Ovidius University Annals, Series Physical Education and Sport / SCIENCE, MOVEMENT AND HEALTH
Vol. XXI, ISSUE 1, 2021, Romania
The journal is indexed in: Ebsco, SPORTDiscus, INDEX COPERNICUS JOURNAL MASTER LIST,
DOAJ DIRECTORY OF OPEN ACCES JOURNALS, Caby, Gale Cengage Learning, Cabell's Directories

Science, Movement and Health, Vol. XXI, ISSUE 1, 2021
January 2021, 21 (1): 45 - 51
Original article

WALKING DIGITAL GALLERY MODEL FOR PHYSICAL EDUCATION & HEALTH: APPLICATIONS OF NOMINAL GROUP TECHNIQUE AND INTERPRETIVE STRUCTURAL MODELING

NIK HAZIRA GHAZALI[1], SAEDAH SIRAJ[1], SYED KAMARUZAMAN SYED ALI[1], KASFUL ASRA[1]

Abstract

This paper presents the development of Walking Digital Gallery model based on digital for Physical Education and Health primary's school subjects. The study adopted the Nominal Group Technique (NGT) and Interpretive Structural Modeling (ISM) method to develop the model that can be used in teaching. The NGT and ISM session involving 8 panel of experts came out with twenty five (25) elements are suggested and twenty one (21) elements have been selected to develop the model based on the expert consensus.

*Keywords***:** Model, Nominal Group Technique, Interpretive Structural Modeling, Physical Education and Health subject, Walking Digital Gallery.

Introduction

The Physical Education and Health (PEH) is a compulsory subject in schools as it aims to create a healthy, active and productive future generation. The knowledge, skills and experience gained through the PEH indirectly enable students to adopt a healthy culture and lifestyle which is very important for the nation. The PEH Education curriculum emphasizes the development of self-development in physical, mental, emotional, social, safety, self-responsibility, interaction and cooperation. PEH subject has been a core subject since 1989 as it is believed to contribute to overall student development through their learning experiences in the cognitive, affective and psychomotor domains (Arsaythamby Veloo & Ruzlan Md Alib, 2016). The PEH Curriculum was formulated in accordance with the National Philosophy of Education aimed at producing a balanced generation of physical, emotional, spiritual and intellectual. In Malaysia, PEH is a compulsory subject taught in all primary and secondary schools. This subject is considered important by the Ministry of Education in promoting the concept of modern education.

Statement of problem

Teachers today have been face new issues, situations and challenges that never be the same like before. As well as the curriculum of the PEH, there are a number of issues that teachers need to address in the implementation of Physical Education subjects such as the concepts, policies and principles of the PEH curriculum itself. One of the main issues that is often associated with the subject of PEH is related to non-optional or untrained teachers who are required to teach the subject (Syed Kamaruzaman Syed Ali, 2014),

This subject is also considered to be less important by some students, but it is also often taught by teachers who are not trained specifically in Physical Education and Health (Muhammad Faizal A.Ghani, 2014). Besides being considered insignificant and taken lightly by some teachers and students in the school. This is because teachers do not emphasize physical and health education subjects that are not considered important to teach. Most teachers take advantage of teaching other subjects such as science, biology, history and so on during the time of physical education and health. According to Eng Hoe Wee (2013), PEH are often replaced by other lessons and reported several observations that revealed current scenarios in schools related to PEH education. Some students are positive about taking PEH lessons while others are not interested. Students complaining about lack of time, organized lessons and missing opportunities to relieve stress before the main exam. There are also students who are not involved in sports activities as they focus on outstanding achievement in the examination (Abd Aziz Hj Salleh, 2019). In addition, there is also a lack of options for Physical Education teachers and other teachers' reluctance to teach the subject.

Therefore, the teaching and learning methodology should be adapted to the needs of the 21st century to make students more interested in learning the PEH. In this regard, the Ministry of Education today needs creative, cooperative and collaborative teachers in their teaching of 21st century learning, communication, critical thinking and creativity in order to make the learning process more interesting and interactive (JPN Perak, 2015). The role and importance of using computer, audio and internet in the learning system in launching the teaching and learning system is undeniable. It also

[1]Faculty of Education, University of Malaya, Malaysia
Email: syed@um.edu.my
Received 04.09.2020 / Accepted 8.12. 2020

indirectly facilitates two-way communication between students and teachers which has been conducted online (Shahrulnizam Ramli & Syed Alwi Syed Abu Bakar, 2015).

Gallery walk

Gallery Walk is a form of teaching and learning that involves interaction between students and they also have the opportunity to inform others. It also focuses on students in managing learning rather than traditional methods that rely entirely on teachers in the delivery of information. Students also have the opportunity to have discussions with them from one station to another (Chee Keong Chin, 2017). According to A'ain (2014), Gallery Walk is a discussion technique that allows students to work in small groups to share ideas and answer meaningful questions or scenarios. They can also see other people's work and explain their own work, this is because they can move freely, travel to each station to see other friends' work and to provide their own works opinions in the learning process. This also indicates that the student is actively involved during the learning sessions. Students can also work in groups, share ideas and ideas and respond to thoughtful questions and this method is very flexible (Desi Sustainable, 2017). In addition, they can also collaborate, analyze, evaluate, and synthesize and even indirectly practice public speaking. It can also include the use of technology tools such as mobile phones and the gallery which will produce pictures, graphics, sentences, posters of various sizes and stations for activities to be carried out (Anita Stewart Mccafferty & Jeffrey Beaudry, 2017)

Therefore, based on the advantages of Gallery Walk an additional of digital elements such as computers, tablets, smart phones, software, digital video, digital games, websites including social media, mp3 and e books (Dictionary Cambridge, 2017) will be implemented in the model. Therefore, this model will be known as the Walking Digital Gallery (WDG).

Application of nominal group technique (ngt) and interpretive structural modeling (ism)

Nominal Group Technique (NGT) is a structured face-to-face group session with the aim of reaching consensus on group and action planning on selected topics. It was originally developed by Delbecq and is also associated with the Delphi technique. The term, "nominal group", means that the session is only nominally, "name", group, while it depends on individual input in the group environment; interactions between individuals during the session are not actively encouraged (O "Neil and Jackson 1983). This method is used in conjunction with the ISM method because it brings together all the experts in a given period of time to gain expert consensus on an issue. Interpretive Structural Modeling (ISM) is a technique specifically designed to support the human brain in managing information and ideas in a clear structure through a targeted problem perspective (Warfield, 1976) or in another word, ISM is also a technique designed specifically to support the human brain to clearly and structurally organize information and ideas into problems that are aimed at finding a solution . In another situation Warfield (1982) explained that ISM is also a computer-based teaching and learning process that enables individuals and groups to develop a model or map of the relationships between elements involved in a given issue based on experience and expert knowledge.

Studies based on NGT and ISM methods in education are relatively limited but they are beginning to become a trend in educational research methods. Among the research conducted using ISM are studies on the design of the English Language Communication M-learning curriculum (Muhammad Tony, Saedah, Asra & Zaharah, 2013), there are also studies on the impact of Homeschooling (Norlidah, Saedah, Nazri & Dewitt, 2013) and studies on the management of knowledge for higher education institutions and in improving the quality of technical education services by Asra (2017). However most studies in the field of education using ISM have not been applied to the maximum extent and still can be upgrade. Therefore, according to Mohd Paris Mohd Salleh (2016) as a great decision-making tool, NGT and ISM's capabilities must be fully utilized to achieve effective and practical solutions to more important educational issues.

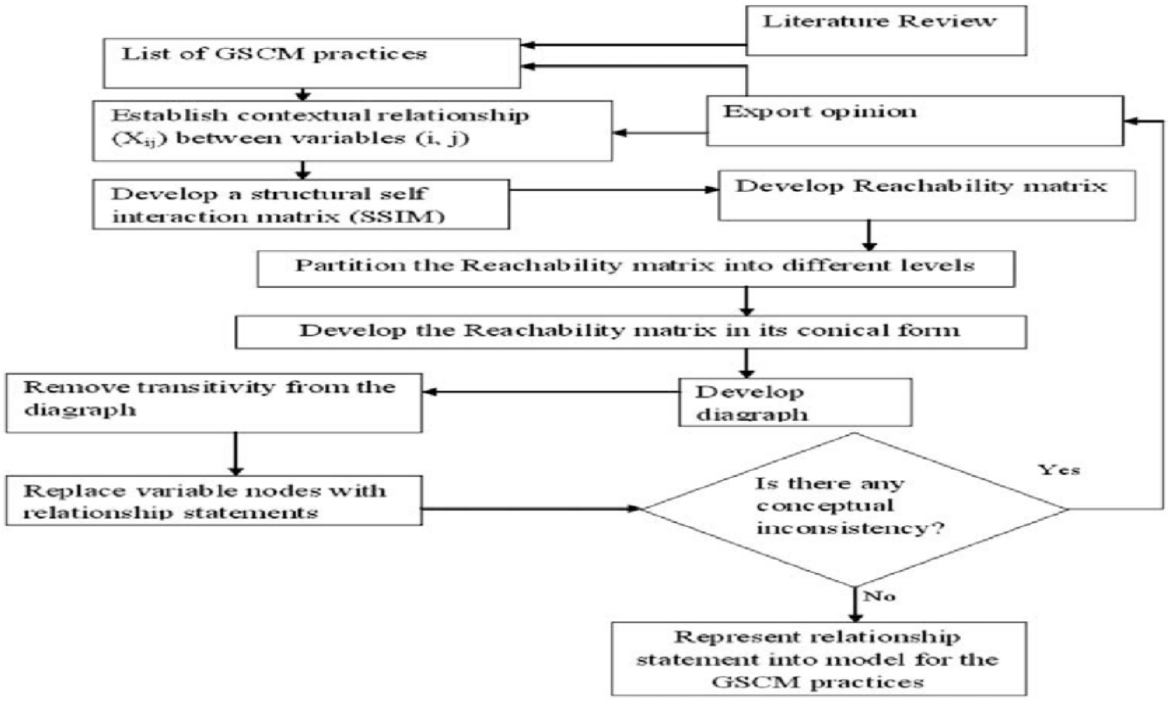

Figure 1: *ISM Process (Kannan Govindan, International Journal of Environmental Studies, 2013)*

The purpose of the study

The focus of this study is to develop a Walking Digital Gallery curriculum model for PEH teachers to teach.

Study Questions:

This study attempts to answer the following research questions:

1. What is the ideal elements for the Walking Digital Gallery model for PEH primary school subjects?

2. What is the design of the Walking Digital Gallery for PEH primary school subjects?

Research methodology

In the context of this study, NGT and ISM is used to help a line of experts reach consensus in formulating the relationships between elements within the Walking Digital Gallery model. The following are the key steps in the ISM procedure (Janes, 1988) that will form the basis for the development of the Walking Digital Gallery for PEH primary school subjects:

1) Stage 1 – To Identify the issue to be studied:

This stage is intended to identify issues or elements using ISM. At this stage, the Nominal Group Technique (NGT) have been used to identify issues and problems. This group of experts comprises of people with knowledge and experience in PEH pedagogy, curriculum, educational technology and also willing to participate in joint workshops to produce ISM models with other experts. 8 selected experts were choosen to facilitate brainstorming ideas. During the NGT session, experts can give their opinions, share ideas or views, and also can state the options for accepting or rejecting the ideas and views presented for the purpose of developing this model. In this session, a consensus of experts will be able to determine the final elements that will be adopted to develop this model.

2) Stage 2 – To Decide and define contextual and phrase relationships:

This step is to determine the shape of the elements to be generated. These include relationship phrases and contextual phrases needed in ISM.

3) Stage 3 – To Develop a structural self-interaction matrix (SSIM):

In this phase, Concept Star software was used. The experts will vote on the relationship of the elements already installed. The voting process will continue until all elements have been through pair and wise process and a model is installed.

4) Stage 4 – To Generate a model:

Once all the elements are installed and selected, model generation is performed. The ISM software itself will complement the mathematical calculation process including the Structural Self-Interaction Matrix (SSIM) as well as the Initial Reachabilty Matrix for ISM software users. The mathematical calculations of this matrix are protected based on the software technology used.

5) Stage 5 – To Display ISM model:

At this stage, the model that has been developed will be presented to the experts for review and modification as needed

6) Stage 6 – To Discuss the structure and amend it if necessary:

At this phase, the final model will be presented to the expert once the approval process has been completed

Findings

1) In the first stage of NGT and ISM

In the NGT session, 25 elements of the activity were presented to the experts for evaluation. As a result of discussion and analysis by experts, there are some elements that need to improve the structure of the sentence and some need to be removed. The experts then agreed to removed 4 elements and accept 21 elements for the model. This shows that the experts agree on the elements of the activity presented at the session (NGT). This answers the first research question, what are the elements of the Wakling Digital Gallery model that fit. Table 1 shows the expert consensus on the 21 agreed elements.

Table 1: *Findings of the Walking Digital Gallery PEH Model Elements*

RANK	ELEMENT	SCORE	%	RATING
1	Create an interactive learning environment	53	94	ACCEPTED
2	Apply planning skills to students	52	94	ACCEPTED
3	Instruct students to form their own small groups	52	94	ACCEPTED
4	Provides presentation guidelines	52	94	ACCEPTED
5	Implement communication skills among students	52	94	ACCEPTED
6	To guide students' existing knowledge of the subject of PEH	51	91	ACCEPTED
7	Guide students in preparing the presentation	51	91	ACCEPTED
8	Encourage students to express themselves using digital tools	51	91	ACCEPTED
9	Apply teamwork skills	51	91	ACCEPTED
10	Apply decision-making skills	51	91	ACCEPTED
11	Guide students in designing the storyboard of the Walking Digital Gallery PEH	51	91	ACCEPTED
12	Applying rationalization skills	51	91	ACCEPTED
13	Helps students upload their Walking Digital Gallery PEH assignments through social media platforms	50	89	ACCEPTED
14	Apply the skills of making conclusions in each of the activities of the Walking Digital Gallery PEH	50	89	ACCEPTED
15	Implementing research skills in Walking Digital Gallery PEH	50	89	ACCEPTED
16	Apply digital usage skills	50	89	ACCEPTED
17	Provides conclusion via e-RPH	50	89	ACCEPTED
18	Guiding students to come up with the idea of the Walking Digital Gallery PEH assignment	49	87	ACCEPTED
19	Help students choose the E-Learning app for Walking Digital Gallery PEH	49	87	ACCEPTED
20	Provides digital facilities for PJK Walking Digital Gallery PEH	48	85	ACCEPTED
21	Guide students using search engine applications with digital tools	48	85	ACCEPTED

* Percentage acceptance ≤ 70 percent

Findings Table 1 shows all 21 elements that have been accepted for inclusion in the Walking Digital Gallery of PEH. The percentage of elements evaluated is at the appropriate level for use. According to Dobbie et al. (2004) the condition of acceptance of an element is that the percentage of votes must exceed 70%. Therefore, it is clear that all elements are acceptable and suitable for use as model elements.

2) The ISM's second-level analysis of the type of ISM that will be built determines the context and contextual phrases it wants to structure in the ISM. Findings of the phrases that are relevant to the context of the study are as follows: Relationship Phrases: *'need to be implemented before ...'*

3) Third and fourth level insights: This stage is an important step in developing a model. The findings of this step answer the second question of the study, which is based on the expert consensus, what is the design of the Walking Digital Gallery PEH. At this stage the compiled elements will be presented using Concept Star software. Elemental pairs will allow specialists to vote until all elements have been installed and a model built. A schematic view of the model can be seen in figure 2 below:

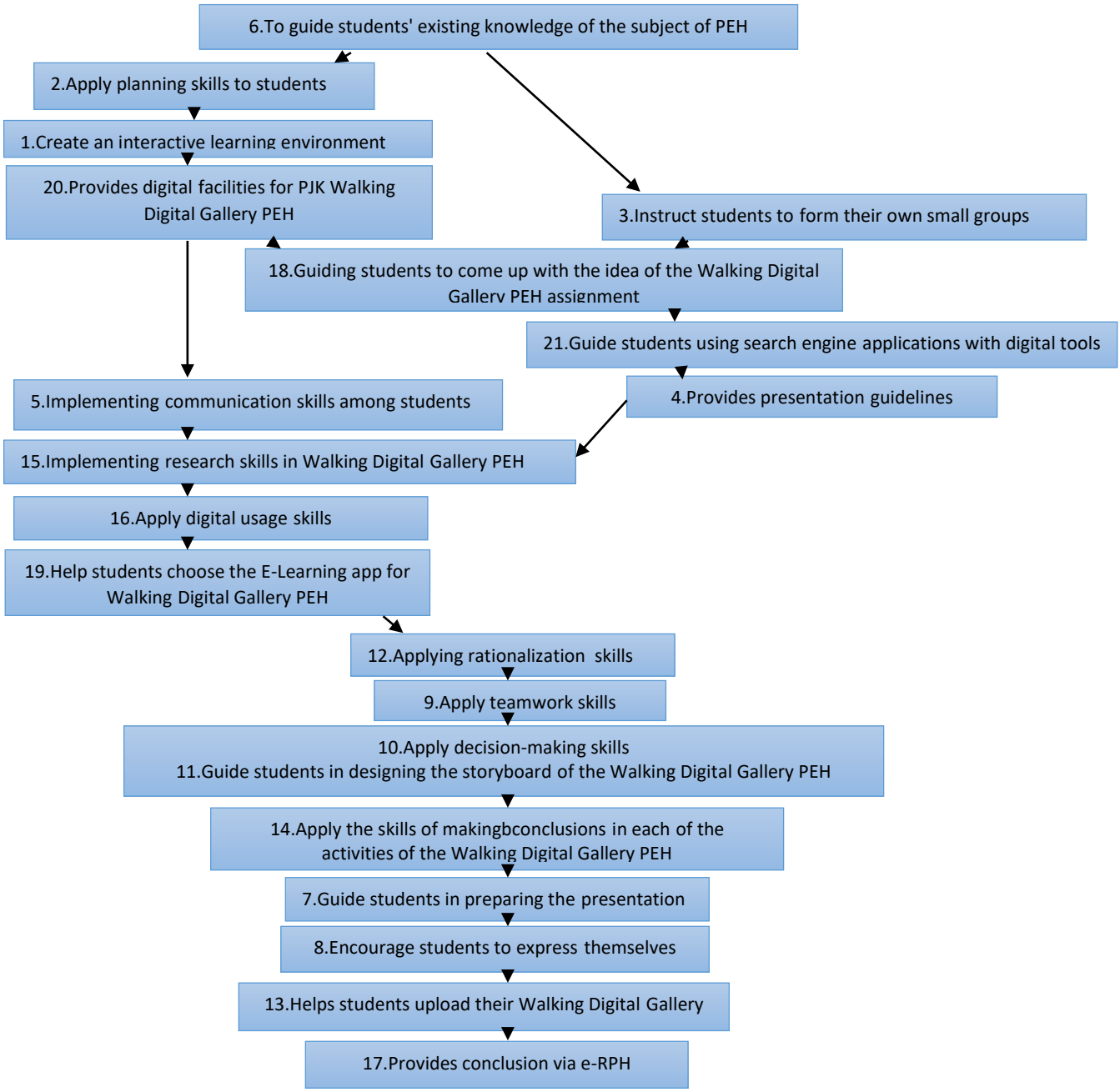

Figure 2: Walking Digital Gallery Physical Education and Health Model

4) The final findings of Stages 5 and 6, the discussion and the structural amendments show that the experts has agreed to maintain without making any amendments to the design of the model. Based on Figure 2, the finding shows that element 6 is in the highest position before the other elements. This

element also has a higher driving power than any other element. The driving power is the power that drives an activity or other element to achieve a goal by itself. Thus, element 6 influences the other elements in achieving the goals of the model. In other word, element 6 has to be done first before any other element.

Discussion

To answer the question 1 - the elements of the Walking Digital Gallery for PEH model were created based on expert opinion, discussion and concensus. The findings show that all 21 elements are accepted by experts and included in the model as shown in Table 1. The most important element is element 6 'to guide students' existing knowledge of the subject of PEH'. Meanwhile, elements 17 'Provides conclusion via E-RPH' is in the last position as shown in Figure 2.

To answer the question 2 - the findings of the studies question can be seen in Figure 2. The model that has been developed is in line with Bloom's Taxonomy theory whereby the stages of human learning must be initiated by knowledge and followed by other stages with knowledge and followed by other stages (Anderson, Krathwohl & Bloom, 2001). In addition, the findings show that element 17 in Figure 2, 'provides conclusion via E-RPH' occupies the last priority in the model which also represents the use of E-RPH in todays situation. The use of online lesson plans that has been used in most scholls has proven to be more easier for teachers to used and also easier for administration to monitor.

Conclusion

Based on the findings of this study, it can be concluded that the 21 elements identified by the experts in the development of the Walking Digital Gallery model for PEH primary school. In the technology world, technology-based teaching and learning such as this model is very relevant. For further study, the researcher proposes to develop specific modules for the PEH subject and also recommended to develop more models for different subjects whether for secondary or primary school.

Reference

Adlan bin Mohamed Yusof, *Pengaruh Modul Permainan Tradisional Terhadap Domain Pembelajaran, Status Konsep Kendiri Serta Minat Terhadap Aktiviti Fizikal Dalam Kalangan Pelajar Sekolah Rendah*, Fakulti Sains Sukan Dan Kejurulatihan Universiti Pendidikan Sultan Idris, 2016.

A'in Ratna Mulyani, *Gallery walk technique, an experimental study of eighth grade students at SMP Muhammadiyah 1 Weleri, Kabupaten Kendal*, English Department, Faculty of Languages and Arts, State University of Semarang, Indonesia in the academic year of 2013/2014).DOI: https://doi.org/10.15294/elt.v3i1.4007, 2014.

Ahmad bin Esa & Umi Kalthom Binti Mahbib, *Pembelajaran Koperatif Di Malaysia: Pembangunan Profesional Dalam Meningkatkan Pendidikan Sekolah Rendah*, Prosiding Persidangan Antarabangsa Kelestarian Insan 2014 (INSAN2014), Batu Pahat, Johor.

Anderson LW, Krathwohl DR, Airasian PW, Cruikshank KA, Mayer RE, Pintrich PR, Raths J & Wittrock MC, *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives* (Complete edition), New York: Longman, 2001.

Anita Stewart, The gallery walk educators step up to build assessment literacy the learning professional, 2017, *Vol. 38 No.6 dimuat turun daripada www.learningforward.org*

Arsaythamby Velooa & Ruzlan Md Alib, Challenges in the Implementation of School Based Assessment in Physical Education: International Soft Science Conference Teachers' the euoropean proceedings of social and behavioural science epSBs ISSC 2016, *International Review of Management and Marketing, 2016, 6(S8) 48-53*.

Asra Kasful Sakika Saedah Siraj Muhammad Tony Lim Abdullah, Aplikasi kaedah interpretive structural modeling untuk pembinaan model implementasi m-pembelajaran latihan perguruan, *JuKu: Jurnal Kurikulum & Pengajaran Asia Pasifik, [S.l.], v. 5, n. 4, p. 38-47, oct. 2017. ISSN 2289-3008*, 2017.

Cambridge dictionary, Cambridge University Press, Cambridge UK Chee Keong Chin, Kwan Hooi Khor, and Tiam Kian Teh (2015). *Is Gallery Walk an Effective Teaching and Learning Strategy for Biology? Biology Education and Research in a Changing Planet* , Selected Papers from the 25th Biennial Asian Association for Biology Education Conference, 2013.

Desi Lestari Nim, *The Effect Of Gallery Walk Strategy On The Students' Ability In Writing Descriptive Paragraph At Mas Al Ittihadiyah*, Proposal Department Of English Education Faculty Of Tarbiyah And Teachers' Training State Islamic University Of North Sumatra, Medan, 2017.

Dobbie A, Rhodes M, Tysinger JW & Freeman J Using a Modified Nominal Group Technique

as a Curriculum Evaluation Tool. *Family Medicine*, 2004, *36 (6), 402- 406*.

Eng-Hoe Wee, Contemporary Issues in the Teaching of PE in Malaysia, JPASPEX, 2013, 1(1), 17-20 Tunku Abdul Rahman College, Kuala Lumpur, Malaysia.

Fahmi Aulia Batubara, I*mproving students' abiity in writing of announcement through gallery walk technique of eight grade at mts jam'iyatul alwashliyah tembung in academic year 2016/2017*, Faculty of Tarbiyah Science and Teacher Training, State Islamic University of North Sumatera, Medan

Janes FR, Interpretive structural modeling: A methodology for structuring complex issues. *Transactions of the Institute of Measurement and Control*, 1988, *10(3), 145-154*.

Jabatan Pendidikan Daerah Larut Matang Perak, 2015, *Aktiviti Pembelajaran Abad 21, dimuat turun Februari* 2018 jpnperak.moe.gov.my/jpn/attachments/article/.../pa21- bankuet.pdf

Kannan Govindan a , Devika Kannan b , K. Mathiyazhagan c , Ana Beatriz Lopes de Sousa Jabbour d & Charbel José Chiappetta Jabbour (2013). Analysing green supply chain management practices in Brazil's electrical/electronics industry using interpretive structural modelling, International Journal of journal of enviromentstudieshttp://www. ***tandfonline.com/loi/genv20***

Mohd Nazri bin Abdul Rahman, *Pembangunan Model Home Schooling Berasaskan Nilai Dan Amalan Masyarakat Bagi Kanak Kanak Orang Asli*, Fakulti Pendidikan, Universiti Malaya, 2014.

Mohd Paris bin Saleh, *Model Pengajaran M-Pembelajaran Berasaskan Kaedah Inkuiri Mata Pelajaran Sejarah Peringkat Menengah*, Fakulti Pendidikan Universiti Malaya, Kuala Lumpur, 2016.

Muhammad Tony Lim Abdullah, A*plikasi Kaedah Interpretive Structural Modeling Untuk Pembinaan Model Implementasi M-Pembelajaran*, Latihan Perguruan Asra Institut Pengajian Siswazah, Universiti Malaya, 2014.

Nur Hanani Hussin, Perubahan Pencapaian Mata Pelajaran Teknologi Maklumat dan Komunikasi melalui Pembelajaran Berasaskan Projek dengan Scaffolding , *Jurnal Pendidikan Malaysia 40(1)(2015): 29-41* Bahagian Pendidikan Islam, Kementerian Pendidikan Malaysia, 2017.

Nor Faradila binti Othman, *Pembangunan Sistem Rancangan Mengajar Harian Berasaskan Web (e-lesson plan)*, Universiti Teknologi Malaysia, 2010.

Roblyer MD & Doering AH, *Intergrating education Technology into teaching* (6thed) Boston, M.A Pearson, 2013.

Sharulnizam Ramli, Syed Alwi Syed Abu Bakar.*Cabaran yang dihadapi pendidikan seni visual dengan kemunculan teknologi maklumat dan komunikasi (ict) di Malaysia*, Pusat Kebudayaan , Universiti Malaya, 2015.

Syed Kamaruzaman Syed Ali, Muhamad Akbar Zahidi, Rahmad Sukor Ab. Samad, Wee, A.S.S.L, *Faktor kekangan ibu bapa dan persekitaran sekolah dalam pelaksanaan pengajaran pendidikan jasmani di sekolah rendah*, JuKu: Jurnal Kurikulum & Pengajaran Asia Pasifik - April 2014, Bil. 2 Isu 2, Fakulti Pendidikan Universiti Malaya. 2014.

Warfield, J.N *Societal systems:planning, policy and complexity*,new York USA:John Wiley & Sons INC, 1976.

Zakaria bin Omar *Pendekatan konstruktif dalam inovasi pengajaran dan pembelajaran Bahasa Melayu di Kolej Vokasional*, Fakulti Pendidikan Teknikal dan Vokasional Universiti Tun Hussien Onn Malaysia, 2014.

Yanjie Song & Siu Cheung Kong, *Going beyond textbooks: a studyon seamless science inquiry in an upper primary class*, Educational Media International, 2014, DOI:10.1080/09523987.2014.968450.