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Physical Learning Environment and Teacher Comfort Index Special Education Integrated Programs

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Abstract

The physical environment in the classroom may have an effect on the comfort index for the Special Education Integration Program (SEIP). A quantitative study was conducted to determine the teachers' and SEIP's comfort levels, as well as ideas for improvement which were relevant to SEIP's needs. Purposive sampling has been used to select 80 SEIP teacher samples. The questionnaire for this study was modified from the Physical Classroom Environment Inventory (PCEI) and Teaching and Learning Comfort Level Scale (TLCLS). The survey was administered online using "Google Form." The results revealed that the physical environment of the SEIP classroom had a high comfort index (mean= 3.94), as did the comfort index of teachers toward teaching and learning (mean=3.90). The comfort of the classroom may be improved in terms of furniture, learning space, number of pupils, lighting, air quality and classroom wall colour, according to a study of improvement. Universal Design Learning (UDL) and Allardt's Theory of Sociological Welfare is used in this research (UDL).

Keywords: SEIP, Comfort Index, Well-Being, Classroom Management, Physical Learning Environment

Introduction

The education's sector faces the difficulty of maintaining a comprehensive, inclusive and effective education system in the aftermath of the Covid-19 pandemic. As a conclusion, the Ministry of Education Malaysia (MOE) places an emphasis on the learning environment's comfort. Learning space, illumination, acoustic, indoor thermal (Gislason, 2011; Scrivener, 2012), tables, chairs, whiteboards and shelves all are part of the physicality of learning (Doyle, 1980). The classroom's physical environment should be conducive for teaching and learning process (Rands & Gansemer-Topf, 2017). The provision of less conducive classrooms seems to have the potential to influence teacher motivation and the academic development of pupils with special needs (Arafat et al., 2021).

Teachers are in charge of setting up the classroom in a comprehensive way. They must be particularly proficient in their teaching practice (Nurhibbah & Rosadah, 2022; Salmah et al., 2020) and ensure that the learning environment is in a suitable state (Akhiar & Shamsina, 2015; Juairiah et al., 2020). Good classroom discipline will result through systematic management (Aney & Norasmah, 2019; Sieberer-Nagler, 2015). Pupils with special needs will may having discomfort from poor classroom management, which will affect their performance (Kanakri et al., 2016; Tegtmejer, 2019) and psychological health (Korpershoek et al., 2016; Norfisah, 2016). As a conclusion, classroom management research needs to be carried out in order to get a better grasp of effective learning environments.

The World Health Organization (WHO) emphasizes that workplace health should reflect employees' psychological, sociological and mental well-being. According to Allardt's Sociological Welfare Theory, a favorable school climate may enhance the teaching appraisal. The comfort aspect, especially good emotional intelligence is important for educators (Ajilin et al., 2020). Teachers' emotional and physical well-being are impacted by a less appropriate work environment (Amalina & Azita, 2016; Ng et al., 2019; Suhaimi & Suhaimi, 2020). As a corollary, management must ensure that the workplace environment's ergonomics support educator convenience.

Literature Review

In prior research, SEIP classroom comfort was determined to be mediocre (Anselm et al., 2018; Norsafiah et al., 2021). Previous research has shown that SEIP classrooms require regular maintenance (Yasin et al., 2013; Razimi et al., 2020; Norwahidah et al., 2019). Pupils will be at risk of developing musculoskeletal disorders as a result of non-ergonomic equipment, notably desks and chairs (Wahyuni et al., 2014). Pupils can be distracted from learning by unbalanced lighting (Amirah et al, 2018), poor acoustics (Hamdi et al, 2012; Zarina, 2019) and hot classrooms (Ghani, 2020; Norsafiah et al., 2021). According to Konu et al. (2002) the implementation of teaching by educators and pupil learning are determined by the school well-being. The presence of a separate building (Majid, 2022 & Yasin et al., 2013), artificial light (Doulos et al., 2019; Amirah et al., 2018), artificial illumination (Farjana & Mozammel, 2019), ventilation blocks (Norhaslin et al., 2019) and appropriate window design have all been found to improve SEIP comfort in previous study (Ernisuhani et al., 2019; Ibhadode et al., 2017).

Methodology

This is survey-based quantitative research. Purposive sampling is used to select 80 educators from Sabah to take part in the study. The Teaching and Learning Comfort Level Scale (TLCLS) and Physical Classroom Environment Inventory (PCEI) from Marina, Ezrizal and Ramlee (2018) were used to create the questionnaire for this study. The questionnaire contained 76 items with a 5-point Likert scale and four sections. Part A: Respondent Demographics, Part B: Classroom Physical Environment, Part C: Teaching and Learning Comfort and Part D: Recommended Improvement to the SEIP Classroom Physical Environment. According to the results of a pilot research, this questionnaire has a high reliability value of =.985. The descriptive statistics of frequency, mean, standard deviation and percentage were calculated using the Statistical Package of Social Science (SPSS) version 26.

The Comfort Index (CI) formula used in this study was based on Aliaa and Helmi's research (2018). The formula used is as follows:

Comfort Index Classroom of Physical Environment (CI CPE) = $CI_f + CI_s + CI_l + CI_{aq} + CI_c$
Where;
CI_f = Average Comfort Index Furniture
CI_s = Average Comfort Index Space
CI_l = Average Comfort Index Lighting
CI_{aq} = Average Comfort Index Air Quality
CI_c = Average Comfort Index Color

And, Comfort Index Classroom of Teaching and Learning (CI TL)= Average Comfort Index of Teaching and Learning.

The CI will be used to classify into three (3) different types of comfort index. As demonstrated in Table 1:

Table 1
Comfort Index of Physical Environment, Teaching and Learning

Mean Value	Comfort Index (CI)
1.00 - 2.33	Uncomfortable
2.34 - 3.67	Comfortable
3.68 - 5.00	Very Comfortable

Source: Che Nidzam, Noraini, Mazlini, Marzita & Mohd Hairy (2013)

Research Findings
a. Comfort index of the SEIP classroom

Table 2
Comfort index of SEIP classroom

	Mean	Standard Deviation	Comfort Index (CI)
Furniture	4.00	0.822	Very Comfortable
Space	3.40	1.114	Comfortable
Lighting	4.17	0.527	Very Comfortable
Air Quality	3.94	0.689	Very Comfortable
Color	3.50	0.675	Comfortable
	3.94	**0.627**	Very Comfortable

The table shows the comfort index of the SEIP classroom was measured using five dimensions; furniture, space, lighting, air quality and color. The overall comfort rating of the SEIP physical environment was found to be quite comfortable (M=3.94, SP=0.627). The SEIP physical classroom has been deemed to comply with the Universal Design for Learning (UDL). Table 2 shows that the following structures, furniture (M=4.00, SP=0.822), lighting (M=4.17, SP=0.527) and air quality (M=3.94, SP=0.689) are very comfortable. Meanwhile, color (M=3.50, SP=0.675) and space (M=3.40, SP=1.114) were moderately comfortable.

b. Comfort index of teaching and learning

Table 3

Comfort index of teaching and learning

	Mean	Standard Deviation	Comfort Index (CI)
Teaching and learning comfort	3.90	0.688	Very Comfortable
	3.90	**0.688**	**Very Comfortable**

The findings indicate that the learning and teaching comfort index is relatively comfortable (M=3.90, SP=0.688). Adapting furniture, colors and spacing to the educational environment can boost pupil interest and educator enthusiasm.

c. Suggestions for improving the SEIP Learning classrooms' physical environment
39 people (48.8%) proposed using standardised, long-lasting, various color and non-iron table and chair legs, as well as replacing old furniture. The number of pupils should be proportional to the size of the class, according to 43.8% of the sample. This research also recommends the construction of teacher offices, classroom walls that aid in acoustics or soundproofing, the installation of ready-made cupboards, book storage racks, use of fans and air conditioners. The ideal number of pupils in a class, according to 31 respondents (38.8%) is between 7 and 10. Meanwhile, according to 21 respondents (26.3%), 4 to 6 are relevant. Artificial light such as LED and tungsten lighting was recommended by 27 respondents (33.8%) to enhance the intensity of illumination. When it came to improving air quality in the classroom, 18 participants (22.5%) recommended using windows to allow for more natural airflow. White (16 proposals) and blue (29 proposals) were the most popular suggesting colors among respondents when it came to enhancing the classroom.

Discussion

The study's findings showed that the comfort index of a physical SEIP classroom is related to the availability of existing physicals. These findings support Norsafiah et al (2021); Anselm et al. (2018) findings that Malaysian school buildings, particularly SEIP classes do not meet classroom design criteria. Limited physicality will contribute to less conducive classroom issues as in the study of (Norwahidah et al., 2019; Yasin et al., 2013). Although the overall comfort index analysis was high, 43.8% of SEIP teachers suggested the classroom size should be expanded. Classrooms must be adequate for the educational needs and diversity of special needs. As indicated in the studies by Norsafiah et al (2021); Ghani (2020), attendance performance was not influenced by the physicality of learning. As supported on Ainul and Ishak (2022), decisions to allow special needs pupils to attend school were influenced by the current state of Covid-19.

The aspect of restructuring classrooms in accordance with school opening requirements has spawned new teaching norms. According to this study, SEIP teachers did not have the difficulty of funding support in the development of instructional materials, as reported by Farah et al. (2021), nor did they experience behavioural management exhaustion (Arafat et al., 2021). This study's findings supported and emphasised Allardt's Sociological Welfare Theory, which states that the physical condition of the school, particularly the classroom influences the development of interaction and disciplinary control in the classroom. The suggestion to minimize pupil placement in a class applies to the current state of SEIP. The MOE's recommendation that only 50% of pupils be in a class does not apply to special education. The suggestion that of the ideal number of pupils is 7 to 10 would be relevant to the existing situation, according to 31 respondents (38.8%). The appropriate number of pupils

in the classroom should be determined by classroom capacity as supported by Norsafiah et al. (2021) study. The use of windows, fans and opening doors of classrooms can eliminate barriers of airflow and daylight is compatible with the findings of the study by Chillon et al (2021). The usage of bright and cool wall colors can help children' cognitive, visual (Nyoman et al., 2021) and psychological development (Qonita & Yoyon, 2018). This was also recommended in Martin and Wilkins's (2021) study, which recommended the yellow colour. However, Muezzinoglu et al (2020); Roslinda et al (2019) discovered that cool (blue) hues were more beneficial than bright colours in encouraging social development and pupil engagement. In conclusion, the selection of classroom colour schemes should be determined on the classroom's physical state.

Suggestions and Conclusions

Future studies should involve all SEIP schools. This study will contribute to the creation of long-term educational environments. School officials should be included in the research group since their perspectives and input can help with a more comprehensive review. Researchers may explore the relation between the suitability of SEIP classrooms and the diversity of special educational needs. Classroom management and reorganization based on MOE standards enables access to classrooms and reduces special education barriers. Teachers and pupils gain total access to the learning environment.

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References

Ahmad, C. N. C., Noh, N. M., Adnan, M., Putih, M., & Ibrahim, M. H. (2013). Pengaruh persekitaran fizikal bilik darjah terhadap tahap keselesaan pengajaran dan pembelajaran. *Jurnal Pendidikan Bitara UPSI, 6*:1-7.

Amin, A. M. M., & Othman, N. (2019). Pengurusan bilik darjah guru baharu yang mengikuti program pembangunan guru baharu (PPGB). *Jurnal Pendidikan Malaysia*, 44(1), 21-27.

Mathalamuthu, A. D., Ibrahim, N. L. N., Ponniah, V., Shafiei, M. W. M., & Ismail, R. (2018). Illuminance uniformity using public works department (PWD) standard design for public school's classroom design in Malaysia. *Journal of Advanced Research in Fluid Mechanics and Thermal Sciences*, 52(2), 205-214.

Aziz, Z. A. (2019). Cabaran yang dihadapi oleh guru dalam pendidikan inklusif di kalangan murid implan koklea. *International Conference on Special Education in Southeast Asia Region 9th Series 2019*. Academia Edu. https://d1wqtxts1xzle7.cloudfront.net/59268571/PROCEEDING_ICSAR_24_MARET_2019201905156885-1t2bfpq-with-cover-page v2.pdf?Expires=1640533321&Signature=dabHe0HOpeYAtyGzl4ADKaUUeslD33RaKopvTZub0iQ4YsyttbVW093LXaGZLLxNQQUCl~yBajdVCtJROZd37pwzZAMFbbREHcuTwFJLjc6wq7Z95XUKsqgXoPmBsQbPPMzLUUtOC9y3fWJP5hWj9qdStT9NtbFQWhzhc5gjeBweURZuklyr6O16A4w5Ifx~66fFY~I9xhABUJNgRnouddCSYVVKeW5OyrKqsDggQxF2nID76fsbJqiyBA2WOoSKL9iN9FtFRv30R9d9omyCdghphXaIx3N8PTyAHU2KJ3PMETXiFvMeDqy2azU2rX-WEldx3~4osaqGFLT~Uzw__&Key-Pair-Id=APKAJLOHF5GGSLRBV4ZA#page=562

Awang, M., Zakaria, M. E., & Ismail, R. (2018). Hubungan persekitaran fizikal bilik darjah dan kesejahteraan dan keselesaan pembelajaran dan pengajaran. Management Research Journal, 8(1), 86-99.

Jaafar, M. A. T. B., Ajmain@Jima'ain, M. T., Subaker, M. B. A., Doraisamy, K., Nordin, M. N. B. (2021). Special education teachers task load in Malaysia: A review. *Turkish Journal of Computer and Mathematics Education*, 12(11), 5333-5337

Chillon, S, A., Millan, M., Aramendia, I., Fernandez-Gamiz, U., Zulueta, E., & Mendaza-Sagastizabal, X. (2021). Natural ventilation characterization in a classroom under different scenarios. *International Journal of Environmental Research and Public Health*, *18*(10), 1-13. http://dx.doi.org/10.3390/ijerph18105425

Doulos, L. T., Kontadakis, A., Madias, E. N., Sinou, M., & Tsangrassoulis, A. (2019). Minimizing energy consumption for artificial lighting in a typical classroom of a Hellenic public school aiming for near Zero Energy Building using LED DC luminaires and daylight harvesting systems. *Energy & Buildings, 194*, 201–217. https://doi.org/10.1016/j.enbuild.2019.04.033

Doyle, W. (1980). *Classroom management*. Kappa Delta Pi Publication.

Fardlillah, Q., & Suryono, Y. (2019). Physical environment classroom: Principles and design elements of classroom in early childhood education. *International Conference on Special and Inclusive Education (ICSIE 2018)*. Atlantis Press. https://www.atlantis-press.com/proceedings/icsie-18/55917541

Rahman, F., & Muhammad Mozammel Hossain Tuhin. (2019). Daylight impact on learning environment in classrooms of secondary high school at Ishwardi, Pabna, Bangladesh. *International Research Journal of Engineering and Technology (IRJET)*, 6(10), 1148-1153.

Ghazali, R., Sakip, S. R. M., & Samsuddin, I. (2019). Creating positive environment for autism using sensory design, *Design & Creative Environment*, *4*(10), 19-26. https://doi.org/10.21834/e-bpj.v4i10.1618

Ghani, M. Z. (2020). Dimensions of learning styles among students with Attention Deficit-Hyperactivity Disorder (ADHD) in Malaysia. *ASEAN Journal of Open Distance Learning*, *12*(1): 91-99.

Gislason, N. (2011). *Building Innovation. History, cases and perspectives on school design.* Backalong Books.

Husin, M. R., Suhaimi, M. F., Hamil, S. M., Azmi, N. N., Roslid, N. U. J., Zainal, N. N., Kamaruddin, N. B., Hamizi, N. I., & Ismawi, N. Z. (2020). Masalah Pembelajaran untuk Pelajar Pendidikan Khas: Dana dan Prasarana. *International Journal of Humanities, Management and Social Sciences, 3*(1), 1-10. https://doi.org/10.36079/lamintang.ij-humass-0301.106

Ibhadode, O., Okougha, F. A., Nwafor, C. O., & Essang, N. (2017). An experimental-study on ventilation of public schools in Akure, Oshogbo and Ado-ekiti cities in South-western Nigeria. *IOSR Journal of Mechanical and Civil Engineering*, *14*(5), 34-43.

Ibrahim, F. A., Ahmad, B., Ismail, R., Ismail, H., & Nordin, M. N. (2021). Resource elements in the construct of special education teacher workload in Malaysia. *Turkish Journal of Computer and Mathematics* Education, *12*(11), 5289-5293.

Ibrahim, W. N. A., Mohammed, Z., Fadzil, N. M., Narayanasamy, S., & Hairol, M. I. (2018). Perubahan tahap pencahayaan dalam bilik darjah di sebuah sekolah Pendidikan khas cacat penglihatan dan perbandingan tahap pencahayaan di bawah keadaan pencahayaan yang berbeza. *Sains Malaysian ,47*(8), 1835–1842.

http://dx.doi.org/10.17576/jsm-2018-4708-23

Isa, W. M. D., Khalid, N. A. M., & Zainuddin, M. F. (2014). Peranan ergonomik dalam reka bentuk kerusi sekolah: Kajian kes di sekitar Perlis, Kedah dan Pulau Pinang. Conference Proceeding: 1st International Conference on Creative Media, Design & Technology (Reka2014), hlm 1-7. Research Gate. https://www.researchgate.net/publication/338914536_Peranan_Ergonomik_Dalam_Rekabentuk_Kerusi_Sekolah_Kajian_Kes_Di_Sekitar_Perlis_Kedah_Dan_Pulau_Pinang

Ishak, H., Tamuri, A. H., Majid, R. A., & Bari, S. (2012). Amalan pengajaran guru dalam pengajaran dan pembelajaran pendidikan islam di Sekolah Kebangsaan Pendidikan Khas (masalah pendengaran). *Journal of Islamic and Arabic Education*, *4*(2), 11-24.

Jaafar, M. A., Ajmain@Jima'ain, M. T., Subaker, M. A., Doraisamy, K., & Nordin, M. N. (2021). Special education teachers task load in Malaysia: A review. *Turkish Journal of Computer and Mathematics Education*, *12*(11), 5333-5337.

Jopri, S., Razak, M. A. A., Hamzah, M. I., Ensimau, N. K., Bari, S., Yasin, M. H. M., Tahar, M. M., Haron, Z., & Rahman, M. J. A. (2022). The rural teacher's ability, knowledge and skill in early identification of children with special needs. Global Conferences Series: Social Sciences, Education and Humanities (GCSSSEH), International Conference on Special Education In South East Asia Region 10th Series 2020. https://series.gci.or.id/assets/papers/icsar-2020-2020 273.pdf

Julianto, N. L., Artawan, C. A., & Cahyadi, W. A. E. (2021). Keterlibatan ilustrasi dan warna sebagai stimulus visual dalam konsep 'Interaksi ruang belajar' pada sekolah dasar kelas 1–3 di Bali. *ANDHARUPA: Jurnal Desain Komunikasi Visual & Multimedia*, *7*(2), 389-400.

Kanakri, S. M., Shepley, M., Tassinary, L. G., Varni, J. W., & Fawaz, H. M. (2016). An observational study of classroom acoustical design and repetitive behaviours in children with autism. *Environment and Behavior*, *49*(8), 847-873. https://doi.org/10.1177%2F0013916516669389

Kamarudin, S., & Taat, M. S. (2020). Faktor tingkah laku pelajar, kekangan masa, beban tugas dan tekanan kerja dalam kalangan guru. *Malaysian Journal of Social Sciences and Humanities (MJSSH)*, *5*(9), 114 – 124. https://doi.org/10.47405/mjssh.v5i9.481

Konu, A., Alanen, E., Lintonen, T., & Rimpela, M. (2002). Factor structure of the school well-being model. *Health Education Research*, *17*(6), 732-742. https://doi.org/10.1093/her/17.6.732

Korpershoek, H., Harms, T., De Boer, H., Van Kuijk, M., & Doolaard, S. (2016). A meta-analysis of the effects of classroom management strategies and classroom management programs on students' academic, behavioral, emotional and motivational outcomes. *Review of Educational Research*, *86*(3), 643-680. https://doi.org/10.3102%2F0034654315626799

Majid, N., & Majid, R. A. (2022). Kesediaan guru pendidikan khas pembelajaran dalam pelaksanaan pengajaran abad ke-21 (pak-21). *Malaysian Journal of Social Sciences and Humanities (MJSSH)*, *7*(1), 240-250. https://doi.org/10.47405/mjssh.v7i1.1252

Marjonet, J., Ah, S. H. A. B., & Omar, N. (2020). Pementoran dalam program pembangunan guru baharu Kementerian Pendidikan Malaysia (Mentoring in the new teacher development program by the Ministry of Education Malaysia). *The Malaysian Journal of Social Administration*, *14*(2), 79-95.

Martin, R., & Wilkins, J. (2021). Creating visually appropriate classroom environments for students with Autism Spectrum disorder. *Intervention in School and Clinic*, 1-6. https://doi.org/10.1177%2F10534512211014882

Mathalamuthu, A. D., Ibrahim, N. L. N., Ponniah, V., Shafiei, M. W. M., & Ismail, R. (2018). Illuminance uniformity using public works department (PWD) standard design for public school's classroom design in Malaysia. *Journal of Advanced Research in Fluid Mechanics and Thermal Sciences*, *52*(2), 205-214.

Mihat, N., Yassin, M. H. M., & Tahar, M. M. (2019). Teachers' views on classroom infrastructure facilities in special education integration program in primary school. *Journal of ICSAR 3*(1), 54-57. http://dx.doi.org/10.17977/um005v3i12019p054

Muezzinoglu, M. K., Hidayetoglu, M. L., & Yildirim, K. (2020). The effects on the perceptual evaluations of students for the wall colors used in educational spaces. *MEGARON / Yıldız Technical University, Faculty of Architecture E-Journal*, *15*(1), 1-12. http://dx.doi.org/10.14744/megaron.2020.87369

Nordin, N., Ismail, M. A., & Ariffin, A. R. M. (2019). Ventilation blocks: Design feature in Malaysia public schools. *Journal of Design and Built Environmen*t, *19*(1),1-12. https://doi.org/10.22452/jdbe.vol19no1.1

Norazman, N., Ani, A. I. C., Ismail, W. N. W., Hussain, A. H., & Maulud, K. N. A. (2021). Indoor environmental quality towards classrooms' comforts level: case study at Malaysian secondary school building. *Applied Sciences*, *11*(3), 2-16. https://doi.org/10.3390/app11135866

Mihat, M., Yassin, M. H. M., & Tahar, M. M. (2019). Teachers' views on classroom infrastructure facilities in special education integration program in primary school. *Journal of ICSAR* 3(1), 54-57.

Pardi, A., & Shamsuddin, S. (2015). *Pengurusan bilik darjah dan tingkah laku.* Pelangi Professional Publishing Sdn. Bhd.

Rabi, N. M. (2016). *Transformasi pendidikan murid kurang upaya.* Penerbit Universiti Pendidikan Sultan Idris.

Rands, M. L., & Gansemer-Topf, A. M. (2017). The room itself is active: How classroom design impacts student engagement. *Education Publications, 6*(1), 26-33.

Rahman, F., & Tuhin, M. M. H. (2019). Daylight impact on learning environment in classrooms of secondary high school at Ishwardi, Pabna, Bangladesh. International Research Journal of Engineering and Technology (IRJET), 6(10), 1148-1153.

Ramli, A. A., & Rahman, H. A. I. (2021). Isu dan cabaran dalam pelaksanaan pendidikan peringkat rendah dan menengah: pendekatan malaysia semasa pandemik covid-19. *Malaysian Journal of Social Sciences and Humanities (MJSSH), 6*(9), 1-13. https://doi.org/10.47405/mjssh.v6i9.1043

Razali, A., & Ali, A. (2016). Faktor–faktor yang mempengaruhi tahap stres guru pendidikan khas. *Online Journal for Tvet Practitioners*, *1*(1), 1-7.

Roslan, S. N. A., & Shafri, H. Z. M. (2018). Developing building comfort index from building climate factors in a tropical urban environment. *IOP Conference Series: Earth and Environmental Science 169*. Research Gate. https://www.researchgate.net/publication/326727819_Developing_building_comfort_index_from_building_climate_factors_in_a_tropical_urban_environment

Roslinda, S. R. M. S., & Samsuddin, I. (2019). Creating positive environment for autism using sensory design, 4(10), 19-26.

Scrivener, J. (2012). *Classroom management techniques*. Cambridge University Press.

Kamarudin, S. B., & Taat, M. S. (2020). Faktor tingkah laku pelajar, kekangan masa, beban tugas dan tekanan kerja dalam kalangan guru. *Malaysian Journal of Social Sciences and Humanities (MJSSH)*, 5(9), 114 – 124.

Sieberer-Nagler, K. (2016). Effective classroom-management & positive teaching. *English Language Teaching*, *Canadian Center of Science and Education*, *9*(1), 163-172.

Tawan, A., Nazarudin, M. Z., Noordin, Z., Tu, M. M., & Watinin, N. (2020). Hubungan motivasi, kecerdasan emosi dan efikasi dengan kepuasan kerja guru di sekolah rendah. *International Research Journal of Education and Sciences (IRJES)*, *4*(1), 1-12.

Tegtmejer, T. (2019). ADHD as a classroom diagnosis. An exploratory study of teachers' strategies for addressing "ADHD classroom behavior". *Emotional and Behavioral Difficulties*, *24*(3), 239–253. https://doi.org/10.1080/13632752.2019.1609271

Yasin, M. H. M., Toran, H., Tahar, M. M., Bari, S., Ibrahim, S. N. N., & Zaharudin, R. (2013). Bilik darjah pendidikan khas pada masa kini dan kekangannya terhadap proses pengajaran. *Asia Pacific Journal of Educators and Education*, *28*, 1–9.

Zamri, E. M., Ismail, A., & Ajis, A. M. (2019). Thermal comfort in naturally ventilated classroom: A literature review. *International Journal of Property Sciences*, *9*(1), 27-37. https://doi.org/10.22452/ijps.vol9no1.3