COVID-19 future, it is critical that physical education teachers need to become professional

development innovators. Innovative instructional design and technologies must align with course goals and learning outcomes. Schools need to be prepared for physical education teachers to professional development innovators by support physical education teachers in professional development policy and emphasize their creativity to solve locale problems for themselves and their students.

References

Abbott, S. (2014). *Hidden curriculum: The glossary of education reform*. Retrieved from https://edglossary.org/hidden-curriculum

Adam, G. (2017). Using a narrative approach to illuminate teacher professional learning in an era of accountability. *Teaching and Teacher Education, 67*, 161-170.

Armour, K. M., & Yelling, M. (2007). Effective professional development for physical education teachers: The role of informal, collaborative learning. *Journal of Teaching in Physical Education, 21*(2), 177-200.

Caena, F. (2011). *Literature Review: Quality in Teachers' Continuing Professional Development*. Retrieved from http://ec.europa.eu/dgs/education-culture/repository/education/policy/strategies-framework/ doc/teacher-development_en.pdf

Cardina, C. E., & James, A. R. (2018). Targeting professional development for beginning physical education teachers. *JOPERD, 89*(7), 43-47.

Colburn, J., Stephen, R., & Keating, X. (2019). A push for professional development innovation. *Strategies, 32*(5), 3-9.

Daum, D. N., & Woods, A. M. (2015). Physical education teacher educators' perceptional toward and understanding of K-12 online physical education. *Journal of Teaching Physical Education, 34*, 716-724.

Deglau, D., & O' Sullivan, M. (2006). Chapter 3: The effects of a long-term professional development program on the beliefs and practices of experiences teacher. *Journal of Teaching in Physical Education, 25*(4), 379-396.

DeMonte, J. (2013). *High- quality Professional Development for Teachers: Supporting Teacher Training to Improve Student Learning*. Washington, DC: Center for American Progress.

DuFour, R., DuFour, R., & Eaker, R. (2008). *Revisiting Learning Communities of Work*. Indiana: Solution Tree.

Durden-Myers, E. J., & Keegan, S. (2019). Physical Literacy and Teacher Professional Development. *JOPERD, 90*(5), 30-35.

Freire, P. (1970). *Pedagogy of the Oppressed*. NY: Continuum International Publishing Group.

Goh, T.L. (2021). Closing the gap: Teaching physical education post-pandemic. *JOPERD, 92*(7), 3.

Good, T., Tower, R., Jones, E., & Bulger, S. (2019). Instructional tools for online physical education: Using mobile technologies to enhance learning. *JOPERD, 90*(6), 40-47.

Goodyear, V. A. (2017). Sustained professional development on cooperative learning: Impact on six teachers' practices and students' learning. *Research Quarterly for Exercise and Sport, 88*(1), 83-94.

Green, N. R., Roberts, W. M., Sheehan, D., & Keegan, R. J. (2018). Charting physical literacy journals within physical education settings. *Journal of Teaching Physical Education, 37*(3), 272-279.

Knowles, M. S. (1980). *The Modern Practice of Adult Education: From Pedagogy to Andragogy*. NY: The Adult Education Company.

Organization for Economic Co-Operation and Development. (2009). *Creating effective teaching and learning environments: First results from TALIS*. Retrieved from https://www.oecd.orgedu/school/43023606.pdf

O'Sullivan, M., & Deglau, D. (2006). Chapter 7: Principle of professional development. *Journal of Teaching in Physical Education, 25*(4), 441-449.

Patton, K., Parker, M., & Pratt, E. (2013). Meaningful learning in professional development: Teaching without telling. *Journal of Teaching in Physical Education, 32*(4), 441-459.

Reynolds, D., & Teddlie, C. (2000). Linking school effectives and school improvement, in: C. Teddlie &. D. Reynolds. (Eds.). *The Instructional Handbooks of School Effectiveness Research*. London: Falmer Press, 206-231.

SHAPE America-Society of Health and Physical Education. (2016). *Shape of the nation report: Status of physical education in USA*. Retrieved from https://www.shapeamerica.org/advocacy/sou/2016/upload/shape-of-the-nation-2016_web.

Verea, V., & Gonzalez-Calvo, G. (2020). *Touch-less classes and absent bodies teaching physical education in times of COVID-19*. Sport, Education and Society. Advance Online Publication. Retrieved from https://doi.org/10.1080/13573322.2020.1791814.

Wenger, E. (2015). Communities of practice - A brief introduction. Retrieved from https: // werger-trayner.com/ introduction-to-communities-of-practice.

Wick, M. (2010). *A National Primer on K-12 Online Learning Version 2*. VA: International Association for K-12 Learning.

PSYCHOLOGICAL STRESS FOR HALFWAY SCHOOL TEACHERS AMID COVID-19 ATTACK

Chen Yu Han

PhD student, Education Administration and Management,
National Dong Hwa University, Hualien, Taiwan
E-mail: 810988124@gms.ndhu.edu.tw, Tel. +886917184196

Abstract

During the epidemic, the teaching site mainly focuses on students' learning effectiveness, pay attention to suspension of classes, halfway school must operate normally, unable to teach online and work from home, it also exposes teachers to the stress of uncertainty for prolonged periods of time, leading to confusion. The purpose of this study was to investigate the role of midway school teachers in the COVID-19 outbreak, coping Strategies for Teachers' Psychological Stress. In this study, a halfway school was selected as a case study. Take qualitative research, data collection using semi-structured interviews, Interviews with teachers and administrative teams, a total of 10 people were interviewed. Psychological stress factors for teachers: (1) Poor contingency plans for the epidemic. (2) Insufficient teaching supporting measures. (3) Students' psychological pressure and high mood. (4) Teachers themselves face the fear of the epidemic. School Coping Strategies: (1) Design a school plan that responds to changes. (2) Supporting measures for constructive teaching. (3) Strengthen the mechanism of student counseling and psychological care. (4) strengthen the school's psychological mutual aid team. In conclusion, COVID-19 attack, through the school's coping strategies, alleviate the psychological pressure of teachers, this study hopes that teachers' psychological pressure can be valued and alleviated, let teachers have more confidence to work with schools to build education in the post-epidemic era.

Keywords: teachers' psychological stress, COVID-19, school coping strategies.

Introduction

Since the outbreak of COVID-19 in December 2019, according to the World Health Organization report, as of January 2022, the number of global infections has exceeded 370 million, resulting in 5.65 million deaths, while the number of infections in Taiwan has exceeded 18,000, More than 800 people died. At the end of 2019, the first case of severe special infectious pneumonia (COVID-19) occurred in China. The epidemic has continued to develop for nearly a year and has had an unprecedented impact on citizens of the world, including medical, education, economic, political and other fields, the World Health Organization pointed out on August 1, 2020 that "this epidemic is a once-in-a-century health crisis, and its effects will be felt for decades to come" (WHO, 2020). According to the statistics of UNESCO on May 26, 2020, nearly 70% of students in the world are still unable to continue their studies, and millions of students in countries that have implemented partial school closures have been affected and severely challenged by the epidemic. Since the outbreak of the epidemic in Taiwan, all schools have followed the guidelines and guidelines of the Central Epidemic Command Center and the Ministry of Education to plan and adjust school epidemic prevention

measures. However, the epidemic situation is changing rapidly and the epidemic prevention work is complicated, and many difficulties and challenges must be overcome in the process. Beginning in May 2021, the epidemic in Taiwan was severe, and education below secondary school began to face the suspension of classes. The government hopes that students can study at home and reduce gatherings.

Under such changes in the epidemic era, not every school institution can cooperate with the government's policy adjustment, and placement-type halfway schools are one of them. There are many types of placement-type schools in Taiwan. The type described in this article is placement-type halfway schools. The placement-type halfway school enrolls students with juvenile incident handling law and sexual exploitation. Students are judged by the court, usually for a period of 2 years, students must stay in the school 24 hours a day, there are no winter and summer vacations and holidays during the year, and they can apply every month two days of honorary leave, but honorary leave will be given according to performance. In this context, students hardly leave the school. When the Central Epidemic Command Center announces the postponement or suspension of classes, the placement-type halfway school will face great difficulties.

The purpose of this study is to explore how during the epidemic, the teaching site mainly focuses on students' learning effectiveness, pays attention to the suspension of classes, and the school must operate normally in the middle. Wireless teaching and working from home also expose teachers to uncertainty and pressure for a long time, leading to confusion. What are the psychological pressure factors, and how to find more suitable and safer coping strategies for teaching in the adjustment policy of placement-type halfway schools, reduce teachers' psychological pressure and protect students' learning rights. It is hoped that through this research, the school will establish a coping strategy and reduce the psychological pressure of teachers. It is hoped that the psychological pressure of teachers can be valued and alleviated, so that teachers can have more confidence to work with schools to build education in the post-epidemic era. This study will first interview school teachers to understand the psychological stress factors of teachers facing the COVID-19 epidemic in placement-type midway schools, and then identify coping strategies and future suggestions that schools can implement.

Related research

COVID-19

Since December 2019, a cluster of unexplained pneumonia has been found in Wuhan, Hubei, China. Most of the cases in the early stage of the epidemic are related to the history of activities in Wuhan South China Seafood City. The Chinese official announced on January 9, 2020 that the pathogen is a new type of coronavirus. The epidemic subsequently quickly spread to other provinces and cities in China and around the world, and it was confirmed that human-to-human transmission was possible. The World Health Organization (WHO) announced on January 30, 2020, that this was a Public Health Emergency of International Concern (PHEIC), and on February 11, the disease caused by the novel coronavirus was called COVID-19 (Coronavirus Disease-2019), the International Society for Taxonomy of Virology named the virology as SARS-CoV-2 (Severe Acute Respiratory Syndrome Coronavirus 2). In order to monitor and prevent this emerging infectious disease, Taiwan announced on January 15, 2020 that "Severe Special Infectious Pneumonia" (COVID-19) is the fifth category of notifiable infectious disease, and the first case was confirmed on January 21, 2020 Among the confirmed cases imported from abroad, the first local case was confirmed on January 28, which was a family cluster infection caused by immigration from abroad.

The halfway schools

The only three halfway schools in Taiwan are specialized schools established by the Ministry of Education based on the Regulations on the Prevention of Sexual Exploitation of Children and Juveniles. The students at the halfway school are victims of sexual exploitation under the Sexual Exploitation Prevention Regulations and are required to receive round-the-clock care education and psychological counseling according to the law. Therefore, the halfway school has established a collection of children and girls who have been unfortunately sexually exploited in Taiwan and let them live in the school. They receive vocational training, so that they can reintegrate into society after correcting their behaviors and their mental and physical concepts. Last year, they also joined the students of the Juvenile Incident Handling Law, so that some students who violate the law but still have educational opportunities have a reading environment. In order to protect the privacy of the students admitted by the Midway School, according to the relevant regulations of the "Measures for the Implementation of Education in the halfway schools ", the information of the students admitted by the halfway schools must be kept confidential or even destroyed at the time of graduation. Use pseudonyms or even code.

Research Method

Research design

This study fits the research purpose, using semi-structured interviews to collect data, Interviews with halfway school teachers attempting to answer the following questions:

1. What are the psychological stress factors for teachers during the covid-19 epidemic?
2. What coping strategies can halfway schools have to reduce the psychological pressure of teachers during the covid-19 outbreak?

Therefore, the teachers at the midway school will be asked the following questions.

1. Do you think that during the epidemic, working in a halfway school will be psychologically stressful? What are your stress factors?
2. How do you think school can help you reduce your stress?

Research object

Halfway School mainly enrolls students in juvenile incident handling law and sexual exploitation, the student is judged by the court, usually 2 years in school, students must stay in school 24 hours a day, there are no winter and summer vacations and holidays in a year, however, can apply for two days of honorary leave every month, and honorary leave will be given according to performance, students barely leave the school, halfway school must operate normally, unable to teach online and work from home, the object of this study is the teachers of the halfway school, a total of ten, the information is as follows:

Table1. Basic information of teachers

No.	Working years	Working years	commuting traffic	Interview time
1	11	Hualien City	car	December 2021
2	14	Hualien City	motorcycle	December 2021
3	20	Hualien City	car	December 2021
4	12	Hualien City	car	December 2021
5	1	Dormitory, New Taipei City	motorcycle, train	December 2021
6	2	Dormitory, Kaohsiung City	motorcycle, train	December 2021
7	3	Hualien City	train	December 2021
8	4	Dormitory, Kaohsiung City	motorcycle, train	December 2021
9	10	Hualien City	motorcycle	December 2021
10	9	Dormitory, Taipei City	car, motorcycle, train	December 2021

Analysis of research results

In this study, the interview data were compiled, respectively from the psychological stress factors of teachers and school coping strategies, summarize the following four aspects for analysis and discussion, through the analysis of this study, it is hoped that the psychological pressure of teachers in the halfway school can be taken seriously and relieved, so that teachers have more confidence to work with schools to build education in the post-epidemic era.

Psychological stress factors for teachers

Poor contingency planning

The contingency plan of the central epidemic situation is very hasty, today the government announced the suspension of classes, and it will be implemented tomorrow, which caused a lot of trouble for our teachers (interview-3). The government suddenly announced the closure of schools, without considering the particularity of the halfway school, halfway school has no way to enforce government regulations, teachers don't know how to teach (interview-10) .During the period when other schools are closed, implement online teaching, halfway school students are usually not allowed to use electronic devices, Implementing online courses will make schools need more teachers to take care of students, ,there is a greater risk of contracting covid-19 (interview-4). Call the education government unit, no one can help schools figure out how to enforce the rules to prevent the outbreak (interview-8). My child is going to implement an online course, so am I going to work from home like other teachers? still going to work at school? if I have to go to work, who will take care of the child? (interview-1)

Insufficient teaching supporting measures

The school hopes that students will focus on courses that can maintain social distance, in a short period of time, I have to prepare a different course again, makes me anxious (interview-6). The school will adjust the timetable in a short period of time, I simply don't have enough time to adjust my mood (interview-9). Students are naughty in class, if social distancing makes it difficult for me to keep track of students, I am worried that students will be naughty in my class (interview-7). The school said to change some teaching methods, don't quite understand, because the students get together to play after class, what is the significance of change in the teaching classroom (interview-2). The supporting measures for teaching are not perfect at all, makes me very confused, not sure which regulation or which version of the policy to listen to (interview-5)

Students' psychological pressure and high mood

Due to the epidemic, students did not have vacations for several months, the students are very restless recently, often making mistakes, student emotions can affect school performance (interview-1). Students usually rely on writing letters to communicate with their families, but the mailing time for writing a letter is long, the students will be very worried about the situation of their families, but school rules cannot be changed, the student's worry will turn into a bad mood, while making trouble at school (interview-10). Students have no way to go home due to the epidemic, there are many complaints and bad moods, feel trapped in school, because of staying in school for a long time, I have no way to deal with the emotions of the students (interview-2). Students are in high spirits during the epidemic, often get angry and quarrel in my class, I did not handle the student situation (interview-5). Students will cry at me, I will spend a lot of time comforting students, as a result, the course cannot be carried out normally, but I think students' emotions are more important, so my class is a lot behind, I would be concerned when the regular assessments, my course is not finished yet (interview-8)

Teachers themselves face the fear of the epidemic

I usually take the train to school to work, I worry every day about whether I will get covid-19 at the station or on the train, I don't know why other schools have stopped going to school, the halfway school has to continue to school, if I get infected while commuting, who is responsible? (interview-7). We have school teachers who take the train back to New Taipei City every week, the epidemic situation in New Taipei City is very serious, she comes back to school from New Taipei City every week, I will deliberately keep my distance from her, I'm afraid she will infect me with the virus, and we usually live in the dormitory together, I'd be concerned about the shared space or the places she passed by for the virus(interview-6). I have children at home, I worry every day when I go to work, if I get covid-19 outside at work, and then infect my family, what should I do? I don't know how to protect myself, I have implemented the protective measures that should be done, but I am still very afraid of contracting covid-19 (interview-3). I don't dare to contact people at school, because I don't know who the others met or where they went yesterday, there are people infected everywhere in Taiwan now, I would doubt that other people will also have the possibility of contracting the virus (interview-9). If I have cold symptoms today, I will be very worried about whether I am infected with covid-19, worrying about my body every day, without thinking about preparing the content of the student's course, I hope I don't get covid-19, I feel anxious every day before coming to work(interview-4).

School Coping Strategies

Design a school plan that responds to changes

The halfway school is special, it is difficult to use general policies to regulate halfway schools, in these ever-changing times, the halfway school needs to have its own school plan, don't worry if emergencies occur, and use the school's plan to implement it. Having a school program can reduce the stress of overwhelmed teachers, also can use a relatively fast speed to adapt to changing policies, but mainly requires government units to be willing to allow schools to have their own plans to implement them.

It is hoped that through school design, school plans can be adapted to changes, so that no matter what happens in the school, there can be traces to follow.

Supporting measures for constructive teaching

The school administration has always been the support of teachers, to help teachers with any difficulties encountered in teaching, this epidemic policy came too fast and too hastily, so that the school administrative unit was caught off guard, which also led to confusion in teaching, the school has been changing the teaching curriculum, bothering teachers, but with this experience, the school has constructed teaching supporting measures, in the event of a crisis in the future, can start the school's teaching supporting measures, so that teachers can teach with peace of mind, no longer worry about the progress of teaching will be hindered.

Strengthen the mechanism of student counseling and psychological care

The students of the halfway school have more emotional problems themselves, even more restless during the epidemic, we can't just expect teachers to take good care of students, the students themselves can also be trained to adjust their own ability, take this opportunity to teach students that when things are unsatisfactory or hindered, how do we find a better way to face the problem, emotions can't handle the problem, but when encountering problems, find a possible solution, so that in the days to come, no matter what difficulties they encounter, students can strengthen their hearts, calmly face and solve problems, and just take this epidemic to give students a chance to learn, it can also reduce the psychological pressure of teachers.

Strengthen the school's psychological mutual aid team

During the epidemic, teachers at Midway School need to worry about the risk of infection at work, also to face the huge emotions of the students, as well as their own fears, teachers are under a lot of psychological pressure, we cannot ignore such emotions, we should pay more attention to and care about the physical and mental state of each teacher, encourage and support each other, don't underestimate your own strength, maybe a small act of yours can help those in need, the current society is relatively indifferent, and everyone is in danger during the epidemic, in such a state, school teachers can spontaneously form a team to help each other, teachers who need help can give care, even a small amount of care can make teachers' psychological pressure be seen and relieved.

Discussion

Due to the COVID-19 attack, most of the teaching site or government policy is based on students, while the psychological pressure on teachers has not been taken seriously.

This study takes this opportunity to find out the factors that contribute to teachers' psychological stress. The study divides the most influential factors into four: 1. Poor contingency plans for the epidemic,2. Insufficient teaching supporting measures,3. Students' psychological pressure and high mood,4. Teachers themselves face the fear of the epidemic, and also try to find coping strategies that can be improved, respectively:1. Design a school plan that responds to changes, 2. Supporting measures for constructive teaching, 3. Strengthen the mechanism of student counseling and psychological care,4.strengthen the school's psychological mutual assistance team. It is hoped that the psychological pressure of teachers can be relieved through coping strategies, and in the changing times that follow, let teachers' psychology be taken care of, after all, teachers take good care of themselves in order to take good care of students.

References

Disease Control Agency, Ministry of Health and Welfare (2020). *Announcement of the Central Epidemic Command Center*.

Disease Control Agency, Ministry of Health and Welfare (2020). *Class V Notifiable Infectious Diseases: Severe Special Infectious Pneumonia*. Retrieved from https://www.cdc.gov.tw/Category/List/AuFztf_j5e4MaYz-sjteNQ

Disease Control Agency, Ministry of Health and Welfare (2021). *Announcement of the Central Epidemic Command Center.*

Ministry of Education (2015). *Measures for the Implementation of halfway School Education*.

Ministry of Education (2021). *Announcement on Suspension of Classes and Non-stop Learning*.

WHO. (2020). *COVID-19 Emergency Committee highlights need for response efforts over long term.* Retrieved from https://www.who.int/news/item/01-08- 2020-covid-19-emergency-committee-highlights-need-for-response-effortsover-long-term

THE BENEFITS AND CHALLENGES OF ONLINE ASSESSMENT IN PUBLIC AND PRIVATE PRIMARY SCHOOLS IN HO CHI MINH CITY IN VIETNAM

Bui Nguyen Bich Thy

PhD students, Department of Education and Human Potentials Development,
National Dong Hwa University, Taiwan
E-mail: 811088120@gms.ndhu.edu.tw, Tel. +0971839452

Abstract

Assessment is an integral part of online education, much like traditional classroom. The purpose of this study was to investigate the benefits and challenges of online assessment in public and private schools in Ho Chi Minh city in Vietnam and teacher's future expectations about online assessment. The research subjects were elementary school teachers. Mix method was used in this study, including quantitative and qualitative methods. Data were collected randomly through questionnaire (N = 132 teachers) and interview (N = 10 teachers) from ten primary schools in Ho Chi Minh city. The instrument consisted of four dimensions: teacher, student, school and learning objectives. The results indicate that both public and private teachers show the benefits of online assessment: providing immediate score for student, improving their performance; reducing the teacher's workload and increase their technical skills, decreasing the cost for institution. However, private teachers supposed that online assessment supports meeting learning goals than public teachers. Moreover, both public and private teachers indicated that online assessment faced some challenges such as: poor technical skill, not enough devices, unstable internet network and cheating. Detailed discussions regarding the teacher future expectations about online assessment are also provided, such as: increasing the performance assessment or the form of test to minimize the chances of cheating, training for teachers and parents about online platform for assessment, more student-to-student interactions in online assessment. The limitation of this study is the interviews were the intersection ones, so that the lengthy interviews would be much better.

Keywords: online assessment, benefits, challenges, public schools, private schools

Background, Motivation and Objective

The COVID-19 pandemic has disrupted teaching in a variety of institutions in Vietnam, especially in primary schools. In this situation, online class is the only option available for schools to choose (Anh, 2020). Since early 2020 until present, Vietnam has totally experienced 4 times of school closure. Three first times have been short periods of time, from two weeks to three months. However, the 4th outbreak of COVID-19 is the longest period time with 8 months, from early May 2021 to present (Department of Statistics of the Vietnamese Ministry of Education and Training, 2021). All primary students in Ho Chi Minh city have experienced online learning and online assessment in the first semester of the school year 2021-2022.

Online assessment relies heavily on technologies (Cigdem et al., 2016). Some of the benefits of online for teachers include different types of assessment methods or automated grading (Carhill & Chen, 2020). Although online assessment has proved to be helpful during

COVID-19 situations, the implementation of technology in assessment may pose some challenges to teachers. The absence of physical interaction between teachers and students has its own consequences which leave teachers with limited options for assessing their students (Abduh, 2021). In Vietnam, there are some arguments on educational forums about the effectiveness of online assessment (Kieu, 2021; Tam & Hang, 2021; Quynh, 2021). This is the reason for the Vietnamese Government intention to send students back to school in early December 2021 to do the summative test face-to-face, because they are concerned about the validity and reliability of online assessment, especially the primary education (Department of Ho Chi Minh city Education and Training, 2021). However, the government had to change this plan because 70% of parents disagreed to send their children to school without vaccinations. Thus, this semester is the first-time teachers in Ho Chi Minh city conducted both online formative and summative assessment.

Among the abundant research about online assessment in Vietnam, most of the studies are dedicated to that of universities and focus on students' perceptions (e.g., Pang, 2021). However, the teacher's experiences about the benefits and challenges of online assessment from in primary education are still unknown. Without information about it, the teaching and learning process in primary education may not meet the goals. In online assessment, the sufficient technical skill of both teachers and students, also equipment support is one of the most significant factors that influence the online assessment efficacy (Carhill & Chen, 2020). That is, in Ho Chi Minh city (Vietnam) the private primary schools, compared to the public ones, teachers and students receive better school support about internet networks and computers (Quynh, 2021). Moreover, the level of public primary students' technical skills is significantly lower than private primary students (Thong, 2017; Vietnamese Ministry of Education and Training, 2018).

What are the experiences of primary teachers about benefits and challenges in the first-time online assessment? What are the differences between the primary teachers at public schools and those at private ones regarding their experiences with online assessment? This study was designed to probe into two questions.

Statement of Contribution

The first contribution of this research is understanding teachers' experiences of online assessment, including four dimensions: teacher, student, school and learning objectives. In detailed results, this study insists on the conclusions from previous studies (e.g., Sun, 2008; Gikandi, 2011; Peterson, 2019; Pang, 2021). Online exams have been proven to be beneficial to teachers because of fast scoring (Sun, 2008). It also has some drawbacks, such as lack of facilities and teachers' poor technical skills (Gikandi, 2011). One of the biggest challenges with online assessment is that students and teachers lack the knowledge or skills to use the technical platform and computer skills (Pang, 2021). A large number of studies have revealed that cheating and deception are common problems in online exams. In a study, Jennifer Peterson said that students tend to cheat on online exams. This issue is getting more serious with the help of modern technology (Peterson, 2019).

From a practitioner standpoint, the main challenge in realizing the above contribution is the degree of support from two kinds of schools, including public and private schools, towards the online assessment. Accordingly, the second contribution of this research is to compare the differences between public and private teachers' experiences on online assessment. The private teachers supposed that online assessment supports meeting learning goals more than public teachers. Moreover, they received more support from schools, such as technical training, money.

Methods

Sample

The study adopted a mixed research methodology: quantitative and qualitative, based on online surveys and interviews for data collection. For the survey, the random sample of 15 primary teachers (N = 150) in each of 10 primary schools (5 public schools and 5 private ones) in Ho Chi Minh city in Vietnam was invited to participate in this research. An online survey was distributed to the selected sample from December 27, 2021 to January 03, 2022 with Google Form. The data collection occurred one week. We received 132 responses of them (88%) of the invited sample, consisting of 70 public primary teachers, 62 private primary teachers, no missing data. The sample varied on a range of demographic dimensions as shown in Table 1. For in-depth interviews, data were collected from interviewing ten primary teachers (5 public teachers and 5 private ones) via online application within 30 minutes per teacher. At the start of interviews, the researcher spent time on introductions and informally chatting to establish rapport and put participants at ease. Participants were reminded of the purpose of the study and that details of interviews would be kept confidential. The interview is to understand the relevant questions and the benefits, challenges of the online assessment.

Table 1: The summary of sample demography (N = 132)

Background	Public		Private		Total	
	n	%	n	%	n	%
Gender						
Male	12	9.1	16	12.1	28	21.2
Female	58	43.9	46	34.9	104	78.8
Age						
20 - 30	25	18.9	30	22.7	55	41.6
31 - 40	12	9.2	18	13.6	30	22.8
41 - 50	20	15.1	12	9.2	32	24.3
> 50	13	9.8	2	1.5	15	11.3
Level of education						
Bachelor	69	52.3	58	44.0	127	96.3
Master	1	.7	4	3.0	5	3.7
Doctoral	0	0	0	0	0	0
Year of teaching						
< 5	25	18.9	32	24.2	57	43.1
5 - 9	18	13.6	20	15.2	38	28.8
10 - 14	7	5.3	8	6.1	15	11.4
15 - 20	8	6.1	2	1.5	10	7.6
> 20	12	9.1	0	0	12	9.1
Subject teaching						
Literature, Math, Science	54	40.8	47	35.6	101	76.4
Art	4	3.0	3	2.3	7	5.3
Music	5	3.9	5	3.7	10	7.6
Physical education	3	2.3	3	2.3	6	4.6
Computer	4	3.0	4	3.1	8	6.1
Online assessment						
Yes	70	53.0	62	47.0	132	100.0
No	0	0	0	0	0	0
Total	70	53.0	62	47.0	132	100.0

Table 1 shows that the sample is most female teachers (78.8%), more than male teachers (21.2%). In both public and private schools, most of the participants is homeroom teachers, they teach many subjects like Literature, Math, Science (76.4%), some of them teach other subjects like Art (5.3%), Music (7.6%), Physical education (4.6%), Computer (6.1%) and teach from grade 1 to grade 5. Most of the participants are Bachelor holders (96.3%) and Master holders (3.7%). Most of them (41.6%) are young teachers with age 20-30 and they have between 1-9 years of teaching experience (71.9%). And 100% of teachers have online assessment experience.

Instrument

The instruments used in this study were the Teachers' Experiences of Online Assessment with Public Schools scale (TEOA-PuS), and the Teachers' Experiences of Online Assessment with Private Schools scale (TEOA-PrS). The items of these two scales were derived from the previous literature and from asking three experts (senior primary teachers). These primary teachers had experiences in online assessment before the interview, and two of them is the homeroom teachers, one of them is the Music teacher. Some contents of items in the instruments used in this study were derived from the interview with these primary teachers. There are four dimensions, including teacher, student, school and learning objectives. The response options were designed five-point Likert scale: 1 = Strongly disagree, 3 = Neutral and 5 = Strongly agree.

To maximize available data and ensure scoring was consistent with previous studies, we computed a mean of all 14 items. The research used Cronbach's alpha for examining the reliability. This reliability statistic indicated the internal consistency of the four dimensions was good as Table 2.

Table 2: The Cronbach's Alpha of dimensions (14 items)

Cronbach's Alpha		Cronbach's Alpha Based on Standardized Items	N of Items
Total	.94	.95	14
Dimension 1	.93	.93	4
Dimension 2	.81	.81	3
Dimension 3	.84	.85	3
Dimension 4	.85	.86	4

Results, Discussions and Conclusions

Teacher traits

Table 3: Teachers in online assessment

Dimension	Public (N=70)		Private (N=62)	
	M	SD	M	SD
Save time for grading	3.43	.49	2.01	.65
Design online tests more creatively	2.26	.84	3.57	.72
Develop information technology skills of teachers	3.15	.78	2.98	.56
Teachers are poor in technical skills	3.45	.48	1.47	.39

Table 3 showed some of the opinions about benefits and challenges from teacher traits about online assessment between public teachers and private teachers. For public teachers, two high scores are "Saving time for grading" (M=3.43, SD=.49) and "Develop information technology skills" (M=3.15, SD=.78). For private teachers, they don't agree online summative assessment can save time for grading because the value is low (M=2.01, SD=.65). Private

teachers think they can "Design online test more creatively" with the highest score (M=3.57, SD=.72) and second is "Develop information technology skills of teachers" (M=2.98, SD=.56). About the challenges, public teachers experienced a difficult time for online assessment because "Teachers are poor in technical skills" (M=3.45, SD=.48), which is higher than private ones.

"Almost the online test is automatically graded, it saves teachers time. However, the fast or slow sometimes depends on the age of the teacher. Some tests (e.g., handwriting test, dictation test) need to need to grade with students' products. After students complete their test, students or parents take pictures and submit them. Opening an image on a computer or phone for grading is sometimes difficult for teachers due to blurry pictures, small screen, especially senior teachers".

Student traits

Table 4: Students in online assessment

Dimension	Public (N=70)		Private (N=62)	
	M	SD	M	SD
Unstable internet connection	4.89	.42	4.55	.40
Not enough devices (computer, phone, battery)	3.42	.41	1.83	.52
Students are poor in technical skills	4.11	.76	3.07	.68

As shown in Table 4, the public teachers show the significantly higher scores than the public teachers on all items, this means public teacher's experience about student traits is more difficult than private students in online assessment. However, both public and private primary teachers describe the highest scores on difficulty "Unstable internet connection" (M=4.89, SD=.42 for public teachers and M=4.55, SD=.40 for private teachers). In addition, public teachers experienced a difficult time for online assessment because "Students are poor in technical skills" (M=4.11, SD=.76), "No enough devices (computer, phone)" (M=3.42, SD=.41).

School traits

Table 5: Schools in online assessment

Dimension	Public (N=70)		Private (N=62)	
	M	SD	M	SD
Saving money	4.52	.42	4.36	.40
Saving the human resources	1.96	.42	3.52	.31
Training teachers about online platforms for assessment	3.21	.61	4.10	.66

Table 5 show that the public teachers had significantly lower scores than the private teachers on all items, except the item "saving money". The private teacher received more support from schools, such as "Training teachers about online platforms for assessment" (M=3.21, SD=.61 for public teachers and M=4.10, SD=.66 for private teachers). In addition, online assessment have some benefits for schools in "Saving money", especially the public schools (M=4.52, SD=.42). And the "saving the human resources" got the higher score from the private schools. Some interview is also showed public teachers receive not enough in instruction technology and low school support.

"I find online assessment very challenging as I was not trained at the schools. Now there are COVID-19 outbreaks, and we are all passive in this situation. We cannot stop time, and the students need to finish their learning, so we have to adapt to online assessment".

Learning objectives

Table 6: Learning objectives in online assessment

Dimension	Public (N=70)		Private (N=62)	
	M	SD	M	SD
Tasks not appropriate for curriculum objectives	3.07	.67	1.90	.56
Students no open camera all time in examination	4.11	.74	3.07	.68
Parents instruct student to do exam	3.81	.69	2.50	.59
Student copy from internet	2.66	.45	2.61	.40

As shown in Table 6, the public teacher's experience is more difficult than private teachers in online assessment. About the tasks in online tests, private teachers indicated that online tests could meet the learning objectives more than public teachers (M=3.07, SD=.67 > M=1.90, SD=.56). Students in private schools can do the tests with critical thinking questions and creative level. Item "Students no open camera all time in examination" is also high scores for both public and private teachers (M=4.11, SD=.74 for public teachers and M=3.07, SD=.68 for private teachers). In addition, public teachers experienced the difficult time for online assessment because "Parents contribute to student's exam" (M=3.81, SD=.69), "Student copy from internet" (M=2.66, SD=.45).

"My students did not turn on their cameras when I required them to. They said their camera had a problem. I could do nothing with that, even though I knew they were telling a lie. I think the Music or Physical education subject will be examine more exactly abilities of students than paper-and-pencil test because they need to show their performance".

"The room exam management is one of most difficult to control. Teachers cannot force students not to say a word during the exam because sometimes during the exam something happens to students. Some students go on the exam room on time, but some of them go on exam room late; and teachers need to talk again about some notes when taking the exam. So this is difficult to keep silent for student's concentrate".

In inclusion, the findings of this study provide a glimpse of the assessment methods as well as the benefits and challenges of online assessment for teachers. There are some benefits from the online assessment: save time for grading, design online test more creatively and develop information technology skills for teachers. However, teachers showed a number of difficulties in online exams. The biggest ones identified by teachers are technical issues. The second issue make more challenging for primary teacher is cheating and the school's support.

This study is limited in its small sample size due to time constraints. It would be much more reliable and reflect reality if the sample was bigger and the interview time was more. Future studies can do a survey with many participants in different regions in Vietnam to add the representativeness and generalizability of the research. It would be also interesting to examine the interaction between primary teacher demographics (e.g., gender, year of teaching experience, teaching subject, grade) and their experience of online summative assessment. This study suggests that the room exam management is an important skill, not only in online teaching but also in conducting the online assessment (from teacher interviewed). Thus, further study of the online assessment should be focus on skills to manage the room exam.

References

Anh, D. K. (2020). *Việt Nam: Covid 19 và thách thức với ngành giáo dục [Vietnam: Covid 19 and challenges for education sector]*. Friedrich-EbertStiftung. Retrieved from https://vietnam.fes.de/post/viet-nam-COVID-19-va-thach-thuc-doi-voi-nganhgiao- duc

Gikandi, J. W., Morrow, D., Davis, N. E. (2011). Online formative assessment in higher education: A review of the literature. *Computers & Education, 57*(4), 2333–2351. doi: 10.1016/j.compedu.2011.06.004

Kieu, H. (2021). *Dịch COVID-19, sinh viên có thi trực tuyến? [COVID-19 pandemic, do students do online exams?]*. Thanh Nien. Retrieved from https://thanhnien.vn/giao-duc/dich-COVID-19-sinh-vienco-thi-truc-tuyen-1382248.html

Pang. (2021). Online assessment at higher education in COVID-19 Era. *Vietnam journal of educational sciences, 115*(3), 60-68.

Peterson, J. (2019). An analysis of academic dishonesty in online classes. *Mid-Western Educational Researcher, 31*(1), 24-36.

THE EFFECTS OF USING PHENOMENON-BASED LEARNING APPROACH DURING THE COVID-19 PANDEMIC ON STUDENTS' CONCEPTUAL UNDERSTANDING ON THE MEASURES OF CENTRAL TENDENCY

Kanaporn Huaihongthong, Songchai Ugsonkid,*
Wandee Kasemsukpipat, Sakon Tangkawsakul

Department of Education, Faculty of Education,
Kasetsart University, Bangkok, Thailand
*Corresponding Author E-mail: Kanaporn.hu@ku.ac.th, Tel. +66970850150

Abstract

Due to the COVID -19 pandemic, education in all levels have adopted online teaching as an emergency measure. This change affects students learning opportunities especially, in large groups or interacting with peers. It results in students' lack of interest and understanding. Phenomenon-Based Learning (PhBL) is a student-centered teaching approach, which students learn through investigating and solving real-life problems and actively discover the knowledge and skills required to solve them. Thus, we designed to implement this approach to enhance students' conceptual understanding and student interaction. The research questions were 1) does the PhBL increase student interaction during the lesson? and 2) how do the students express their conceptual knowledge on the measures of central tendency? The target group was 87 twelfth grade students, who were in Arts - Language Program from a school in Bangkok, Thailand. The students were requested to conduct projects on the theme "Covid-19 in My Perspectives". They had to select their preference topics requiring knowledge of the Measures of Central Tendency and their experiences to solve or make sense the real problems. The data from students' projects and a test aiming to assess students' conceptual understanding at the end of lesson were analyzed to answer the research questions. The finding showed that using the PhBL approach during Online learning enhanced the interactions among teachers and students; teacher-to-student and student-to-student interaction increased. Moreover, the students could choose and calculate the most appropriate measure of central tendency that describe a dataset depending on the type of data and conditions.

Keywords: Phenomenon-based Learning, COVID-19, The Measures of Central Tendency, Online Learning, Conceptual Understanding

Background

The Coronavirus 2019 pandemic has changed teaching and learning from traditional classrooms to online. Online learning has decreased interaction compared to regular classrooms; for example, students voided using cameras or microphones, and some had limited online learning equipment, affecting their learning capacity and comprehension of Mathematics content. One of the researchers who works as a mathematics teacher faced the same phenomena. She has noticed a decline of student interest in participating during online lesson. They were silent when the teacher asked questions to the whole class. Also, most of them had bad attitude to Mathematics. They view mathematics as a difficult subject and has little relevance to daily life.

The researchers sought a solution for solving these problems and wanted them to see the value of mathematics in their daily lives. The Phenomenon-Based learning (PhBL) approach, a student-centered approach, involves learning from interesting phenomena to students' questions. They found solutions by posing questions, cooperative problem solving, and learning by doing. (Butkatunyoo, 2018; Daehler & Folsom, 2016). Through investigating the phenomena, they gain a better understanding of important concepts, practices, and applications of mathematics in real–world contexts. (Muangchan & Kijkuaku, 2021). However, the former studies were conducted in real classroom setting. There is no evidence of using PhBL in online setting. Therefore, the researchers were interested in integrating the Phenomenon-Based Learning approach to engage students to the lesson and to enhance students' mathematical understanding during online learning.

The Measures of Central Tendency is one of mathematics content were commonly used in our daily lives. They were used to describe sets of data by indicating the typical data or central value of the distribution. Although it quite related to our lives, sometimes it was taught as a mathematics algorithm without meaning of each measure. It leads to the lack of students' understanding, which cause them unable to apply what they had learned in their lives. Therefore, in this study, we aimed to explore the effects of using Phenomenon-Based Learning in terms of students' interactions and conceptual knowledge on the measures of central tendency.

Research Questions

1) Does the PhBL increase student interaction during the lesson?

2) How do the students express their conceptual knowledge on the measures of central tendency?

Statement of Contribution

This study will contribute to effective ways of mathematics teaching practices based on PhBL via online learning in order to enhance students' interactions and conceptual knowledge on the measures of central tendency.

Methodology

Participants

The participants were 87 twelfth-grade students who were in the Arts and Language Program at one of upper secondary level schools in Bangkok.

Variables of the Study

The intervening variable was the use of Phenomenon-Based learning approach in teaching The Measures of Central Tendency (Arithmetic mean, Median and Mode). The dependent variables were the students' behaviors and conceptual understanding on the Measures of Central Tendency.

Instruments

The instruments used in this study were lesson plans, teacher' observation form, capture of video lessons, and the mathematical conceptual knowledge test on the Measures of Central Tendency.

1. There were 10 periods lessons, which were divided into two parts. The first 5 lesson were designed to introduce conceptual knowledge on The Measures of Central Tendency. The other 4 lessons, which took 5 periods, were employed the PhBL approach to engage the students to apply the concepts they had learned to the real-world situations. The situations related to Covid-19 were used as the phenomena for the students to conduct their projects under the theme of Covid-19 in My Perspectives.

2. Observation form and capture of video lessons, which were recorded by teachers and used as evidence to monitor students' behavior during the lessons and consulting time.

3. The mathematical conceptual knowledge test on The Measures of Central Tendency, which aims to the student's understanding on the meaning of each the measures of central tendency, such as Arithmetic mean, Median and Mode, how to find and chose them to describe a set of data. The test is 10-item of multiple choices typed questions and 2 written questions. It was examined the content validity by 3 experts. The Item Objective Congruence (IOC) Index of every item was greater than 0.5.

Research procedures

1. The teacher, who was one of the researchers, employed the lesson plans to the class. Every lesson was filmed.

2. After each lesson, the teacher recorded what she could notice in the observation form.

3. The teacher separated the students into 11 groups, which were vary levels of performance, to conduct the project. Each group of students were assigned to find a topic they were interested under the theme and apply the knowledge of the Measure of central tendency to describe the data. While they were conducting the project, the teacher will act as a mentor if they need. Every consulting time was also recorded.

4. The mathematical conceptual knowledge test on the Measures of Central Tendency was administered by the students after the lessons.

Data Analysis

The data from the observation form and video lesson captures were analyzed using inductive content analysis to gain a better understanding of the effects of PhBL on students' behaviors, particularly their interactions. Moreover, the data from the students' projects and the test were used to conclude the students' conceptual understanding and misconceptions.

Results and Discussions

The findings were divided into two sections: 1) students' interaction and 2) the students' conceptual understanding on the Measures of Central Tendency.

1. Students' interaction

Teacher-student interaction.

The researchers discovered that the project allows discussion and sharing opinion between teacher and students. From at the beginning, the students took responsibility to research by finding the topic they were interested and presented to the teacher. The teacher's role shifted to a mentor, who gave them the suggestion and advice on the possibility of the project and provoked their thinking and reasoning. as illustrated in Figure 1:

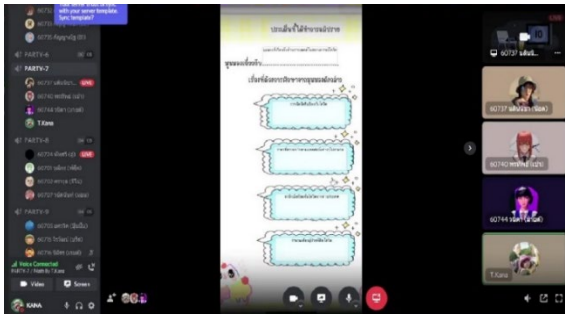


Figure 1: Project work increased opportunities for teacher-student interaction

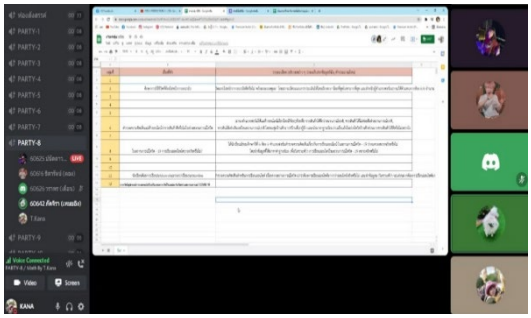


Figure 2: Outside the classroom, the teacher's advice.

Additionally, teacher-student interaction occurs not only in the classroom but also outside of it. Occasionally, students seek advice from their teachers. According to Figure 2, teaching and learning through a Phenomenon-Based Learning approach allows for more opportunities for teacher-student interaction and discussion. As was evident last semester, some students never responded to teacher's questions during online learning. However, because the students did the project as a group work, they had to present their studies to the class and respond to the teacher's or classmates' questions.

1.2 Student-to-student interaction.

The researcher discovered that students preferred to speak up in small groups rather than in front of the entire class. They were less tense. They used platforms to collaborate with their group mates. Although the students in each group had varying levels of performance, each group member participated in the project. Additionally, slow learners were asked for their feedback on the work. Additionally, the researcher discovered that some students used the online group discussion platform provided by the teacher to work on and practice their presentation.

These interactions are consistent with the nature of project-based teaching and learning, which enables students to work collaboratively to solve problems by promoting critical thinking and teamwork in knowledge sharing. (Butkatunyoo, 2018; Samahito, 2021)

2. The conceptual knowledge on The Measures of Central Tendency.

The students' conceptual knowledge and the project "COVID in My Perspectives".

The researcher discovered that most students available to apply the knowledge of Measures of Central Tendency to understand, analyze, and interpret the data related to the Corona2019 pandemic (COVID-19) situation and a variety of related projects. The examples of students' project work that demonstrate the correct conceptual knowledge were as follows:

Example 1. the topic 'Work-From-Home - How many weights you gained?'

Students had interesting and reasonable topics on The Measures of Central Tendency and related to conceptual knowledge. They collected friends' and teachers' weights data that are divided into two parts based on the before and after Work-From-Home and Online Class. In this case, the group of students use the concept of Mode to analyze the data and find that majority friends' and teachers' weights increased. The students use this measure because the category of increased weight data is qualitative data. (As shown in Figure 3)

Figure 3: Students' sample work using Mode to describe the data.

Figure 4: Showing the reason behind the justification

The students also compared the weight data before and after Work From Home and online classes to find out overall how much weight they gained. The students find arithmetic mean, median, and mode of the data to support their justification. They found that the arithmetic mean can indicate greater degree of precision than other measures because using all data in the

calculation. This showed that they had conceptual understanding on each measure and can apply it to describe real-life situation as shown in Figure 4. They also mentioned about the increased weights may also cause obesity and increase the risk of severe symptoms from Coronavirus 2019 infection. Therefore, they showed calculating the average of reducing the number of calories per day that can be an effective weight loss and meet the goal over 30-day period as shown in Figure 5.

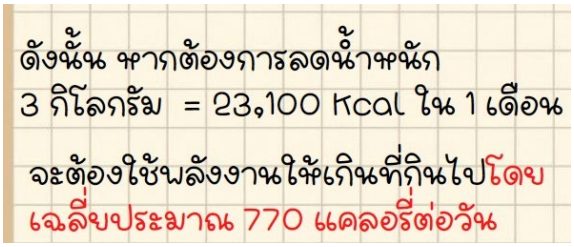


Figure 5: Applying the Measures of Central Tendency with significance in daily life.

Example 2 the topic 'Differences of face mark prices between regular and irregular periods'.

The shortage of face mask during covid-19 outbreak caused the rise in the price of masks. Thus, this group was interested in comparing the price of face masks during an irregular time to the price of face masks during a regular period. They gathered data from local shops, pharmacies, friends, and acquaintances to determine the highest and current prices of face masks. They intended to compare the data using the arithmetic mean. This approach was approved by the teacher, however she advised comparing the same brand. Although they correctly compare the arithmetic mean of the face mask prices obtained from friends and acquaintances to the arithmetic mean of the prices obtained from local shops and pharmacies in two periods, their data collection method and the results were unsuitable for the conclusion. As shown in Figure 6, the data was inadequate for the conclusion since it was not based on real-world costs and lacked information on the brand and quantity of face masks in each unit.

Figure 6: Using arithmetic mean to estimate mask price.

The students' conceptual knowledge of the test

The researcher discovered that the students achieved an average of 12.67 points out of 24 total points. Most of the students could explain correctly conceptual knowledge on the mode and arithmetic mean. Besides, there were about more than half of students could answer correctly on the median and choosing the appropriate measure of central tendency. Table 1 shows the percentage of students with correct conceptual knowledge.

Table1: the percentage of students with correct conceptual knowledge.

The Measures of Central Tendency	Percentage of the students with correct conceptual knowledge
Arithmetic mean	80.95
Median	54.43
Mode	87.34
Choosing the appropriate measure of central tendency	57.14

Additionally, the researcher discovered that they could elaborate on The Measures of Central Tendency, including how to calculate the arithmetic mean, as shown in Figure 7. In comparison, the researcher discovered that some groups of students who completed the project correctly experienced anxiety during online testing, resulting in fewer correct responses. They were only interested in measures of central tendency and were misinformed about the types and distribution of data, as shown in Figure 8.

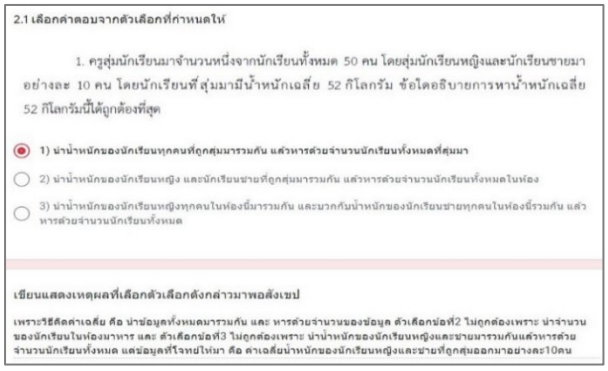


Figure 7: Students' explanations on the arithmetic mean

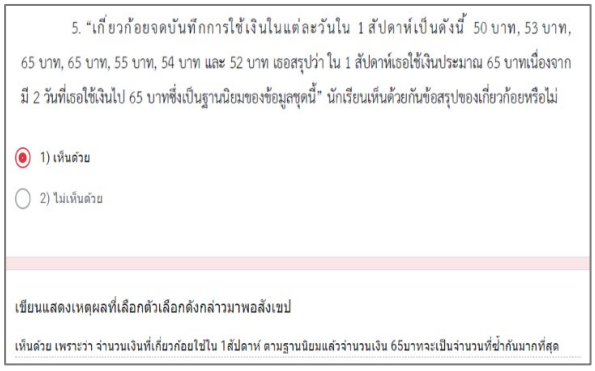


Figure 8: Students' misinformed about the nature of data

As a result of the test, the researcher discovered that Phenomenon-Based Learning can assist students in effectively applying the concept of The Measures of Central Tendency to find answers or solve issues in areas of study in which they are interested. These are consistent with Saudah et al. (2019) which indicates that there is an improvement of students'conceptual understanding in the cognitive realm through an implementation of phenomenon-based learning. For the score of students' median conceptual understanding, which was the lowest score. The researcher thinks the fact that students are not familiar with the use of median in real-world situations led to their misconceptions.

Conclusions

According to the results of the students' project and test, the researcher concluded that increased interaction with the teacher and their friend while engaging in Phenomenon-Based Learning could help students develop a deeper conceptual understanding. Additionally, the project encourages students how to apply the Measures of Central Tendency in real-world situations. These opportunities for learning are consistent with the nature of teaching and learning, which is to impart knowledge, lessons, and practical skills through the study of interesting phenomena, Phenomenon-Based Learning (Daehler & Folsom, 2016). Lastly, the researcher recognized the critical nature of follow-up and strategic intervention for certain

struggling students. These are consistent with the role of the teacher in facilitating students' learning and thinking while using Phenomenon-Based Learning. Teachers have to ensure that students have sufficient foundational knowledge to conduct the project (Mathewson, 2019).

References

Butkatunyoo, O. (2018). Phenomenon based Learning for Developing a Learner's Holistic Views and Engaging in the Real World. *Journal of Education Studies, 46*(2), 348-365.

Daehler, K., & Folsom, J. (2016, May). *Making Sense of SCIENCE: Phenomena-Based Learning*. Retrieved from http://www.WestEd.org/mss

Mathewson, T. G. (2019, December). The Teacher's Role in Finland's Phenomenon-based Learning. The Hechinger Report. Retrieved from https://www.kqed.org/mindshift/55006/the-teachers-role-in-finlands-phenomenon-based-learning

Muangchan, W., & Kijkuakul, S. (2021). Using Phenomenon-Based Learning Approach to Develop Grade 5 Students Mathematics Connection Skills in Geometry. *Journal of Graduate Studies Valaya Alongkron Rajabhat University, 15*(2), 143-155.

Samahito, C. (2021). Developing Science and Mathematics Learning Management Competency of Graduate Students in Early Childhood Education Using Phenomenon-Based Approach with E-Learning Media. *Journal of Education Naresuan University, 23*(1), 104-115.

Saudah, S., Arifuddin, M., & Suyidno S. (2019). Implementasi Model Pembelajaran Berbasis Fenomena untuk Meningkatkan Pemahaman Konsep Siswa pada Materi Tekanan. *Jurnal Ilmiah Pendidikan Fisika, 3*(2), 41-47.

THE PRINCIPALS' TRANSFORMATIONAL LEADERSHIP AND MANAGEMENT STRATEGIES DURING THE PANDEMIC ERA

Bi-Ching Chen[1], Chin-Wen Fan[2]*

[1]Department of Educational Administration and Management, PhD student,
National Dong Hwa University, Taiwan
[2]Department of Educational Administration and Management, Professor,
National Dong Hwa University, Taiwan
*Corresponding Author E-mail: chin6998@gmail.com Tel. +886919592598

Abstract

As the Novel Corona Virus (COVID-19) sweeps the world it has caused a major impact on the way of life in countries around the globe, undermines economic and social interactions, and reconfigures many long-held ideas. The impact on the educational field is dramatic, and has changed implementation methods across education. Both principals and the teachers must adjust in response. The purpose of this article is to discuss how principals can use transformational leadership as a management strategy in the pandemic era. The researcher chooses the qualitative interview method to explore school management strategies through in-depth interviews with the principals of elementary and middle schools. The interview results revealed the following transformation strategies: (1) Administration: establish information technology-based administrative systems. Training to improve technology application for information transfer and communication among faculty, establish mutual assistance mechanisms, and enhance immediate response measures. (2) Curriculum and teaching: improve digital medium teaching skills, make better use of interactive tools to enhance learning, and strengthen students' autonomous learning ability. (3) Diversify interaction with students: promote multi-modal learning for cross-regional and cross-border learning, like media assisted broadcasts of synchronous and asynchronous classes. (4) Level-up campus equipment: add essential computer infrastructure, accelerate development of smart campus technology, and enhance cyber security. (5) Resource integration and utilization: effectively integrate off-campus resources. (6) Empathy and flexibility: increase flexibility based on empathic assessment of teachers and students ongoing challenges. According to the conclusions, this study puts forward suggestions for the reference of school principals in the pandemic era.

Keywords: Transformational leadership, Management strategy, Pandemic.

Introduction

The COVID-19 outbreak happening in the end of 2019 not only created subversive impact upon the entire globe hence disrupted lifestyles and paces of people all over the world, but also changed how human beings think. The pandemic also brought huge impact to the teaching sites for, according to the UNESCO (2021), there already are over 190 nations forced to have full suspension of classes with more than 1.5 billion students affected worldwide. Bush (2021) regards the COVID-19 pandemic as an impact encountered by the entire globe hence not only human beings' physical health, but also school education has been significantly affected. In order to respond to the pandemic, there has been many changes regarding the

implementation of education-specific activities, such as the implementation of "Learning Never Stops!" and online learning, and the changes in question have further given education staff new enlightenment as well as plans to work with. This impact, as far as school education is concerned, can be regarded as a crisis on the one hand, or a quiet revolution tremendously liberating school education from both the conventional thinking and the original structure and paradigm on the other hand (Lin, 2021).

Kaden (2020) points out that the COVID-19 pandemic happening in the spring of 2020 forced a lot of schools to shut down, and such sudden conflict and unprecedented educational disruption has further affected how people work. The COVID-19 pandemic happening in the rural areas of Alaska, for instance, not only had schools shut down, but further changed the professional lives of middle-school teachers there for they had to teach their students via the Internet. Moreover, in order to achieve such challenging objectives, it requires the joint efforts made by decision makers, school leaders, and teachers. As far as the standpoints of stakeholders, i.e. parents, students, educational staff, and principals, are concerned, how to strike a balance among rights & obligations, teaching & learning, and life & death while maintaining the school's educational functions is an extremely crucial agenda.

Fan (2021) states that during the post-COVID-19 era, the principals of middle and primary schools shall uphold the concept of instructional leadership as well as implement the agile leadership in order to maintain both flexibility and agility, and to bring their positive leadership into full play so that the momentum of both teachers and students can be activated in light of the realization of their leadership. Moreover, both domestic and foreign news reports have shown that the pandemic might become a normal order in chaos in the future; therefore, in order to deal with the post-COVID-19 era, principals shall be able to manage crisis (Harris, 2020), to completely master the Chaos theory, to grasp the pulse of global environment under the macro-political framework, and to make precise use of micro-political strategies. In short, principals shall be able to master all five aspects of the micro-political strategies, i.e. communication & coordination, cooperation & alliance, resources & control, dialogues & negotiations, and ideology (Huang & Chen, 2021).

In light of the abovementioned situation, in the post-COVID-19 era when the use of Information Technology has been enlarged, the new leadership behaviors and operational strategies of principals have become extremely crucial whereas the transformational leadership can be used to deliver a performance that exceeds expectations (Bass, 1985). Moreover, when encountering various education-specific crisis and challenges due to the pandemic, how should education change to adapt and how should school leaders guide their teams through transformational development in order to encourage teachers to pursue professional growth, to help students with effective as well as self-directed learning, to facilitate educational development, and to achieve educational objectives are certain agendas worth exploring.

Literature Review

I. Transformational Leadership

The idea of transformational leadership was proposed in 1978 by Burns (1978) who pointed out that transformational leadership could enable leaders to confirm and develop the current needs or demands of their subordinates. By identifying the underlying motivation of one's subordinates, one can then seek to meet their higher needs in exchange for their full commitment. A leader can become the driving force behind changes and transform her/his subordinates into leaders. Transformational leadership is a type of dynamic leadership, i.e. a leader makes her/himself more energetic as well as proactive by injecting her/himself into the interpersonal relationship with her/his subordinates to further create a core of leadership competence.

Fan (2004) states that transformational leadership is something a leader can make use of in order to create significant changes regarding the attitudes and assumptions of the members of her/his organization, to facilitate the members to make commitment upon the vision and value of the organization, and to lead the organization moving toward reformation and innovation. In other words, by making use of not only their individual charisma and influence, but also various incentive strategies and methods, leaders can provide their members with individual care and good interaction in order to boost their morale and help them with their professional growth, e.g. equipping them with higher-level motivations and expectations so that they are willing to double their efforts and deliver performances beyond expectations. In the end, it is expected to carry the vision of the organization, and to achieve the objective of reformation and the performance of organization.

A large number of research have pointed out that transformational leadership is crucial as far as a school's reformation and innovation are concerned; for instance, Bennis and Nanus (2007) propose four key leadership strategies: 1. Attention through Vision, i.e. by shaping up the vision together, leaders can transfer the strength of the entire team to pursuing the shared ideals and values. 2. Meaning through Communication, i.e. by using attractive rhetoric, metaphors, slogans, symbols, ceremonies, etc., leaders can convey their visions to the members, and even deeply root the visions into the culture of the organization. 3. Trust through Positioning, i.e. allowing the members to sacrifice in order to achieve the visions. 4. Development of Self, i.e. leaders shall know themselves well enough, recognize and acknowledge the merits of the members, and develop their own abilities and wisdom with continuous efforts. Bass (1985) regards a transformational leader as someone who not only possesses charisma, but also is capable of inspiring her/his members to leave behind their own interests to make contributions regarding the visions of the organization. Huang and Chen (2021) also propose six new leadership thinking a principal should have in order to face the post-COVID-19 era: (1) Be brave to innovate. (2) Be aware and be sharp. (3) Evolve together. (4) Seek order in chaos. (5) Learn from Mother Nature. (6) Here & Now.

II. How do principals make use of transformational leadership to cope with the trend of changing?

Transformational leadership can create three effects upon group members: First, the members will work hard once having understood the importance of their work results. Second, the members will leave behind their own interests and regard the interests of the organization or team as their goals. Third, the higher-level needs of the members, e.g. self-esteem and self-realization, will be triggered and satisfied. In order to respond to this trend of changes, principals shall turn resistance into assistance and apply the transformational leadership strategies onto the management of the school (Fan, 2021; Wilson, 2020). See below for details:

1. Planning the vision of the school, motivating the group dynamics. Since a principal clearly knows the future development of the school, s/he shall not only map out forward-looking visions and objectives, but also convey the visions to all the members in order to achieve the objectives and performance together in light of this ever-changing era.

2. Making good use of communication and negotiation, establishing interpersonal network. A principal shall bring her/his sensitivity into full play and grasp any opportunity in advance in order to provide parents, teachers, and students with necessary assistance. Moreover, s/he shall make good use of the model of team decision making, i.e. providing the members with the opportunity to state their opinions, and then synthesizing all the opinions before making any conclusive decision.

3. Bringing up the charisma, achieving self-realization. A principal shall constantly work on developing her/his ability and wisdom for self-affirmation; for instance, one shall manage oneself well enough so that s/he is able to bring her/his charisma into full play, to

lead the members, and to gain trust from them. Moreover, s/he shall encourage the members to pursue self-growth by sharing with them her/his own successful experience so that not only her/his own administrative work can have success, but also her/his life career can reach the higher level while making promises that all the members will achieve self-realization.

4. Activating learning organization, facilitating professional autonomy. Transformational leadership emphasizes common growth between leaders and members, constructs learning organizations, attaches importance to systems thinking, and encourages the members to reinvent themselves. In other words, it constantly acquires new knowledge from group learning, and is able to respond to changes.

Research Method

Research Methods and Subjects

Individual interviews have been conducted between November and December in 2021 with 10 principals whose schools were of different scales, i.e. large (80~100 classes), middle (12~36 classes), and small (6~11 classes), and from different areas in Taiwan, e.g. Tainan County, New Taipei City, Yilan County, and Taitung County; all 10 principals had solid experience in leading schools. In this study, P1 represents the first principal interviewed; P2, the second and so on. All the interviews were conducted and recorded on-site and on-line with carefully proofread transcripts.

Research Ethics

Since the researchers regarded themselves as instruments for collecting data, they upheld the attitude of learning and adopted an open and relaxed yet respectful way to try to keep the subjects pressure-free while expressing their opinions. During the course of the study, researchers also took the opportunity to discuss with fellow educators their finding as well as doubts in order to increase the research trustworthiness by having external verifications.

Research Trustworthiness

Trustworthy qualitative research shall have its internal validity built upon credibility, a reliability upon dependability, an external validity upon both reliability and transferability, and an objectivity upon conformability, and it can be conducted via thick description, triangulation, continuous reflection upon bias, peer review, and interviewee review.

Research Results and Analysis

The results and analysis of this study regarding the operation strategies schools can use during the post-COVID-19 era have been compiled by the researchers in accordance with the abovementioned interviews and literature review. They are:

Administrative Management

After the Ministry of Education (2021b) promulgated both the guidelines and the coordinated sets of measures in order to react upon the COVID-19 outbreak, schools at all levels immediately coped with the government policies and then successively made corresponding plans as well as implemented concrete measures to prevent the pandemic from spreading, and protect students' right to education as well.

In order to reduce the population of staff working at school, and to more effectively allocate manpower, the school drafted adequate guidelines for the administrative staff and teachers to take turns to come to the school while working from home. (P1)

We did take some preventive measures in advance, i.e. a lot of things were prepared in advance in case it would be too late to respond. For example, the online school timetable was arranged and uploaded online much earlier than usual so that teachers and parents wouldn't be in the dark. (P3)

Since to manage the COVID-19 pandemic is to manage the crisis (Harris, 2020), principals shall speed up the enhancement of the school's Information Technology, make good use of technology-related software to improve the handling of the school's administrative matters, e.g. holding online administrative meetings via Google Meet, keeping the school's communication channels unobstructed, e.g. forming large groups via Line and/or Facebook so that all the information can be accurately and rapidly sent out to all teachers, parents, and students, and enthusiastically encourage all teachers to respond to the pandemic with positive attitudes and measures.

The school's administrative team had a meeting discussing "What to do?" and "How to do it?", and then fully communicated as well as timely modified with the teachers before they released the unified announcement, i.e. notice for parents, to all parents via Line to make sure all parents would receive correct messages and information. (P6) Similar opinions were also given by other principals interviewed. (P7)

The school built a website for both teaching and learning so that parents and students could use media or watch video clips online whenever they needed to learn or study. (P2)

Schools shall implement coordinated sets of measures, such as the establishment of exclusive channels for emergency, one integrated website for making public announcement, etc., in case students are to return to schools and have actual classes when the academic term starts. Moreover, schools shall establish mutual-aid and empowerment-related mechanisms as well as administration- and teaching-related databanks in order to improve the information-specific competence of administrative staff, and to provide teachers with consummate supports.

The school first used the money of the parents' association to purchase the partitions so that students can have meals separately. We also discussed in advance certain issues like if the entire County is allowed to have actual classes but some parents still prefer their children learning from home, how do we respond. (P6)

The school has been conducting workshops, seminars, and professional exchanges regarding online teaching and certain professional matters; meanwhile, the homeroom teachers regularly provide Information-related courses via email or Line so that parents can have the opportunity to learn Information courses while helping their children with them. (P5) Similar opinions were also given by other principals interviewed. (P2)

Curriculum and Teaching

Making flexible use of Information Technology, e.g. incorporating it into the actual teaching, in order to improve the teaching quality and efficacy. The popularization of video software, such as Zoom and Google Meet, has made most actual classes replaced with synchronized video conferences; moreover, even online courses are being delivered by different types of channels, such as prerecorded films, materials by post, recordings, etc. (Lo & Chen, 2021; Kidd & Murray, 2020)

Teachers have to invite parents into the Line or Facebook groups to which assignments and links to films are uploaded for students to learn. In addition, teachers also mark the students' homework and assignments within the groups. (P6) Similar opinions were also given by other principals interviewed. (P3)

Some arts and crafts teachers have been making excellent use of various Information tools, such as asking students to practice in front of the screen first, teachers demonstrating second, watching films third, and students practicing again, to maintain constant interactions with students and to improve their learning efficacy. (P9)

Schools shall attach importance to the establishment of multiple and flexible marking principles as well as the use of diverse marking measures. Moreover, online courses and materials, such as Junyi Academy and the MOE's Adaptive Learning, can be used to improve

the teaching effectiveness. In other words, since "Learning Never Stops!" even in light of the pandemic, self-directed learning shall become the new normal. (Hong, 2020)

Students engage their learning via the Microsoft Teams where they can upload their homework and assignments on the one hand and the teachers can mark the homework and assignments on the other hand. Parents can also take photos of their children's homework or assignments and send the photos to the teachers via Line where the teachers sometimes upload Google Forms for students to fill them out. (P10) Similar opinions were also given by other principals interviewed. (P9)

We did sense the importance of 'using Information Technology media'; therefore, we have been participating in MOE's special project focusing on the strategies for self-directed learning, adaptive teaching, and the use of the MOE's Adaptive Learning. (P4)

Multi-phased Students Activities

Departing from the ideas of student-based learning, schools shall continue their activities and learning with additional and diverse measures, such as online live streaming, online presentation, recorded films, online collaboration, etc., to display special cross-domain and cross-border results. In light of the pandemic, since epidemic prevention is the primary concern, any idea about loosening the limitation over teaching and learning activities shall be required to conform to the rules made by the potent authority.

In response to the pandemic, the school has planned and arranged diverse learning activities, such as providing students with learning pack so that they can DIY with online teaching at home. (P2)

Basically, we didn't suspend most of the student activities but altered the way we used to do them; for example, during the suspension period, we had students show themselves in front of the cameras when having PE or comprehensive classes and asked to do some activities. We will cope with government policies even when they return to school. (P3)

Since learning is expected to never stop, it is inevitable to engage in different learning modes, such as replacing students' conventional learning activities with online teaching, learning, exploration even presentation.

On 9th July, through online live streaming, we had students watch how young farmers reaped crops with the homeroom teacher explaining on-the-spot and the farmers interacting with students as well, and then the farmers and students had online Q&A in the end. (P5)

By incorporating Information Technology, such as film recording, online collaborative platform, live streaming, etc., all those special cross-domain and cross-nation performances and results can be displayed be it important on-campus activities, such as graduation ceremony and parent-teacher discussions, or off-campus competitions.

During this continuous COVID-19 pandemic, our students not only made some actionable teaching aids, but also recorded it and then participated in this year's do your :bit. In short, we have witnessed with our own eyes their outstanding performance and the spirit of self-directed learning. They are brilliant! (P10)

We had an online graduation ceremony in June. Right before the ceremony, we positively confirmed that each and every student and parent were online. The ceremony was proceeded with pre-recorded films and online interactions taking turns. (P4)

Campus Environment and Facility

How schools make plans and arrangements for their environments and spaces does create crucial impact upon the facilitation of teacher-student interaction, the change of student behaviors, and the full functions of educational. In the post-COVID-19 era, to speed up the development of smart campus as well as to establish safeguard shall be the primary concerns. In light of the pandemic, personal hygiene is the first and foremost concern; moreover, schools

shall pay close attention to both teacher's and student's individual safety as well as have the campus closed to the public to prevent it from COVID-19 invasion.

We have already set up necessary measures all over the campus; for example, there are devices taking temperature and distributing alcohol at the school entrance, hand sanitizers and soaps are being promptly supplied in every office and classroom. All classrooms are disinfected with bleach on a daily base, and our nurse's office is filled with enough stacks of epidemic-prevention materials, such as masks. (P3)

Since having meals together will be inevitable hence a potential danger regarding COVID-19 infection when students do return to school, we have decided, before receiving subsidies from our superior, to purchase partitions to keep our students safe while enjoying their meals. (P1)

In light of the rapid delivery of information, in order to improve the functions of education, it becomes necessary to not only set up but also popularize Information Technology equipment and devices required by a smart campus. As a result, during this post-COVID-19 era, all schools have been upgrading their IT-related equipment and devices as well as integrating all types of Hi-Tech equipment and devices. Some interviewees even stated the necessity of making flexible arrangement of spaces, such as teaching, administrative, and sporting areas, in order to maintain students' right to education as well as the health and safety of both teachers and students. Moreover, it is a good idea for administrative staff to work on actual repairing and improvement during the level-three COVID-19 prevention when all students are at home.

In addition to the tablets and IT-related devices subsidized by the government, our school also purchased some computers and related equipment. Moreover, we have equipped important learning corners all over the campus with Wi-Fi access so that students can use either tablets or smartphones to study everywhere on-campus. (P5)

In order to deal with the fact that students coming from double-career family cannot learn from home, we arranged a separate space for them to learn at school. Moreover, we had similar arrangement for the administrative staff. They took turns and stayed in designated and separate spaces when they came in to work. The areas for teaching and community sports were also separated. (P2)

Integrated Use of Recourses

In light of COVID-19 pandemic, organizations and schools shall attach more importance to making effective integration and flexible use of external resources, especially when work from home and learn from home have gradually become the new normal. (Bolisani, Scarso, Ipsen, Kirchner, & Hansen, 2020) Maintain an obstruction-free feedback system in order to secure the smooth operation of teaching affairs and administrative matters is important; moreover, it is also important to take the initiative to strive for external resources, such as financial injection from both public and private sectors.

We acted and strived for some resources from local religious organizations during the pandemic; for example, the Tienhou Temple in Sanchong Area donated 2,500 pieces of partitions to Chongyang Elementary School to help their students to stay safe while having lunch. (P1)

We felt that as far as the resources we had strived for were concerned, they didn't just serve to help the underprivileged students but to help both the students and adults to discover that they are actually shining. For example, during the pandemic, we received a well-equipped film studio from some companies because we had been training little broadcasters at school, and now they have an actual stage to show their talents. (P10)

Parent-Teaching Communication and Cooperation

In addition to making good use of parents to establish parent-teacher cooperation mechanism, to stabilize the family-supporting system, and to form different groups since it is crucial as far as school operation is concerned (Van der Lippe & Lippényi, 2020), schools can also incorporate certain extra human resources, such as volunteers, to help with their epidemic prevention work. It is, in short, to establish the collaborative relationship.

Students actually need parents to be with them and to guide them while learning from home during the pandemic; therefore, if we can maintain an unobstructed teacher-student communication channel as well as incorporate parents into our teaching resources, the learning efficacy of our students can be improved. (P5)

During the pandemic, a principal shall respect the teachers and trust their professional expertise, recognize and acknowledge the value of their vocation, and boost their work morale; meanwhile, a principal shall maintain her/his flexibility when dealing with urgent matters or leave-of-absence procedures regarding both teachers and students.

Some teachers do need to take care of their own children, and we should be compassionate. That's why we have flexible work schedules and the mode of work from home. We respect and trust our teachers of course; therefore, the answer to their requests is normally 'Yes.' as long as it won't affect the school's normal operation. (P7)

Our teachers, directors, and the principal all take time and regularly make phone calls to underprivileged students. We have a student from the special education class who has no one to take care of him in the daytime; therefore, his teacher visits him and teaches him there twice a week. (P5)

Conclusions and Suggestions

In light of the post-COVID-19 situation, principals shall uphold correct leadership ideas and take proactive actions. The conclusions made upon the abovementioned finding(s) are: (1) Attaching importance to crisis management as well as using various technology tools to convey messages while getting a head start. (2) Employing suitable measures, such as Google Meet, for online teaching as well as having a firm grasp of students' learning outcome. (3) Attaching importance to students' participation in diverse activities even in this post-COVID-19 era. (4) Forming teachers' groups to actively promote professional growth. (5) Integrating all educational resources and fully apply them to students' learning activities. (6) Continuously improving and/or upgrading teaching equipment, learning venues, and other on-campus constructions. (7) Having parents and teachers to communicate and work with each other on issues concerning the learning of underprivileged students during the pandemic.

The suggestions made in accordance with the abovementioned conclusions are: (1) Having insight upon the future development of the school in order to improve the group dynamics and achievements, to complete each other, and to implement the innovative operation beneficial to the school. (2) Proposing forward-looking education visions and objectives as well as giving the members sufficient trust in order to win their recognition and approval while creating the sense of belonging. (3) Maintaining unobstructed communication channels as well as conducting collaboration and cooperation in order to improve the responding and problem-solving capacity. A principal shall exercise a variety of strategies and methods, such as motivating her/his members, giving affirmations and praises, to strengthen and engage their work motivation and centripetal force with educational work. (4) Stimulating innovative thinking as well as leading the members to cultivate capabilities for curriculum development and teaching innovation. In light of the post-COVID-19 era, both the planning and the implementation of online courses should take the needs in line with this technology era and the convenience for students to learn into more serious consideration. (5) Integrating leadership

strategies as well as activating comprehensive care in order to cope with this technology era. A principal shall make good use of communication and negotiation to establish her/his interpersonal network to face the future trend of "Blended Teaching"; moreover, s/he shall pay attention to what her/his teachers need and use care, encouragement, and two-way communication to facilitate the development of the school.

Since Bush (2021) points out that the COVID-19 pandemic has given principals and the members an opportunity to show their crisis management ability and actions, it is expected that school leaders shall be able to work harder for their students and solve problems encountered by the schools jointly with teachers by helping them to recognize the importance of collaboration and cooperation, to support each other, and to trust each other.

References

Bass, B. M. (1985). *Leadership and performance beyond expectation*. New York: The Free Press.

Bennis, W., & Nanus, B. (2007). *Leaders: The strategies for taking charge*. New York: Harper Business.

Bolisani, E., Scarso, E., Ipsen, C., Kirchner, K., & Hansen, J. P. (2020). Working from home during COVID-19 pandemic: Lessons learned and issues. *Management & Marketing. Challenges for the Knowledge Society, 15*(Special Issue), 458–476.

Burn, J. M. (1978). *Leadership*. New York: Harper & Row.

Bush, T. (2021). Leading through COVID-19: Managing a crisis. *Educational Management Administration & Leadership, 49*(3), 373–374.

Fan, C. (2004). Research on the Transformational and Transactional Leadership of Primary School Principals and the Organizational Performance of Primary Schools. *Journal of National Hualien Teachers College, 19*(2), 21–40.

Fan, C. (2021). *The Leadership Implementation of Primary and Secondary School Principals during the Post-Pandemic Era*. 2021 International Conference on Educational Leadership and Practice. National Academy for Educational Research.

Harris, A. (2020). COVID-19 – school leadership in crisis?. *Journal of Professional Capital and Community, 5*, 321-326.

Hong, Y. (2020). Learning Never Stops: When Self-directed Learning Becomes Accustomed. *Journal of Curriculum Studies, 15*(1), 15– 34.

Huang C. & M. Chen (2021). The New Thinking and Micro-political Strategy of Principal in Leadership of the Post-Epidemic Era. *Journal of Education Research, 323*, 59–73.

Kaden, U. (2020). COVID-19 school closure-related changes to the professional life of a K-12 teacher.(EJ1258705). *ERIC*. https://eric.ed.gov/?id=EJ1258705

Kidd, W., & Murray, J. (2020). The Covid-19 pandemic and its effects on teacher education in England: how teacher educators moved practicum learning online. *European Journal of Teacher Education, 43*(4), 542-558.

Lin, C. (2021). Models of School Education Implementation and Implications during the Pandemic Era: A Cross-country Comparison. *Journal of Education Research, 323*, 130-143.

Lo, F. & C. Chen (2021). Technology-enhanced Synchronous and Asynchronous College Distance English Teaching amid COVID-19. *Contemporary Educational Research Quarterly, 29*(1), 69–114.

Van der Lippe, T., & Lippényi, Z. (2020). Co-workers working from home and individual and team performance. New Technology. *Work and Employment, 35*(1), 60–79.

Wang, Y. (2015). The Thinking behind the Excellent Principal Awards: A Principal's "Transformational Leadership". *Taiwan Educational Review Monthly, 4*, 106–108.
Wilson, S.(2020) .Pandemic leadership: lessons from New Zealand's approach to COVID-19. Leadership,16,279–293.

USING PERFORMANCE TASKS IN AN ONLINE MATHEMATICS CLASSROOM

Supitchaya Pangbubpha[1]* *and Wandee Kasemsukpipat*[2]

[1]Kasetsart Laboratory School, Bangkok, Thailand
[2]Faculty of Education Kasetsart University, Bangkok, Thailand
*Corresponding Author E-mail: supitchaya.pan@kus.ac.th, Tel. +66863007432

Abstract

The Covid-19 pandemic outbreak has forced teaching and learning to online format inevitably. The new normal of distance learning must evolve to ensure that the children have enough experience, and the lesson can engage them to the lessons. Performance tasks is open-ended, providing entry points at different levels. It provides opportunities for students to share their learning with teacher and other classmates. It can be a great way to keep students focus on important learning. This classroom action research aimed to explore the impacts of using performance tasks in online mathematics learning for grade 2 students at a laboratory school in Bangkok, Thailand. The performance tasks were designed to be assessment tools aiming to gain information about the students' mathematics understanding and skills. The students were assigned to do performance tasks individually as exercise questions, homework, or project throughout the semester. The data from students' response to the tasks and teacher's self-reflection record were analyzed to understand the effects of using the tasks. The results showed that the students were motivated and actively engaged to the tasks. Moreover, it could help the teacher to recognize what the students knew and what they didn't know or had misunderstanding. Therefore, the performance tasks can be used as an assessment-driven instruction for online mathematics learning. How to implement the tasks in the lesson will be addressed as implications of the study.

Keywords: performance tasks, online mathematics classroom, mathematics, assessment

Introduction

According to research, cognitive construction processes appear to have a significant impact on children's development when students are actively engaged (Piaget, 1952; Vygotsky, 1978). During the regular time, teacher can provide them manipulatives and have them collaborate with others in the classroom. However, during the covid-19 outbreak the students were forced to learn online. Teachers are unable to fully teach with hands-on activity. It caused the students lack of attention to the lessons and had a hard time to interact with others (Sharp & Skipp, 2022). Because of their short concentration, they cannot spend a long time to monitor computer or smart phone screen, listen to the teacher, and take notes on their own. Previous research has found that while the usage of online learning has increased dramatically during COVID-19, but the real effectiveness and completion rate have not improved much (Liu et al., 2020; Yang et al., 2020). One of researcher was a second-grade mathematics teacher in which her normal classes were quite active. She was also confronted with the same issue when the classes become online. We were searching for strategies to engage students to the lessons and

also help students to gain deep understanding on the topic. We discovered performance tasks which can be address this problem.

Teachers regularly use mathematics tasks to teach and assess students' performance. Mathematics tasks are an important factor in student learning. Informally, what matters is not 'how' we teach, but what we ask students to 'do' with what they've learned. Students require opportunities to think beyond fundamental activities to acquire concepts and problem-solving skills. (McGrane & McCourt, 2020) and to improve their performances, teachers should use the tasks called “performance task” which is a part of performance-based assessment or performance assessment which is an alternative assessment that requires students to show their mathematical understanding by using real world context. Performance tasks are the tasks given in any stages of learning that can measure students’ skills not only by writing but also making or doing activities to solve problems. Teachers use performance assessment to engage students in the assessment of their own (Arter & Stggins, 1992; Lorin, 2003; Jarrent et al., 2020).

During Covid-19 pandemic with the limits of time and distance, teachers must know immediately about their students' performances; how well they comprehend the concepts and their skills. Teachers should create performance tasks for online classrooms to keep students actively in learning by choosing platforms that facilitate teaching and engage students in participating in the courses. Therefore, the researchers were interested in exploring the effects of using performance tasks in teaching mathematics for grade 2 students during online learning.

Method

This classroom action research aims to investigate the effects of using performance tasks in online mathematics learning for grade 2 students at a laboratory school in Bangkok.

Participant

A total of 84 second-grade students (2 classes) from a laboratory school in Bangkok, Thailand took part in the study. They participated in all activities in the online classroom during the first semester of 2021.

Instrument

The performance tasks used in this action research were assigned to students using the Microsoft Teams, as well as online websites such as www.quizziz.com, www.padlet.com, and www.wordwall.com. All the tasks were constructed with two goals: 1) to learn more about the students' mathematical understanding and skills, and 2) to practice mathematical skills.

1) Evaluation tasks. The following shows some examples of Evaluation tasks used to assess students' mathematics knowledge and ability.

When the students had learned about the name and base of a three-dimensional shape. The students were assigned to identify a 3D shape that resembled an object they chose at home and describing the base of that 3D shape by uploading a photo and writing a caption on a digital wall, www.padlet.com.

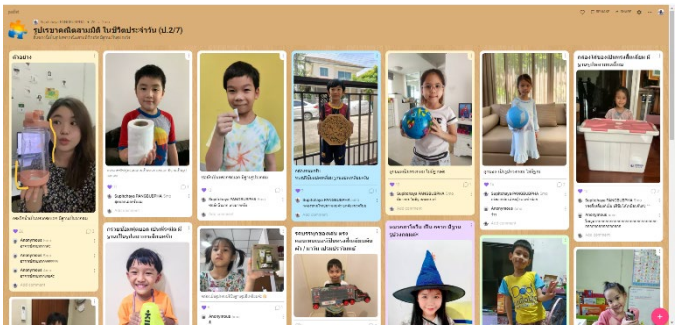


Figure 1: example of evaluation task

When learning “Knowing Calendar” lesson, the teacher assigned the students to find their birthdays from the Year 2021calendar and posted them on Padlet. Or using Microsoft Teams to submit pictures of organized money using coins and banknotes to represent the given amount.

Figure 2: example of students’ responses

2) Practicing activities. The Practicing activities are used to motivate students to practice what they had learned. Most of them are games which teacher create through game-based learning online platform such as wordwall.com. As the example below, it is a packman game on wordwall.com which the students need to find numbers that meet the criteria.

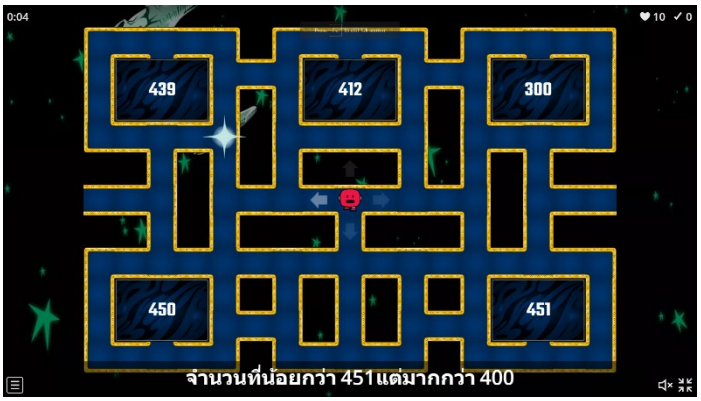


Figure 3: example of practicing activity

The research procedure

One of researcher took responsibility to teach both classes and assigned students to perform the tasks. After each class, she must reflect on what happened to the class, the students' reactions to the tasks, and what she has learned about students' knowledge or performance from the students' responses to the tasks. The students’ responses were analyzed to gain information on students’ understanding and misunderstanding. The data from teacher’s self-reflection record and students’ responses were analyzed by using content analysis to find the pattern of information to use as evidence to answer the research question.

Results

Using performance tasks can engage the students to the lessons and increase afford to accomplish the tasks. The figure 4 below show examples of students’ work. The teachers assigned them to arrange money into 300 baht in their own ways. They tried to convert money

into 300 baht in their own way and in different patterns from their friends. One of them used one 100-baht banknote, one 50-baht banknote, five 20-baht banknotes, one 10-baht coin, six 5-baht coins, and ten 1-baht coins, whereas the other used one 100-baht banknote, five 20-baht banknotes, one 10-baht coin, six 5-baht coins, and ten 1-baht coins. The students will have a better understanding of the concept that the same amount of money can be formed in multiple ways after completing this assignment.

Figure 4: example of students' work

The other example showing that using the tasks can increase their attention to the activities. The teacher assigned students from a class, which has 41 students in total, to practice by playing a game. According to the records, there are 86 students participated in this game. It appeared that some of them played more than once. It showed that the students were interested in putting their skills to the test throughout the performance task.

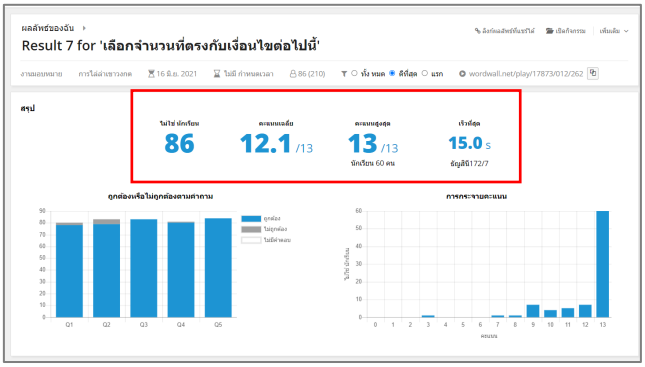


Figure 5: records of a practicing game

Using the performance tasks can help teacher recognize what students knew and didn't know. The teacher sometimes divided the class into small group and led the students playing game on quizziz.com. This task can help the teacher to gain the student understanding and misunderstanding on the lessons. For example, the teacher had students to complete the game which aims to evaluate their understanding on the meaning of division. The result showed that 69 percent of the students answered correctly, while 39 percent of them gave the wrong answer. Therefore, after this activity the teacher realized that she had to reexplain and give additional examples to correct their understanding. Furthermore, employing evaluation tasks as a formative assessment allows students and teachers to get instant feedback on the students' performance. This information can be used by the teacher to plan her next teaching activities based on her students' performance.

Figure 6: examples of responses on an evaluation task

Using the performance tasks allows students to share their opinions with others. Most of performance tasks are open-ended in terms of answers or solving methods. Therefore, it enables students to exchange or share their solutions or opinions. From one of the lessons, while the students learned about name and base of 3-D shapes, teacher led students to find objects in their home that similar to 3-D shapes and identify name and base of the shape. They have to post photos of the object and write down the caption on giving digital wall, Padlet.com. This platform is a simple digital wall that is easy for students to use. They are allowed to leave comments to their friend's responses. It can be a chance for student to interact with their friends.

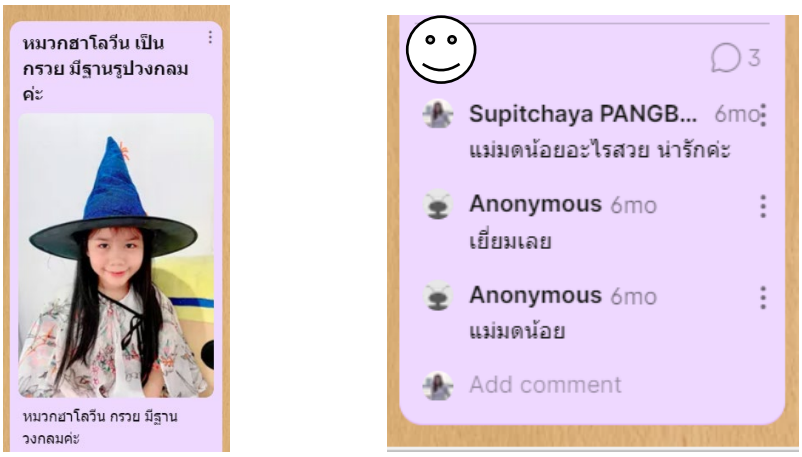


Figure 7: Sample of students' comments on their friend's work

Discussion

The results of this study showed that using performance tasks during online learning could engage students to the lessons and provided students opportunities to be active learners. Children in this age they need teacher acceptance (Erikson, 1950) Therefore, when the teacher demonstrated their friend's work, the others were eager to participate. It is according to Erikson's (1950) claim that children who are encouraged and commended by teachers develop a feeling of competence and belief in their skills. Those who receive little or no encouragement from parents, teachers, or peers will doubt their abilities to be successful. Corresponding with McFeetors, Marynowski, & Candler (2021), after using performance task, their students see mathematics as a subject that can be meaningful and interesting. Performance task needs the students to perform, create, construct, or produce something with a deep understanding and concepts. (Bahr, 2006) So, students' work can obviously show their understanding and misunderstanding through their performance.

Implication

Using performance task is aimed to gain the to gain information about the students' mathematics understanding and to engage students to practice mathematics skills. While learning mathematics, students need opportunities to show their performances in any way. Hence, Teachers should have included performance tasks into their classrooms not only in real classroom but also in online classroom. Together, the tasks in online classroom should be a simple platform which can response easily especially for grade1-3 students to avoid technological difficulties and students can response the tasks themselves.

References

Anderson, L. A. (2003). *Classroom Assessment: Enhancing the Quality of Teacher Decision Making*. Routledge.

Arter, J. A., & Stiggins, R. J. (1992). *Performance Assessment in Education*. (ERIC Document Reproduction Service No. ED 346 157)

Bahr, D. (2006). Creating Performance Assessments in Secondary Mathematics Classrooms. *Mathematics in School, 35*, 4-8. doi10.2307/30215955

Erikson, E. H. (1950). *Childhood and Society*. New York: Norton.

Jarrent R., & Tayag, M. B. (2020). Relationship between Student Achievement and Performance Task Scores in Math. *Universal Journal of Educational Research,8*(8), 3643-3647.

Jin, Y. Q., Lin, C. L., Zhao, Q., Yu, S. W., & Su, Y. S. (2021). A Study on Traditional Teaching Method Transferring to E-Learning Under the Covid-19 Pandemic: From Chinese Students' Perspectives. *Frontiers in psychology, 12*, 632787. https://doi.org/10.3389/fpsyg.2021.632787

Liu, X., Zhou, J., Chen, L., Yang, Y., and Tan, J. (2020). Impact of COVID-19 epidemic on live online dental continuing education. Eur. *J. Dent. Educ. 24*, 786-789. doi: 10.1111/eje.12569

McFeetors, P. J., Marynowski, R., & Candler, A. (2021). Generative Unit Assessment: Authenticity in Mathematics Classroom Assessment Practices. *Education Sciences, 11*(7), 366.

Piaget, J. (1952). *The Origins of Intelligence in Children*. New York, NY: W.W. Norton & Co.

Sharp, C. & Skipp, A. (2022). *Four Things we Learned about the Impact of Covid-19 on Mainstream Schools and Special Education Settings in 2020 and 2021*. Slough: NFER.

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Massachusetts: Harvard University Press.

Yang, X., Li, D., Liu, X., and Tan, J. (2020). Learner behaviors in synchronous online prosthodontic education during the 2020 COVID-19 pandemic. *Journal of Prosthetic Dentistry, 126(5), 653-657.* doi: 10.1016/j.prosdent.2020.08.004

DIGITAL COMPETENCE NEEDS FOR PRIMARY SCHOOL TEACHERS IN HAINAN PROVINCE, CHINA

Luping Zhuang[1], *Panchit Longpradit*[2*]

[1]Master of Education Program in Educational Management (International Program), Department of Education, Faculty of Social Sciences and Humanities, Mahidol University, Nakhon Pathom, Thailand
[2] Department of Education, Faculty of Social Sciences and Humanities, Mahidol University, Nakhon Pathom, Thailand
[*]Corresponding Author Email: panchit.lon@mahidol.ac.th

Abstract

The objectives of the study were to perform a digital competence needs assessment of primary school teachers and to propose recommendations for the digital competence needs of primary school teachers, verified by means of expert review. The study employed quantitative methodology using two sets of questionnaire. The samples for digital competence needs assessment were 414 primary school teachers in Haikou City, Hainan Province, China, and 8 experts were purposively selected to verify the recommendations of digital competence needs. Descriptive statistical analysis was adopted. The findings indicated that, firstly, the highest PNI $_{modified}$ score was 0.230 of digital skills, whereas the lowest PNI $_{modified}$ score was 0.203 of digital attitudes. Secondly, recommendations of digital competence needs involving 5 urgent digital competence needs: digital skills, digital communication, digital information, problem solving and digital security, were proposed. In addition, experts positively accepted the digital competence needs recommendation based on topicality, uniqueness, interactivity and context. The outbreak of the COVID-19 epidemic has accelerated the reform of digital education worldwide, hence the study findings have contributed and informed related stakeholders in China about the current primary school teachers' digital competence needs in Hainan province, and provision of digital competence needs recommendations has offered viable ways to improve teachers' digital competence essentially for education in the post-COVID-19 era.

Keywords: Digital Competence, Needs Assessment, Primary School Teachers

Background, Motivation and Objectives

The enormous proliferation of Information and Communication Technology (ICT) has advanced many ways people can perform their daily life tasks, and at the same time this has also indicated that individuals have to face situations that require the use of new technical, cognitive and social skills every day. Consequently, many countries and organizations have made educational policies and issued digital competence framework for teachers to support the development of digital competence. Particularly, the COVID-19 pandemic has accelerated the digital competence for teachers at all levels and it would be the most vital competence of all for education in the post-COVID-19 era.

China also realized this importance. Currently, there are still some improvement needed in some areas regarding digital education in China. Teachers and students have an unbalanced informatization ability. Internet regulatory loopholes and inadequate technical

ethics brought about cyber risks (Zhu, 2020). In addition, due to the situation and technical nature of digital teaching, the level of educational informatization and teaching work environment in different regions determines the different levels of teachers' digital competence. Hence, the development of teachers' digital competence is the need to solve the problem of informatization teaching, and it is also the need to promote the development of China's Core Competence and the core qualities of students.

Furthermore, primary education is basic and compulsory education; primary school teachers are vigorous for the development of younger learners, are conductive to the implementation of digital teaching in primary school, and accelerates the pace of China's education informatization 2.0. Since digital competence is the ability for the 21st century, it is crucial that the primary school teachers need to possess such ability so that they can in turn develop digital skills for younger learners. However, despite the importance of digital competence in primary education, the previous studies are mainly involved research on the concept of digital competence, hardly pay attention to study digital competence needs assessment for teachers in China, and lastly are very limited in the primary education domain.

Therefore, the main objectives of this research are to perform a digital competence needs assessment and to propose recommendations for the digital competence needs of primary school teachers in Haikou City Hainan Province, China.

Statement of Contributions

The results of the study can serve as recommendations on digital competence needs for primary school teachers that can be used for their teacher professional development and training. It can also recommend school administrators to comprehend which areas primary school teachers should gain their digital competence knowledge so that they can integrate it into teaching and learning, and which areas of digital competence schools should place emphases the most and possibly invest in recruiting more teachers and technology. All of the study findings have provided related stakeholders about worthwhile ways to improve teachers' digital competence essentially for education in the post-COVID-19 era.

Method

This research employed quantitative research methodology by using two set of questionnaires.

1. The first study was to perform a digital competence needs assessment. A questionnaire consisted of 32 questions in 7 dimensions, as illustrated in Table 1, with 5 degrees of perception on Likert scale, to assess 400 primary school teachers' digital competence needs in Haikou City of Hainan Province, including Xiuying, Meilan, Longhua and Qiongshan districts, calculated using Taro Yamanee's formula (Yamane, 1973) and rounded up with a quota sampling of 100 teachers for each district. The 7 dimensions of digital competence were synthesised from the UNESCO ICT Competence Framework for Teachers (UNESCO, 2011); the European Framework of Digital Competence for Teachers (DigCompEdu, 2017); the Common Digital Competence Framework for Teachers (INTEF, 2018) and the International Society for Technology in Education Standards for Teachers (ISTE Standards) (ISTE, 2018).

Table 1: 7 Dimensions of Digital Competence in this Study and their Description

Digital Competence Dimension	Description
Digital Knowledge:	The result of assimilated information obtained through learning, and can best be described as either theoretical or factual.
Digital Skills:	The ability to solve a task or problem in practice, while an instrumental skill is the ability to apply a method, a material or tool.
Digital Attitudes:	Ways of thinking and motivations behind actions, which have a great influence on people's digital activities, including ethics and values.
Digital Information:	The ability to identify, locate, retrieve, store, organize and analyze digital information and evaluate relevance and purpose.
Digital Communication	The ability to communication, collaborate, interact with and participate in virtual teams and networks, as well as making use of appropriate media, tone and media choice, behavior and social awareness.
Problem solving:	The ability to solve technical problems, identify needs and technological responses, creatively use digital technologies, and identify digital competence gaps.
Security:	Protecting devices, protecting personal data and privacy, protecting health and well-being and protecting the environment.

Following the analysis of digital competence needs assessment questionnaire, the $PNI_{modified}$ formula (Wongwanich, 2007) was applied to prioritize the digital competence needs of primary school teachers.

2. The second study was to propose recommendations for the digital competence needs of primary school teachers in Hainan Province, China. The finding from the first study and the literature review were analyzed to develop the recommendations for the digital competence needs, and 8 purposively selected experts with professional experience in educational field and teaching experience with digital competence as selection criteria then verified the proposed recommendations, using a 5-point rating scale questionnaire with 20 questions in 4 components of characteristics of information needs, namely Topicality, Uniqueness, Interactivity and Context (Bouwman & Wijngaert, 2002), as shown in Table 2.

Table 2: 4 Components of Characteristics of Information Needs and their Description in this Study

Components	Description
Topicality	Refers to the quality of present recommendations for the digital competence needs relating to the established objectives.
Uniqueness	Refers to the quality of the digital competence needs recommendations being specific and suitable for primary schools.
Interaction	Refers to the quality of digital competence needs recommendations being used for successful transaction or communication.
Context	Refers to the contents of digital competence needs recommendations are relevant, in the right format, easy to be obtained, and easy to put into practice in primary education.

Results, Discussions and Conclusions

The findings of the studies are presented as follows:

1. Regarding the digital competence needs assessment, the general information of respondents was summarized based on gender, teaching experience, academic qualification, working area and teaching subjects. It found that female teachers are more than male teachers, most of primary school teachers had less than 3-year teaching experience, academic qualification of primary school teachers were bachelor degree qualification, and the largest proportion of teaching subjects was Chinese language teaching (151 respondents).

In addition, the findings of digital competence needs assessment of primary school teachers were summarized by category and by items. The dimension (category) or item with a higher $PNI_{modified}$ score meant the primary school teachers would like to improve it more urgently than the dimension or item with a lower $PNI_{modified}$ score. By category, the highest $PNI_{modified}$ score of 0.230 was digital skills and the lowest $PNI_{modified}$ score was digital attitudes with 0.203, as shown in Table 3.

As illustrated in Table 3, among 7 digital competence dimensions, the highest $PNI_{modified}$ score was 0.230 of digital skills, whereas the lowest $PNI_{modified}$ was 0.203 of digital attitudes. In total, the $PNI_{modified}$ scores were between 0.203 and 0.230. This indicated that 7 digital competence needs were ranked as follows: (1) digital skills ($PNI_{modified}$ value= 0.230); (2) problem solving and digital security ($PNI_{modified}$ value= 0.229); (3) digital information ($PNI_{modified}$ value = 0.226); (4) digital communication ($PNI_{modified}$ value= 0.224); (5) digital knowledge ($PNI_{modified}$ value= 0.219); and (6) digital attitudes ($PNI_{modified}$ value= 0.203).

Table 3: Overview Digital Competence Needs of Primary School Teachers

Dimension	Expected Situation (I)		Current Situation (D)		$PNI_{modified}$ = (I-D)/D	Rank
	Mean	SD	Mean	SD		
Digital Knowledge	3.58	1.01	4.37	0.74	0.219	5
Digital Skills	4.40	0.75	3.57	1.03	0.230	1
Digital Attitudes	4.39	0.73	3.65	1.02	0.203	6
Digital Information	4.41	0.75	3.59	1.03	0.226	3
Digital Communication	4.39	0.75	3.59	1.00	0.224	4
Problem Solving	4.37	0.78	3.56	1.00	0.229	2
Digital Security	4.28	0.74	3.60	1.02	0.229	2

Additionally, by items, totally, all 7 dimensions comprised 28 items in the questionnaire, each of which was grouped under 1 dimension. Digital knowledge was accounted for 3 items, digital skills contained 3 items, digital attitudes consisted of two items, digital information was comprised of 5 items, digital communication included 6 items, problem solving concerned 4 items, and digital security was accounted for 5 items. The findings revealed that the most 5 items with the highest $PNI_{modified}$ scores were from the dimensions of digital communication, digital information, digital information, digital skills and problem solving, as presented in Table 4.

Table 4: The Most 10 Items with the Highest PNI $_{modified}$ Scores

Rank	Item	Dimensions	I		D		PNI $_{modified}$ Scores
			Mean	SD	Mean	SD	
1	Q16	Digital Communication	4.433	0.761	3.527	1.036	0.257
2	Q11	Digital Information	4.374	0.769	3.495	1.074	0.251
2	Q26	Digital Security	4.386	0.762	3.507	1.007	0.251
3	Q10	Digital Information	4.386	0.762	3.532	1.036	0.242
4	Q4	Digital Skills	4.399	0.763	3.545	1.014	0.241
4	Q25	Digital Security	4.441	0.748	3.579	1.083	0.241
5	Q5	Digital Skills	4.446	0.758	3.584	1.066	0.240
5	Q20	Problem Solving	4.354	0.776	3.512	0.990	0.240
6	Q21	Problem Solving	4.403	0.774	3.562	1.037	0.236
7	Q24	Digital Security	4.458	0.729	3.611	1.061	0.234
8	Q22	Problem Solving	4.384	0.787	3.554	1.035	0.233
9	Q17	Digital Communication	4.401	0.747	3.574	0.985	0.231
10	Q3	Digital Knowledge	4.366	0.742	3.554	1.016	0.228

2. Regarding the recommendations for the digital competence needs and their expert validation. Combining all the results of digital competence needs assessment by category and by items, it can be synthesized and summarized that the top digital competence needs for primary school teachers were digital skills, problem solving, digital security, digital information and digital communication. These competences therefore formed the basis of recommendations for the digital competence needs of primary school teachers in Hainan Province, China. The details are exhibited in Table 5. In addition, the recommendation for the digital competence needs of primary school teachers were verified by 8 experts. Table 6 exhibits the overall expert's levels of perception towards the recommendations for the digital competence needs of primary school teachers.

Table 5: Recommendations for the Digital Competence Needs of Primary School Teachers

Digital competence	Recommendations
Digital Skills	1. Primary school teachers should master how to use several basic applications and introduce appropriately to students. 2. Primary school teachers should use digital tools to communicate with students and parents and solve some tasks. 3. Teacher should use platforms to search appropriate learning and teaching resources for students. 4. In total, primary school teachers should set a good sample to students and guide students to rationally use digital learning platforms and digital learning tools in the process of using digital tools or online education platforms.
Problem Solving	1. Primary school teachers should identify students' digital needs and promote students' problem solving skills by using digital tools. 2. Primary school teachers should know how to solve some basic technical problem in teaching and learning. 3. Primary school teachers should create and design teaching materials in digital environment. 5. Primary school teachers should have ability to assess digital needs from students and themselves.

Table 5 (cont.)

Digital competence	Recommendations
Digital Security	1. Primary school teachers should have a sense of digital security and guide students to build the digital security awareness. 2. Primary school teachers should distinguish the concept of digital security and cyber security. When they are in trouble regarding digital security, they can know how to solve it. 3. Primary school teachers should have basic digital literacy and know privacy policy to protect students' personal information. 4. Primary school teacher should know how to avoid digital risk and how to solve the relevant problem.
Digital Information	1. Primary school teachers should enhance their ability of critical evaluation to process, critical evaluation of digital information. 2. Primary school teachers also need to pay more attention to the ability of searching information. 3. Primary school teachers should promote their ability to analyze digital information.
Digital Communication	1. Primary school teachers should pay attention to the way they express their opinions in the digital environment to make sure that students can understand correctly. 2. Primary school teachers should master how to use digital media and digital tools for teamwork, coordination and contact with parents in appropriate ways. 3. Primary school teachers should enhance a sense of social awareness. When teachers express their opinions or viewpoint on the public platform, they should guide students to use polite words. 4. In all, digital communication needs teachers to enhance the ability to express their opinions and have social awareness to deal with viral communication problems.

Table 6: Overall Level of Recommendations for the Digital Competence Needs Verified by Expert Review

Dimension	Mean	SD	Perception level
Topicality	3.52	0.98	high
Uniqueness	3.52	1.15	high
Interactivity	3.22	1.02	moderate
Context	3.70	1.09	high
Overall	3.49	1.07	high

Note: 1-1.80: lowest, 1.81-2.60: low, 2.61-3.40: moderate, 3.41-4.20: high, 4.21-5.00: highest (Best & Kahn, 1998)

As per the results presented in Table 6, the overall perception level of recommendations verified by experts was at a high level with the mean score of 3.49 (SD=1.07). The perception level of the Context was at a high level with the highest mean score of 3.70 (SD=1.09), among the 4 components. The result indicated that the recommendations for the digital competence needs was very relevant to the digital competence needs. The perception level of Topicality and Uniqueness received the same mean scores of 3.52 (SD=0.98, SD=1.15, respectively) and

were ranked the second highest, which revealed that the recommendations were related to the established objectives and had the high quality to be suitable for primary school teachers. Among all the component, the perception level of Interactivity was at a moderate level, the lowest mean score of 3.22 (SD=1.02), among 4 components. This indicated that the recommendations were slightly accepted by experts. All in all, the experts positively accepted the digital competence needs recommendation.

In conclusion, this research aimed to find out about the digital competence needs of primary school teachers in Hainan Province, China. The reasons behind this investigation are that digital competence is essential for digital education and teachers' digital competence can help moving toward and catch up with the development of digital education. So, knowing the digital competence needs of primary school teachers in Hainan Province China, confirms the current situations about what teachers' area of digital competence are missing and what areas the teachers already have. More importantly, the prioritization of digital competence needs based on the $PNI_{modified}$ formula offers an understanding and realization of what needs should be considered and be taken into consideration as the most and the least urgent matters.

In addition, digital competence needs recommendations for primary school teachers were proposed and verified by experts. The recommendations are worthwhile because they can be used for improving teachers' digital competence. They can be adopted by the concerned agency independently to make training programs for improving teachers' digital competence. Furthermore, as the digital competence needs recommendations were analyzed from the data collected from the primary school teachers' perspectives and viewpoints; hence the primary school teachers would benefit from them directly. In this way, the recommendations can provide some ideas to help teachers promote their digital competence, especially in Hainan Province, China.

Most importantly, the COVID-19 pandemic has speeded the digital competence needs for teaches at all levels, teachers must now catch up with this high pace of change in order to stay in line on how to use digital tools and technologies to assist in their teaching and learning, as well as student assessment in the post-COVID-19 era.

The contributions of the research are the digital competence needs assessment results that can pave the way for the teachers and related stakeholders to realize the current status of digital competence, and the recommendations on how to make improvements on teacher's digital competence. In addition, the study has developed a digital competence needs assessment questionnaire created from various universal frameworks. Additionally, it provides recommendations for school administrators and Ministry of Education to make digital competence training programs and human resource development plans for teachers. Such training and development plans would principally help teachers to strengthen their limitation of digital competence. Furthermore, the teachers can develop a series of individual self-learning plans to enhance their particularly missing areas in digital competence to fulfill their own requirements.

References

Best, J. W., & Kahn. J. V. (1998). *Research in Education*. https://ww2.odu.edu/~jritz/attachments/reined.pdf. Accessed 2 November 2020.

Bouwman, H., & Wijngaert, L. (2002). Content and Context: An Exploration of the Basic Characteristics of Information Needs. *New Media & Society, 4*, 329-353.

Butcher, N. (2019). *Marco de competencias docentes en materia de*. TIC UNESCO, Paris: UNESCO.

Education Technology and Mobile Learning. (2017). *9 Essential Digital Skills for Teachers*. https://www.educatorstechnology.com/2017/09/9-essential-digital-skills-for-teachers.html#google_vignette. Accessed 1 December 2020.

Fong, M. W. L. (2009). *Digital Divide Between Urban and Rural Regions China*. https://onlinelibrary.wiley.com/doi/pdf/10.1002/j.1681-4835.2009.tb00253.x. Accessed 15 December 2020.

National Institute of Educational Technologies and Teacher Training (INTEF). (2018). *Common Digital Competence Framework for Teachers*. https://aprende.intef.es/sites/default/files/2018-05/2017_1024-Common-Digital-Competence-Framework-For-Teachers.pdf. Accessed 1 December 2020.

International Society for Technology in Education (ISTE). (2018). *Crosswalk: Future Ready Librarians Framework and ISTE Standards for Educators*. Washington DC: International Association for Technology in Education.

UNESCO. (2011). *UNESCO ICT Competency Framework for Teachers*. https://iite.unesco.org/pics/publications/en/files/ 3214694.pdf. Accessed 11 January 2021.

Wongwanich, S. (2007). *Needs Assessment Research* (2nd ed.). Bangkok: Chulalongkorn University Press. (in Thai)

Yamane, T. (1973). *Statistics: An Introductory Analysis* (3rd ed.). New York, NY: Harper and Row Press.

Zhu, D. (2020). *Continue to Develop Youth Digital Education After the Epidemic Becomes Normal.* People.cn. http://edu.people.com.cn/ n1/2020/0729/ c1053-31802064.html. Accessed 2 February.

EFFECT OF SOCIAL SUPPORT FROM UNIVERSITY ON LEANING HAPPINESS OF HEALTH SCIENCES STUDENTS

Sirawit Pattanacharoenkit

Educational Management, Faculty of Social Science and Humanities, Mahidol University, Nakorn Pathom, Thailand.
E-mail: Sirawit.tk.sp163@gmail.com Tel. +6625498998.

Abstract

In the present day, people have been experiencing significantly increase stress and anxiety from their personal life and also in social life. Learning happiness is the elements that students need to increase their productivities and performance in their learning. In university, health science students seem to be one of the top students who showed high level of stress. The purpose of this study was to study the effect of social support from university on leaning happiness of health sciences students. The objective of this paper was 1) to examine the level of social supports from university and learning happiness of first year health sciences students; 2) to examine the relationship between social supports from university and learning happiness of first year health sciences students and; 3) investigate factors affecting learning happiness of health sciences students. The sample of this paper was 390 first year health science students at Mahidol University. The research instrument was survey questionnaires. The data was analysis with percentage and frequency for general information, mean, standard deviation for the level of social support and learning happiness. Simple Regression Analysis was use to examine the effect of social support on learning happiness. It was found that the average level of social supports from university is high (mean = 3.50 and S.D= .967). The result of learning happiness level is high (Mean= 3.66 and S.D. = 0.546). The coefficient of determination between social support and learning happiness is 40%. Overall, the result showed that there is the correlation between leaning happiness and social support. The factors that seem to affect learning happiness the most is material support and cognitive support.

Keywords: Hedonic, PERMA, Social support from university, Leaning happiness, Health sciences students

Background, Motivation and Objective

In the present day, people have more and more stress and anxiety from their personal life and also outside of their home. Happiness is the element that is difficult to define even with people who already claim that they have or earn the happiness. However, no one know or be able to earn happiness. The problem of happiness is not only difficult to define but also depend on each person's perspective. There are some researches that show there are some problems about happiness.

The problem of happiness in first research is concern about the origin of the problem with happiness by Cieslik. Cieslik, (2015) cited work from Marx (1984) and Durkheim (1991) which showed that there is different between wellbeing commonsense and critical explanations of wellbeing. Marx claim that some type of happiness might showed only happiness as delusion. The reason is it should have the effect especially on the personal life style. The work

that Cieslik agree that the happiness should change and be able to adapting to the modern day life style. Another research by Friedlander, Reid, Shupak, and Cribbie, (2007), it showed that there were many factors that cause student's unhappiness which are;

1. Exams most students likely to have the most anxiety during the exam, in this research it showed that they have stress and happiness while they discuss about score and performance with people around the students. However, the other stress that students also have is the expectation from the students themselves.

2. Project and other, the students are more likely to be concerned with the results of the work or project that they have done after submit.

3. Wrong option for university, first year university students try to learn and earn the degree for their future career. However, after study for 1 -2 semester, students may discover that they might not suitable in this subject or they might not be happy with the courses in university.

4. Inequality is one of the major issues in the society, it is the treatment between people that are not the same even in the same level of society. This makes people have major issue with the society and people around them.

5. Courses is possible cause on the feeling of wrong decision of choosing the university in students. The reason is that students may not fully aware of the meaning of the course and the feeling of mistaking or making wrong choice will appear in their mind and it will reduce the motivation and also happiness.

6. Scolding and Insult is not that simple to solve because this happen with other part of the students' life. It is depend on who the students dealing with at that time, some can be their family, friend or other. This will decrease their happiness level slightly.

Overall, the students especially first year face the difficulties not just about finding the right parts for their life but also balance emotion while they are facing issue that they cannot mention. This point of view is fascinating to explore more for further research.

It seem that stress it not minor issue as people think, it could lead to the major issue like suicide. The researcher of this studied feel confidents that the social support of Mahidol University will reduce stress level of the health science students.

The main reason that the researcher choose health science as the sample group is the researcher want to improve social support in university to contribute learning happiness in health science students.

Research question

What are the level of social support from university and learning happiness of first year health sciences students?

Is there relationship between social support from university and learning happiness of first year health sciences students?

Do the social supports from university affect learning happiness of health sciences students?

Research objective

To examine the level of social supports from university and learning happiness of first year health sciences students.

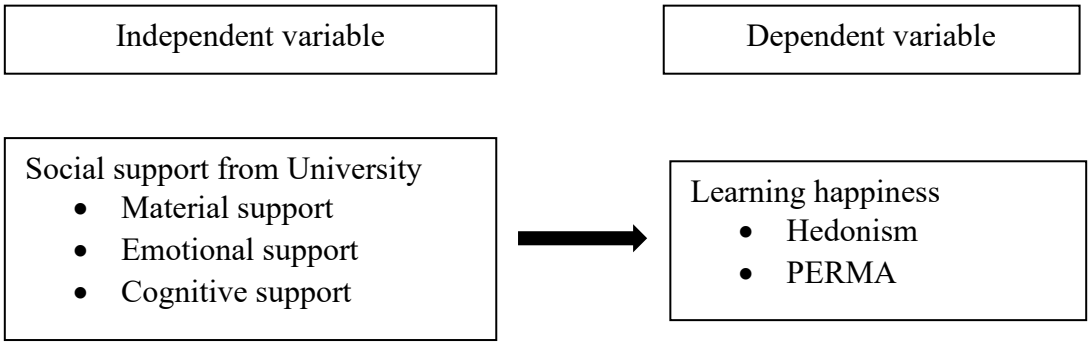
To examine the relationship between social supports from university and learning happiness of first year health sciences students.

To investigate factors affecting learning happiness of health sciences students.

Research hypothesis

This research aims to find the correlation between social support and learning happiness within the student. The researcher hypothesized social support system is effective factors for learning happiness of the students.

Conception framework



Literature review

Social support

Researched of social support from university from Friedlander, Reid, Shupak and Cribbie (2007) showed the challenge for the first-year university student during their beginning of their university life. Changing from high school student to university is a main life change for many teenagers. Attending university presents students with new experiences of learning and opportunities for mental development Nevertheless, university might be a source of stress. Academic difficulties increase and new social relations are established (Tao et al, 2000). Students are often uncertain of their abilities to meet these difficulties.

For students who move into university reduces contact from home, the change to and, likely support, from family as well as friends. Difficulties managing the stress associated with the transition may lead to decreased academic performance and increased mental distress. Social support and self-esteem are important resources for adolescents undergoing the transition to university. Positive self-esteem and higher levels of social support have both been shown to predict better adjustment to university. Thus, our overall question of interest was how changes in support, self-esteem, and stress are related to changes in adjustment from the fall of students' first year to early in the second semester.

Low attention has been paid to how different sources of social support and types of self-esteem differentially predict various facets of adjustment. In a longitudinal study, the present study examined the joint contribution of perceived social support, self-esteem, and stress as predictors of academic, social, personal-emotional, and overall adjustment across time.

Learning happiness

In this part, the concept of learning happiness definition and how it can affect to the student will be explained. Learning happiness is the sense that accompany while learning especially the emotion that has direct influence to the learners. This mostly have positive feedback from the student performance and also how the student will interact in their social life.

The work from Elwick and Cannizzaro (2017) showed that the effective way of achieving happiness and quality of life improvement is though learning and practicing wisdom and knowledge. In this work it is also possible to create policy that support happiness in higher

education by measuring flourishing, despairing, satisfaction, well-being and theory of Aristotelian Eudaimonia level.

As the researched continue, the PERMA model seem related and direct to manage learning happiness in students.

There is research from Australia about PERMA in 258 student's age between 13 to 18 years old. This research aimed to apply PERMA model and Hedonic happiness together According to the model from Sligma (2011) Seligman's (2011) model (see also Forgeard et al., 2011), positive emotions refer to hedonic feelings of happiness (e.g. feeling joyful, content, and cheerful). Engagement refers to psychological connection to activities or organizations (e.g. feeling absorbed, interested, and engaged in life). Positive relationships include feeling socially integrated, cared about and supported by others, and satisfied with one's social connections. Meaning refers to believing that one's life is valuable and feeling connected to something greater than oneself. Accomplishment involves making progress toward goals, feeling capable to do daily activities, and having a sense of achievement. Seligman (2011) advanced that these five pillars contribute to overall well-being, are important areas that people pursue for their own sake and can be defined and measured independently of one another.

This research applied cross-sectional associations between the well-being and self-reported measures of overall life satisfaction, physical vitality (i.e. feeling fit and strong), physical activity, school engagement, hope, somatic symptoms, and stressful life events. The author expected a differential pattern of associations across the factors. However, as studies to date have not directly tested the five components together in a single model, the author did not make specific hypotheses about the pattern of associations. Rather, the author explored associations and begin to build the empirical foundation for more differentiated perspectives, which can be further tested in the future.

Methods

Research Design

This study design to examine the effect of social support on the learning happiness in the first year Health science students. Single regression will be used, and questionnaire will be applied to collect the data from the first year health science students.

Population Sample and Sampling Method

There are many varieties of undergraduate degree in health science student in Mahidol University which are Medicine, Dentistry, Veterinary medicine, Medical technology, Nursing, pharmacy and Public Health. Mahidol University is the best university of the medical study. Mahidol University will also meet or above the benchmark in order to be able to apply to study in the Mahidol University.

The faculty of medicine accepts about 100 students

The faculty of Veterinary medicine accepts 50 students

The faculty of Nursing accepts approximately 200 students

The faculty of Public Health accepts approximately 40 students

Total the number of students are 390 students.

The main focus sample is the medical student in Mahidol University especially the focus group that will be study in Mahidol Salaya campus. The first-year students normally study at Salaya campus. The researcher will use the survey questionnaire based on the concept from Learning happiness, Hedonism, PERMA and social support from university

Part 1: General Information.
The question will be about gender, age of the students.
Part 2: Learning happiness
This part of the question will evaluate the factor that have related to the learning happiness.
Part 3: PERMA model and Hedonism
This question will be about; Positive emotion, Engagement, Relationships, Meaning and Accomplishment.
Part 4: Social support from University
In this question, the Material support, Emotional support and cognitive support from Mahidol University will be evaluated

Results

The research results are as follows:

The first section to state general information of the sample sex and age. The data are analysis by using descriptive analysis of frequency and percentage.

At the second section, to investigate the hypothesis social support system is effective factors for learning happiness of the students by using mean value, standard deviation, and maximum, minimum.

General information of the sample

The sample groups are fist year health science student total population is 101 students. According to the table most of the sampling number 91 (99.1%) are female while the male respondents are 10 (9.9%). The age of sample can be grouped by 3 age groups which are 18 – 20, 21 – 23 and above 24. The majority of the respondents are 18 – 20 with 60 (59.4%) respondents. Second group of the respondents are 21- 23 with 23 (22.8%) respondents. Last group of the respondents are 24 and above with 18 (17.8%) (Table 4.1).

Table 1: frequency and percentage of the respondents. (n=101)

General information	Frequency	Percentage (%)
Sex		
Male	10	9.9
Female	91	90.1
Age		
18 – 20	60	59.4
21 – 23	23	22.8
Above 24	18	17.8
Total	101	100

Level of social supports from university and Level of learning happiness

As the result from the SPSS, the level of social support from university was showed in table 4.2 with mean and standard deviation for the overall level of social support. According to the analysis, the total level of the social support from university was high with the mean score 3.50. From the standard deviation result the score is .967 which define as high. The highest mean score in this variable is cognitive support with the mean score of 3.78. On other hand, the lowest mean score is emotional support with 3.12 as mean score.

Table 2 Level of social supports from university

No	Components	Mean	S.D	Level of social support
1.	Material support	3.61	.927	High
2.	Emotional support	3.12	1.103	Moderate
3.	Cognitive support	3.78	.872	High
	Average	3.50	.967	High

Note: 1.00 – 1.80 = Lowest, 1.81 - 2.60 = Low, 2.612 – 3.40 = Moderate, 3.412 – 4.20 = High, 4.21 – 5.00 = Highest

Level of learning happiness

Table 3 stated the level of learning happiness according to the analysis the level of overall level of dependent variable is high with the mean score of 3.66.

Table 3 Level of learning happiness

No	Components	Mean	S.D	Level of learning happiness
1.	Hedonic	3.53	.515	High
2.	PERMA	3.79	.577	High
3.	Average	3.66	0.546	High

Note: 1.00 – 1.80 = Lowest, 1.81 - 2.60 = Low, 2.612 – 3.40 = Moderate, 3.412 – 4.20 = High, 4.21 – 5.00 = Highest

The relationship between social supports from university and learning happiness.

The following table 4 showed that the significant level of the correlation between social support, PERMA and learning happiness. The finding show that social support is correlated with learning happiness and PERMA as .470 .631 consequently. The social support was the significantly affective predictor of learning happiness for the first-year students of health science.

Table 4 correlation

Variables	Social support	Learning happiness	PERMA
Social support	1.000	.470*	.631*
Learning happiness	.470*	1.000	.624*
PERMA	.631*	.624*	1.000

*. Significant < 0.01

Factors affecting learning happiness

Table 4.4 show the over prediction of social support on learning happiness with the coefficient of determination ($R^2 = 0.407$) with the social support measure that 40% influence on learning happiness. On the other hand, table 5 also specify the level of the significant effect of social support on learning happiness.

Table 5 Significant effect of social support on learning happiness

R	R^2	Adjusted R Square	F Change		B	Beta	t	Sig.
.638[a]	0.407	0.401	67.996	(Constant)	2.284		12.585	0
				Social support	0.416	0.638	8.246	0

Predictors (Constant): Social support
a. Dependent Variable: Learning happiness
*. Significant < 0.01

Discussions and Conclusions

This research was conduct to find the factors affecting learning happiness of health sciences students by examine the level of social supports from university and learning happiness of first year health sciences students and also the relationship between social supports from university and learning happiness of first year health sciences students. This research was conduct though survey with 101 students. Then, analysis using SPSS program to complete the analysis and find the correlation of both of dependent variable. Level of social support from university.

From the previous chapter stated that social support from university there seem to have approximately 40 percent. However, there seem to have 2 main complements, which are cognitive support and material support. Although, the emotional support seem to be moderate level. It possibly means this variable should not misjudge, it could be necessary for some students who have issue with coping with stress or anxiety. There seem to have more elements in the social support from university that this research not include. Therefore, it is possible that there are many elements that could relate, affect or have an effect on the social support from university. In terms of management, it seems that social support from Mahidol University are already support student in material and cognitive support as the result from the result. Management could improve and find more about support that university could provide to students and what support that students are needs for their life in university.

Level of learning happiness of health science student.

Overall, the students there seem to show high learning happiness in health science student from Mahidol University. The main happiness could seem to be the meaning and accomplishment because the emotional support have low percentage in social support compare to other social support. Both of the motivation theories which are intrinsic and extrinsic motivation are relate to this. The reason is the students seem to aim for improving study performance and grade in class more than other elements. In fact, PERMA seem to showed correlation to learning happiness in students, which is high. This research aim to find the factor of learning happiness. It is possible that if there is research that aim to find that level of the PERMA in students after find correlation with the social support can be interested.

Relationship between social support from university and learning happiness on the health science students

There seem to have high correlation between social support and learning happiness. Even though this researched, not concern in each element, there seem to have more possibilities to explore more in further researched. In learning happiness, there seem not only have PERMA theory, but there could have more for learning happiness. In this researched showed that there seem to have strong relationships for social support from university and learning happiness.

Factors affecting learning happiness of health sciences students

Overall, as the analysis showed that the all of the complements in social support are affect with learning happiness. Nevertheless, emotional support level is moderate, there seem that there could have more factors that other research could explore more. As the evidences from the results are concern. It is not showed the low results which mean there are possibility that there could have other factors not only in social support but other factors that impacts learning happiness. The motivation theories could be involved in students, and it could attract other researcher interested.

Recommendation from the study

In this researched, there are three objectives which are, to examine the level of social supports from university and learning happiness of first year health sciences students.to

examine the relationship between social supports from university and learning happiness of first year health sciences students and to investigate factors impacting learning happiness of health sciences students. Moreover, it is possible to explore more in educational management especially in term of mange other factor that can support the students such as motivation, external elements like income and life outside classroom.

Recommendation for further study

According from the evidence from the light of above are concern, this research concern 3 complements which are cognitive support and material support and emotional support. For learning happiness, researcher assume that for further study the next research could find another dependents variable to discover correlation with learning happiness.

References

Cieslik, M. (2015). Not smiling but frowning': Sociology and the 'problem of happiness. *Sociology, 49*(3), 422-437.

Deci, E. L., & Ryan, R. M. (2008). Hedonia, eudaimonia, and well-being: An introduction. *Journal of happiness studies*, *9*(1), 1-11.

Di Fabio, A., & Palazzeschi, L. (2015). Hedonic and eudaimonic well-being: the role of resilience beyond fluid intelligence and personality traits. *Frontiers in psychology*, *6*, 1367.

Ehrman, M. E., Leaver, B. L., & Oxford, R. L. (2003). A brief overview of individual differences in second language learning. *System, 31*(3), 313-330.

Elwick, A., & Cannizzaro, S. (2017). Happiness in higher education. *Higher Education Quarterly*, *71*(2), 204-219.

Friedlander, L. J., Reid, G. J., Shupak, N., & Cribbie, R. (2007). Social support, self-esteem, and stress as predictors of adjustment to university among first-year undergraduates. *Journal of college student development*, *48*(3), 259-274.

Goodman, F. R., Disabato, D. J., Kashdan, T. B., & Kauffman, S. B. (2018). Measuring well-being: A comparison of subjective well-being and PERMA. *The Journal of Positive Psychology, 13*(4), 321-332.

Huta, V. (2016). An overview of hedonic and eudaimonic well-being concepts. *Handbook of media use and well-being: International perspectives on theory and research on positive media effects*, 14-33.

Kramer, H. C., Berger, F., & Miller, G. (1974). Student concerns and sources of assistance. *Journal of College Student Personnel*.

Li, J., Han, X., Wang, W., Sun, G., & Cheng, Z. (2018). How social support influences university students' academic achievement and emotional exhaustion: The mediating role of self-esteem. *Learning and Individual Differences*, *61*, 120-126.

Michalos, A. C. (2008). Education, happiness and wellbeing. *Social Indicators Research*, *87*(3), 347-366.

Michalos, A. C. (2017). Education, happiness and wellbeing. In *Connecting the quality of life theory to health, well-being and education* (pp. 277-299). Springer, Cham.

RELATIONSHIP BETWEEN LOAN UNDERSTANDING, LOAN SATISFACTION AND LOAN PRESSURE IN THE IMPLEMENTATION OF CHINA STUDENT LOAN POLICY IN CHONG QING, CHINA

Xirun He, Arisara Leksansern*

Department of Education, Faculty of Social Sciences and Humanities,
Mahidol University, Thailand
*Corresponding Author E-mail: 384348931@qq.com, Tel. +18615723613527

Abstract

The purpose of this study was to study the level of loan understanding, satisfaction, and pressure of the students on the implementation of China's student loan policy in Chongqing, China and to find the relationship between loan understanding, loan satisfaction, and loan pressure in the implementation of China's student loan policy in Chongqing, China.
The study employed a quantitative method. Quantitative data were collected using a survey questionnaire. The sample consisted of 397 students, including 172 students from C University, 100 students from S University, and 125 students from W University who responded positively. Descriptive statistical analysis and Pearson's product-moment correlation coefficient were employed in analyzing the quantitative data. The overall findings revealed that the level of students loan understanding of the students was moderate with an average score of 2.77; the level of loan satisfaction of the students was moderate with an average score of 2.96; and the level of repayment pressure of the students was moderate with an average score of 3.06. It was indicated that there was a positive correlation at the 0.01 level (2-tailed) among the loan understanding and loan satisfaction of the three universities in Chong Qing (r=0.528); there was a negative correlation at the 0.01 level (2-tailed) among the loan understanding and loan pressure of the three universities in Chong Qing (r=-0.454). There was a negative correlation at the 0.01 level (2-tailed) between the loan satisfaction and loan pressure of the three universities in Chong Qing (r=-0.519). Based on the findings, it is recommended that the Chinese government increase the publicity of Chinese student loans, including the application conditions, application procedures, application process, repayment methods, punishment measures, etc. Before applying for student loans, Chinese students should carefully understand the treaties, application process, and repayment methods of student loans. The university should screen and train relevant staff to ensure that students have a positive loan experience during their studies at the university and to increase college student satisfaction. The three universities selected in this study are ordinary universities, excluding vocational universities and junior colleges.

Keywords: Chinese Student Loan, Loan Understanding, Loan Satisfaction, Loan Pressure

Background, Motivation and Objective

Government subsidized student loan policy (GSSLS), also known as the China's student loan policy, is a credit student loan policy initiated and launched by the government in 1999. Its target customers are mainly poor students from ordinary colleges and universities. The method is to borrow money. Students apply for loans from the bank through the university to pay the tuition, accommodation and living expenses during the university period. After

graduation，Students will pay off by installment. The main preferential policies are no guarantee, no loan interest and the repayment period has been extended to six years after graduation (Xin & Xuezhen, 2021). Chongqing, as a municipality directly under the central government of China, currently has 65 universities, including 26 undergraduate and 39 junior colleges. Since its release in 1999, China's student loans have helped tens of thousands of poor students and families in Chongqing. According to the survey, with the popularization of national student loan policy. In 2017, the proportion of rural students attending key universities increased by 4% (Wenjuan & Xueping, 2008). In addition, in recent years, the number of poor students applying for university student loans in Chongqing is increasing year by year.

However, With the rapid expansion of the demand for higher education and a large number of poor students entering universities for higher education, more and more poor students choose Chinese student loans as the only way to realize their university dream. At this time, problems such as student loan understanding, student loan satisfaction and student loan pressure gradually surfaced. Due to inadequate policy publicity and management, many students and parents blindly apply for Chinese student loans because they are not clear about them. Studies have shown that, there are differences in the cognition of students applying for loans to the Chinese student loan policy information. Some students who have received loans still do not understand and roughly understand some policies and information of the Chinese student loan until graduation, which is mainly reflected in their understanding of the nature of the Chinese student loan policy There is a lack of correct understanding and cognition about the repayment plan and compensation method of the loan, as well as the risks and consequences of overdue repayment (Mingjiao & Qing, 2015). Generally speaking, the loan students have a low understanding of the national student loan policy, The student loan policy in China cannot be planned and implemented as expected, and the student loan caused by the imperfect design of Chinese student loan makes students dissatisfied. The pressure of student loans caused by the employment problems and integrity reasons of Chinese students after graduation. many problems come one after another. Whether these problems can be solved and how to solve are closely related to the development of China's higher education and the self-interest of university students.

This research will study and analyze the current student loan policy issues reflected by them, so as to find the relationship among student loan understanding, student loan satisfaction and student loan pressure. At present, for Chinese university students, especially the poor students who have the experience of student loan policy, the most concerned problems are obtained. The researcher will study the existing research results, combined with the reality of China, the actual situation of university students. Find out the relationship among student loan understanding, student loan satisfaction and student loan pressure. The researchers believe that this is a new perspective and can improve China's student loan policy.

The objective is to study the level of loan understanding, satisfaction, and pressure of the students on the implementation of China’s student loan policy in Chongqing, China and to find the relationship between loan understanding, loan satisfaction and loan pressure in the implementation of China’s student loan policy in Chongqing, China.

Statement of Contribution

The research findings will help to bring different opinions from the perspective of students to Chinese student loans and will find the shortcomings of Chinese student loans from a new perspective, and the policy also has the opportunity to be improved.

It helps to improve the equity of education in China and meet the most practical needs of poor students in China. From the student level, we can get the real problems that contemporary

university students are facing. It is conducive to the development of university Students' reading and employment.

It is conducive for the Chinese government to get effective suggestions and improve the perfection of Chinese student loans. It is helpful for college students to understand Chinese student loans. It will help Chinese universities improve their serviceability and increase the satisfaction of college students. Provide research direction for future research on Chinese student loans in Vocational Colleges and junior colleges.

It is helpful to promote the social and government departments to understand the shortcomings of national student loans in colleges and universities. Provide relevant suggestions for relevant government departments to study and formulate relevant policies.

Methods

In this study, three universities in Chongqing, China applied for student loans as the research objectives, using quantitative research methods to obtain data. This study uses the questionnaire method to collect data and study the contemporary university students' views on Chinese student loans. This study used Likert scale to collect and measure variables. This study uses the quantitative research method, through the of Chinese student loans and similar student loans in other countries, puts forward suggestions to improve Chinese student loans.

The following steps will be used for data collection of this questionnaire

3.1 The researchers sought agreement from the presidents and student unions of C, S and W universities in Chongqing.

3.2 The researchers visited C, S and W universities in Chongqing, randomly searched for students on campus, and obtained the consent of the students.

3.3 The researchers provided pens and questionnaires to the university students who agreed to the questionnaire survey, and obtained the data of the questionnaire.

The following statistics will use in data analysis:

3.4 Descriptive statistics will use in presenting information receive from study in order to describe the information of samples by using frequency, percentage, mean and standard deviation.

3.5 The relationship between loan understanding, loan satisfaction and loan pressure in the implementation of China student loan policy in Chongqing, China are analyzing by using descriptive statistical analysis and Pearson’s product-moment correlation coefficient.

Results, Discussions and Conclusions

The results of relationship between understanding, satisfaction and repayment pressure of Chinese student loan:

The Pearson Coefficient correlation was used to determine the relationship between understanding, satisfaction and repayment pressure of Chinese student loan. Therefore, the correlation between Chinese students’ understanding, satisfaction and repayment pressure are shown in table 4.6

Table 1: Correlation of loan understanding, loan satisfaction and loan pressure in the implementation of China’s student loan policy in Chongqing, China

	Loan understanding	Loan satisfaction	Loan pressure
Loan understanding	1		
Loan satisfaction	.528**	1	
Loan pressure	-.454**	-.519**	1

**. Correlation is significant at the 0.01 level (2-tailed).

From Table1, the results of the analysis on the correlation of loan understanding, loan satisfaction, and loan pressure in the implementation of China's student loan policy in Chongqing, China. It was found that there was a significant positive correlation of loan understanding with loan satisfaction at the 0.01 level (2-tailed). Loan pressure was significantly negatively correlated with loan understanding and loan satisfaction at the 0.01 level (2-tailed).

Discussion: analyze the relationship between student loan understanding and student loan satisfaction.

The relationship between students' understanding of student loans and their satisfaction with student loans are closely linked and positive. The data results in table1 show that if students are clearer about the application conditions, application process and materials to be submitted, they will be more satisfied with the student loans. This can be reinforced by Adelaide (2009) explained that understanding, attitude, and behavior are interrelated and interactive. Understanding plays a very important role in the formation of attitude. Understanding affects attitude, and attitude and behavior have a great correlation.

The relationship between student loan understanding and student loan repayment pressure is negative. From the data analysis in table1, the more a student understands under what kind of financial situation should students need loan support, the less pressure they will have after the loan expires. On the contrary, if a student does not understand the application qualification, application process, and repayment time of a student loan when the loan is due, their repayment pressure will be greater. It is also in accordance with the findings from a study carried out by Ming Jiao and Qing (2015) who found out that the high understanding of student loan policies, will correspondingly reduce the repayment pressure they feel.

The relationship between student loan satisfaction and student loan repayment pressure is negative. The repayment period and loan amount also have a certain impact on the repayment pressure of students. According to the analysis results in table1, students' satisfaction with student loans is related to repayment pressure, and there is a negative correlation.

Conclusion: The relationship between students' understanding and satisfaction of Chinese student loan：Pearson coefficient was used to analyze the relationship between students' understanding and satisfaction with Chinese student loans. The result showed that if students were clearer about the application conditions, application process, and submitted materials, they would be more satisfied with the student loan. Secondly, the more students know how to repay the loan, the higher their satisfaction with the punishment measures for students who fail to repay the loan on time. Finally, the more students know about the national student loan policy before going to college, the more consistent their expectations of loan application experience.

The relationship between students' understanding and repayment pressure of Chinese student loan.

Pearson coefficient was used to analyze the relationship between students' understanding and repayment pressure of Chinese student loans. Moreover, this correlation is negative. The more students understand what kind of economic situation students need loan support; the less pressure they will have after the loan expires.

The relationship between students' satisfaction and repayment pressure of Chinese student loan.

Pearson coefficient was used to analyze the relationship between students' satisfaction and repayment pressure of Chinese student loans. Moreover, this correlation is negative. The students are dissatisfied with the loan amount of 6000RMB a year, the greater the repayment pressure when the loan is about to expire. It can be seen that there is a certain relationship between high tolerance and student loan satisfaction. The repayment period of Chinese student

loan is 6 years, up to 6000 yuan per year. The repayment period and loan amount also have a certain impact on the repayment pressure of students.

References

Adelaide. (2009). Creating value in multiple cooperative relationships. *International Journal of Quality & Service Sciences, 1*(3), 255-270.

Mingjiao, Y. & Qing, C. (2015). Research on post-90s college students' cognition and behavior of national student loan policy. *Exploration of Higher Education, (07),* 39-41. doi: CNKI: Sun: gjta. 0.2015-07-008

Wenjuan, L. & Xueping, T. (2008). Analysis on the dilemma and Countermeasures of national student loan. Journal of Inner Mongolia Agricultural University (Social Science Edition), (02), 81-83. Doi: 10.16853/j.issn.1009-4458.2008.02.030

Xin, L. & Xuezhen, L. (2021). Evolution and Prospect of college student financial aid policy. *Journal of College Counselors,* (03), 84-89. doi: 10.13585/j.cnki.gxfdyxk.2021.03.016

THE EFFECTS OF USING PROJECT-BASED LEARNING TO DEVELOP STATISTICAL UNDERSTANDING DURING COVID-19

Muhammatarlawi Boogu[*]*, Kawalin Chainarong, Wandee Kasemsukpipat, Songchai Ugsonkid*

Faculty of Education, Kasetsart University, Bangkok, Thailand
[*]Corresponding Author E-mail: muhammatarlawi.b@ku.th, Tel. +66847499818

Abstract

Although during the COVID-19 outbreak, most of the schools were restricted from teaching students in the classrooms, teachers should still consider finding teaching approach that engage and enhance students' conceptual knowledge and skills. Project-based Learning (PBL) is an instructional approach, which students actively investigate real-world problems in order to gain deeper understanding, which is no difference from studying in an actual classroom. The aim of this research was to study the effects of using PBL to develop statistical understanding via practice in online classroom. A total of 153 grade 12 students from a laboratory school in Pattani Province took part in this study. The instruments were students' projects and teaching logs. The data were analyzed using content analysis to evaluate how the students applied their statistical knowledge in the project and what additional skills they gained as a result of working on it. The findings revealed that the students had a thorough comprehension of statistical process. They could formulate statistical questions and collect, organize, and display relevant data. However, some students still misunderstood how to use the appropriate displays with the essential data. Furthermore, the results of online PBL instruction revealed that students had opportunity to deepen their learning by using technology to seek for updated statistical questions and data as well as produce their presentations. The study showed that PBL is applicable for online learning which can be adopted as channels for giving feedback and collaboration among students and teacher and results in students' knowledge and skills.

Keywords: Project-based learning, Statistical process, Online learning

Background, Motivation and Objective

Although during the COVID-19 outbreak, most of the Thai schools were restricted from teaching students in the classrooms, teachers should still consider finding teaching approach that engage and enhance students' conceptual knowledge and skills, similar to what they would learn in the classroom. The distinction between teaching in a regular classroom and teaching in an online classroom is how to keep students engaged in the activities that the teachers are teaching while maintaining the same level of knowledge that they would have in the classroom.

Project Based Learning (PBL) is the way out of this issue. Instead of passively acquiring knowledge from the teacher, students in PBL have an active role in learning. The basic features of PBL activities are as follows: 1) find what students are interested in learning, 2) inspire students self-directed inquiry and let them choose what they want to study, 3) foster a student-centered learning environment, 4) provide relevant hands-on experience and emphasize outcome-based learning, 5) encourage social and collaborative skills, and 6) provide feedback

and improvement ideas (Bell, 2010; Larmer, Mergendoller, & Boss, 2010; Saye, 2017; Schultz, 2010; Laksana, Busayanon, and Mahamarn, 2019). Thus, the PBL activities that teachers have to create, would allow students work together with their teammates and the teacher to accomplish the project, and after the project is completed, a presentation is presented. The teacher's duties are to ask questions that stimulate students thinking and reasoning and encourage self-directed inquiry, as well as to help them arrange learning experiences (Bell, 2010). The previous studies were found that the advantages of using PBL in the classes include facilitating students to work together on conceptual understanding, prior knowledge application, and skill development which has the ability to bring together a variety of disciplines to develop a project (Capraro & Slough, 2013), allowing students to show greater skill (Crowley, 2015), increasing the performance of students (Ali, Akhter, Shahzad, Sultana, & Ramzan, 2011), requiring students to tackle real-world situations, and developing effective collaboration skills, (Roberts, 2011), motivating students (Liu, 2010), increasing content knowledge, and responding to the needs of students with a wide range of abilities and learning methods (Coyne, Hollas, & Potter, 2016).

Many previous studies on the usage of PBL revealed that PBL is an instructional approach, which students actively investigate real-world problems in order to not only gain deeper understanding, but also to have more skills such as self-regulation, collaboration, creativity, and communication skills. However, there is no evidence of it being employed in online classes. The researchers would then seek to investigate the effects of employing PBL in an online statistical process class to explore the effects of PBL on students' understanding and additional skills gaining from conducting the projects in this study.

Statement of Contribution

This study provides a recommendation for teachers to use PBL as a supportive way of online learning on the statistical process topic.

Methods

Participants

The participants of this study were 153 twelfth grade students from 4 classes of a laboratory school in Pattani Province, enrolled in the Basic Mathematics course in the 2021 academic year.

Research instruments

1. The 8-period lesson plans were developed using a PBL approach, which includes allowing students to find out and choose "hot issue" or the topics they were interested, encouraging self-directed inquiry and allowing students to choose what they wish to study in a student-centered learning environment, providing direct experience with a focus on outcome-based learning, encouraging students to collaborate with their teammates to complete the project, and critique or share their ideas to others. The lessons were divided to 2 sessions: 4-period virtual classes and 4-period learning management system classes (LMS). The virtual classes were planned to introduce the fundamental knowledge the students need for conducting the project such as formulating statistical questions, designing a survey, collecting the data and presenting relevant data. The LMS were planned to give students space for discussion and sharing their progresses on the projects. The students were assigned to critique and feedback on other groups' work in the LMS.

2. The teachers' logs were established to keep track of students' actions while they are in the virtual Classroom and proceeding their final projects.

3. The students' projects were assigned to conduct a survey study on the topics they were interested. The students needed to create statistical questions, construct questionnaires, collect, interpret, represent data, and present their projects.

Research procedures

1. The teacher taught the students the fundamental knowledge such as crafting statistical questions, designing a survey, gathering data and presenting data. These virtual classes were conducted through Google Meet platform.

2. The teacher instructed students to create their own group projects on the theme of statistical processes. He divided the students into 51 groups and each group was given the first task of the project which was choosing the hot topic they were interested and creating series of seven questionnaires to survey in their daily lives, then asked them to submit the task through Google Classroom.

3. Teacher encouraged students to discuss their survey series with classmates, and advised them to find sample groups for their questions, before creating survey forms.

4. Each groups received the second task of the project which was generated survey forms and collected data with their sample groups using forms they created. After that, they used Google Form to distribute the work.

5. A teacher followed up on the issues that students encountered while gathering data and encouraged them to share and discuss their findings with their peers in order to come up with solutions.

6. Students returned to complete the survey, then submitted their project task through Google classroom.

7. Students used Google Meet to present their projects and share what they have learned about statistical processes from their projects with their classmates.

8. After receiving the feedbacks from their peers and a teacher, students revised their projects and submitted them again through Google Classroom.

9. Every period and assignment, the teacher would record what he observed from the lessons and the project tasks into teacher logs.

Data analysis

The researchers utilized inductive content analysis the data from students' projects and teaching logs to find the patterns in the data and evaluate which topics and which charts tended to recur frequently in the participants' responses. All the hot topics in which participants directly or indirectly mentioned "studying online during Covid-19", "ordering food and stuffs during Covid-19", "dealing with the problems of government during Covid-19", "working from home during Covid-19", "Covid-19 vaccines and the way to protect the Covid-19", "traveling inside and outside Thailand during Covid-19", "people feelings during Covid-19", and "university admissions during Covid-19", and all the charts were represented "Pie chart", "Donut chart", "Simple bar chart", "Multiple bar chart", "Component bar chart", "Mix charts" were coded for this purpose. Furthermore, there were something the researchers found out from teaching logs and doing the students' projects, and what additional skills they obtained as a result of working on the project were also analysed and shown in the results.

Results

The findings revealed that the students had a thorough comprehension of statistical process. They could formulate statistical questions and collect data which were hot topics in their daily lives. The most popular three hot topics they created survey forms were about studying online during Covid-19 (29.41%), ordering food and stuffs during Covid-19 (23.53%), and dealing with the problems of Thai government during Covid-19 (19.61%). All

the series of questionnaires were updated statical questions and according to the present situations. (Table 1)

Table 1: Hot Topics of the students' projects

Topics	Frequency (%)
1) studying online during Covid-19	15 (29.41)
2) ordering food and stuffs during Covid-19	12 (23.53)
3) dealing with the problems of government during Covid-19	10 (19.61)
4) working from home during Covid-19	5 (9.81)
5) Covid-19 vaccines and the way to protect the Covid-19	3 (5.88)
6) traveling inside and outside Thailand during Covid-19	2 (3.92)
7) people feelings during Covid-19	2 (3.92)
8) university admissions during Covid-19	2 (3.92)
total	**51 (100)**

Furthermore, they could organize and display relevant data which were many kinds of charts such as pie chart, donut chart, simple bar chart, multiple bar chart, component bar chart and some groups showed the data in mix charts. The most two popular simple charts they used were pie chart (25.49%), and donut chart (13.73%). The most popular mix charts were pie chart and donut chart (17.65%) as well as pie chart and simple bar chart (17.65%). (Table 2)

Table 2: The charts in students' projects

Charts	Frequency (%)
1) Pie chart	13 (25.49)
2) Donut chart	7 (13.73)
3) Simple bar chart	5 (9.80)
4) Multiple bar chart	2 (3.92)
5) Component bar chart	3 (5.88)
6) Mix charts: Pie chart and Donut chart	9 (17.65)
7) Mix charts: Pie chart and Simple bar chart	9 (17.65)
8) Mix charts: Pie chart and Component bar chart	2 (3.92)
9) Mix charts: Donut chart and Simple bar chart	1 (1.96)
total	**51 (100)**

Some students, however, were still confused about how to use the appropriate displays for the data. Some groups used the incorrect chart to represent the data. They used a multiple bar chart to indicate the number of responses for each phenomenon (Figure 1), which was not in accordance with the goal of utilizing a multiple bar chart to compare between more than one phenomenon. Students had to use component bar chart to illustrate data in which the overall magnitude is divided into various or components within each phenomenon. The students in this scenario were perplexed about how to find the most appropriate representation for their data.

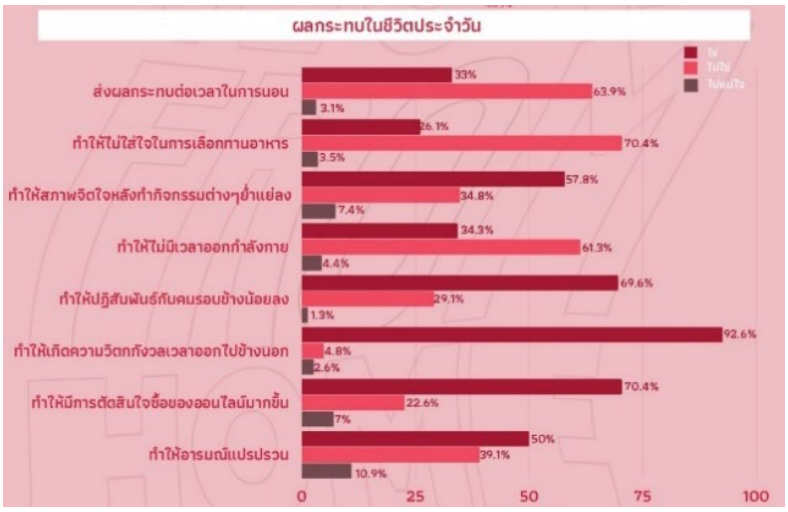


Figure 1: The misunderstanding student's project

Apart from the basic skills such as self-regulation, collaboration, creativity, presentation and communication skills that students could gain from PBL activity, there was also another unexpected skill occurred in the PBL online class. It resulted from working on the projects such as using technology to seek for updated statistical questions and data as well as produce their presentations. While students were enrolled in this course, a teacher could provide feedback, and students could participate by using computer platform such as Google Meet and submitting assignments through Google Classroom. Moreover, they used Canva for creating excellent presentations (Figure 2) and Google Forms for creating online survey to collect data. Some groups used data representations which have not been introduced in the class, such as the Donut chart and mix charts. They researched how to use those representations by themselves from the internet. The students displayed sufficient technology abilities in their project execution as a result of implementing this PBL online class.

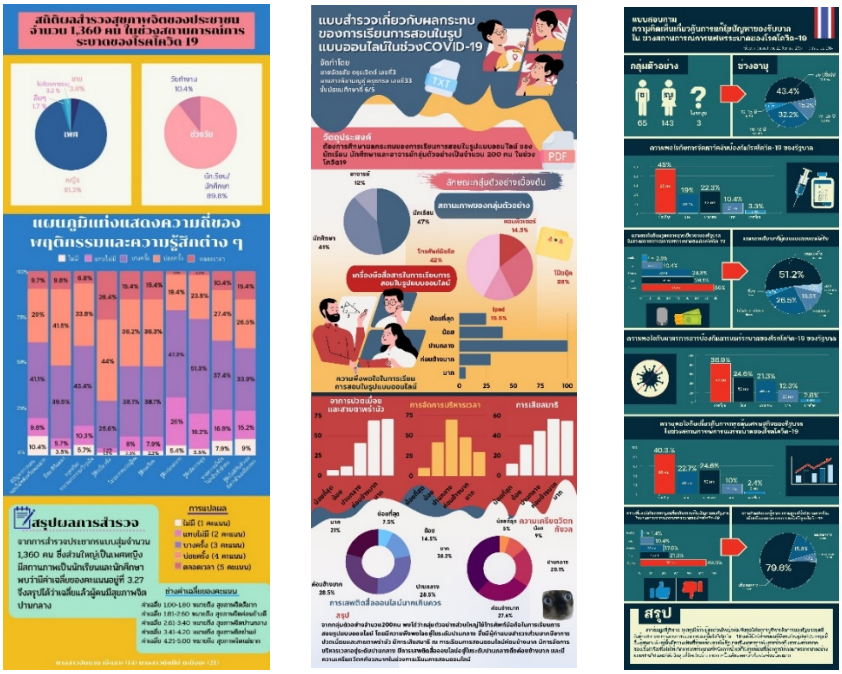


Figure 2: The examples of students' projects

Discussions and Conclusions

According to the data, the students had a good understanding of the statistical process after learning through PBL in the online class. They were able to formulate statistical questions and collect data on current issues in their lives. Furthermore, they were able to arrange and display important data using a variety of representations, such as pie chart, donut chart, simple bar chart, multiple bar chart, component bar chart, and mix charts and use technology to create the charts. This finding supports Branch's (2015) claim that PBL learning is used as an instructional technique with the use of technology rather than using a typical educational strategy with integrated technology. However, there was misunderstanding in selecting the suitable displays for the data.

In addition, the students had opportunity to deepen their learning by using technology to seek for updated statistical questions and data as well as produce their presentations. These findings suggest that PBL in an online class can transform the classroom into a student-centered learning environment, allowing students to locate the topics and solutions they seek and convey them through the statistical process. It encourages them to learn on their own by allowing them to search for and develop the projects, which help them improve their knowledge and abilities. These finding are in agreement with Laksana, Busayanon, and Mahamarn (2019) who asserted that the PBL aim to establish student-centered learning settings in which a culture of inquiry is fostered and questions are used to drive substantial learning. Students were encouraged to be engaged and actively seek information in PBL since questions were given to create an inquiry-driven classroom. As a result, students obtained a thorough comprehension of the subject matter.

Finally, this study showed that PBL is applicable for online learning which can be adopted as channels for giving feedback and collaboration among students and teacher and results in students' knowledge and skills. This finding back up those of Beckett and Slater's (2018) claim that participating in PBL focusing on technology can help students develop decision-making skills, independent learning, and collaboration skills.

References

Ali, R., Akhter, A., Shahzad, S., Sultana, N., & Ramzan, M. (2011). The impact of motivation on students' academic achievement in problem-based learning environment. *International Journal of Academic Research, 3*(1), 306-309.

Beckett, G. & Slater, T. (2018). Project-Based Learning and Technology. *Wiley Online Library*, doi:10.1002/9781118784235.eelt0427

Bell, S. (2010). Project-based learning for the 21st century: Skills for the future. *The Clearing House, 83*, 39-43.

Branch, L.J. (2015). The Impact of Project-Based Learning and Technology on Student Achievement in Mathematics. In: Ma W., Yuen A., Park J., Lau W., Deng L. (ed) *New Media, Knowledge Practices and Multiliteracies* (pp. 259-268). Singapore: Springer.

Capraro, R., & Slough, S. (2013). *Why PBL? Why STEM? Why now?*. Rotterdam: Sense Publisher.

Coyne, J., Hollas, T., & Potter, J. P. (2016). Jumping in: Redefining teaching and learning in physical education through project-based learning. *Strategies, 29*(1), 43-46.

Crowley, B. M. (2015). The Effects of Problem-Based Learning on Mathematics Achievement of Elementary Students Across Time. *Thesis*. Bowling Green: Western Kentucky University.

Laksana, K., Busayanon, K., & Mahamarn, Y. (2019). Creating pre-service teachers' engagement in an active learning journey with project based learning to become effective teachers. *Proceedings of the 8th Teaching & Education Conference*, *Vienna*, doi:10.20472/TEC.2019.008.015

Larmer, J., Mergendoller, J., & Boss, S. (2010). *Setting the standard for project-based learning: A proven approach to rigorous classroom instruction*. Alexandria, VA: ASCD.

Liu, Y. (2010). A case study of online project-based learning: The beer king project. *International Journal of Technology in Teaching and Learning, 6*(1), 43-57.

Roberts, J. (2011). Jazzed about Javits—GEMS data showing impact on student learning in math and science. *Proceeding of the NAGC 58th Annual Convention*. New Orleans, LA: National Association for Gifted Children.

Saye, J. (2017). Disciplined inquiry in social studies classrooms, *In The Wiley handbook of social studies research* (pp. 336-359). Malden, MA: John Wiley & Sons.

Schultz, B. (2010). Project-based curriculum, *In Encyclopedia of curriculum studies* (pp. 690-691). Thousand Oaks, CA: SAGE.

SHAPING A POST-PANDEMIC READING-ORIENTED SCHOOL CULTURE: LEADERSHIP FROM PRINCIPALS OF SCHOOLS RECEIVING THE BEST READER AWARD

Hui Hua Wu

Department of Educational Administration and Management,
National Dong Hwa University, Taiwan

Abstract

This study used interviews and participant observation to collect data. The interviews were conducted with the principals, directors and teachers of the three schools awarded the Best Reader Award selected via purposive sampling, and a post-pandemic reading-oriented school culture was built as the focal point of the discourse to present the principals of elementary schools in leading all their members to foster a reading-led campus culture. This study found that the principals of the schools that won the Best Reader Award had taken a leading role in shaping a "reading-oriented" school culture by: (1) creating a reading-based school atmosphere through the use of man-made objects and technology; (2) building a consensus on a reading-led campus through the cohesion of beliefs and values; and (3) practicing the basic assumptions of reading orientation in daily life.

Keywords: Principal Leadership, Reading Orientation, Post-Pandemic, School Culture

Research Background and Purpose

Since the outbreak of the COVID-19 pandemic in 2020, up to 1.5 billion students worldwide have been kept at home at the height of the disease and have only been able to learn online through distance learning (UNESCO, 2020). The switch to online teaching in many educational settings in Taiwan has posed a new challenge to all educators. Fan and Huang (2008) indicated that in order to ensure the sustainable development of their countries and enhance their competitiveness, many countries around the world have been promoting reading among students. However, it is worth exploring what kind of reading-oriented culture the school principals have displayed in the midst of the pandemic, as well as their experiences and reflections in this post-pandemic period.

Adopting a case study method in which the cases were recipients of the Best Reader Award in the last two years, this study uses interviews and participant observation to collect data with the aim of presenting how the elementary school principals led their staff and teachers in shaping a school culture conducive to reading habits among students after the outbreak of COVID-19, and showing the endeavors of schools in reading-oriented culture.

The key to Nurturing Students' Core Competencies Lies in a Post-Pandemic Reading-Oriented School Culture

Reading competence has become the focus of curriculum development and policy formulation in schools today and is a common concern of major organizations and advanced countries around the world. The United Nation Educational, Scientific and Cultural Organization (UNESCO) in its "United Nations Literacy Decade 2003-2012" program underlines the interaction of reading and writing skills with social context and social change as a means of development; literacy gives individuals the opportunity to participate in society and can be considered as part of advanced learning; in other words, the concept of literacy draws attention to social, cultural and political contexts (UNESCO, 2008). Additionally, the International Association for the Evaluation of Education Achievement (IEA) leads the Progress in International Reading Literacy Study (PIRLS), which puts a premium on reading performance, reading attitudes and habits, as well as investigating environmental factors associated with students' reading performance. In the European Union (EU), the key competencies for citizens are developed in a different order of importance for each EU member state, with the main emphasis on literacy, mathematics and arithmetic, information and communication technology and multilingual competence (Liu & Peng, 2008). Moreover, Taiwan and other countries such as the United Kingdom, the United States, Germany, Japan and South Korea also set out specific content on reading competence.

Schools and libraries have been forced to close in many countries across the world as the pandemic spreads. Although the Ministry of Education (MOE) has set standards for school closures in response to the pandemic, and at the same time established the "Reference Guidelines for Teaching and Learning in Online Courses" (Ministry of Education Department of Information and Technology Education, 2020), it is important for school leaders to take disease-control measures to ensure that reading education continues to be promoted, that learning is uninterrupted and up-to-date, that crisis management is done, and that, more importantly, a caring and righteous attitude is adopted to implement education for equality and well-being (Beauchamp, Hulme, Clarke, Hamilton & Harvey, 2021; Egan, 2020).

The long-term impact of the suspension of school classes on children may not be known for two to three years, but short-term data suggests that the suspension has had a greater effect on middle-class and disadvantaged families. According to a recent study by Dr. Ben Dominguez, a professor at the Graduate School of Education at Stanford University, US students' reading skills stagnated during the pandemic, and the study found that the reading competence among US students in second and third grades decreased by 30 per cent in one year (Ministry of Education e-Paper, 2021).

Reading is one of the most essential skills for a child's academic development, as it is a key to opening the door to education. Unless a child is able to read efficiently or fluently in third grade, it is less likely that they will have a proper understanding of other subjects.

The rapid spread of the COVID-19 virus across the globe represents both a crisis and an opportunity, and electronic resources bring new complexities as well as new possibilities for reading advocacy as reading is not only an acquisition of knowledge, but also a complex activity, a process of turning book information and existing knowledge into something new through the reading behavior of the reader. In other words, the reader draws on past experience and knowledge to construct meaning from the material read, and this constructive journey is not merely one of passive reception, but of participation and creative interpretation, with an emphasis on reflection, practice, application and continuity.

Such an elaboration suggests that a culture of "reading" fostered in schools will help to promote core competencies in the post-pandemic context.

With regard to school culture, Schein (1992) introduced a rather classical and authoritative "levels of culture," which advocates that the culture of an organization comprises: (1) "artifacts," which can be easily identified in the form of buildings, environmental equipment, technology and art, words and actions of interpersonal interactions, clothing and visible documents, promotional materials and rituals and celebrations; (2) "espoused values," which refer to the ought-to-be content, behavioral norms and educational philosophy shared by the school in relation to people, events, time, place and things; and (3) "basic underlying assumptions," i.e. the everyday reality that school members take for granted. This is the essence of school culture, which is the integration and implementation of the educational philosophy into the life of the school.

In addition, Nonaka & Takeuchi (1995) posited that organizational culture is made up of the beliefs and knowledge shared by the members of an organization, while highlighting human factors such as values, meanings, commitments, and symbols. Schein (1985) suggested that organizational culture can be divided into three components: artifacts, espoused values and basic underlying assumptions. According to Lin (2020), principal leadership is closely linked to the shaping, maintaining, strengthening and changing of school culture. Tsai (2013) noted that principal leadership is an effective strategy for building learning communities by seeking and connecting the common interests, values and goals of community members.

To summarize the three levels of school culture described above, this study collected and analyzed the practices of the principals of three elementary schools receiving the Best Reader Award in leading school members to build school cultures that are conducive to students' reading habits in the post-pandemic period, including (1) creating reading-oriented school atmosphere through artifacts and technology applications (e.g. securing funding for digital reading environment and reading teaching facilities); (2) forging consensus on reading-focused schools by coalescing espoused values (e.g., demonstrating and disseminating the core values of diverse learning via systemic reading); and (3) putting into practice the basic underlying assumptions about reading orientation (implementing the core values of diverse learning through reading in the daily life of the school and its specific performance actions).

Research Methodology

This study, by using purposive sampling, selected three elementary schools honored with the Best Reader Award in the last three years and gathered data through participant observation and interviews, with five observations per school for three hours each, making a total of 15 observations for 45 hours in the three schools, and three individual interviews per school for about three hours each with principals, directors, chiefs, homeroom teachers or teachers promoting reading activities. The three schools under study were large, medium and small in size, with a focus on reading for learning and a commitment to integrating reading activities with school characteristics. Elementary schools A, B and C had 57 classes, 45 classes and 12 classes respectively, with information on each school shown in Table 1.

Table 1: Research Participant Information

Item	A	B	C
Gender	Female	Male	Male
Participant Title	Principal	Principal	Principal
School Size	57 classes	45 classes	12 classes
School Type	Metropolitan	Urban	Remote
Number of Pupils	1600 ppl	1400 ppl	166 ppl
Seniority	32 yrs	30 yrs	22 yrs
Year of Service in Current Position	4 yrs	4 yrs	5 yrs
Highest Degree	PhD	Master's	Master's
School Performance	1. Elementary school receiving Best Reader Award 2. KDP Certification for School Management and Teaching Innovation 3. Excellence in Inno School National Creative Teaching for science reading 4. New Taipei City Reading Star Project Steering Committee Member 5. MOE Best Reader Award Judge	1. Elementary school receiving Best Reader Award 2. MOE Friendly School Excellence Award 3. Excellence in MOE Traffic Safety Education Golden Safety Award	1. Elementary school receiving Best Reader Award 2. Gold Award for Teaching Excellence 3. MOE Junior High and Elementary Schools with Space Aesthetics and Development 4. Excellence in Work-Together Benchmark Award

Research Results and Analysis

Based on data assembled for this study, the following three levels of school culture demonstrate the leadership of the principals of the schools studied in forming a "reading-oriented" school culture in the post-pandemic context.

1. Creating artifacts conducive to student reading habits.

In terms of creating artifacts that are conducive to student reading, this study focuses on the efforts of school principals to secure resources that foster student reading in an attempt to shape a reading environment that is conducive to teaching and learning in the post-pandemic setting and to exclude relevant artifacts that are detrimental to learning.

Seeking funding from the public sector to enhance the reading environment through administrative leadership

The principals of the elementary schools examined, through their administrative leadership, led their administrative staff in securing funding from the public sector (Ministry of Education, Department of Education) that would help students to read and learn.

> *In the public sector, there are grants that we apply for through projects such as the MOE's teaching environment improvement, or the Department of Education's reading-related funding such as library upgrading, buying books,*

and rewarding students for their reading performance. (Interview with Principal A)

> *There are many reading resources available today, including e-books published by the Ministry of Education, online reading resources, and digital reading resources released by the city and county governments' education departments. But whether schools will encourage it, that is, whether they will seek to use multiple resources depends on the principal. Some schools are not even aware of the Ministry of Education's related reading websites, but this website contains many relevant reading and teaching resources. Our principal is well aware of the external resources available and therefore brings in these resources to promote reading in school. (Interview with Chief C)*

Principal's networking for resources to enrich digital reading facilities

School principals utilized their personal networks or work with parent associations to secure external resources (e.g. from educational foundations or associations) to replenish digital reading resources.

> *Our principal is able to supplement digital reading resources, including software, hardware, human, material and organizational resources..... is able to work with a foundation to bring in external human and teaching-related resources, and our school organizes reading activities on a regular basis to create a reading atmosphere. (Interview with Director A)*

Striving for the enrichment of digital reading facilities with the help of parents and the community to provide students with reading and learning opportunities

School principals were able to solicit funding for student reading and learning through parent associations or through their contacts.

> *Through fundraising by the parents' association or funds from councilors, our principal has been able to secure funding for reading-related resources, including hardware facilities, or funding for reading activities..... For example, the library in our school was not only funded by the government, but also subsidized by the private sector, which is why we now have a library that is the envy of everyone.* (Interview with Director C)

Eliminating environments that are not conducive to reading and learning

The school corridor was originally not systematically arranged to promote reading education. The principal incorporated a reading-oriented school culture into the development of school affairs at the school affairs meeting, with a view to forming a consensus (2nd observation of School C). In addition, data collected from the interviews and observations show that the principals in the study were all committed to creating a friendly reading environment, or setting up a dedicated space to introduce new books, or constructing a butterfly garden to help students' study of the ecology, or designing a reading corner for students (1st observation of Schools A, B and C).

All of these practices help to shape students' reading habits, build a learning environment favorable to reading, and remove adverse factors, which are similar to principals' leadership in reading and instruction promotion noted in many studies (Wu, 2017; Lin, 2017; Glickman, 2002), which would consider whether the resources sought by schools are beneficial to students' reading habits.

The creation of artifacts that facilitate student reading, as described above, is closely associated with the other two levels of school culture (Schein, 1992), as they are related to the promotion by principals of the educational values and norms they believe in and contribute to the implementation of basic underlying assumptions in school life.

2. Demonstrating and promoting the values and norms that benefit students reading in the post-pandemic period

The beliefs and values that principals and school members hold about student learning through reading influence the actions they take. Therefore, an examination of the values and beliefs espoused by the school principals concerned to their school staff would help to understand their efforts in forming the reading culture of the school.

Promoting the notion of reading for diverse learning among students

In the midst of the pandemic, the principals pushed for and advocated “diverse reading and learning" on an ongoing basis, which not only affected their own behavior, but also the behavior of their fellow staff in helping students to diversify their reading materials.

> *The actions and words of leaders set an example for their members. Thus, school leaders must lead by example if they are to underscore the desired expectations or norms. Even during the pandemic, principals still need to stress the importance of reading as a means of fostering a cohesive force in the organizational culture.* (Interview with Principal C)
>
> *Reading campaigns actually come in many forms, and we are capitalizing on digital resources, so that reading is no longer just about print and images, but can be combined with more audio-visual materials, making reading an even more sensory experience. Technological advancements have provided post-pandemic reading and communication channels, especially in Taiwan where information development has made great strides.* (Interview with Principal B)

The principals looked into had impressive qualities, as stated in the reading culture evaluation comments from a visit: "The principal has a rich educational vision and a forward-thinking approach to school development that allows for specific and feasible strategies to promote reading" (1st observation of School A). One teacher also commented that "The principal holds great ideas and visions and always work towards his ideas and visions" (Interview with Teacher C). In addition, the principal often mentions his persistence in reading because he "believes that reading is a driving force in making a difference to the school" (2nd observation of School A).

> *Our principal plays a crucial role. With a vision comes an idea, and with an idea comes a way of doing things. Our principal often commends students for their reading volume at assemblies, and also for their contributions to publications. The children are in fact well aware of the principal's vision, as it is clearly conveyed in his practice.* (Interview with Chief C)

Schools were proactive in caring for students and reaching out to parents and volunteers

In order to fulfill the concept of reading and learning, the principals must care about the students and reach out to the parents, not only to keep track of the children's learning, but also to make the parents feel that they take reading seriously.

> *Our storytelling group often holds talks. In the past, the principal only came to preside at the event, but now our current principal is able to share a lot of professional knowledge about reading when he comes on stage and still expresses the importance of reading to parents and volunteers online during the pandemic, so that is why we have made a difference in our reading promotion.* (Interview with Teacher B promoting reading activities)
>
> *Volunteers and parents actively promote reading programs in conjunction with the school's curriculum design. There are monthly themed book fairs, parent-child reading activities during holidays and now online reading*

sessions, which are expected to boost the overall reading culture and enhance students' reading skills. (Interview with Director C)

Encouraging student performance in reading for learning

The principals regularly encouraged students' reading performance on a variety of occasions and actively assisted students in their reading abilities during the pandemic.

We encourage our children to read, and we also encourage them to submit their writing online, especially if their work is published. The sense of achievement they gain from having their work seen by more people can be imagined, and our school also awards them with book vouchers, which is a real incentive. (Interview with Chief B)

Inspiring students' confidence in learning by providing them with a stage for reading performance

The principal leads the school's reading learning program for students, guiding us to take to the Internet to present our reading thoughts in the midst of the pandemic, both to demonstrate our oral expressions and to integrate digital technology to showcase our digital reading achievements. (Interview with Chief A)

3. Practicing the basic underlying assumptions of student reading and learning in everyday life

What constitutes the culture of the school is based on the underlying assumption that it is the essence of the school culture (Deal & Peterson, 2009), in other words, the everyday actions of all members of the school without a second thought.

Implementing reading and learning in daily school life

1) Extending the curriculum with school characteristics. Principals of elementary schools presented with the Best Reader Award can continue to build on the school's characteristics and authentically integrate them into the curriculum and teaching. All three schools have developed a special curriculum over a period of time that links to the concept of reading and learning advocated by the principals, who then integrated it with the post-pandemic digital learning courses to make it more accessible by combining reading-related learning elements.

Whether it is the Grades 1-9 Curriculum or the forthcoming Curriculum Guidelines of 12-year Basic Education, principals should be able to lead their teaching staff to link to the special curriculum for reading learning, and to develop systematic reading activities at all grade levels in parallel, so as to continue to promote reading even during the pandemic. (Interview with Principal C)

Diverse reading activities present not only sedentary reading, but also active one, such as AR and VR, and learning about the living environment of the butterfly garden, and one becomes more curious than before in learning, which is of paramount importance for sustainable learning. (Interview with Teacher B promoting reading activities)

2) Carrying out the functions of meetings such as curriculum development and lesson preparations. The principal's leadership in promoting reading learning must still be exercised with the help of the school administration and the teaching staff, and meetings on curriculum development, area studies and lesson preparations must be held in order for the principal to exercise leadership in advocating reading.

The principal attended our field's meetings and was present at meetings in all fields. In the online meetings during the pandemic, the principal was concerned about our views and often encouraged us to dream big. Sometimes we thought it was impossible to achieve the goals, but the

> *principal would just inspire us and accompany us in the hands-on operations, which boosted our morale and gave us a sense of identity with the school.* (Interview with Homeroom Teacher A)

3) Administrative support for digital reading programs and teaching. Administrative support for digital reading and learning in schools also forms an integral part of a principal's leadership.

> *The principal guides the administration and teachers, telling us a clear direction for reading and asking teachers about their instructional needs during the pandemic, and the administration and teaching staff really had a plan, so they worked together to promote reading and won the highest honor of the Best Reader Award from the Ministry of Education, which we all said was the Golden Horse Award in education!* (Interview with Director A)

4) Actively motivating teachers to further their studies to sharpen their teaching competence in digital technology reading. The principal arranged workshops for us to better understand the importance of digital reading skills. When discussing PIRLS digital reading, the teaching staff found that the motivation for reading in Taiwan was significantly low. They therefore gave serious thought to how to pique the interest in reading, as well as to the learning strategies that students could employ when reading and even how to develop their reading habits. (3rd observation of School A)

5) Incorporating school affairs into the curriculum and teaching. The researcher observed the layout of the school settings and the themes of the libraries were varied. When the principals were asked about the layout, all three replied that the reading environment would be planned in line with the school's special curriculum.

> *Everything that happens at school is an educational possibility and even a very important learning opportunity for children. For example, when we secured funding for the library, we hoped to work with teachers and children to build the library that we had discussed... And, of course, taking down the original decorations was also a learning experience.* (Interview with Principal A)

The above leadership actions are aligned with Lin's (2020) school special curriculum integrated into the teaching and learning practices and the principal's important role in shaping the school's culture by holding related administrative meetings. This type of leadership behavior was in reality less addressed in the early literature with respect to the integration of school characteristics into the curriculum and teaching (Wu, 2017; Huang, 2002; Glickman, 2002; MacBeath & Dempster, 2009).

Presenting the performance of principals in advancing reading-oriented curriculum and teaching

1) Parental involvement in school activities and review of students' reading performance

> *In the past, library volunteers only helped students to check out and return books, but now it is different, because apart from assisting in checking out and returning books, they can also take part in the planning of reading programs and fully feel that the principal recognizes the work of volunteers and that parents and volunteers are also part of the school. As a result, volunteers and parents are more than willing to participate in the activities organized by the school.* (Interview with Chief C)

2) Promoting students' performance in reading and learning and demonstrating the effectiveness of reading. By promoting the diversity of the school's achievements, the principal kept parents informed of students' learning status and held them jointly accountable for the performance of their students.

> *The Best Reader Award received by our school should be viewed as the highest honor for reading performance. The significance of winning this award spans a wide range of areas, including the reading lessons, the integration of resources, the creation of a reading environment, reading activities and the effectiveness of reading performance.* (Interview with Teacher B)

To be effective in promoting reading, parents and volunteers must have a sense of identity with the school. Volunteers and parents learn and grow together to improve their reading competence. The school grounds have a vibrant reading and humanistic atmosphere with a real sense of vivacity in the learning environment. (5th observation of School B)

3) Reviewing students' performance in reading for learning. Assessing students' performance in reading and learning helped the principals to gain an understanding of students' reading and learning processes. In the random checking of assignments and reading comprehension at all levels, we are conscientious about evaluating the completeness of students' written expressions and the fluency of their reading, and we ask teachers to help us with this. (2nd observation of School C)

4) Conducting curriculum and teaching evaluations to gain a comprehensive understanding of student performance and curriculum and teaching. The school evaluation provides an insight into students' learning performance on the one hand, and explains to parents what is being taught in the curriculum on the other.

> *Through the curriculum development committee and domain meetings, a principal has been able to find out what problems teachers encounter in the reading program, discuss how to revise the curriculum and change how it is taught, and we are getting a clearer picture of the reading program.* (Interview with Principal B)
>
> *All staff, including administrators and teachers, as well as the principal, participated in the end-of-semester presentation of the curriculum instruction and showed their interest in the students' performance in the reading program.* (Interview with Principal C)

For a holistic view of the effectiveness of students' learning in reading, a principal has made all staff and parents jointly responsible for their performance, which is linked to the principal's ability to genuinely lead the school and turn student performance into a shared responsibility of all parents, teachers and students, which is noted in much of the literature. (Glickman,2002; Leithwood & Riehl,2005).

In summary, the principals' role in forming a post-pandemic reading-oriented school culture is closely connected to the three levels that are the artifacts, the consensus on the espoused values of reading, and the basic underlying assumptions of practicing reading orientation in the daily life of the school (Schein,1992). In particular, "the consensus on the espoused values of reading," as described in the observations and interviews for this study, was key to the success of the principals of the three schools in creating a reading learning culture for their students.

Conclusions

Employing interviews and observations to collect data, this study uses the three levels of school culture—artifacts, espoused values, and basic underlying assumptions—to show how elementary school principals, in the aftermath of the pandemic, led the school members to develop a school culture conducive to reading. This study found that the three principals' leadership in fostering a "reading-oriented" school culture included: (1) shaping a reading-focused school ethos by creating artifacts and emphasizing the application of technology; (2)

building consensus on a reading-oriented school environment by espousing values; and (3) linking beliefs and actions among groups and putting into practice the basic underlying assumptions of reading orientation in everyday life.

References

Beauchamp, G., Hulme, M., Clarke, L. Hamilton, L., & Harvey, J. A. (2021).People miss people: *A study of school leadership and management in the four nations of the United Kingdom in the early stage of the COVID-19 pandemic. Educational Management Administration & Leadership* ,49(3) 375–392

Cheng, W. W. (2018). *The Study of Promoting Reading Education in Reading Rock Award Elementary Schools* (Unpublished doctoral dissertation). National Taichung University of Education, Taichung.

Deal, T.E. & Peterson, K. D. (2009). S*haping school culture: Pitfalls, paradoxes, and promises.* San Francisco: Jossey-Bass.

Fan, C. W. & Huang, J. L. (2008), The Practice of Children's Reading from a Policy Implementation Perspective, *Teachers' Talk*, 204, 28-33.

Glickman, C. D. (2002). *Leadership for learning: How to help teachers succeed.* Alexandria. VA: Association for Supervision and Curriculum Development.

Ko, H. W. (2008). *Teaching Reading Literacy*. Taipei: CommonWealth Magazine.

Hung, D. L. (2001). Reading and Personal Development. *Social Education Bimonthly*, 101, 17-22.

Huang, H. C. (2002). Trends and Prospects of Curriculum Leadership Development for Elementary School Principals. *Journal of Education Research*, 104, 121-135.

Huang, H. C. (2015). *A Study on the Application of Instructional Rounds to Enhance Learning Leadership Effectiveness* (Conference Paper). International Conference on When Learning Leadership Meets Technology Leadership, Taipei.

Lin, M. D. (2017). Principal Leadership for Learning: A Perspective on Helping Students Learn. In Chu, C. H. et al., *New Perspectives in Educational Research*: 20th Anniversary Essays from the National Chung Cheng University Graduate Institute of Education (pp. 185-215). Taipei: Wu-Nan Book.

Liu, W. C. & Peng, S. M. (2008). European Framework of Key Competences: Traits and Its Socio-cultural Implications. *Curriculum & Instruction Quarterly*, 11(2), 51-78.

Lin, M. D. (2020). The Conceptual Framework of Elementary School Principal's Learning and A Case Study on a Principal's Learning Approaches and Leadership Craft. *Journal of Taiwan Education Studies*, 1(3), 127-148.

Ministry of Education (2014). *Curriculum Guidelines of 12-Year Basic Education-General Guidelines*. Taipei: MOE.

Ministry of Education Department of Information and Technology Education, (Feb 27, 2020). Online Curriculum Teaching and Learning Reference Guide. Retrieved from https://learning.cloud.edu.tw/onlinelearning_file/Annex-Online Curriculum Teaching and Learning Reference Guide (Issued Version)*.Pdf

Ministry of Education e-Paper (Dec 20, 2021). International View. Retrieved from https://epaper.edu.tw/windows.aspx?windows_sn=25583

MacBeath, J., & Dempster, N. (Eds.). (2009). *Connecting leadership and learning： Principles for practice*. London, UK: Routledge.

National Academy for Educational Research (2015). *12 Year Basic Education Curriculum Guidelines Core Competencies Development Manual*. National Academy for Educational Research.

Nonaka, I., & Takeuchi, H. (1995). *The knowledge-creating company*. New York, NY:Oxford University Press.

Schein, E. H. (1992). *Organizational culture and leadership*. (2nd ed.). San Francisco, CA: Jossey-Bass.

Tsai, C. T. (2013). *Core Competencies and Assessment of the Elementary and Secondary School Curriculum in 12-Year Basic Education* (Conference Paper). Conference on the Theory and Practice of Educational Assessment in Elementary and Secondary Schools across the Taiwan Strait, Chiayi.

UNESCO, Inc. (2020, February 2). *COVID-19 Impact on Education*, from https://en.unesco.org/covid19/educationresponse

Wu, H. H. (2017). *The Construction of Elementary School Principals' Reading-Instructional Leadership Model* (Unpublished doctoral dissertation). National Dong Hwa University, Hualien County.

iTHESIS: TOOLS FOR THESIS SUBMISSION PROCEDURE TRANSFORMATION FROM ANALOG TO DIGITAL UNDER CONTEXT OF THE GRADUATE SCHOOL, KASETSART UNIVERSITY

Poolsub Hochuei[1], *Weeraphart Khunrattanasiri*[2*]

[1] The Graduate School, Educator (Professional Level), Bangkok, Thailand
[2] The Graduate School, Associate Professor, Bangkok, Thailand
[*]Corresponding Author E-mail: fforwpk@ku.ac.th, Tel. +6629428445 ext 302

Abstract

Since the Graduate School, Kasetsart University was established in 1966, the thesis submission procedure was paper-based printing, and the graduate students both in master and doctoral degree needed to submit thesis documents to their advisors from hand to hand directly. The Integrated Thesis and Research Management System or iThesis which has been developing by the Office of the Higher Education Commission, Ministry of Higher Education, Science, Research and Innovation is a powerful system to support the thesis submission procedure between graduate students and thesis advisors. The Graduate School, Kasetsart University has started to use iThesis in the thesis submission procedure since the first semester 2017. Presently, iThesis is widely implemented in public, private, or anonymous universities. This research aimed to reveal activities of the university used for driving iThesis to substitute the traditional thesis submission procedure. The result showed that from 2017 - 2020 the use of iThesis from 1,243 graduate students can clearly reduce 1,160,400 baht of their thesis printing cost. The training of iThesis both onsite and online covered 4,427 graduate students, and thesis advisors is the most efficiently activity to make well understanding of the system and how it is used. Due to the coronavirus disease situation now a day, iThesis will play the important role for thesis submission procedure within Kasetsart University, and it finally makes the traditional procedure disappear. The thesis advisors need to improve the computer skill and learn to work together with iThesis and the relevant applications.

Keywords: iThesis, Thesis Submission, Graduate School, Kasetsart University.

Background

The dissertation or thesis is a scholarly treatise that substantiates a specific point of view as a result of original research that is conducted by students during their graduate study (Cornell University, 2018). The purpose of a thesis is to demonstrate student proficiency in academic research and appropriate academic communication. A thesis demonstrates student mastery of a particular subject area and your ability to independently create new scientific knowledge. (University of OULU, 2012) The process of writing a thesis develops skills to gather, analyse and make conclusions from data and the ability to independently create new scientific knowledge. Master's thesis is a way to show students expertise in the topic of their choice on the levels of both theory and practice. Due to the Thai Standard Rules of Graduate Curriculum 2015 declared by the Ministry of Education, the thesis is a part of requirement for the receipt of master's degrees, while the dissertation is a r a part of requirement of the doctoral degree. This rule had been applying countrywide in public, private, and autonomous universities. However, each university has it right to determine the thesis document formats and standard

which depend on the context of each university. In some universities, the graduate school sets the thesis format and standard, but in some universities the thesis writing is a free style format based on the suggestion of thesis advisor or committee. In 2013, the Office of the Higher Education Commission (OHEC), Ministry of Higher Education, Science, Research and Innovation, Motivation and Objective (MHESRI) started to seek for the IT platform to make thesis standardization. The CU e-Thesis of Chulalongkorn University was selected as a prototype for develop a new platform to support thesis writing and support the thesis submission procedure between a graduate student and his/her committee. After the final phase of the new platform development in 2015, OHEC asked for the voluntary universities which have full readiness to join a new platform in the meeting of the Council of the Graduate Studies Administrators of Public and Autonomous Universities (CGAU). The Graduate School of Kasetsart University (GSKU) is one of five voluntary universities ready to utilize the new system. The OHEC designated the new platform as "*iThesis*" or "*Integrated Thesis and Research Management System"*. The idea of iThesis is open for the public, private, and autonomous universities with reasonable annual fee. It is the facilitating tool for students to construct any thesis which helping them to (1) create a thesis template according to the specified document format, (2) create thesis plan, (3) submit thesis proposal, draft version, and complete version to their advisors, (4) record their test results, theses and dissertations, and the thesis paper, and (5) the complete version of thesis file will be fully collected and stored in the Intellectual Repository (IR) of the university in order to facilitate the library to provide an effective research database for students and other people outside the university; then it would be sent to the OHEC for storing in Thai Digital Collection (TDC) for the public dissemination (Office of Information Technology Administration for Educational Development, n.d.).

Now a day, iThesis has been implementing as a tool to support the thesis writing and thesis submission procedure of graduate study in 33 universities countrywide. The GSKU installed the iThesis system in August 2016 and spent at least 3 years to make the transition period from the traditional thesis writing and submission procedure to digital mode. With the powerful of word add-in tool prepared in the system of iThesis, the graduate students can save a thesis file from word processor program run on personal computer to the cloud storage which can access to the file from everywhere 24 hours. A module of plagiarism detection from Akarawisut System becomes a part of iThesis, and each graduate student has a permission to check plagiarism of the thesis file individually. The GSKU is the university lead for iThesis because more than 5,000 graduate students are using iThesis for writing and submission procedure. Additionally, GSKU has a well inhouse organization together with a strong collaboration with KU Library and KU Office of Computer Services.

Objectives

1. To reveal the iThesis history under GSKU context.
2. To compare the traditional of thesis submission procedure with the iThesis procedure.
3. To analyse the cost reduction based on iThesis procedure

Statement of Contribution

1. The university members of CGAU can learn the iThesis story in GSKU context.
2. To report the cost reduction based on iThesis procedure to KU Council, CGAU, and UniNet to plan the iThesis optimal policy in the future.

Methods

1. Review the secondary data from CGAU meeting reports and GSKU documents.
2. Analyze the graduate student data and thesis information during the academic year 2017 - 2020 from GSKU database.
3. Google forms were used as a satisfaction survey to collect the data about iThesis training courses during the academic year 2017 – 2020.

Results

iThesis history under GSKU context

Before the first use of iThesis in KU, a thesis submission was set fix procedures based on the Kasetsart University Regulations on Graduate Studies in 2018 (Kasetsart University, 2021). The GSKU also prepared a manual for thesis writing for graduate students in master program of science (Kasetsart University, 2010a) and a manual for thesis writing for graduate students in master program of social science (Kasetsart University, 2010b). These manuals present the principles of academic writing as well as the formal writing requirements. Figure 2 illustrates the traditional thesis submission procedure. Graduate student, main thesis advisor, co-thesis advisor, final oral exmination committee, and graduate school staff are the five main important group involved with the thesis submission procedure. Each number (1-10) showed in figure 1 presents the sequencing step of submission. In each step, students need to print out one copy of their theses in paper format, except the step number 10 (final oral exmination) four copies should prepared for the committee. With in the complete cycle of the graduate study whether in master or doctoral degree the students need to print out their theses in paper format for 13 copies. Graduate students have to submit the thesis to advisors from hand to hand directly which is somehow not applicable now a day due to the coronavirus disease situation.

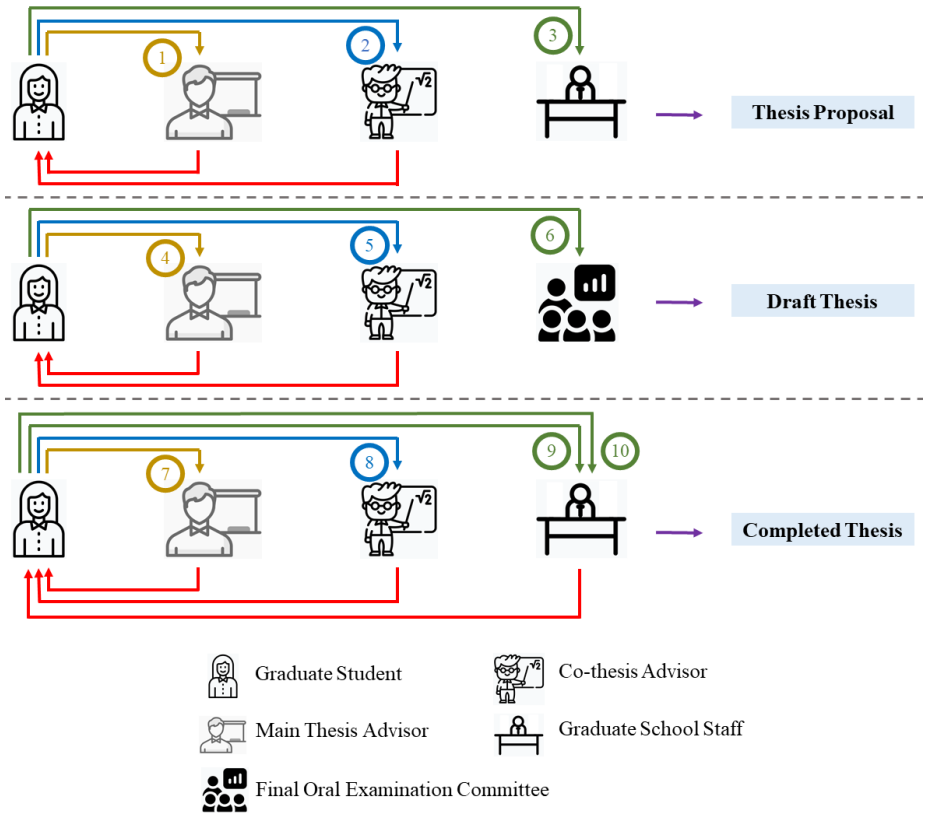


Figure 1: Thesis Submission Procedure based on the Kasetsart University Regulations on Graduate Studies in 2018.

On 17th August 2016, iThesis system has been installed in the computer server of GSKU. The iThesis system architecture is an on-premise architecture which consists of two main parts. The first part is organized by OHEC (iThesis OHEC system) and the second part is under the control of Kasetsart Office of Computer Services (iThesis on-premise). Both parts are connected via Inter University Network (UniNet) thru the application protocol over the hypertext transfer protocol secure (HTTPS) (Figure 2). The usage functions are divided into two main parts: web portal and iThesis add-in which is an extension installed on word processing program. These two main parts are working together, for example, when there is an editing data on the form in iThesis web portal, or there is a change in the name of thesis examination committee other information on the electronics form menu, thesis template created by add-in function will also be automatically updated to ensure that the information appearing in every section is consistent. By using iThesis for thesis writing, it is guaranteed that all thesis files are controlled the word template according to the GSKU specified format. For the reference style in thesis document, the EndNote program with KU campus licensed, can help students to collect and create the reference or any bibliography relating to the content of the student's thesis.

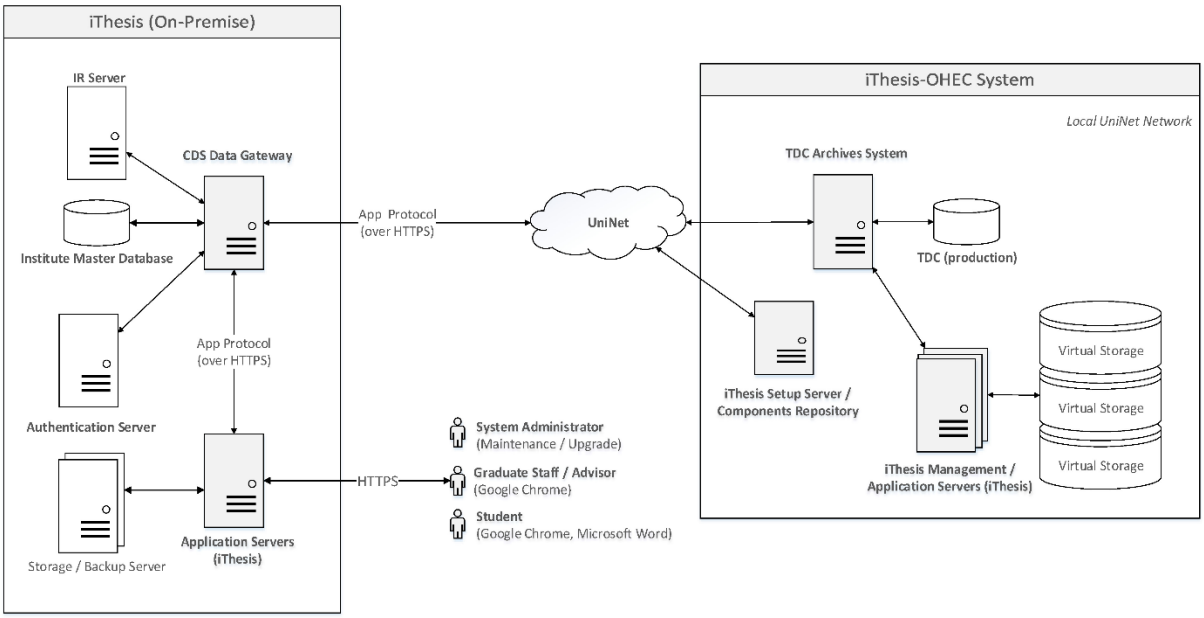


Figure 2: iThesis System Architecture
Source: Office of Information Technology Administration for Educational Development. (n.d.)

However, the full operation of iThesis started officially in 2019. The 3 hours iThesis training is used as a proactive task to create the iThesis technology recognition and to strengthen the basic skill for all stakeholders in graduate studies. At the beginning, GSKU organized the onsite iThesis training on the 7th floor of GSKU building; however, since the middle of year 2020 onsite trainings have been replaced by online trainings due to covid-19 epidemic situation (Figure 3). Now 4,427 graduate students and thesis advisors were passed whether onsite or online iThesis training courses. The training evaluation score collected from 2,344 participants (52.95 % of training attendances) during 2017 - 2020 was 4.34 (scale ranging from 0 to 5). The GSKU iThesis channel on YouTube is an alternative way for some graduate students to improve the skill by themselves in an office or at home.

Cost Reduction Based on iThesis Procedure

To compare the cost for printing thesis between the traditional and iThesis submission procedure, the average page number for thesis is set based on the data queried from main database system administrated by GSKU. All the faculties in the university can generally grouped in 3 parts; Science and Technology, Health Science, and Humanities and Social. The printing cost is set to 2 baht per 1 page include paper, ink, and electricity.

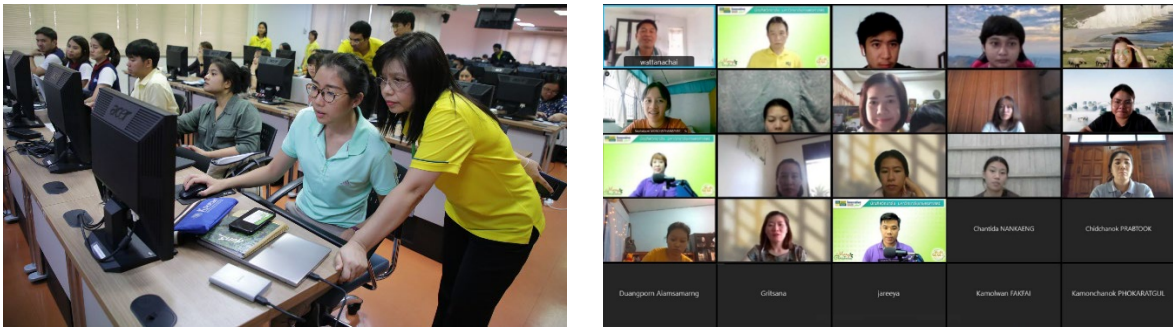


Figure 3: iThesis trainings

Doctoral Degree

- Sciences and Technology: a thesis proposal has an average 100 pages, and a completed thesis has an average 200 pages.
- Health Sciences: a thesis proposal has an average 100 pages, and a completed thesis has an average 200 pages.
- Humanities and Social Sciences: a thesis proposal has an average 125 pages, and a completed thesis has an average 250 pages.

Master's Degree

- Sciences and Technology: a thesis proposal has an average 50 pages, and a completed thesis has an average 100 pages.
- Health Sciences: a thesis proposal has an average 50 pages, and a completed thesis has an average 100 pages.
- Humanities and Social Sciences: a thesis proposal has an average 100 pages, and a completed thesis has an average 200 pages.

Table 1: Comparison of the thesis printing costs of the graduated students during 2017-2020

Details	Number of Students	No. of Thesis Copies		Total Cost (THB)	
		Traditional	iThesis	Traditional	iThesis
Doctoral Degree					
1. Sciences and Technology	43	13	8	197,800	129,000
2. Health Sciences	1	13	8	4,600	3,000
3. Humanities and Social Sciences	1	13	8	5,750	3,750
Master's Degree					
1. Sciences and Technology	1,001	13	8	2,302,300	1,501,500
2. Health Sciences	35	13	8	80,500	52,500
3. Humanities and Social Sciences	162	13	8	745,200	486,000
Total	*1,243*			*3,336,150*	*2,175,750*

Source: Information Division, The Graduate School, Kasetsart University.

As described in 5.1, the graduate students need to print out 13 copies of thesis in paper-based format followed the traditional graduate study framework. However, after using iThesis the graduate students can submit the thesis proposal, draft thesis, or completed thesis directly to their main thesis advisor via iThesis web portal. In figure 1, the step number 1, 4, and 7 are unnecessary anymore, and the step number 3 and 9 can also remove permanently because the GSKU staff can check the correctness of the thesis file directly from iThesis system. The number of thesis copies when graduate students used iThesis are dropped down to only 8 copies. (Table 1). Using iThesis to support the writing thesis and thesis submission procedure can save the printing cost of 1,160,400 baht.

Conclusions

The iThesis is now playing an important roles to support GSKU both in a part of graduate students for writing their thesis and another part of thesis committee for online thesis submission and thesis evaluation procedure. The system can help students to reduce the thesis printing cost significantly. iThesis would effectively help graduate students to increase the computer skill and to strongly understand and be aware of plagiarism, both intentional and unintentional ways, which the system will examine the resemblance of the thesis through the program of plagiarism detection. The teaching technology now a day is changed from onsite to online classroom excepts in some courses that need precison measurement using scientific equipments/ instruments in laboratory. The role of KU thesis advisors requires a big change also. The thesis advisors need to improve computer skill and learn to work together with iThesis and the relevant applications i.e. Acrobat, Endnote, or Mendeley. The key to success with iThesis is not only graduate students or thesis committee but also both.

In the context of the COVID-19 epidemic, iThesis is an answer to the new normal live of the students by keeping physical distancing between stakeholders in graduate studies. The thesis advisors/committee and students are communicate to each other via online using iThesis web portal as a center of thesis writing and submission. The financial and technology support from OHEC are garanteed by the MEHSRI for the long development, and it ensures the GSKU to drive the iThesis as a powerful tool in the future.

Acknowledgements

We would like to express appreciation to Associate Professor Dr. Somwang Khantayanuwong, Vice President for Advanced Education Development and Suphan Buri Campus Establishment Project, Associate Professor Dr. Srijidtra Charoenlarpnopparut, Dean of the Graduate School, and Assistant Professor Dr. Sukumal Kitisin for invaluable advice and encouragement.

References

Cornell University. (2018). *Thesis and Dissertation Guide.* Graduate School Cornell University.

Kasetsart University. (2010a). *Manual for Thesis Writing: Science.* Bangkok: The Graduate School, Kasetsart University.

Kasetsart University. (2010b). *Manual for Thesis Writing: Social Science.* Bangkok: The Graduate School, Kasetsart University.

Kasetsart University. (2021). *Student's Booklet Academic Year 2021.* Bangkok: The Graduate School, Kasetsart University.

Office of Information Technology Administration for Educational Development. (January 30, 2022). *iThesis Advisor Manual*. Retrieved from https://ithesis.uni.net.th/downloads/?info=dcm-1604383535_219

Office of Information Technology Administration for Educational Development. (January 30, 2022). *iThesis System Admin Manual*. Retrieved from https://ithesis.uni.net.th/downloads/?info=dcm-1500950753_535

University of OULU. (January 30, 2022). *Guidelines for Writing a Thesis*. Retrieved from https://www.oulu.fi/sites/default/files/content/Guidelines.pdf

ITEN 2022

Faculty of Education
Kasetsart University, Bangkok, Thailand
Local Host