Vol 12, Issue 4, (2022) E-ISSN: 2222-6990

# Leading Malaysian Public Preschool Peers Through Peer-Led Fun Inspired Inquisitive Model in The New Realm

# Fanny Kho Chee Yuet

Faculty of Management and EconomicsSultan Idris Education University 35900 Tanjung Malim, Perak Darul Ridzuan, Malaysia

# Khayri Zaid Z Alzalit

Libyan Authority for Scientific ResearchMinistry of Higher Education, Libya

# Jessnor Elmy Mat Jizat

Faculty of Management and EconomicsSultan Idris Education University 35900 Tanjung Malim, Perak Darul Ridzuan, Malaysia, Kumaran Gengatharan Sekolah Kebangsaan Bedong, 08100 Bedong, Kedah Ministry of EducationMalaysia

**To Link this Article:** http://dx.doi.org/10.6007/IJARBSS/v12-i4/13170 DOI:10.6007/IJARBSS/v12-i4/13170

Published Date: 14 April 2022

# **Abstract**

The current changes in the global ecosystem have resulted in a rapid transformation of the Industrial Revolution 4.0 in the Malaysia Education system. Globalized educational technologies advancement was adopted and adapted into the new realm of learning environments. The global shift from conventional to contemporary learning platforms has led to the need for public preschool teachers to be well-versed in conducting inspirational and inquisitive learning activities that create an enjoyable learning atmosphere. Learners at the age of four to six years are having high imagination and creativity. They like to explore their feelings through fun-inspired activities. Public preschool teachers' capability to lead their peers in conducting various fun-inspired activities via virtual and physical environments has led to the quality of public preschool education during the pandemic era. Nonetheless, studies regarding the association between leadership and fun-inspiredinstructions are still scarce. It is also revealed that the combination of various innovative leadership can be associated with creativity and interesting ideas that led to various types of innovations involved. An inquiry occurs on how peer leaders could lead their peer teachers in transforming new ways of delivering instructions in the new realm, particularly among Malaysian public preschool teachers. Therefore, an empirical review of existing models was performed to establish a new model that would serve as a significant reference for public preschool peer leaders in mobilizing fun-inspired inquisitive instructions in virtual and physical learning

Vol. 12, No. 4, 2022, E-ISSN: 2222-6990 © 2022

environments. These models include the Community of Inquiry Framework, Model of Instructional Coaching, Community of Practice Model, Model of Knowledge Sharing, and Model of Appreciative Inquiry. Hence, a new inspirational peer-led model namely, Peer-Led Fun Inspired Inquisitive (PeLFII) Model was established to mobilize virtual and physical peer-led fun-inspired inquisitive instructions in the new realm.

**Keywords:** Educational Technologies, Fun-Inspired, Peer-Led, Public Preschools, Virtual and Physical Learning.

#### Introduction

In a volatile, unpredictable, complex, and ambiguous (VUCA) world, leading virtual and physical fun-inspired inquisitive instructions are becoming increasingly popular in early childhood education. The Malaysian government, like the rest of the globe, recognizes the need of changing instructional delivery channels, especially during global pandemic circumstances. The conventional norm of face-to-face instructions particularly in public preschools may not be popular anymore due to an uncertain turbulent environment. In other words, the global pandemic of COVID-19 has brought a great impact on global education ecosystems. The global COVID-19 problem has wreaked havocon education, affecting both the quality and quantity of instruction, particularly in the area of preschool curriculum modification.

The rise of virtual learning has shifted the fun learning approach in the Malaysian public preschool environment. Hence, it is significant to develop superior peer leaders among experiencedpublic preschool teachers to lead their peer teachers' in conducting innovative fun-inspired inquisitive activities in multi-learning environments. The newly developed Peer-Led Fun Inspired Inquisitive Model would enhance peer leaders' leadership competency in mobilizing fun-inspired inquisitive instructions via virtual and physical learning platforms.

In other words, public preschool teachers are moving away from conventional instructional practices toward virtual environments, which are the foundations of the Fourth Industrial Revolution. Leading public preschool teachers in Cybergogical educational technologies of industrial 4.0 provides advantages for public preschool teachers to be conscious of leading each other in innovating virtual and physical fun-inspired inquisitive instructions for the future (Gerekli et al., 2021). In reality, as global education institutions change, innovation in instructional practices is crucial (Drosos et al., 2021). It should also include taking risks and being flexible to adapt the virtual fun-inspired inquisitive instructions in the event of future outbreaks, whether through synchronous or asynchronous interactions. Parents' or guardians' involvement, particularly in virtual learning environments that needs hands-on initiative would attract young learners' attention in using their imagination to accomplish the given tasks. Parents' or guardians' virtual participation would provide moral support and encourage young learners to enjoyably explore additional ideas to complete the tasks (Rudenko et al., 2021; Chmelárová & Čonková, 2021).

Actively engaged learners in inquiry-based learning (Chokchai & Pupat, 2018) require innovative and inquisitive thinking skills, especially among young learners. Incorporating creative queries into both virtual and physical encounters would also help young learners develop creativity, curiosity, and inquisitive minds. Similarly, public preschool teachers should

Vol. 12, No. 4, 2022, E-ISSN: 2222-6990 © 2022

use creativity to conduct hands-on fun-inspired inquisitive instructions in various interactive surroundings, as this would improve their innovative thinking skills (Batey, 2012). Unfortunately, creating a unique, entertaining, dynamic, and curious atmosphere necessitates public preschool teachers to work together to brainstorm ideas. Leading peers would also necessitate public preschool teachers to polish their inquisitive and curiosities minds (Grazer & Fishman, 2015), resulting in numerous creative thinking talents (Anderson, Potočnik, & Zhou, 2014) both within and across processes.

Public preschool teachers should mobilize innovative leadership and perform as active team members. Peer leaders can use innovative leadership to inspire their peers to think creatively and formulate fresh ideas, new fun instructional alternatives, and new approaches to conduct effective virtual and physical fun-inspired inquisitive instructions. Public preschool peer leaders should work with their peer teachers to practice more pleasant, creative, and enjoyable instructions actively (Sailin & Mahmor, 2018). Both virtual and in-person encounters could be used to deliver innovative instructions. Nonetheless, since the worldwide education ecology has transformed to a new realm in delivering instructions as a result of the pandemic, virtual and physical fun-inspired inquisitive instructions have become increasingly popular.

To put it another way, public preschool teachers must perform a variety of Cybergogical approaches, especially when conducting hybrid (a combination of virtual and face-to-face) sessions. They must explore a wide range of free educational technologies that are applicable in a volatile, uncertain, complex, and ambiguous (VUCA) world. Other options include fully utilizing the newly developed Peer-Led Fun Inspired Inquisitive (PeLFII) Model, a newly established peer leadership model in conducting fun-inspired instructions in Malaysian public preschools contexts.

#### The Peer-Led Fun Inspired Inquisitive Model

The Peer-Led Fun Inspired Inquisitive (PeLFII) Model was developed based on Sashkin's visionary leadership theory (Sashkin, 1988) and Dobni's innovation theory (Dobni, 2008). The visionary leadership theory explains a person's leadership style regarding the organization's setting and effectiveness (Sashkin, 1988). Drawing from innovation and visionary leadership theories, PeLFII Model was also developed through the lenses of cognitive constructivism (Piaget, 1973) and social constructivism (Vygotsky, 1978), as well as an empirical review of a related framework and three models. The Community of Inquiry Framework (Garrison et al., 2000), Model of Instructional Coaching (Knight, 2004), Community of Practice Model (Bonk et al., 2004), Model of Knowledge Sharing (Ho, Wu, & Hsu, 2006), and Model of Appreciative Inquiry (Cooperrider & Whitney, 2001) serve as significant empirical sources in the development of PeLFII Model. As a result, the newly developed PeLFII Model is measured by four domains respectively. The domains include: i) Leading through Appreciation of Fun-Inspired Inquiry, ii) Leading through Sharing Knowledge and Ideas of Fun-Inspired Inquiry, iii) Leading through Engaging and Fun-Inspired Inquiry, and iv) Leading through Short-Term Innovation Goals of Fun-Inspired Inquiry. The four domains are essential for peer leader to lead their peer teachers in mobilizing fun-inspired inquisitive instructions through virtual and face-to-face interactions.

Vol. 12, No. 4, 2022, E-ISSN: 2222-6990 © 2022

Eventually, the Peer-Led Fun Inspired Inquisitive (PeLFII) Model also serves as a foundation for generating creative ideas among public preschool teachers, especially in the discovery of viable solutions to inquiry-based challenges. On the other hand, Mehtaa, Chandanib, and Neerajac (2014) found that an inquiry-based approach improved the integration of original idea development and innovative thinking among young learners. In delivering virtual and physical fun-inspired inquisitive instructions globally in a world full of volatility, uncertainty, complexity, and ambiguity(VUCA), public preschool teachers must practice their creative and critical thinking skills, analytical skills, synthesis skills, decision-making skills, creative leadership skills, as well asvisionary leadership skills, and digital skills. Nonetheless, in a turbulent, uncertain, complex, and ambiguous global environment, public preschool peer leaders and their peer teachers may fail to seehow visionary leadership, digital skills, and creativity are interwound.

Therefore, public preschool teachers are urged to mobilize visionary leadership and their creativity within and beyond schools closer together. They need to review which skills inhibit creativity that does not drive visionary leadership into virtual and physical fun-inspired inquisitive instructions and in contrast, contribute to limitations in young learners' creativity and existing knowledge. The true measure of visionary leadership and creativity will highly depend on the effectiveness of the proposed PeLFII Model in virtual and face-to-face interactions. Incorporating digital technology and visionary leadership into virtual and physical fun-inspired inquisitive instructions, on the other hand, is a terrific technique to actively engage public preschool teachers, young learners, and parents throughout the interactive sessions. In other words, the public preschool community must actively participate in the virtual and face-to-face fun-inspired inquisitive instructions as successful players. Public preschool peer leaders, on the other hand, could continue to lead their peer teachers in implementing a borderless learning network for fun-inspired inquisitive instructions. Likewise, public preschool peer leaders should openly communicate evidencebased and promising virtual and physical fun-inspired inquisitive instructions to peer teachers, motivating them to mobilize visionary leadership within and beyond schools. It is also undeniable that not every public preschool teacher can generate unique and engaging ideas for innovative fun-inspired inquisitive activities.

## The In-Depth of Peer-Led Fun Inspired Inquisitive Model

Through multiple virtual and physical interactive platforms, the Peer-Led Fun Inspired Inquisitive (PeLFII) Model was designed to mobilize visionary leadership and fun-inspired inquisitive instructions to an endless number of public preschool teachers. The public PeLFII Model was also created to improve the quality of innovative instructions in public preschools, both within and beyond public preschools, through online and face-to-face interactions. The PeLFII Model was also aflexible model that allows public preschool teachers to interact with young learners, as well as their parents based on schedules that are convenient for both parties.

Similarly, public preschool teachers may emphasize shared responsibility among parents and young learners in achieving short-term innovation goals for fun innovative instructions (Yuet et al., 2021). In other words, preschool peer-leaders must work 'in parallel' with the Head of Department or subject heads that are often known as middle leaders (Kho et al., 2016; Kho,

Vol. 12, No. 4, 2022, E-ISSN: 2222-6990 © 2022

2020) to construct varied fun-inspired innovative instructions, Shared responsibility also has a significant influence in getting public preschool teachers to mobilize visionary leadership and creativity in their classrooms and beyond (Andrew & Terry, 2014; Yuet et al., 2021). In addition, this effort encourages public preschool teachers to freely discuss creative ideas in a safe environment (Mehtaa et al., 2014). Public preschool peer leaders are specifically encouraged to inquisitively lead their peer teachers in evidence-based fun-inspired innovative instructions. To elaborate, the proposed PeLFII Model was created to improve and monitor the effectiveness of visionary leadership and fun-inspired innovative instructions in the public preschool context. Parallel to this, public preschool peer leaders would engage in multi-peer-led innovative engagement to help spreadcreative ideas both within and beyond the school system (Andrew & Terry, 2014). As a result, the development of the multi-dimensional PeLFII Model remains crucial in current trends of innovation (Andrews Graham, 2019).

Furthermore, creative and innovative public preschool peer leaders are expected to lead their peer teachers in reflecting on effective virtual and physical fun-inspired inquisitive instructions that suit preschool curriculums and have a significant impact on the learning of young learners. These insights would also help to lay the groundwork for multi-level innovative thinking among public preschool peer leaders and their peer teachers both inside and outside of the classroom. Similarly, innovative public preschool peer leaders would encourage their peer teachers to adopt new ideas for implementing evidence-based fun-inspired innovative instructions that areappropriate for the current changes in the global education ecosystem. In other words, public preschool peer leaders have a significant influence in directing their peer teachers in the study of more fun-inspired innovative instructions in a volatile, uncertain, complex, and ambiguous (VUCA) world.

The influence of the aforementioned inventions led to the development of the proposed PeLFII Model in the current study. The proposed PeLFII Model was also developed based on an empirical review of five related models that had led public preschool teachers' creativity in generating virtual and physical fun-inspired innovative instructions in public preschools (Batey, 2012). The models include; i) Garrison, Anderson, and Archer's Community of Inquiry Framework (Garrison et al., 2000), ii) Knight's Model of Instructional Coaching (Knight, 2004), iii) Bonk, Wisher, and Nigrelli's Community of Practice Model (Bonk, Wisher, & Nigrelli, 2004), iv) Ho, Wu, and Hsu's Model of Knowledge Sharing (Ho et al., 2006), and v) Cooperrider and Whitney's Model of Appreciative Inquiry (Cooperrider & Whitney, 2001). There are limited models of fun-inspired innovative instructions in the literature. As a result, the Community of Inquiry Framework, developed by Garrison, Anderson, and Archer (Garrison et al., 2000), has been chosen as the essential model for gaining in-depth insight into fun-inspired innovative instructions in Malaysian public preschool settings.

Since 2000, the Community of Inquiry Framework (Garrison et al., 2000) has been the most widely used approach for cultivating creative inquiry. The Community of Inquiry Framework was intended to promote and sustain innovative inquiry in the transformation of twenty-first-century public preschools' fun innovative instructions to align with current pandemic scenarios. To date, it hasbeen a highly influential paradigm that has served as the foundation

Vol. 12, No. 4, 2022, E-ISSN: 2222-6990 © 2022

for a variety of fun-inspired inquisitive frameworks and models. It is, in particular, a foundational approach for the creation of creative and innovative inquiry instructions.

Meanwhile, Knight (2004) has created a collaborative, on-site, evidence-based instructional coaching program for public preschool teachers that walks them through the process of implementing fun-inspired innovative instructions, from the initial instructions to the final innovative practices, with a detailed discussion of effective instructional approaches (Model of Instructional Coaching). Value-added leadership in the professional community is required for effective teaching strategies. The Community of Practice Model, developed by Bonk, Wisher, and Nigrelli in 2004 (Bonk, Wisher, & Nigrelli, 2004), was one of the key models employed in the study. It's a professional development program that focuses on recognizing and resolving instructional issues in schools.

The Knowledge Sharing Model (Ho, Wu, & Hsu, 2006) was another key paradigm. It gives teachers vital insight into instructional knowledge that will help teachers achieve their innovation goals. Finally, the Cooperrider-Whitney Model of Appreciative Inquiry (Cooperrider & Whitney, 2001), the study's most important model, contributes greatly to the knowledge of fun-inspired and creative inquisitive instructions in educational institutions. The proposed PeLFII Model was developed in a multi-layered method, as previously described. To integrate public preschool peer leaders and their peer teachers in a range of vital roles, each process needs distinct visionary leadership competencies, leading to improved virtual and physical fun-inspired inquisitive instructions. Hence, the researcher's first step in determining the newly developed PeLFII Model is to look for novel fun inquisitive-related models. Following that, clusters of creative fun-inspired inquisitive practices were identified.

## The Domains of Peer-Led Fun Inspired Inquisitive Model

The proposed ideas of developing fun-inspired inquisitive instructions were the most notable dissimilarity among the five innovative inquiry-related models namely, the Community of Inquiry Framework (Garrison et al., 2000), Model of Instructional Coaching (Knight, 2004), Community of Practice Model (Bonk, Wisher, & Nigrelli, 2004), Model of Knowledge Sharing (Ho, Wu, & Hsu, 2006), and Model of Appreciative Inquiry (Cooperrider & Whitney, 2001). Despite this, there were sites of contact between them. In practice, all the identified areas of abilities, from identification through evaluation of peer-led fun-inspired inquisitive instructions were articulated. As a result, four domains have been proposed: i) Leading through Appreciation of Fun-Inspired Inquiry, iii) Leading through Sharing of Knowledge and Ideas of Fun-Inspired Inquiry, iiii) Leading through Engaging and Fun-Inspired Inquiry, and iv) Leading through Short-Term Innovation Goals of Fun-Inspired Inquiry.

#### **Leading through Appreciation of Fun-Inspired Inquiry**

The first domain, Leading through Appreciation of Fun-Inspired Inquiry was constructed based on the first phase of the 4-D cycle in the Model of Appreciative Inquiry – 'Discovery' (Cooperrider & Whitney, 2001), as well as the second and third basic strategies in the Model of Instructional Coaching (Knight, 2004), Community of Inquiry Framework (Garrison et al., 2000) and Community of Practice Model, respectively. It emphasized the importance to accept and appreciateothers' efforts in delivering fun-inspired inquiry, particularly in teaching basic science process principles through virtual or face-to-face interactions.

Vol. 12, No. 4, 2022, E-ISSN: 2222-6990 © 2022

Appreciating public preschool peer teachers' effort in sharing fun-inspired inquisitive instructions allow public preschool peer leaders to lead their peer teachers in introducing exciting and engaging activities into virtual learning environments. The ability to share virtual fun-inspired inquisitive instructions would enhance their personalized learning too. Personalized learning is further enhanced by the ability and flexibility to use educational technologies as an intrinsic aspect of social interactions between a public preschool teacher and a young learner, as well as learner to learner in a virtual fun-inspired learning environment. Similarly, peer leaders should be flexible andappreciate peer teachers' effort in delivering fun-inspired instructions that take into account young learners' imagination and creativity.

Indeed, peer leaders should lead their peer teachers on ways to initiate ideal fun-inspired inquisitive instructions and constantly express gratitude for their contributions in the planning and conducting fun-inspired inquisitive activities that are tailored to the present pandemic situation (Heng & Sol, 2020). Peer leaders should also urge their peer teachers to collaborate with parents through cross-boundary digital collaboration tools for the betterment of young learners' acquisition of early science process concepts and skills (Graafland, 2018). The cross-border collaboration is expected to foster creative education and, as a result, incorporate the 4th Industrial Revolution's needs into Malaysian public preschools' environment (Jemimah & Suziyani, 2019).

#### Leading through Sharing Knowledge and Ideas of Fun-Inspired Inquiry

The second domain, Leading through Sharing Knowledge and Ideas of Fun-Inspired Inquiry emphasized the significance of being open-minded in sharing best practices from diverse perspectives, which boosted young learners' artistic problem-solving abilities. Similarly, peer leaders in Malaysian public preschools should foster the development of creative-thinking abilities by applyinginnovative, authentic, and multi-focused learner-centered fun-inspired innovation in engaging in inquisitive activities. This domain was also created based on the third domain of the Model of Knowledge Sharing – 'Functions of ICT Platforms in Knowledge Sharing' and the third dimension of the Community of Practice Model - 'Sharing spaces for idea negotiation'. This domain demonstrated the importance of being open-minded, imaginative, and creative. Similarly, this dimension emphasized the importance of honing imaginative and creative thinking skills, knowledge, and values while leading and engaging peer teachers in effectively planning and conducting fun-inspired inquisitive activities in integrated subjects like science, mathematics, and the arts.

#### **Leading through Engaging and Fun-Inspired Inquiry**

The third domain, Leading through Engaging and Fun-Inspired Inquiry was established based on Garrison, Anderson, and Archer's Community of Inquiry Framework's third dimension - 'Integration' (Garrison et al., 2000). This dimension promotes leadership for learning by leading peer teachers to reflect on their instructional practices across subjects and schools for effective and creative learning. It was concerned with public preschool peer leaders' efforts to collaborate and share best practices in combined learning environments for collective reflection via online or in-person platforms, as well as peer leaders' observation to improve peer teachers' skills in designing engaging virtual and face-to-face fun-inspired inquisitive instructions. As a result of spontaneous and informal exchanges of instructional

Vol. 12, No. 4, 2022, E-ISSN: 2222-6990 © 2022

ideas on various fun-inspired inquisitive instructions, the learning environment becomes more engaging and imaginative, from school-based to home-based learning that incorporates leadership for learning during an epidemic environment (MacBeath, 2012).

## Leading through Short-Term Innovation Goals for Fun-Inspired Inquiry

The fourth domain, Leading through Short-Term Innovation Goals for Fun-Inspired Inquiry focused on setting short-term innovation goals for fun-inspired inquiry in collaborative and co-creative environments, giving public preschool peer leaders and their peer teachers a sense of belonging and allowing them to stay connected for a short period to achieve the short-term fun-inspired innovation goals. It was developed based on the first phase of the 4-D cycle, 'Discovery' in the Model of Appreciative Inquiry (Cooperrider & Whitney, 2001). 'Leading through Short-Term Innovation Goals for Fun-Inspired Inquiry' was also allied with 'Leading through Appreciation of Fun-Inspired Inquiry' – the first domain, 'Leading through Sharing Knowledge and Ideas of Fun-Inspired Inquiry' – the second domain.

Precisely the alignment of the three domains requires public preschool peer leaders to think out of the box to lead their peer teachers to enhance their critical and creative thinking skills in dynamic learning environments (Batey, 2012). Peer teachers, too, should be instructive and accountable all of the time as they provide the opportunity for young learners to share their "voice" through online or in-person interactions. Incorporating the learners' "voices" will improve their performance and ability to lead (Banner et al., 2019), which would later lead to the achievement of short-term fun-inspired innovation goals in the new realm.

#### **Assessing Domain Reliability and Validity**

The newly developed PeLFII Model was subjected to a pilot field test. Hence, the PeLFII Scale which was used to measure the effectiveness of the PeLFII Model was administered to 145 public preschool teachers for assessing the internal consistency reliability of the 34 items. The items were measured based on each domain. The Cronbach alpha value of more than 0.7 (> 0.7) determines the level of internal consistency of the PeLFII Model (Hair et al., 2019).

Further, Exploratory Factor Analysis (EFA) was employed to assess relevant domains for PeLFII Model. EFA also aims to identify appropriate items to be loaded into each domain. Hence, Principal Components Analysis (PCA) was also employed to load each item as it is less challengingthan factor analysis (Hair et al., 2019). Data cleaning will be employed before PCA to remove severely skewed variables. The output of EFA yielded four domains that were successfully loaded (Table 1) to measure the effectiveness of the PeLFII Model. The domains were 'Leading through Appreciation of Fun Inspired Inquiry', 'Leading through Sharing Knowledge and Ideas of Fun Inspired Inquiry', 'Leading through Engaging and Fun Inspired Inquiry', and 'Leading through Short-Term Innovation Goals for Fun Inspired Inquiry'.

The four domains were further computed for more advanced construct validity namely, Pooled Confirmatory Factor Analysis (Pooled-CFA). The four domains were known as latent variables in Pooled-CFA. The latent variables were measured by observable variables (items) based on the rule of thumb of at least three observable variables (items) to measure each latent variable (domain) as proposed by Hair et al. (2019). The threshold value of more than .5 (>.50) was set to measure the newly developed observable variables or items (Hair et

Vol. 12, No. 4, 2022, E-ISSN: 2222-6990 © 2022

al., 2019). Structural Equation Modelling (SEM) was further employed for assessing the reliability and validity of the newly developed PeLFII Model. Three categories of fit indices were utilized toassess the construct validity of the PeLFII Scale. The categories of the fit indices include i) absolute fit indices; ii) incremental fit indices, and iii) parsimonious fit indices. All the fit indices have surpassed the threshold indicating that the PeLFII Scale is valid to measure the effectivenessof the PeLFII Model via online or face-to-face platforms.

Table 1. Domain Clarity Average Scores

| Construct                | Domain   | Average Score of theDomain | Average Score of theConstruct |
|--------------------------|--|----------------------------|-------------------------------|
| Peer-Led Fun<br>Inspired | Leading through<br>Appreciation of Fun   | 9.52                       |                               |
| Inquisitive Model        | Inspired Inquiry Leading through Sharing Knowledge and Ideas of Fun Inspired Inquiry | 9.42                       |                               |
|                          | Leading through Engaging and Fun Inspired Inquiry                                    | 9.60                       |                               |
|                          | Leading through Short-<br>Term Innovation Goals<br>for Fun Inspired Inquiry          | 9.33                       |                               |
|                          | Total Average Score  |                            | 9.47                          |

The development of the Peer-Led Fun-Inspired Inquisitive (PeLFII) Model had highlighted the novelty of leadership and innovation research models and frameworks in the local context. In particular, the PeLFII Model is the first model to be tested both practically and conceptually to better understand public preschool teachers' peer leadership abilities in mobilizing funinspired inquisitive instructions in online and in-person educational settings. The underlying theories add to the body ofknowledge on teachers' peer leadership competency in leading peers on fun-inspired inquisitive instructions, as well as provide a platform for future research. The underpinning theories contribute to the body of knowledge on teachers' peer leadership competency in leading peers on fun-inspired inquisitive practices and framework for further investigations. It also results in a collaboration between teachers and parents in multi-educational settings. Schools, teachers, and policymakers can adopt one or more funinspired approaches to ensure that schools reflect the interests and needs of the school community they serve. It would also contribute to scholarly knowledge and provide a new perspective in online and in-person interactions in early childhood educational settings that emphasized Higher Order Thinking Skills (HOTS), particularly in the planning and inventing of training programs for Malaysian public preschool teachers. PeLFII Model also inculcates problem-solving skills and principles. The PeLFII Model also incorporates learners' voices and innovation values toward Education 4.0. It would also offer much-needed advice to practitioners in the development of a Malaysian Early Childhood Educationist Professional Development Model. The newly established PeLFII Model emphasized the twenty-first-

Vol. 12, No. 4, 2022, E-ISSN: 2222-6990 © 2022

century competencies that may be fine-tuned for better efficiency in virtual fun-inspired inquisitive instructions for Malaysian public preschool teachers in the new realm.

#### **Recommendations for Future Research**

The present study provides insights into the process of inspiring preschool teachers' creativity in teaching science process skills in the physical and virtual environment. Future research can be conducted to examine the impacts of the PeLFII model on the development of young children's creativity. Longitudinal studies can be carried out to monitor and evaluate the permanence of the positive effects of the model. The PeLFII model can also be used to support preschool novice teachers and experienced teachers in fundamental science process skills (Fanny & Alzalit, 2022). A professional development network can be established to ensure effective professional communication between novice and experienced preschool teachers. The professional network may also serve as an effective tool to assess the effectiveness of the PeLFII model in the Malaysian preschool curriculum.

More comprehensive samples will be required in future research since the sample for this studyonly require small samples of public preschools from the three strata. To design new, enjoyable, and inspirational research instruments, a more thorough and systematic research approach such as Design and Development Research (DDR) could be used. Since the research samples in this study only include public preschool teachers, future research may include more comprehensive samples from private kindergartens to determine substantial demographic effects. A follow-up study may also be conducted based on the individual factors that influence creativity in leading peers via novel fun-inspired activities that are appropriate for the new realm educational ecosystem. Future research may concentrate on elements that enhance imagination among young learners, particularly in acquiring science process skills. Last but not least, the PeLFII Scale, which was recently developed, could be employed to support the professional development of Malaysian preschool teachers.

#### **Acknowledgement**

This research was supported by the Ministry of Higher Education through Fundamental Research Grant Scheme for Research Acculturation of Early Career Researchers (RACER/1/2019/SSI09/UPSI//4) from 2019to 2022.

## References

- Anderson, N., Potočnik, K., & Zhou, J. (2014). Innovation and Creativity in Organizations: A State-of-the-Science Review, Prospective Commentary, and Guiding Framework. Journal of Management, 40(5), 1297–1333.
  - https://doi.org/10.1177/0149206314527128.
- Andrew, B., & Terry, C. (2014) Mobilizing leadership in cities and regions. Regional Studies. *Regional Science*, 1(1), 5- 20. https://doi.org/10.1080/21681376.2013.869428.
- Graham, A. D. (2019). Benefits of online teaching for face-to-face teaching at historically black colleges and universities. *Online Learning*, 23(1), 144-16.
- Banner, M., Brown, C., & Jeffrey, A (2019). *Elevating Student Voice in Education*. Center for American Progress. http://www.americanprogress.org/
- Batey, M. (2012). The measurement of creativity: From definitional consensus to the introduction of a new heuristic framework. *Creativity Research Journal*, 24(1), 55 56. https://doi.org/10.1080/10400419.2012.649181.

- Bonk, C. J., Wisher, R. A., & Nigrelli, M. L. (2004). *Learning Communities, Communities of Practice: Principles, Technologies, and Examples*. In K. Littleton, D. Miell and D. Faulkner (Eds.), Learning to Collaborate, Collaboratingto Learn (pp. 199–219). Hauppauge, NY: NovaScience Publishers.
- Chmelárová, Z., & Čonková, A., (2021). Project-Based Learning from the Point of View of Economics Students. *TEM Journal 10* (2), 832-838.
- Chokchai, O., & Pupat, P. (2018). A Student's Scientific Mind: A Confirmatory Factor Analysis. *Malaysian Journal of Learning and Instruction*, 15(2), 1-31.
- Cooperrider, D.L., & Whitney, D. (2001). *A positive revolution in change: Appreciative inquiry*. In R. T. Golembiewski (Ed.), Handbook of organizational behavior (2nd ed., pp. 611-629). NewYork: Marcel Dekker
- Dobni, C. B. (2008). Measuring innovation culture in organizations: the development of a generalized innovation culture construct using exploratory factor analysis. *European Journal of Innovation Management* 11(4), 539–559.
- Drosos, D., Kyriakopoulos, G. L., Gkika, E. C., Komisopoulos, F., Skordoulis, M., & Ntanos, S. (2021). Managing Changeand Managerial Innovation towards Employees Satisfaction at Workplace. *TEM Journal 10* (2), 597-606.
- Fanny, K. C. Y., Alzalit, K. Z. Z. (2022). Employing Exploratory and Pooled Confirmatory Factor Analysis for Reliability and Validity of Peer-Led Fun Inspiring Inquisitive Scale. *International Journal of Learning, Teaching and Educational Research, 21*(3), 51-70. https://doi.org/10.26803/ijlter.21.3.4
- Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education, 2*, 87–105.
- Gerekli, I., Celik, T. Z., & Bozkurt, I. (2021). Industry 4.0 and Smart Production. *TEM Journal 10* (2), 799-805.
- Graafland, J. H. (2018). *New technologies and 21st-century children: Recent trends and outcomes*. Organization for Economic Co-operation and Development. OECD. EDU/WKP 15, 1-60.
- Grazer, B., & Fishman, C. (2015). A Curious Mind. The Secret to A Bigger Life. New York: Simon & Schuster Publication.
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate Data Analysis* (8th ed.). United Kingdom: Cengage Learning, EMEA. https://dokumen.pub/multivariate-data-analysis-8th-edition-1473756693-9781473756694-1473756545-9781473756540.html
- Heng, K., & Sol, K. (2020). Online learning during COVID-19: Key challenges and suggestions toenhance effectiveness. Cambodian Education Forum. https://cambodianeducationforum.wordpress.com/2020/12/08/online-learningduring-covid- 19-key-challenges-and-suggestions-to-enhance-effectiveness/
- Ho, S. P., Wu, P. C., & Hsu, Y. (2006). *Knowledge Sharing Model and Its Implication on Knowledge Categorization and management*. ISARC, 751-756.
- Jemimah, H., & Suziyani, M. (2019). The Readiness of Preschool Teachers in Integrating 4th Industrial Revolution Skills in Classroom. *International Journal of Academic Research in Progressive Education and Development*, 8(3), 84–98.
- Kho, F. C. Y. (2020). Teachers Who Lead. UPSI: University Press Office.
- Knight, J. (2004). Instructional coaches make progress through partnership. Journal of Staff

Vol. 12, No. 4, 2022, E-ISSN: 2222-6990 © 2022

- *Development, 25*(2), 32-37. MacBeath, J. (2012). *Leadership for Learning*. The Cambridge Network, 2, 1-9.
- Mehtaa, M., Chandanib, A., & Neerajac, B. (2014). Creativity and Innovation: Assurance for growth. *Procedia Economics and Finance* 11, 804 811.
- Piaget, J. (1973). *To understand is to invent: The future of education*. NY: Grossman Publishers. Rudenko, Y., Naboka, O., Korolova, L., Kozhukhova, L., Kazakevych, O., & Semenikhina, O. (2021). Online Learning with the Eyes of Teachers and Students in Educational Institutions of Ukraine. *TEM Journal*, *10* (2), 922-931.
- Sailin, S. N., & Mahmor, N. A. (2018). Improving Student Teachers' Digital Pedagogy throughMeaningful learning activities. *Malaysian Journal of Learning and Instruction*, 15(2), 143-173.
- Sashkin, M. (1988). The visionary leader. In J. A. Conger & R. N. Kanungo, *Charismatic Leadership: The elusive factor in organizational effectiveness* (pp. 122-160), Jossey-Bass.
- Vygotsky, L. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.
- Yuet, F. K. C., Zaid, K., Ardini, P. P., Gengatharan, K., & Ling, Y. C. (2021). Preschool teachers' peer leadership readiness in mobilizing fun innovative inquiry in the New Horizon. Journal ofResearch, Policy & Practice of Teachers and Teacher Education, 11(2), 124-138. https://doi.org/10.37134/jrpptte.vol11.2.9.2021