

The validity and reliability of an instrument to evaluate the practices of learning organization

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ABSTRACT

The future of students learning, and excellence of schools absolutely depend on the competence, skills, and expertise of its teachers. This study aimed to report on the validity and reliability of the practices of the learning organization instrument. The dimension of the learning organization questionnaire (DLOQ) instrument was used for the validity and reliability practices of learning organization among teachers. A total of 50 teachers who were selected at random from four indigenous primary schools located in Negeri Sembilan, Malaysia were the respondents in this survey study. The results showed: i) The item-content validity index (I-CVI) value achieved was between 0.67 to 1.00; ii) The scale-content validity index (S-CVI) value between 0.95 to 1.00; and iii) The modified kappa statistic between 0.57 to 1.00, proved that the DLOQ instrument adapted in this study had a high content validity. Hence, Cronbach's Alpha values, Cronbach's alpha if item deleted, inter-item correlation and corrected item-total correlation also explained that this instrument had high reliability. Therefore, the DLOQ instrument was reliable to measure characteristics of learning organization practices in the context of indigenous primary schools, Malaysia. In line with this, the practices of learning organization among teachers in schools especially primary schools need to be fully applied and implemented to produce more broadly skilled teachers, competent, have a high quality of teaching, able to produce students with high marketability, maintaining the sustainability of schools and educational institutions.

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1. INTRODUCTION

The 4th sustainable development goal is the education goal. This goal aims to “ensure inclusive and equitable quality education and promote lifelong learning opportunities for all” [1]. However, global advances as well as technology challenge educators especially teachers to increase their knowledge to remain relevant in the education system. In this regard, the organization for economic co-operation and development (OECD) recommends that “schools should be reconceptualized as learning organizations” to: i) Support continuous learning; ii) Foster a culture of learning; iii) Learning to learn; and iv) Enable teachers to give response more quickly to changes in the internal as well as external environment [2].

The Ministry of Education Malaysia (MOE) adheres to the Malaysian education blueprint 2013-2025 to improve the quality of education in this country [3]. According to MOE [4], 60% of teachers in schools will continue to serve for the next 15 years. In relation to this, MOE aspires to produce 18,000 primary school teachers to further their studies at the masters' degree level by year 2025 through the

scholarly teacher program as an initiative to improve the quality of teachers. Therefore, teachers in schools need to practice the habit of learning and always gaining new knowledge so that they are competent and competitive because the excellence of students and schools also depend on the teachers. Thus, the application and practices of the concept of learning organization enable either individuals or groups or organizations to be able to learn and adapt knowledge in this challenging new millennium education system [5].

There is no denying that the coronavirus disease 2019 (COVID-19) crisis has left an impact on the global education system. All parties involved are urged to implement online distance teaching and learning. Not only that, this pandemic has also taught students to improve certain skills such as survival, problem solving and critical thinking apart from their usual academics [6]. Therefore, teachers should take the initiative to improve their pedagogical and curriculum skills to ensure that online teaching and learning can be carried out well [7]. In this regard, training and courses not only encourage the dissemination of knowledge but also can strengthen the skills of teachers in delivering lessons to students [8].

Hargreaves and O'Connor [9] found that the shortage of teachers in small schools located in rural areas resulted in teachers having to deal with the issue of 'segregation' because the opportunities to conduct collaborative learning in schools were very low. Learning networks with ministries, communities, principals, and teachers successfully solved this problem in 32 schools located in rural America [10]. Other than that, new trends in technology, politics and economics in the 21st century have a major impact on human being life especially for the next generation who have to face a more complex world. According to Fullan, Quinn, and McEachen [11], teachers need to prepare themselves with relevant global skills to meet the needs of students to cope with this situation. In line with this, the application of the learning organization practices encourages and facilitates everyone to learn, adapt and continue to excel [12]–[14].

In Malaysia, the understanding of the concept of learning organization is still at an early stage and there is a lack of empirical research related to this in educational institutions [15]. It has been found that the dimension of the learning organization questionnaire (DLOQ) is reliable and has proven durable across national borders and organizational types for measuring learning organization practices as over 70 articles have been published using DLOQ [16]; however, researchers found that more studies are needed to validate the DLOQ instrument by using different populations in Malaysia [15]. There are requirements that must be met to make an assessment of the validity and reliability to assess the potential implementation of learning organization practices in Malaysian indigenous primary school context using the DLOQ instrument.

The use of questionnaires is one of the data collection techniques which is often used to obtain data in surveys. Thus, accuracy and consistency can give a preliminary picture of whether the actual study can be continued by using the questionnaire or vice versa. This phase of analysis is termed as the validity and reliability of the instrument. Although there are various methods of validity, content validity is highly recommended because it can measure each item accurately [17]. Next, methods such as test-retest, alternative forms and inter-rater can be used to test the reliability of the instrument. nevertheless, Cronbach's alpha measurement is the best approach for measuring the degree of internal consistency of an instrument [18]. even though DLOQ is reliable, additional studies as well as translations into multiple languages are still anticipated [19] to confirm its validity and reliability. Therefore, as a preliminary effort, the researchers wanted to contribute by providing the content validity and reliability of the DLOQ instrument in the context of Malaysian indigenous primary schools. Therefore, the research objectives in this study are: i) Identify the overall content validity of the DLOQ instrument; ii) Identify the content validity of each dimension of the DLOQ instrument; and iii) Identify the reliability of DLOQ instrument.

2. LITERATURE REVIEW

2.1. Concept of learning organization

The word learning organization was popularized by Senge through his book *The Fifth Discipline* in 1990 [5], [20]. Learning organization means an organization that learns continuously and able to change itself according to the changes in its environment. Learning is a process that is strategically used, integrated, and carried out in parallel with work [5]. Learning organizations are places where its members develop their abilities to achieve their desired goals while new and broad thought patterns are nurtured by learning collectively [21]. Thus, learning organizations should connect one individual with another individual, or even a team, or even an environment that is often constantly changing [22]. As such, knowledge sharing is systematically carried out efficiently in the organization [23], [24]. In this regard, the OECD [2] explains that educators have the capacity to change collectively and can also adapt to changes in the complex environment to achieve the desired school objectives. Watkins and Marsick [5], [12], [13] have identified seven different but interrelated dimensions of learning organization practices in four levels of learning namely individual learning practices, group learning practices, organizational learning practices and global learning practices.

Firstly, learning is closely related to the work. Thus, human beings can always learn in the workplace and opportunities for continuous learning and self-development are also offered in organizations. In addition, people can also express their own views, listen, and question the opinions of others in the organization. Thus, the work culture has changed to a form of supporting constructive inquiry, giving progressive feedback and conducting experiments for the purpose of learning and self-development [19]. In line with this, formal and informal self-learning are two types of learning that allow individuals to expand their respective professional competencies [16], [25]. Formal learning takes the form of formal training such as workshops and courses, while informal learning is usually related to tasks performed such as mentoring colleagues or even reflecting on tasks that often bring positive changes in the organization [26], [27]. Therefore, teachers need to participate in various types of learning [28], [29] such as seminars, workshops, conferences, online programs, peer observation, coaching and mentor mentee programs to enhance teachers' professional knowledge and skills [30].

Secondly, every human being has a different and distinctive way of thinking. Thus, the culture of collaboration that exists between small groups in an organization has a high value because human beings can work together to learn in groups to improve overall knowledge, skills, and competencies [19]. Effective collaborative learning develops when team members learn with integrity. Organizations need proactive employees who can take initiative and collaborate with other colleagues in the group to achieve high quality work [31] because learning in groups can improve organizational performance [32] and generate new ideas and creativity which contribute to innovation [33].

Thirdly, the appropriate technology is integrated, has been simplified to use and constantly updated to suit the working environment to support continuous learning. In addition, power is distributed to all levels of people in the organization. This ensures that people are motivated to participate in the decision-making process and understand their responsibilities within the organization [19]. The use of appropriate and effective technology infrastructure can facilitate communication and accelerate accessibility to resources [34], [35] in contributing to the organizational success concerned. This is because technology facilitates the process of storage, delivery and tracking of learning as well as enhances effective communication throughout the organization [16].

Fourthly, humans view, learn and use information obtained from environments and communities outside of the organization to adapt their learning practices. Additionally, the head of the organization also plays a role as a strategic leader in encouraging his followers to learn outside of the organization, between organizations and globally. Leaders also serve as role models for others to learn, support learning and use learning practices to achieve organizational missions [19]. Since organizational structure has a large impact on organizational output, then organizations should emphasize learning by shaping its structure according to the requirements of internal and external environment [36]. Rapidly and drastically changing external environment affects organizational changes [37]. In conclusion, the concept of learning organization refers to the characteristics and the culture of an organization that is conducive and can change by itself to enable its members to learn, acquire and create knowledge continuously. Next, everything learned is shared, then adapted and applied in the organization to achieve self, group, organization, and global goals simultaneously.

2.2. Studies of learning organization

The literature of previous studies in relation to learning organizations found that a study on organizational culture, learning organization and exploration of innovation in the context of higher education institutions (HEI) in Germany was conducted by Yazici and Karabag [38]. This study provides a new perspective on the multi-dimensional nature of learning organizations and its importance to HEI. Findings from academic deans and academic staffs from 54 HEI showed that all dimensions of organizational culture were significantly correlated with learning organization and innovation exploration. Despite this, academic deans and academic staffs had significantly different perceptions about the dimension of system for shared learning and the team learning dimension. Academic staff showed low interest in the implementation of these two dimensions compared to deans. This is because the academic staff felt that the practices of learning organization were less implemented in the system and structure of the organization. This proves that not all educational organizations implement learning organization practices fully and there are still some educators who do not understand the importance of learning organization practices.

Next, in United Kingdom, a study was conducted involving 1,703 respondents including headmasters, teachers, and other staff from 571 schools consisting of primary, middle, and secondary schools [39]. This study was conducted to measure the characteristics of the schools as a learning organization. The results showed that schools that adopted a learning organization culture had eight main characteristics, namely: i) A shared vision to improve the learning of all students; ii) All school partners contribute to the achievement of the school's vision; iii) Continuous learning opportunities are given to all citizens' schools; iv) Prioritise collective learning and team collaboration; v) Promote a culture of enquiry, innovation and exploration; vi) Have effective systems for acquiring and sharing knowledge as well as learning within the

organization; vii) Learning within and outside the organization; and viii) Have a leadership for learning. Therefore, the practice of learning organization must be practiced in schools because it can contribute to the development of students, teachers, schools, and community.

Additionally, a qualitative study on the role of information technology in the formation of learning organizations in rural primary schools located in North Cyprus, Turkey was conducted by Altınay, Dagli, and Altınay [40]. The study which involved a sample of eight directors and 23 teachers used thematic studies to analyze the data. In this study, the directors argued that the existing school organizational structure was very appropriate and promoted effective communication in the organization, collective learning was always carried out and teachers could share opinions and ideas easily. On the other hand, teachers preferred to work individually, there was not much sharing of learning and teachers did not have time to work together due to the heavy workload. This shows two conflicting views between directors and teachers about the use of technology to carry out the practices of the learning organizations. Thus, collective learning needs to be enhanced with the help of technology to achieve educational advancement in schools.

Collins [41] conducted a study in specific schools to measure the role of school leadership teams in fostering a learning organizational culture. Five school administrators and eight teacher leaders serving in secondary schools around the mid-Atlantic, America were selected as respondents in this study. The results showed that the practices of giving feedback, engaging in decision making, building positive relationships, and focusing on achievement were four learning organization practices implemented by the respondents to improve the effectiveness of teaching in schools. In addition, the collaborative aspect was identified to have an important role in promoting the process of knowledge formation and expansion, facilitating teaching practices and building trust among the school leadership team. Thus, the practice of learning organization proved to have a positive relationship with the improvement of knowledge and teaching effectiveness of teachers in school.

Furthermore, Hussein, Razak, and Omar [42] conducted a survey study on 150 academic and non-academic staff in semi-government institutions operating throughout Malaysia to measure the relationship between seven dimensions of learning organization and staff engagement. The results of the study found that only four dimensions of learning organization namely; i) Power sharing; ii) Creating a system to share learning; iii) Connecting the organization with the environment; and iv) Strategic leadership to support learning had a positive and significant relationship with staff involvement in the organization. This means that the learning organization did not fully influence staff engagement. In conclusion, the practices of learning organization at schools enable teachers to learn continuously, having the ability to change according to changes in the environment to meet current education needs, sustain and continue to remain excellent.

3. RESEARCH METHOD

This survey involved a total of 50 teachers who were serving in four indigenous primary schools located in Negeri Sembilan, Malaysia. These teachers were selected using the simple random method. The DLOQ instrument by Marsick and Watkins [19] was used to assess respondents' (teacher) perceptions of learning organization practices implemented in their respective schools. All the items measured utilized the 5-point Likert scale as previous researchers [43], [44] stated that this scale was suitable for measuring human attitudes. The validity and reliability of the instrument were conducted by the researcher to determine the probability of obtaining statistically significant findings through data analysis [18], [43].

3.1. Content validity

Once the translation and adaptation process had been completed, the DLOQ instrument was sent to the experts for review to ensure that its content was appropriate and could measure the objectives of the study [45], [46]. A total of six experts with extensive experience in the field of learning organization verified the content of this instrument. These six experts examined and evaluated all items using a four-point scale. In this instance, measuring the value of the content validity index (CVI) was the right choice for validating the content of the instrument. CVI values can be calculated for each item on a single scale item-content validity index (I-CVI) as well as for the overall scale-content validity index (S-CVI) [47], [48]. The evaluation scores given by all experts on the learning organization practices items are presented in Tables 1 to 4.

Tables 1 to 4 explain the I-CVI values achieved for all 43 items by dimension. A total of 42 items in this instrument were acceptable because an I-CVI value of 0.78 or higher for three or more experts could be considered as having 'excellent' content validity. Meanwhile, the 4th item also was accepted and retained by making improvements in the form of the sentence structure because only items that recorded an I-CVI value of 0.50 or less were unacceptable and had to be rejected [48], [49]. Additionally, all items in these four dimensions were also fully accepted because the S-CVI of 0.90 or higher for three or more experts could be considered having 'excellent' content validity [47], [48].

Table 1. Practices of individual learning

Items	Exp 1	Exp 2	Exp 3	Exp 4	Exp 5	Exp 6	Experts in agreement	I-CVI	Pc	Kappa statistic
1	1	1	1	1	1	1	6	1.00	.016	1.00
2	1	1	1	1	1	1	6	1.00	.016	1.00
3	1	1	1	1	1	1	6	1.00	.016	1.00
4	1	0	1	1	1	0	4	0.67	.234	0.57
5	1	0	1	1	1	1	5	0.83	.094	0.81
6	1	1	1	1	1	1	6	1.00	.016	1.00
7	1	1	0	1	1	1	5	0.83	.094	0.81
8	1	1	1	1	1	1	6	1.00	.016	1.00
9	1	1	1	1	1	1	6	1.00	.016	1.00
10	1	1	1	1	1	1	6	1.00	.016	1.00
11	1	1	1	1	1	1	6	1.00	.016	1.00
12	1	1	1	1	1	1	6	1.00	.016	1.00
13	1	1	1	1	1	1	6	1.00	.016	1.00

S-CVI/Ave=0.95 (accepted); I-CVI; S-CVI; Pc=Probability of chance agreement

Table 2. Practices of group learning

Items	Exp 1	Exp 2	Exp 3	Exp 4	Exp 5	Exp 6	Experts in agreement	I-CVI	Pc	Kappa statistic
14	1	1	1	1	1	1	6	1.00	.016	1.00
15	1	1	1	1	1	1	6	1.00	.016	1.00
16	1	1	1	1	1	1	6	1.00	.016	1.00
17	1	1	1	1	1	1	6	1.00	.016	1.00
18	1	1	1	1	1	1	6	1.00	.016	1.00
19	1	1	1	1	1	1	6	1.00	.016	1.00

S-CVI/Ave=1.00 (accepted); I-CVI; S-CVI; Pc

Table 3. Practices of organizational learning

Items	Exp 1	Exp 2	Exp 3	Exp 4	Exp 5	Exp 6	Experts in agreement	I-CVI	Pc	Kappa statistic
20	1	1	1	1	1	1	6	1.00	.016	1.00
21	1	1	1	1	1	1	6	1.00	.016	1.00
22	1	1	1	1	1	1	6	1.00	.016	1.00
23	1	1	1	1	1	1	6	1.00	.016	1.00
24	1	1	1	1	1	1	6	1.00	.016	1.00
25	1	1	1	1	1	1	6	1.00	.016	1.00
26	1	1	1	1	1	1	6	1.00	.016	1.00
27	1	1	1	1	1	1	6	1.00	.016	1.00
28	1	1	1	1	1	1	6	1.00	.016	1.00
29	1	1	1	1	1	1	6	1.00	.016	1.00
30	1	1	1	1	1	1	6	1.00	.016	1.00
31	1	1	1	1	1	1	6	1.00	.016	1.00

S-CVI/Ave=1.00 (accepted); I-CVI; S-CVI; Pc

Table 4. Practices of global learning

Items	Exp 1	Exp 2	Exp 3	Exp 4	Exp 5	Exp 6	Experts in agreement	I-CVI	Pc	Kappa statistic
32	1	1	1	1	1	1	6	1.00	.016	1.00
33	1	1	1	1	1	1	6	1.00	.016	1.00
34	1	1	1	1	1	1	6	1.00	.016	1.00
35	1	1	1	1	1	1	6	1.00	.016	1.00
36	1	1	1	1	1	1	6	1.00	.016	1.00
37	1	1	1	1	1	1	6	1.00	.016	1.00
38	1	1	1	1	1	1	6	1.00	.016	1.00
39	1	1	1	1	1	1	6	1.00	.016	1.00
40	1	1	1	1	1	1	6	1.00	.016	1.00
41	1	1	1	1	1	1	6	1.00	.016	1.00
42	1	1	1	1	1	1	6	1.00	.016	1.00
43	1	1	1	1	1	1	6	1.00	.016	1.00

S-CVI/Ave=1.00 (accepted); I-CVI; S-CVI; Pc

The kappa coefficient is also an important additional component to measure CVI as it provides information on the index of expert agreement [47], [48]. Therefore, the modified kappa index was used to determine the kappa coefficient for DLOQ instrument. The modified kappa index achieved in this study was also 'excellent' for total of 42 items. Meanwhile, item number 4 recorded the modified kappa index at a 'fair' level [48]. Overall, all items in this instrument had good content validity, were fully accepted, and would be used for the actual study.

3.2. Reliability

In this study, the analysis of: i) Cronbach's alpha value; ii) Cronbach's alpha if item deleted; iii) Inter-item correlation; and iv) Corrected item-total correlation were conducted the international business machines-statistical package for the social sciences (IBM-SPSS) version 25.0 to test the reliability of the DLOQ instrument. Overall, the learning organization practices among teachers in this study had reached a Cronbach's alpha value of .979. This proved that the DLOQ instrument in the context of this study had high reliability because the Cronbach's alpha value recorded was above 0.7 [18], [49]. This value also shows that the DLOQ instrument was well received and could be used to measure the respondents' opinions about the practices of learning organizations in actual studies. Table 5 describes in detail of each dimension's reliability.

Table 5. Reliability of DLOQ instrument

Dimension	Cronbach alpha	Cronbach's alpha if item deleted	Inter-item correlation	Corrected item-total correlation
Practices of individual learning	.942	.932 - .941	.310 - .863	.609 - .891
Practices of group learning	.916	.892 - .912	.493 - .824	.673 - .830
Practices of organizational learning	.928	.918 - .926	.308 - .859	.598 - .801
Practices of global learning	.952	.947 - .951	.411 - .824	.682 - .816

In addition, Cronbach's alpha if item deleted also indicated that all items were highly appropriate and should be retained because deleting any items can further lower the Cronbach's alpha value. Next, the analysis of the inter-item correlation showed that all items in the DLOQ proved the existence of a good correlation between items. Thus, all items in this instrument were accepted and retained because their value exceeded 0.30 [49]. Moreover, corrected item-total correlation value of more than 0.50 was acceptable to assess the correlation of items with the summation scale [49]. Thus, each item in this DLOQ instrument had a good relationship with constructs, sub-constructs, and dimensions.

4. RESULTS AND DISCUSSION

The main goal of this study was to identify the validity and reliability of the DLOQ instrument to measure teachers' views on learning organization practices at schools. The analysis of I-CVI, S-CVI and modified kappa index conducted by the researchers in the context of this study showed that the items in this instrument contributed to the consistency of the DLOQ instrument. Not only that, the value of Cronbach's alpha, Cronbach's alpha if item deleted, inter-item correlation and corrected item-total correlation also proved that this instrument had high reliability and were suitable to be used to conduct actual study.

Related to this, the literature found that the internal consistency (Cronbach's alpha) of the DLOQ instrument in this study was high (between .916 to .952). This was compared to scores recorded in previous studies by: i) Mustafa [50] in Prizrenregion, Kosovo at 0.65 for 140 respondents; ii) Chai and Dirani [51] between 0.66 to 0.84 for 922 respondents in Lebanon; and iii) Zainal, Yusof, and Goodyer [52] with 321 respondents in Malaysia between 0.81 to 0.88. However, the Cronbach's alpha in this study was almost identical to the recent DLOQ validation by Goula *et al.* [53] which involved 380 respondents in Attica, Greece, with scores ranging from 0.842 to 0.977. Thus, the analysis provided support to Marsick and Watkins [19] who stated that individual learning practices, group learning practices, organizational learning practices and global learning practices in this instrument had equal importance to promote learning organization practices among teachers in schools.

There are two main implications contributed by this study. Firstly, theoretically it is undeniable that in recent times the concept of learning organization has become popularly discussed and studied by many researchers because learning and expansion activities through learning organizations identified can improved organizational performance [54]. This preliminary study demonstrates strong evidence of content validity and reliability of DLOQ instrument. Thus, this study contributes to the development of the literature on learning organization practices in schools. Secondly, in terms of practice, teachers should take the initiative to implement the learning organization practices in daily life to acquire new knowledge and extensive knowledge, renew skills to meet the needs of the current world of education and remain excellent in a competitive education eco-system. This is because it was found that individual learning contributed to learning in teams collectively and promoted organizational learning, thereby increasing capacity and making changes in the organization [55]. As such, teachers are responsible for self-learning and becoming lifelong learners. In addition, the findings of this study also provide awareness to administrators in schools to cultivate the practices of learning organization in schools and provide strong support to teachers. This ensures

that learning among teachers is improved and subsequently the effectiveness of the school is improved. This is attributed to the attitude of the organizational leader who always motivates his followers and thus also enhances learning among other members [56], [57] to engage in large-scale global learning.

5. CONCLUSION




Since this study was only conducted in four schools, then further studies can be implemented on a large scale with an optimal amount of data. This would enable generalization to be made regarding the findings of the study. In addition, various other: i) Validity test such as face; and ii) Reliability such as test-retest also can be performed. Not only that, quantitative analysis such as: i) Exploratory factor analysis (EFA); ii) confirmatory factor analysis (CFA); and iii) Path analysis also can be employed by using a structural equation model (SEM) for better instrument validity and reliability. To conclude, we strongly feel that the practices of learning organization among teachers in every school should be given priority. This would ensure that the quality of students, teachers, educational institutions and the education system can be improved.

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