Jurnal Ilmiah Visi
http://doi.org/10.21009/JIV.1901.4

Volume 19 Issue 1
Juni 2024

p-ISSN: 1970-9176
e-ISSN: 2620-5254

DOI: doi.org/10.21009/JIV.1901.4

Accepted : 30 April 2024
Revised : 30 Juni 2024
Approved : 30 Juni 2024
Published : 30 Juni 2024

PENILAIAN LINGKUNGAN BELAJAR VIRTUAL: PERSEPSI MAHASISWA INDONESIA

Herdi Herdi
*email Penulis Koresponden: Herdi@unj.ac.id
Program Studi Bimbingan dan Konseling, Fakultas Ilmu Pendidikan, Universitas Negeri Jakarta

Abstrak: Word of Mouth (WoM) cenderung lebih dipercaya dibandingkan promosi langsung dari sekolah. Orang tua cenderung mempercayai pengalaman nyata orang lain dalam memilih sekolah, sehingga dapat memperkuat brand image positif suatu sekolah. Melalui WoM, orang tua dapat memperoleh informasi lebih mendalam tentang berbagai aspek sekolah, antara lain kualitas pendidikan, fasilitas, kurikulum, dan suasana pembelajaran. Penelitian ini bertujuan untuk mengetahui peran mediasi WoM dalam mempengaruhi citra merek dan biaya pendidikan terhadap keputusan orang tua dalam memilih sekolah. Purposive sampling digunakan untuk menentukan responden penelitian yang berjumlah 43 orang tua siswa di SMP Ma`arif 2 Ponorogo. Data dianalisis menggunakan analisis jalur dengan metode PLS-SEM. Hasil penelitian menunjukkan bahwa WoM berperan sebagai mediator yang tidak signifikan terhadap citra merek (β=0.094; ρ=0.101), namun signifikan terhadap biaya pendidikan dan keputusan orang tua dalam memilih sekolah (β=0.388; ρ=0.005). Selain itu, WoM juga berpengaruh langsung terhadap keputusan orang tua (β=0.540; ρ=0.000). Temuan ini menyoroti pentingnya rekomendasi dan ulasan dari orang tua lain dalam membentuk persepsi orang tua terhadap suatu sekolah, yang berdampak pada keputusan mereka dalam memilih sekolah untuk anak-anak mereka. Implikasi praktis dari penelitian ini adalah sekolah dapat meningkatkan brand image dan menyesuaikan biaya sekolah agar lebih menarik bagi orang tua, sekaligus memperkuat strategi pemasaran WOM untuk meningkatkan keputusan pilihan sekolah orang tua.

Kata-kata kunci: citramerek,biayapendidikan, keputusan orang tua, promosimulutkemulut, PLS-SEM.

ASSESSMENT OF THE VIRTUAL LEARNING ENVIRONMENT: PERCEPTIONS OF INDONESIAN COLLEGE STUDENTS

Abstract: *The research aims to explore the factors structure of the virtual learning environment based on the perspective of Indonesian college students. The study used a descriptive method of survey type. The sample amounted to 511 college students from one of the state universities in Indonesia who were selected using incidental sampling techniques. The data were collected using an Indonesian version of the Technology-Rich Outcomes-Focused Learning Environment Inventory (TROFLEI) with excellence of psychometric properties. The data were analysed using descriptive statistics and confirmatory factor analysis assisted by SPSS v. 26 for Windows. The findings show that there are 10 dimensions of the virtual learning environment based on the perspective of Indonesian college students, namely: computer usage, student involvement, young adult ethos, task orientation, investigation, lecturer support, cooperation, equity, cohesivity, and differentiation. Further studies are needed to examine the factors structure of the virtual learning environment using confirmatory factor analysis with LISREL and examine their antecedents and consequences to academic performance and achievement in a wider range of college students taking into account their ethno-socio-demographic proportions in Indonesia.*

Keywords: adaptation of standard instrument; assessment; virtual learning environment; online learning environment; Technology-Rich Outcomes-Focused Learning Environment

INTRODUCTION

Education and learning process have changed since the era of the industrial revolution 4.0, the learning environment in the 21st century (Kim, Choi, Han, & So, 2012) and the learning environment during the covid-19 pandemic (Glaveanu, Ness, & Laurent, 2021) done online from home (Aristovnik, Kerzic, Ravselj, Tomazevic, & Umek, 2020; Lonescu, et al.,

2020). The learning process now takes place more from home and is carried out online. The design of virtual learning environments is important to optimize targeted learning outcomes. A well-designed learning environment supports pedagogic practices that engage, challenge, and equip learners with Sophia, episteme, and techne, as well as the attributes it needs to achieve success in the face of complex, fast changing, and unpredictable life.

In the context of education and guidance and counseling, mental health development occurs through healthy interaction between individuals (students) and their environment of the learning environment as a developmental environment is a strategic vehicle for the development of students that must be developed by educators and counselor educators (Kartadinata, 2013). Students must be educated in a learning environment that can provide a sense of security, comfort, freedom, and conduciveness to learning, both in a physical learning environment (classroom) and a virtual learning environment.

Empirical studies show that the learning environment can increase the effectiveness of educators in teaching and encourage student involvement in learning and achieve positive learning outcomes (Thomas, Pavlechko, & Cassady, 2019). Research has also found that the learning environment has a significant positive effect (Rickards, 2003), like improving academic integrity (Schaeper, 2019), academic self-efficacy (Alt, 2015), learning motivation and achievement (Baeten, Dochy, & Struyven, 2013), learning achievement (Aluri & Fraser, 2019), learning satisfaction (Lin, Salazar, & Wu, 2019), innovation competence (Ovbiagbonhia, Kolloffel, & Brok, 2019), and academic aspirations and satisfaction of college students in higher education (Huang, 2012). Other studies emphasize the importance and find that a conducive learning environment is a critical component and has a positive influence on the development of wisdom of high school students, college students, and pre-service counselors (DeMichelis, Ferrari, & Rozin, 2015; Herdi, 2020; Osterlund, 2016).

Recent research shows that students' perceptions of the level of learning and the quality of the virtual learning environment have a positive effect on online learning outcomes during the covid-19 pandemic (Elumalai, et al., 2020). The results of interviews with students showed that students admitted that they often felt lazy and bored in attending learning, procrastinating assignments, and the temporary achievement index (indeks prestasi sementara) tended to be low/decreasing. This is due to lack of interaction and support from the environment (peers, parents, lecturers), lack of cooperation and cohesiveness in group work, and students tend to be passive during online learning.

Until now, intensive studies on assessment and structural factors of the virtual learning environment of college students at higher education in Indonesia are still limited. In fact, the study of the structural factors of the virtual learning environment in the perspective of Indonesian college students is important in order to formulate a conceptualization framework for a new virtual learning environment and according to the Indonesian cultural context to design learning in future universities that are more effective and confirm various virtual learning environment theory literature. Based on this rationale, the study is aimed at exploring the structural factors of the virtual learning environment based on the perspective of Indonesian college students. The formulation of the problem proposed is "what are the structural factors of the virtual learning environment based on the perspective of Indonesian college students?"

RESEARCH METHODS

Research uses a descriptive survey type method because it is intended to explore various facts, opinions, attitudes, or certain behaviors (Heppner, Wampold, Owen, Thompson, & Wang, 2016). This research explores the factor structure of the virtual learning environment based on the perspective of Indonesian college students.

The research population is college students who actively attend lectures at one of the state universities in Indonesia. The sample amounted to 511 college students from one of the state universities in Indonesia who were selected by incidental sampling.

Data collection using indirect communication techniques using the Technology-Rich Outcomes-Focused Learning Environment Inventory/TROFLEI (Dorman & Fraser, 2009; Welch, Cakir, Peterson, & Ray, 2012; Aldridge, Dorman, & Fraser, 2004) the results of adaptation by researcher are disseminated to research

samples through google form. This TROFLEI was chosen because: (1) it has a comprehensive and relevant theoretical construct; (2) widely used by researchers around the world to assess students' virtual learning environments; (3) ease of licensing to developers as well as experts from learning environment theory. The TROFLEI assesses 10 dimensions of college students' virtual learning environments, including: computer usage, student involvement, young adult ethos, task orientation, investigation, lecturer support, cooperation, equity, cohesivity, and differentiation.

The test results show that the Indonesian college student version of the TROFLEI has very satisfactory psychometric properties, including: item fit, person fit, and instrument quality (unidimensionality, rating scale, item reliability, person reliability, and instrument reliability). This is evidenced by unidimensionality of 44.6% and unexplained variance of 5.7%. The item reliability scale is 1.0 (preferential), person reliability is .97 (special), and instrument reliability/Cronbach' alpha is .96 (special). The rating scale is also appropriate based on Andrich Threshold sequentially 1 (almost never), 2 (rare), 3 (sometimes), 4 (often), and 5 (always). Therefore, the TROFLEI is suitable to be used to collect data on the virtual learning environment of the Indonesian college students.

The data were analyzed using descriptive statistics and confirmatory factor analysis assisted by *SPSS v. 26 for Windows.*

RESULTS AND DISCUSSION

Findings

This research aims to explore the factor structure of the virtual learning environment based on the perspective of Indonesian college students. In this study, exploratory factor analysis (EFA) using principle component analysis (PCA) and orthogonal rotation method (varimax) was carried out on 80 virtual learning environment items from the TROFLEI (Dorman & Fraser, 2009; Welch, Cakir, Peterson, & Ray, 2012). Verification of sample adequacy is done through the *Kaiser-Meyer-Olkin* (*KMO*) and correlation between items is done through *Barlett's test of Sphericity*. The test results show a KMO value 0f .941, which means excellence. This is based on Kaiser's opinion (Field, 2013; Herdi, Kartadinata, & Taufiq, 2017; 2019) that KMO .941 far exceeds the minimum acceptable value of .50. The results of *Barlett's Test of Sphericity* χ^2 (511) = 27962.306; $p < .001$) indicating that the correlation between items is large enough to be sufficient to perform PCA analysis. This means that the data is fit to conduct EFA analysis of the factor structure of the virtual learning environment based on the perspective of Indonesian college students.

EFA test results using the PCA extraction method and orthogonal rotation (varimax) obtained 10 dimensions of the virtual learning environment quality which have an Eigen value of > 1 with a total variance obtained of 60.489%. the variance that can be described by dimension 1 is 27.19%, dimension 2 is 8.345%, dimension 3 is 5.050%, dimension 4 is 3.779%, dimension 5 is 3.334%, dimension 6 is 2.920%, dimension 7 is 2.657%, dimension 8 is 2.406%, dimension 9 is 2.213%, and dimension 10 is 2.066%. *Plots scree* shows inflections to maintain justification on 10 dimensions. Given the large sample size and convergence of *Plots Scree* Eigen value criteria, then it can be set from 80 items to 10 dimensions of the virtual learning environment of Indonesian college students.

Table 1 presents the factor loading after rotation. Items that are grouped in the same dimension are made into one dimension. EFA test results show 10 dimensions of virtual learning environments formed according to relevant previous theoretical and empirical studies. In this test, 74 of the 80 items had a ≥ .40 loading factor, while 6 items had a < .40 factor loading, namely S_{14}, S_{43}, S_{57}, S_{61}, S_{58}, and S_{59}. In addition, there are two items (S_{19}, S_{28}) that undergo *cross-loading*.

Table 1. EFA Results of Indonesian College Student Virtual Learning Environment

Item Nu.	VLE's Dimensions										h
	1	2	3	4	5	6	7	8	9	10	
S68	.877										.829
S66	.866										.795
S69	.860										.793
S70	.848										.792
S72	.833										.736
S65	.815										.723
S71	.810										.725
S67	.746										.625
S18		.734									.682
S22		.693									.660
S24		.674									.670
S20		.642									.611
S17		.623									.574
S21		.622									.584
S23		.613									.651
S19		.443				.400					.454
S76			.754								.660
S75			.717								.654
S77			.680								.661
S74			.678								.629
S78			.670								.646
S80			.666								.635
S79			.648								.628
S73			.587								.507
S59											.373
S58											.203
S39				.707							.672
S36				.694							.610

Item Nu.	VLE's Dimensions										h
	1	2	3	4	5	6	7	8	9	10	
S38				.679							.589
S34				.666							.559
S40				.650							.595
S37				.629							.613
S33				.598							.496
S35				.555							.582
S43											.378
S31					.770						.761
S30					.755						.752
S29					.751						.737
S27					.712						.703
S32					.639						.582
S25					.631						.657
S26					.573						.617
S28		.429			.539						.625
S11						.743					.637
S14						.725					.642
S10						.685					.574
S13						.667					.610
S9						.654					.615
S12						.635					.554
S15						.620					.533
S16											.455
S47							.805				.726
S46							.802				.718
S45							.780				.700
S44							.689				.624
S41							.656				.507
S48							.624				.658
S42							.537				.491
S53								.723			.695
S54								.694			.694
S52								.678			.597
S56								.666			.701
S50								.663			.626
S51								.536			.549
S55								.500			.533
S49								.436			.474
S57											.451
S4									.681		.511
S5									.655		.554
S1									.655		.486
S2									.601		.419
S7									.569		.486
S3									.547		.468
S8									.526		.499
S6									.402		.427
S63										.831	.771
S64										.801	.725
S62										.775	.686
S60										.703	.579
S61											.388
Eigen Value	22.043	6.679	4.234	3.107	2.633	2.299	2.081	1.969	1.806	1.626	
% of Variance	27.19	8.345	5.050	3.779	3.334	2.920	2.657	2.406	2.213	2.066	

The 10 dimensions of the virtual learning environment based on the perspective of Indonesian college students that are formed are described as follows. **Dimension 1: c*omputer usage.*** This dimension is represented by items regarding the use of computers to type assignments from lecturers (S_{65}), send assignments to lecturers (S_{66}), ask questions to lecturers (S_{67}), searching information about courses (S_{68}), read lecture notes prepared by lecturers (S_{69}), searching information about course assessment requirements (S_{70}), take part in online discussions with other college students (S_{71}), and get information from the internet (S_{72}).

Dimension 2: *involvement*. This dimension is represented by the items regarding raising an opinion when discussing in the class (S_{18}), explain ideas to college students (S_{22}), explain and discuss how to cope with fellow college students (S_{23} and S_{24}), using personal ideas in class discussions (S_{20}), discuss ideas in class (S_{17}), and questions to lecturers (S_{21}) and other college students (S_{19}).

Dimension 3: *young adult ethos*). This dimension reveals a wide range of abilities, such as: interactions between and with diverse young adults (S_{76}), think and behave independently (S_{75} and S_{79}), reliable, (S_{77} and S_{78}), responsible for the assigned tasks (S_{74}), controlling self-determining learning (S_{80}), and treated as and able to treat others as young adults (S_{73}).

Dimension 4: *task orientation*. It covers various indicators, such as: trying to understand tasks in class (S_{39}), ready to start studies (S_{36}), pay attention when lectures are in progress (S_{38}), work on tasks (S_{34}), know how many tasks to do (S_{40}), know the targets and goals that must be achieved from the lectures followed (S_{35} dan S_{37}), and attaches importance to every coursework (S_{33}).

Dimension 5: *investigation*. This dimension reveals characteristics such as: conducting investigations to find out answers to certain questions (S_{31}), answering questions from lecturers (S_{30}) and those that arise in discussions (S_{27}), answering confusing questions (S_{29}), testing various ideas (S_{25}), overcoming problems using information obtained from their investigations (S_{32}), think of evidence to compile reports (S_{26}), and explain the meaning of statements, diagrams, and graphs and figures (S_{28}).

Dimension 6: *lecturer support*. In this dimension, students consider lecturers to care about student feelings (S_{11}), interested in student problems (S_{14}), help students in creative ways (S_{10}), communicate with students inside and outside the classroom (S_{13} and S_{15}), pay attention to students (S_{9}), and help students when facing difficult tasks (S_{12}).

Dimension 7: *cooperation*. This dimension assesses students' ability to work together with fellow students in lecture activities (S_{47} and S_{46}), work together in working on various projects, assignments, and achieving learning goals (S_{44} and S_{48}), share books and reference resources with other students when doing assignments (S_{42}), and learn from other students in class (S_{45}).

Dimension 8: *equity*. This dimension measures receiving equal support from lecturers (S_{53}), getting the same opportunity to contribute in class discussion forums (S_{54}), students getting treatment, attention, help, the opportunity to ask questions and opinions, and praise for the work they produce (S_{52}, S_{56}, S_{50}, S_{51}, and S_{55},). In addition, students also feel that lecturers devote their attention to the questions asked by each student equity (S_{49}).

Dimension 9: *college student cohesiveness*, includes: students make friends and friendships in class (S_4 and S_2), work together (S_5), know each other (S_2), like each other (S_7), be friendly to fellow students (S_3), help each other and get help, especially when having difficulties in doing assignments (S_6).

Dimension 10: *differentiation*. This

dimension is characterized by: students using learning methods (S_{63}), doing work (S_{64}), using lecture materials (S_{62}), and assigning assignments (S_{60}) that are different from other students.

Discussion

This research found that the virtual learning environment of Indonesian college students includes 10 dimensions, namely: computer usage, involvement, young adult ethos, task orientation, investigation, lecturer support, cooperation, equity, cohesiveness, and differentiation. The results of this research are relevant to the (virtual) learning environment theory and relevant with previous researches (Skordi & Fraser, 2018; Fraser, McRobbie, & Fisher, 1999; Aldridge, Dorman, & Fraser, 2004; Aldridge & Fraser, 2003). The experts argues that the quality of the learning environment includes dimensions, such as: student cohesiveness, lecturer/teacher support, student involvement, investigation, task orientation, cooperation, and equity. Meanwhile, Welch, Cakir, Peterson, and Ray (2012) and Cakir (2011) found the dimensions of the virtual learning environments in Turkey and America, including: student cohesiveness, teacher/lecturer support, student involvement, investigation, task orientation, cooperation, equity, differentiation, computer usage, and young adult ethos.

Other empirical studies have also shown that quality of the virtual learning environments include the following dimensions. First, the use of computers by students as a tool to access information and communicate with others. Second, the lecturers support who assess the extent to which lecturers/teachers are helpful, friendly, and interested in students. Thirds, interaction and collaboration between students get the opportunity to interact, exchange information, and collaborate with each other in the learning process. Fourth, personal relevance measures the relationship between learning and student experiences outside the campus. Fifth, authentic learning is the extent to which students get the opportunity to overcome problems faced in the real life authentically. Sixth, autonomy that assesses the extent to which students get the opportunity to initiate ideas, make learning decisions, and the locus of self-control is student-oriented. Seventh, equity is that every student is treated equally by lecturers. Finally, asynchronicity, which is the extent to which the learning process is asynchronous from discussion forums that can encourage reflective thinking skills and send messages at the right time and comfortable for students mahasiswa (Trinidad, Aldridge, & Fraser, 2005).

Chang *et al.* (2015) reported the results of his research that the structural factors of virtual learning environments based on the perspective of learners in Taiwan consider more technical, cognitive, and social dimensions, rather than content, metacognitive, and affective dimensions. *Technical dimensions* measure the use of technology in the learning environment, such as ease and sustainability of technology use, asynchronicity, complexity, usability, online communication, audiovisual environment, environmental arrangement, interactivity, implementation, opening of technology-based laboratories, adequacy of technology, and availability of technology-based laboratories

The cognitive dimension measures activities that involve learners in their cognitive and personal development. This dimension is related to: (1) constructive pedagogy such as inquiry learning, learner negotiation, investigation, concept-based and structured modules, exploration-based and inquiry-based modules, learning styles, learner initiative support, and technology enrichment; (2) higher-order thinking, such as challenge, competition, process-oriented accommodation and assimilation, and innovation; (3) metacognitive-cognitive interactions, such as epistemological awareness, goal setting, seeking help, time management, and active learning; and

(4) social-cognitive interactions, such as cognitive internships, differentiation, face-to-face sessions, and time guides (Chang, et al., 2015).

The social dimension identifies the nature and intensity of personal relationships in the environment and assesses the involvement and cohesiveness of learners in the environment, supporting and helping each other. The social dimension is divided into: (1) educator-student interaction characterized by support, understanding, and encouragement from teachers to students); (2) interactions between learners such as interaction, cooperation, and collaboration, cohesivity, group work, peer support, affiliation, and friendship; and (3) affection factors in social interactions, such as fairness, order and organization, online environment, relationships with staff, interaction support, asynchronous feedback, intimate interactions, and outward interactions (Chang, et al., 2015).

The content dimension investigates the various information features included in technology-enabled learning environments, such as adaptive content, multi-source, relevance, authentic learning, information retrieval support, and integration. *The* metacognitive dimension explores activities that confine learners to the development of metacognitive knowledge or metacognitive regulation in technology-based learning environments, such as student responsibility and freedom (young adult independence and work ethic), reflective thinking (critical thinking, self-evaluation, critical weighing), and self-regulation (task-oriented, task-working strategies, and assessment) (Chang, et al., 2015).

The affective dimension measures the personal affective aspects developed in a technology-based learning environment. This dimension is related to technology teaching, enjoyment, students' views on blended and innovative learning, satisfaction, anxiety about computers, feeling self-efficacy, feeling the need, and responsibility in learning (Chang, et al., 2015).

Learning environments, both physical/offline and virtual/online, are based on five core foundations: psychological, pedagogical, technological, cultural, and pragmatical (Land, Hannafin, & Oliver, 2012). *The psychological foundation* emphasizes the theoretical and empirical study of the way individuals think and learn. *Pedagogical foundations* form various environmental abilities and activities relevant to psychological foundations. *The technological foundation* emphasizes the influence of media that can support, limit, or enhance learning environments that have an impact on learning outcomes. *Cultural foundations* reflect basic cultural values, interdisciplinary learning, and the environment of a global society. *The foundation of pragmatics* emphasizes on reconciling the available resources and constraints encountered with the actual design of each learning environment provided.

The learning environments is designed based on the following assumptions: (1) learners are the primary subject in defining meaning; (2) the importance of authentic situations and contexts; (3) negotiation and interpretation of personal beliefs and plural perspectives; (4) the importance of previous learners' experience in constructing meaning; and (5) the use of technology to *guide (scaffold)* higher and complex mental processes (Land, Hannafin, & Oliver, 2012).

The learning environments is formulated to provide conceptual ideas and praxis of the way learners interact with the learning environment to develop personal qualities and professional identity, especially wisdom and counselling alliances. There are three main ecological approaches to designing learning environments: human ecology, developmental ecology, and campus ecology (Evans, Forney, Guido, Patton, & Renn, 2010). The human ecology approach represents a view of the process of adaptation, interaction, and

interdependence between humans as individuals, groups, and societies with the environment.

Empirical studies show that the learning environments can increase the effectiveness of educators in teaching and encourage student involvement in learning and achieve positive learning outcomes (Thomas, Pavlechko, & Cassady, 2019). Research has also found that the learning environments has a significant positive effect on academic integrity (Schaeper, 2019), academic self-efficacy (Alt, 2015), learning motivation and achievement (Baeten, Dochy, & Struyven, 2013), learning achievement (Aluri & Fraser, 2019), learning satisfaction (Lin, Salazar, & Wu, 2019), innovation competence (Ovbiagbonhia, Kolloffel, & Brok, 2019), and academic aspirations and satisfaction of college students in higher education (Huang, 2012). Other studies emphasize the importance and find that a conducive learning environment is a critical component and has a positive influence on the development of wisdom of high school students and college students (DeMichelis, Ferrari, & Rozin, 2015) and pre-service counselors (Osterlund, 2016).

CONCLUSION

This research found that the virtual learning environment of Indonesian college students includes 10 dimensions, namely: computer usage, involvement, young adult ethos, task orientation, investigation, lecturer support, cooperation, equity, cohesiveness, and differentiation. Further research is needed to adapt and validate the TROFLEI version of Indonesian college students and elementary school students, junior high school students, and senior high school students, both full length and short-form versions based on paper and pencil tests and web-based assessment and test analyses (WATA), test both instruments with confirmatory factor analysis using the LISREL and examine various antecedents and consequences of students' and college students' virtual learning environments on wider participants taking account its ethno-sociodemographic proportions.

ACKNOWLEDGEMENT

Sincere appreciation is conveyed to the Head of the Dean of the Faculty of Education/Institute for Research and Community Service, Universitas Negeri Jakarta who has funded the Faculty Institutional Assignment Research through the Decree of the Rector of Universitas Negeri Jakarta Number: 364/UN39/HK.02/2022 and Number Contract Agreement: 214/PPK-FIP/KONTRAK-PENELITIAN/IV/2022 Date April 20th 2022. Sincere thanks are also extended to Prof. Barry J. Fraser from the School of Education, Curtin University for permission to use the TROFLEI, as well as the research participants, editors, reviewers, and those who helped publish this article

REFERENCES

Aldridge, J. M., & Fraser, B. J. (2003). Effectiveness of a technology-rich and outcomes-focused learning environment. In M. S. Khine, & D. Fisher, *Technology-rich learning environments: A futue perspective* (pp. 41-69). Singapore: World Scientific.

Aldridge, J. M., Dorman, J. P., & Fraser, B. J. (2004). Use of multitrait-multimethod to validate actual and preferred forms of the Technology-Rich Outcomes-Focused Learning Enviroment Inventory (TROFLEI). *Australian Journal of Educational & Developmental Psychology, 4*, 110-125.

Aldridge, J. M., Dorman, J. P., & Fraser, B. J. (2008). Use of multitrait-multimethod modelling to validate actual and preferred forms of the What is Happening In the Class (WIHIC questionnaire. *Learning Environments Research, 11*, 179-193.

Alt, D. (2015). Assessing the contribution of a constructivist learning environment to academic self-efficacy in higher education. *Learning Environments Research, 18*(1), 47-67.

Aluri, V. L., & Fraser, B. J. (2019). Students' perceptions of mathematics classroom learning environments: measurement and associations with achievement. *Learning Environments Research, 22*(1), 1-18.

Aristovnik, A., Kerzic, D., Ravselj, D., Tomazevic, N., & Umek, L. (2020). Impacts of the covid-19 pandemic on life of higher education students: a global perspective. *Sustainability, 12*, 1-34.

Baeten, M., Dochy, F., & Struyven, K. (2013). The effects of different learning environments on students' motivation for learning and their achievement. *British Journal of Educational Psychology, 83*(3), 484-501.

Brown, S. C. (2004). Learning across the campus: How college facilitates the development of wisdom. *Journal of College Student Development, 45*(2), 134-148.

Cakir, M. (2011). Validity and reliability of the Turkish form of technology-Rich Outcomes-Focused Learning Environment Inventory. *Educational Sciences: Theory and Practice, 11*(4), 1959-1963.

Chang, H.-Y., Wang, C.-Y., Lee, M.-H., Wu, H.-K., Liang, J.-C., Lee, S. W.-Y., . . . Tsai, C.-C. (2015). A review of features of technology-supported learning environments based on participants' perceptions. *Computer in Human behavior, 53*(2015), 223-237.

DeMichelis, C., Ferrari, M., & Rozin, T. (2015). Teaching for wisdom in an intergenerational high-school-english class. *Educational Gerontology, 41*(8), 551-566.

Dorman, J. P., & Fraser, B. J. (2009). Psychosocial environment and affective outcomes in technology-rich classrooms: testing a causal model. *Social Psychology of Education: An International Journal, 12*(1), 77-99.

Elumalai, K. V., Sankar, J. P., John, R. K., Menon, J. A., Alqahtani, M. S., & Abumelha, M. A. (2020). Factors affecting the quality of e-learning during the COVID-19 pandemic from the perspective of higher education students. *Factors affecting the quality of e-learning during the covid-19 pandemic from the perspective of higher education students, 19*, 731-753.

Evans, N. J., Forney, D. S., Guido, F. M., Patton, L. D., & Renn, K. A. (2010). *Student development in college: Theory, research, and practice* (2nd ed.). Sanfransisco, CA: Jossey-Bass.

Field, A. (2013). *Discovering statistics using IBM SPSS statistics* (4th ed.). Thousand Oaks, California: SAGE.

Fraser, B. J., McRobbie, & Fisher. (1999). Investigating classroom learning environments in Taiwan and Australia with multiple research methods. *The Journal of Educational Research, 93*(1), 48-62.

Glaveanu, V. P., Ness, I. J., & Laurent, C. d. (2021). Creative learning in digital and virtual learning environments during covid-19 and beyond. In V. P. Glaveanu, I. J. Ness, & C. d. Laurent, *Creative learning in digital and virtual environment: Opprotunities and challange of technology-enabled learning and creativity* (pp. 162-179). New York: Rutledge.

Heppner, P. P., Wampold, B. E., Owen, J., Thompson, M. N., & Wang, K. T. (2016). *Research design in counseling* (4th ed.). United States: Cengage Learning.

Herdi, H., Kartadinata, S., & Taufiq, A. (2017). Faktor-faktor yang mempengaruhi kearifan konselor menurut perspektif calon konselor etnis Jawa. *Jurnal Penelitian dan Evaluasi Pendidikan, 21*(2), 162-174.

Herdi, H., Kartadinata, S., & Taufiq, A. (2019). Factors affecting the wisdom of counselors: Perceptions of Indonesian pre-service counselor. *Jurnal Kajian Bimbingan dan Konseling, 4*(4), 122-133.

Huang, S.-Y. L. (2012). Learning environments at higher education institutions: Relationships with academic aspirations and satisfaction. *Learning Environments Research, 15*(3), 363-378.

Kartadinata, S. (2013). Arah kebijakan pengembangan dan kode etik profesi bimbingan dan konseling Indonesia. In M. Supriatna, *Bimbingan dan konseling berbasis kompetensi: Orientasi dasar pengembangan profesi konselor* (pp. 1-16). Jakarta: RajaGrafindo Persada.

Kim, H., Choi, H., Han, J., & So, H.-J. (2012). Enhancing teacher's ICT capacity for the 21st century learning environment: three cases of teacher education in Korea. *Australasian Journal of Educational Technology, 28*(6), 965-982.

Land, S. M., Hannafin, M. J., & Oliver, K. (2012). Student-centered learning environments. In D. H. Jonassen, & S. M. Land, *Theoretical foundations of learning environments* (2nd ed., pp. 1-23). New York: Taylor & Francis.

Lin, S., Salazar, T. R., & Wu, S. (2019). Impact of academic experience and school climate of diversity on student satisfaction. *Learning Environments Research, 22*(1), 25-41.

Lonescu, C. A., Paschia, L., Niculau, N. L., Stanescu, S. G., Stanescu, V. M., Coman, M. D., & Uzlau, M. C. (2020). Sustainability analysis of the e-learning education system during pandemic period - covid-19 in Romania. *Sustainability, 12*, 1-22.

Osterlund, L. C. (2016). Developing wisdom in counselors of the future: Ignatian pedagogy applied to counselor education and supervision. *VISTAS Online, 2016*(Article 35), 1-11.

Ovbiagbonhia, A. R., Kolloffel, B., & Brok, P. d. (2019). Educating for innovation: students' perceptions of the learning environment and of their own innovation competence. *Learning Environments Research, 22*(1), 1-21.

Rickards, T. (2003). Technology-rich learning environments and the role of effective teaching. In M. S. Khine, & D. Fisher, *Technology-rich learning environments: A future perspective* (pp. 115-132). Singapore: World Scientific.

Schaeper, H. (2019). The first year in higher education: The role of individual factors and the learning environment for academic integration. *Higher Education, 1*(1), 1-16.

Shepperis, C. J., Drummond, R. J., & Jones, K. D. (2020). *Assessment procedures for counselors and helping professionals* (9th ed.). New Jersey: Pearson.

Skordi, P., & Fraser, B. J. (2018). Validity and use of the what is happening in this class? (WIHIC) questionnaire in university bussiness statistics classrooms. *Learning Environment Research, 22*, 275-295.

Skordi, P., & Fraser, B. J. (2019). Validity and use of the What Is Happening In this Class? (WIHIC) questionnaire in university bussiness statistics classrooms. *Learning Environments Research, 22*(1), 1-21.

Thomas, C. L., Pavlechko, G. M., & Cassady, J. C. (2019). An examination of the mediating role of learning space design on the relation between instructor effectiveness and student engagement. *Learning Environments Research, 22*(1), 117-131.

Trinidad, S., Aldridge, J., & Fraser, B. (2005). Development, validation and use of the Online Learning Environment Survey. *Australasian Journal of Educational Technology, 21*(1), 60-81.

Wang, T. H., Wang, K. H., Wang, W. L., Huang, S. C., & Chen, S. Y. (2004). Web-based assessment and test analyses (WATA) system: development and evaluation. *Journal of Computer Assisted Learning, 20*, 59-71.

Welch, A. G., Cakir, M., Peterson, C. M., & Ray, C. M. (2012). A cross-cultural validation of the Technology-Rich Outcomes-Focused Learning Environment Inventory (TROFLEI) in Turkey and the USA. *Research in Science & Technological Education, 30*(1), 49-63.

Welch, A. G., Cakir, M., Peterson, C. M., & Ray, C. M. (2012). A cross-cultural validation of the technology-rich outcomes-focused learning environment inventory (TROFLEI) in Turkey and USA. *Research in Science & Technological Education, 30*(1), 49-63.