

PEDAGOGY FOR SUSTAINABLE DEVELOPMENT AMONG GEOGRAPHY TEACHERS TOWARDS IMPLEMENTING SUSTAINABLE DEVELOPMENT GOALS (SDGS)

PENDEKATAN PEDAGOGI UNTUK PEMBANGUNAN LESTARI DALAM KALANGAN GURU-GURU GEOGRAFI KE ARAH MENERAPKAN MATLAMAT PEMBANGUNAN LESTARI (SDGS)

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ABSTRACT

Pedagogy for sustainable development is important towards implementing the Sustainable Development Goals (SDGs) in education including the Geography curriculum in Malaysia. The purpose of this study was to measure frequency uses of Pedagogy for Sustainable Development approaches among Geography teachers. This study used a quantitative approach by utilizing a questionnaire involving 252 samples of Geography teachers in Penang, Malaysia. The finding showed a high level of frequency in the use of storytelling approach ($M=4.00$, $SD=0.771$), an emphasis on sustainable living ($M=4.12$, $SD=0.683$), cultivating a sense of appreciation for living things and nature ($M=4.40$, $SD=0.621$) and promoting values ($M=4.28$, $SD=0.680$). Teachers like to implement the teacher-oriented learning-based activities through the approach of promoting, nurturing and emphasizing the issues of Sustainable Development (SD). Geography teachers prefer to implement the teacher-oriented learning-based activities compared to student-based learning issues. The findings revealed that the experiential learning technique are at high frequency level of use compared to the real-world learning method and critical problem-solving learning. As a result, the study indicated that the Pedagogical of Sustainable Development approach has not yet received high attention from Geography teachers to be used (to use) in class as a teaching approach as global requirement in educating students about SDGs Agenda.

Keywords: Pedagogy for Sustainable Development, Sustainable Development Goals experiential learning, real-world learning, critical problem-solving learning

ABSTRAK

Pedagogi untuk pembangunan lestari adalah penting ke arah menerapkan Matlamat Pembangunan Mampan (SDG) dalam pendidikan termasuk kurikulum Geografi di Malaysia. Tujuan kajian ini adalah untuk mengukur kekerapan penggunaan pendekatan pedagogi untuk pembangunan lestari dalam kalangan guru Geografi. Kajian ini menggunakan pendekatan kuantitatif dengan menggunakan instrumen soal selidik yang melibatkan 252 sampel daripada 350 orang guru Geografi di Pulau Pinang, Malaysia. Dapatan kajian menunjukkan tahap kekerapan yang tinggi dalam penggunaan pendekatan bercerita ($M=4.00$, $SD=0.771$), penekanan kepada kehidupan lestari ($M=4.12$, $SD=0.683$), memupuk rasa menghargai hidupan dan alam semula jadi. ($M=4.40$, $SD=0.621$) dan nilai menggalakkan ($M=4.28$, $SD=0.680$). Guru gemar melaksanakan aktiviti berasaskan pembelajaran berorientasikan

guru melalui pendekatan mempromosi, memupuk dan menekankan isu-isu Pembangunan Lestari (SD). Guru geografi lebih gemar melaksanakan aktiviti berasaskan pembelajaran berorientasikan guru berbanding pendekatan pembelajaran berasaskan pelajar. Dapatan kajian menunjukkan bahawa teknik pembelajaran melalui pengalaman berada pada tahap kekerapan tinggi berbanding kaedah pembelajaran dunia sebenar dan pembelajaran penyelesaian masalah kritikal. Hasil daripada kajian menunjukkan bahawa pendekatan pedagogi pembangunan lestari masih belum mendapat perhatian yang tinggi daripada guru Geografi untuk digunakan dalam kelas sebagai pendekatan pengajaran sebagai keperluan global dalam mendidik pelajar tentang Agenda SDGs.

Kata Kunci : *Pedagogi untuk Pembangunan Lestari, Matlamat Pembangunan Lestari, pembelajaran pengalaman, pembelajaran dunia sebenar, pembelajaran penyelesaian masalah kritikal.*

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INTRODUCTION

Education is essential to the Sustainable Development Goals (SDGs) for future generations as well as to ensure that citizens and nations meet the 2030 Global Agenda. According to Sachs (2012), SDGs became an important point in the aspect of global concern for environmental, economic and social dimensions. SDGs aims to address the diverse and complex problems faced by human beings through 17 goals and 169 targets (Pradhan et al 2017). Seventeen goals of the SDGs were created to address global problems such as poverty, unemployment, increasing inequality and differences related to gender, wealth and power, political and environmental threats (UN, 2015). Rieckmann, Mindt and Gardiner (2017) stated that achievement in the goals of the SDGs depends on Education for Sustainable Development (ESD) activities in the field of education. Thus, the SDGs have become an important direction for the countries to achieve the needs of global goals, especially in the field of education.

Geography provides significant benefits to the understanding of the SDGs based on the focus on the importance of place, space, network, conflict and interactions in economic, social, cultural and environmental issues (Georgeson & Maslin,2018). Meanwhile, Schee (2016) states that Geography can link various goals in the SDGs starting with SDG4 (Quality of Education). Thus, the role of Geography is very important to bring the 17 targets of SDGs into the classroom through methods of integration or insertion in the teaching of Geography. The role of teachers is very challenging to produce students who have a high awareness in Sustainable Development (SD). According to Georgeson and Maslin (2018), the critical but pragmatic role of Geographers is important to be actively involved in the SDGs by understanding the scope of work to integrate contemporary global development contexts to meet development challenges through theoretical or practical methods in local, national and global situations. Therefore, Geography is an important subject in schools to convey the goals of the SDGs through the effective teaching and learning issues to the students.

Pedagogy for Sustainable Development (PSD)

Pedagogy is a learning process and situation that is created based on the belief, values

and concern of teachers through specific learning issues (Afzaal et al., 2019). In term of SDGs, Pedagogy for Sustainable Development (PSD) is a specific approach in implementing global goals through integration during the teaching and learning (T&L) process. PSD contains three target-based issues for competency and behavior change (Redman, 2013). The three issues are real-world learning, critical problem solving learning and experiential learning (active learning) (Brundiars & Wiek 2011; Segalàs et al., 2010; Hmelo-Silver, 2004). According to Taimur (2020), experiential learning helps to provide direct experience and create a learning context through the application of knowledge in student action while bridging the gap between education and action (Cortese 2003; Sipos et al. 2008). Higgs and McMillan (2006) state that this approach can also provide the strength to act in sustainable practices through the skills imparted by teachers. According to Taimur (2020), the real-world learning approach involves activities that require students to apply theory into practice while developing interpersonal skills that have been established through real-world learning around them. Meanwhile, the critical problem-solving learning approach involves student-centered learning that requires students to use existing experiences and collaborate with peers to solve issues from various problems.

Highlights of studies related to ESD in teaching among teachers still shows weaknesses in using pedagogical approach for sustainable development and given less attention by researchers. A study by Aye et al. (2019) among lower secondary teachers in 30 selected schools in Myanmar found that the practice in terms of teaching strategies to integrate the concept of ESD in their respective subjects was unsatisfactory. The study also found that the skills in integrating ESD into science subjects were higher than other subjects. Meanwhile, previous studies on teaching and learning (T&L) strategies to promote ESD show a lack in terms of skills in delivering Environmental Education (EE) and ESD (Cordina and Mifsud, 2016). A study of primary school teachers in Maltase showed that the use of T&L strategies, namely "group work" was at a one-scale level and "bringing the outside community into the classroom" was at a level never and rarely done (Cordina and Mifsud, 2016).

The findings from previous studies show that the low frequency of use specialized Pedagogy for Sustainable Development (PSD) in Teaching and Learning (T&L). Rieckmann, Mindt and Gardiner (2017) state that the achievement of the SDGs depends on ESD activities in education. The study regarding the PSD is very important to identify the issues of implementation of SDGs in school education in order to ensure that the school education is in line with the 2030 Agenda including Geography. This study was conducted to identify the frequency of using Pedagogy for Sustainable Development issues among Geography teachers, in class activities toward the goals of SDGs.

METHODOLOGY

This quantitative research was conducted to measure the frequency of using the pedagogy approach for sustainable development among Geography teachers. The population of teachers who teach Geography in secondary schools in Penang, Malaysia totals to about 350 peoples.

The sample was selected based on cluster sampling involving teachers teaching the Geography subject. The total sample in this study was 252 teachers that involved 58 males (23%) and 194 females (77%). The numbers of sample exceeding the minimum number of 186 people, based on Krejcie and Morgan (1970).

The instrument consisted of 20 items adapted from UNESCO (2014) and the items are in line with the pedagogical approach to Sustainable Education (SE) by Redman (2013). A five-point Likert scale was used on, namely scale 1 (Never), 2 (Rarely), 3 (Sometimes), 4 (Often) and 5 (Always). Each item used meets the criteria of item suitability, which exceeds the mean value = 0.85. According to Zamanzadeh et al. (2015), items have a fit with an I-CVI value > 0.70, items are relevant between 0.70 and 0.79 requiring revision and the item will be deleted for values below 0.70. Besides, each item has high Cronbach's Alpha value exceeds 0.938 and considered as high instrument consistency. According to Amin Al Haadiet et al. (2017), the value of the reliability coefficient between 0.75 to 0.90 is at a satisfactory level of reliability.

RESULTS AND DISCUSSION

RESULTS

This study had involved a total of 252 respondents consisting of Geography teachers from various types of secondary schools in Penang. A total of 194 female teachers (77%) and 58 male teachers (22%) were involved in this study. Most of the respondents are specialized in Geography where 159 are teachers (63.1%) and the rest of the 93 teachers (36.9%) are non-option teachers.

Next, mean (M) analysis was performed and interpreted according to mean score for frequency of teachers using pedagogical approach for sustainable development shown in Table 1.

Table 1. Interpretation of Mean Score

Score Mean (M)	Interpretation
1.00 – 2.00	Low
2.01 – 3.00	Moderate Low
3.01 – 4.00	Moderate High
4.01 – 5.00	High

Source: Nunally (1978)

The findings in real-world learning issues show that the frequency at the level of “Moderate High” for eight learning issues namely the “Educational drama” (M=3.18, SD=1.172), “role-play technique” (M=3.40, SD=1.045), “bring in a skilled specialist” (M=2.84, SD=1.294), “analyze various sources/materials in groups” (M=3.40, SD=1.045), “case studies” (M=3.48, SD=1.035), “discovery-based learning through investigation” (M=3.53, SD=0.957) and “field studies” (M=3.34, SD=1.169) except “High” frequency in “story telling” (M=4.00, SD=0.771) shown in Table 2. The finding also show that a high number of respondents have never used the approach of “brought a skilled specialist” (18.3%), (20.2%) rarely, (28.2%)

sometimes, (21%) often and (12.3%) always. Meanwhile, the story telling approach showed the popular used by teachers, (27.4%) of respondent always, (50%) often, (21%) sometimes, (1.6%) rarely and (0%) of respondent never ever used in teaching approach. The overall mean constraints in real-world learning issues was in “Moderate High” level (M=3.40, SD=1.06).

Table 2. The frequency use of real-world learning approach.

	Issues (N=252)	Never (%)	Rarely (%)	Sometimes (%)	Often (%)	Always (%)	Mean (M)	Standard Deviation (SD)	Level of Mean Score
1.	Story telling	0	1.6	21.0	50.0	27.4	4.00	0.771	High
2.	Educational drama	7.5	18.7	32.9	27.0	13.9	3.18	1.172	Moderate High
3.	Role-play technique	4.0	9.9	41.3	27.4	17.5	3.40	1.045	Moderate High
4.	Bring in a skilled specialist	18.3	20.2	28.2	21.0	12.3	2.84	1.294	Moderate High
5.	Analyze various sources/materi als in groups	4.0	10.7	32.5	36.1	16.7	3.48	1.035	Moderate High
6.	Case studies	5.6	9.1	33.3	27.8	18.7	3.42	1.074	Moderate High
7.	Discovery- based learning through investigation	3.2	5.6	37.7	36.9	16.7	3.53	0.957	Moderate High
8.	Field studies	7.1	13.1	35.7	33.3	16.3	3.34	1.169	Moderate High
	Overall Mean						3.40	1.06	Moderate High

Meanwhile, real-world learning approach also shows that the frequency at the level of “Moderate High” for sixes learning issues namely the “assignments” (M=3.78, SD=0.890), “debate sessions” (M=3.55, SD=0.986), “presentation session” (M=3.84, SD=1.081), “inquiry learning” (M=3.59, SD=0.939), “discussion” (M=3.39, SD=0.939) and “peer-to-peer teaching” (M=3.39, SD=1.089) except “High” frequency in “internet resources exploration” (M=3.68, SD=0.981) is shown in Table 3. Besides, “peer-to-peer teaching” approach showed a high number of respondents (6%) never used by teachers, (14.7%) rarely used, (36.5%) sometimes, (29%) often and (13.9%) always. However, the “assignment” learning approach shown that a small number (0.4%) of the respondents had never used such an approach, (6.3%) rarely, (28.2%) sometimes, (21%) often and (12.3%) always. Overall mean constraints in the “Moderate High” level (M=3.53, SD=1.011).

Table 3. The frequency use of critical-problem solving learning approach.

Issues (N=252)	Never (%)	Rarely (%)	Sometimes (%)	Often (%)	Always (%)	Mean (M)	Standard Deviation (SD)	Level of Mean Score
1. Assignments	0.4	6.3	27.8	43.7	21.8	3.78	0.890	Moderate High
2. Debate sessions	3.2	7.9	34.5	36.9	17.5	3.55	0.986	Moderate High
3. Presentation session	4.8	10.3	31.0	36.1	17.9	3.48	1.081	Moderate High
4. Internet resources exploration	3.2	7.1	25.8	44.0	19.8	3.68	0.981	Highly
5. Inquiry learning	1.6	8.3	32.9	40.1	17.1	3.59	0.939	Moderate High
6. Discussion	4.8	12.3	31.0	35.7	16.3	3.39	1.089	Moderate High
7. Peer-to-peer teaching	6.0	14.7	36.5	29.0	13.9	3.25	1.111	Moderate High
Overall Mean						3.53	1.011	Moderate High

For experiential learning (active) issues in this study showed at “High” frequency level of used except “Moderate High” for the “global citizenship projects” shown in Table 4. The “Global citizenship projects” (M=2.91, SD=1.301) approach recorded (17.5%) respondents had never used the approach (16.7%) rarely used, (30.6%) sometimes, (23%) often and (12.3%) always. Meanwhile, the finding show that four popular approaches are used in this study. “Emphasizes on sustainable living” (M=4.12, SD=0.683), (29.4%) of respondent always, (54.4%) often, (15.5%) sometimes, (0.8%) rarely and (0%) of respondent never. “Cultivate a sense of appreciation for all living things and nature” (M=4.40, SD=0.621), (47.6%) of respondent always, (45.2%) often, (7.1%) sometimes, (0%) rarely and (0%) of respondent never. “Promote the values of peace, unity, and mutual respect” (M=4.28, SD=0.680), (40.5%) always, (48.0%) often, (10.7%) sometimes, (0.8%) rarely and (0%) never. Finally, “Be a role model for behaviors that support the environment and sustainable practices” (M=4.05, SD=0.76) showed that (4.0%) never used (2.4%) rarely used, (16.3%) sometimes, (51.6%) often and (29.4%) always. The overall mean constraints was in “High” level (M=3.95, SD=0.81).

Table 4. The frequency use of an experiential-learning (active) approach.

Issues (N=252)	Never (%)	Rarely (%)	Sometimes (%)	Often (%)	Always (%)	Mean (M)	Standard Deviation (SD)	Level of Mean Score
1. Be a role model for behaviors that support the environment and sustainable	4.0	2.4	16.3	51.6	29.4	4.05	0.76	High

Issues (N=252)	Never (%)	Rarely (%)	Sometimes (%)	Often (%)	Always (%)	Mean (M)	Standard Deviation (SD)	Level of Mean Score
2. practices Global citizenship projects	17.5	16.7	30.6	23.0	12.3	2.91	1.301	Moderate High
3. Emphasizes on sustainable living	0	0.8	15.5	54.4	29.4	4.12	0.683	Highly
4. Cultivate a sense of appreciation for all living things and nature	0	0	7.1	45.2	47.6	4.40	0.621	Highly
5. Promote the values of peace, unity, and mutual respect	0	0.8	10.7	48.0	40.5	4.28	0.680	Highly
Overall Mean						3.95	0.81	High

DISCUSSION

Studies on the frequency of using pedagogy for sustainable development learning approach indicated that Geography teachers highly used experiential-learning (active) than real-world learning or critical-problem solving learning issues. Experiential-learning involves teachers often playing a role in promoting action as opposed to conducting student-centered learning-oriented activities. Respondents highly adopted a storytelling approach, an emphasis on sustainable living, cultivate a sense of appreciation for living thing and nature and promoting values. However, the findings show that the use of teaching practices among Geography teachers is better than the findings by Aye et al. (2019) in terms of the use of role-play techniques, in assignments, debates and discussions and being a role model. In this study, teachers like to implement the teacher-oriented learning-based activities through the approach of promoting, cultivation and emphasis on Sustainable Development (SD) issues. Meanwhile, the approach of bringing in skilled experts and global citizenship projects is getting less attention from teachers. These activities involve external parties and the school is required to go through many procedures before it can be implemented.

Therefore, the findings of this study indicate that the approach of PSD among Geography teachers has not yet received high attention, to be implemented in Learning and Teaching (T&L) based on the result of the studies in pedagogical issues which is at the level of moderate high. As such, it is a challenge to the education system and teacher leadership to ensure that the SDGs agenda achieves the goals of the 2030 Agenda by changing the pedagogical approach from teacher oriented to student learning oriented.

CONCLUSION

The study concluded that the frequency use of Pedagogy for Sustainable Development (PSD) approach among Geography teachers toward Sustainable Development Goals (SDGs) are at a Moderate High, used especially for real-world learning issues and problem-solving learning but Highly used for experiential-learning (active) approach. The findings also show that almost (20%) of the respondents have never used the method of bringing skilled experts and global citizenship project issues or it is very rarely used compared to other issues. Teachers like to implement the teacher-oriented learning-based activities as compared to student based learning issues. This study indicates that the pedagogical approach of sustainable development has not yet received high attention from teachers Geography to use in class as a teaching approach, as global requirement in educating students about SDGs toward Agenda 2030 UNESCO. Further studies are needed to indentify the problem of PSD implementation among Geography teachers.

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