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Instrument Measuring the Adaptability of University Students to Online Learning (SOLE) and Its Predicting Factors

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Abstract. Online learning has become a practical method in the teaching and learning process, especially during the unprecedented Covid-19 pandemic. Additionally, this situation has forced students to adapt to the new norms of the virtual learning environment. This study intends to validate the instrument used to measure the students' adaptability to online learning (SOLE). A total of 316 students were selected using purposive sampling from several universities in Malaysia. The validity and reliability of SOLE were both evaluated using exploratory and confirmatory factor analysis. As a result of the findings, the instruments remained at 35 items across four constructs, namely physical, spiritual, and emotional as well as the students' values. The Cronbach's alpha coefficient for the scales is above 0.85. The results reveal that overall student adaptability is at a high level across all constructs. It was also observed that there is a significant relation between emotional constructs and SOLE ($t=4.726$, $p<0.000$), physical constructs and SOLE ($t=6.899$, $p<0.000$), as well as between spiritual constructs and SOLE ($t=9.461$, $p<0.000$). Based on this finding, the SOLE instrument has proven to be a suitable instrument measurement to assist students in the

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context of adjusting to an online learning condition, even though further research is necessary to be carried out on a more diverse population.

Keywords: instrument; measurement; new norm; online learning; students' adaptability

1. Introduction

Face-to-face learning is a traditional teaching method whereby the lesson materials are taught to a group of learners (Gherhes et al., 2021). To date, the enormous disruption of the Covid-19 pandemic has changed the student perception of depending on physical classes. The pandemic Covid-19 has also led to several problems among the students such as loneliness as well as insufficient access to technological appliances due to their being from a low-income family (Morgan, 2022). In fact, adaptability to online learning is crucial to educate the learners so that the learning process continues, even in a fully virtual class. The current study endeavoured to develop a measurement for the students' adaptability (SOLE) to online learning. It is an assessment for students to ensure that they can adapt well and identify the required elements in order to achieve their educational goals.

This study is meaningful since there are several cases of students who struggle to maintain a high level of motivation during online learning as well as engaging in a conducive virtual environment (Bao, 2020). Furthermore, there are some learners who consider physical and virtual learning to be two different aspects (Xhelili et al., 2021). Thus they seem to have difficulty in perceiving online learning as the only method of learning. Regardless of the different perspectives of online learning, students should be constantly reminded that the aim of the process is to achieve the same learning goals.

Consequently, this study can also serve as a guideline for students and educators if they have any issues related to the students' adaptability to the online learning sessions. This is because the components that have been applied to measure the learners' adaptability are significant in assessing how students should prepare themselves to access knowledge virtually. This platform is important because it has been mentioned that it could replace the traditional method of teaching (Mukhtar et al., 2020).

In addition, learning virtually is also a viable way of enhancing the students' satisfaction as well as improving the cost effectiveness (Sadeghi et al., 2014). In addition, the current study is also significant since it involves the human element. This is an essential benchmark to measure education goals. One of the learning process objectives is forming students' spirituality. This can benefit others and a nation as a whole. Hence, the uniqueness of SOLE is that it contains several items that can be used to measure the level of righteousness among them which relates to the values that are practised in daily life.

2. Literature Review

Previous studies mention that students can adapt to online classes. However, they also face difficulties relating to their Internet connection and they may have insufficient technological appliances. It is also necessary for educators to pay attention to the students' problems to achieve the desired learning goals (Xhelili et al., 2021). Moreover, it has also been shown that the lack of social interaction may reduce the level of motivation and minimise the students' discipline (Ainoutdinova et al., 2017). Furthermore, it is mentioned that students require there to be several aspects involved such as those relating to physical, emotional and spiritual needs in order to maintain a balanced state of well-being, especially during virtual learning sessions (Razak et al., 2021). Educators are also encouraged to use a suitable teaching aid to ensure that their learners can adapt well during the learning process (Izuli, 2021). This is due to the fact that sustainable well-being is necessary so that the students can balance their lives in terms of the educational aspect as well as the other contexts such as social, emotional and other components that contribute to the students' well-being.

Another previous study developed a measurement to assess student readiness in online learning. It encompassed the components of self-development, technology, innovation and people (Krismanto et al., 2020). The instrument was reliable when used to assess student readiness. However, it is limited to the external elements and does not emphasise the aspect of well-being among the students, including the spiritual and emotional components.

In addition, another scale that relates to the assessment of student engagement focuses only on the components of observational learning behaviour and application learning behaviour (Dixon, 2015). These instruments are meaningful when assessing the external factors of student engagement. However, it is necessary to identify whether the students can adapt well to the rapid development of the e-learning system. Thus it has been proven that an assessment of the students' adaptability (SOLE) should be developed to produce a balanced concept for humanising education.

3. The Development of SOLE Constructs

The current study develops several domains related to the students' adaptability to online learning. SOLE encompasses three predictors, namely emotional, physical and spiritual components. In addition, the components used to measure SOLE itself are of internal as well as external value. The instrument was also developed based on the main component of the contributors of well-being. This is to identify whether the students can adapt well to a virtual session. Furthermore, SOLE will also be used in post-pandemic situations because nowadays there is a great deal of e-learning available that requires students to be well prepared for a lesson.

In terms of the physical aspect, this domain evaluates several components that relate to a conducive environment that can help the students adapt well to online learning. This includes how teachers play a role in sharing their knowledge, particularly during a virtual lesson (Dhuli & Sakshi, 2017). This

component also measures how the teachers apply their innovative skills when imparting knowledge to their students so that the students can also improve their essential skills in the future (Setiyawati et al., 2018). Upgrading teaching skills is crucial in order for teachers to be fully capable of using the online platform (Muganga et al., 2021).

In addition, this component also analyses the method of teaching. This element is vital to reduce the rate of unpreparedness towards digital learning among educators (Maheran et al., 2021). Moreover, students are also encouraged to engage with the online lesson since it is also a platform of continuous learning (Muganga et al., 2021). Furthermore, there are several students who face difficulties when trying to participate in an online class because of their inadequate Internet access (Jalli, 2020). This might be because of demographic factors as those in rural areas cannot fully adapt to the advancements in technology because of Internet issues (Flynn & Himel, 2020).

Furthermore, students are also required to have a plan when joining in with the online learning so then they can adapt and achieve the learning goals (Rapanta et al., 2020). Hence, it is important for educators to be aware of the students' situation in order to assist them to adapt well to an online lesson. For example, students can also face financial issues which hinder them from being able to engage fully with the online lesson (Daud et al., 2018). It is understood that educators and students need to cooperate to achieve positive adaptability in online learning.

In terms of the emotional component construct, this domain evaluates how the students prepare to join the online class. It also identifies several aspects such as the level of motivation among them. This element is crucial because it leads to the students' attaining a level of engagement in relation to the virtual lesson (Meşe & Sevilen, 2021). This attribute also makes the students feel more enthusiastic about the learning process (Koçoğlu & Tekdal, 2020). Moreover, the interaction between the teachers and students is a vital element in the creation of a positive relationship as well as ensuring the learners' commitment towards the online resources (Çebi & Güyer, 2020).

In addition, the students were also asked about their characteristics as well as their technical and communication management. These issues are also important to highlight among the teachers because they will determine the amount of individual preparation before participating in the virtual class (Martin et al., 2020). This component was developed in order to investigate the learners' skill of problem solving. This is one of the essential skills, requiring a long and continuous process of education (Fitarahmawati & Suhartini, 2020).

The spiritual aspect was one of the predictors used to assess student adaptability in online learning. It is argued that it is a subjective element and that it is difficult to measure the human level of spirituality. Nevertheless, it is agreed that it has some characteristics which could assist the individual in establishing a well-prepared spiritual practice in their daily life (Razak & Lukman, 2019).

This basis contains several items that relate to the students' practice before, during and after attending the virtual class.

For instance, the item asks the students whether they pray before participating in class. This is a righteous attitude and it guides the learners to having a firm faith which relates to the religious attribute (Chotimah et al., 2021). In addition, this construct also identifies the element of compulsory practice, especially among Muslims. This is one of the components used to evaluate Muslim attributes (Zulvia et al., 2020).

Other than that, this construct also measures the level of consistency *oristiqamah* characteristics among the students. This attitude instils self-discipline among the students and it also improves their daily performance (Wijayanti et al., 2020). Moreover, it is also compulsory for Muslims to perform five daily prayers. It is one of the five pillars that should be adhered to by Muslims and it is also a way to obtain inner calmness (Abdul Aziz et al., 2020).

The external values relate to how the students manage to interact with people, particularly their educators (Razak et al., 2021). For instance, this item analyses the bond between learners and educators. As mentioned before, teachers also should participate in learning because it is paramount for them to gain a good level of adaptability in the online lessons (Raducu & Stanculescu, 2021). This section also identifies how the students get to know each other. The concept of social relationships is significant since it can develop a firmer sense of community among them, especially during virtual sessions (Tuan, 2015).

In addition, the students' adaptability could also be measured through time management in terms of how they divide their time, specifically time for studying as well as time for a social life. This is a salient aspect as there are some issues to do with online learning which can lead to the lack of time for social mundane activity (Shivangi, 2020). Furthermore, the students are also encouraged to adapt well to the online learning because during the era of the fourth industrial revolution (IR 4.0), the students should understand how to utilise fully the technology accommodations available so that they can adapt accordingly to an online lesson (Zuriah & Rahmandani, 2020). Similarly, this was also used to evaluate how the students are provided with guidelines by their teachers. The previous study mentioned that the students who receive proper coaching from their educators tend to achieve higher results in their final assessment (Raducu & Stanculescu, 2021).

Regarding the domain of internal values, it contains several aspects that relate to human attributes. This is one of the student indicators that can help them to achieve a good level of adaptability in their online lessons. For example, learners who attain an education goal will have a positive attitude in their daily practice. This is part of having a righteous character (Ramli, 2016).

In addition, this component identified the attitude of honesty when carrying out their daily responsibilities. This behaviour relates to people being trustworthy

in terms of both their word as well as their practice (Babang et al., 2016). This also examines how hard students work in their daily lives. This practice can be continued even after the conclusion of the formal online learning process: if they have been trained to work hard, they also will achieve success in the future. Moreover, it is also an indicator of being a highly principled human being (Erfinia, 2016).

Nevertheless, other virtuous attitudes such as being grateful are also included in this domain because they are part of Islamic religious values (Mila et al., 2019). In addition, the attribute of discipline is regarded as a highly desirable characteristic. It also acts as a symbol of the basic societal attitude that people can adopt to compete globally in the future (Suntonrapot, 2019). Furthermore, the aspect of *tawakkal* (reliance on Allah) is a righteous practice because it symbolises the high level of reliance of the servant on the Creator. Furthermore, it also relates to the enthusiasm to attain excellence while the final effort that has been made is submitted to God (Jaeni et al., 2020).

4. Method

This study used a quantitative method, commencing with reviewing the previous articles on student adaptability. The research instruments were developed based on the literature review and recent scholars' perspectives on online learning. These include how students can adapt during the online lessons. This study analysed the previous studies related to student adaptability relating to online learning. This study also identified several related instruments that have been developed and in addition, analysed other elements related to learner adaptability in virtual lessons. The current study then developed several constructs that predict student adaptability in relation to online learning. Subsequently, some of the items were then organised into components and they underwent the reliability and validity processes. In terms of construct reliability and validity, the items of the current study were reviewed by experts in select fields. They were then revised based on the content validity and pilot testing procedures.

In terms of the sampling method, the current study used the purposive sampling technique. This method is especially useful when randomisation is impossible as in cases where the population is very large (Ilker, 2016). The participants consisted of university students who have experience of online learning. The respondents came from various states. Additionally, the current study also aimed to identify the various perspectives among the different levels of students. They were selected from semesters 1 - 4 and came from various areas in the state of Malaysia.

The questionnaire was distributed via Google Forms. Later the responses were analysed using Smart PLS 3.2.8. The statistical process involved exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). EFA is a basic technique involved in the process of the development and validation of the measurement scale inventory (Marley, 2018). CFA was used to test the predicted items that had been developed based on certain constructs (Prudon, 2015). After

performing this analysis, the model was then validated based on certain predictors of SOLE.

5. Results

This section reveals the findings focused on the reliability and validity of the SOLE instrument. Table 1 illustrates the value of Cronbach's alpha (CA), the composite reliability (CR), and the average variance extract (AVE) for each construct.

Table 1: The values of construct reliability and validity in the SOLE instrument

Constructs	Cronbach Alpha	Composite Reliability	Average Variance Extract
Emotional aspect	0.953	0.961	0.78
Physical aspect	0.879	0.906	0.583
Spiritual aspect	0.863	0.901	0.647
Internal values	0.942	0.951	0.684
External values	0.913	0.931	0.66

Convergent validity is the assessment used to discover the statistical terms involved, for example, the AVE, loadings, and CR (Gholami et al., 2013; Rahman et al., 2015). Table 1 depicts the SOLE main construct which illustrates the value of reliability and validity for the development of SOLE. It established that the values of Cronbach's alpha, CR and AVE are of an acceptable range. This proved that SOLE is a reliable measurement that could be used in the current study as well as in future research.

This study applied several elements such as the selected physical, emotional and spiritual aspects as the predictors of student adaptability during virtual learning. The internal and external values are the components that measure whether the students can adapt to the online lessons.

Based on Table 1, it is indicated that the CA, CR and AVE reached an adequate level of reliability. This references the recommendation which states that the AVE score should be at least 0.5 (Hair et al., 2013). This includes the validity process that was assessed through convergent and discriminant tests. This was applied to evaluate the level to which the multiple predictors correlate with each other.

In accordance with the recommendations of Hair et al. (2014), the construct validity of the outer loading, Cronbach's alpha, CR and AVE should be more than 0.7. From Table 1, it can be noted that the predictors of SOLE have an accepted value. This shows that they possess a high level of reliability and validity in terms of the statistical results. In addition, it also proves that every component can predict student adaptability to online learning. Table 2 explains the value of the loading factor of each item based on certain constructs.

Table 2: Loading factors for the items in the SOLE instrument

Items	Emotional	Physical	Spiritual	Internal	External
I always find that online learning is very interesting	0.89				
I always communicate with the teacher during the online learning activities	0.88				
I always enjoy joining in with the online learning activities	0.89				
I am always well prepared before joining the online learning	0.87				
I always solve my problems before attending the online classes	0.90				
I always have a high level of motivation to attend the online classes	0.89				
I get a lot of beneficial information on how to participate in online learning		0.83			
I get the opportunity to explore the guidelines on how to use the e-learning tools		0.76			
I get to learn from teachers who are experienced at preparing the teaching materials		0.87			
I get to learn from teachers who have many skills when conducting online learning		0.65			
I get good Internet data and coverage during the online learning		0.78			
I get to prepare for a Plan A and B while joining the online activities		0.54			
I can subscribe to the Internet data without any financial issues		0.86			
I always allocate time for studying and religious activities			0.79		
I always perform my religious practices consistently			0.87		
I always perform my <i>solah</i> early			0.79		
I always pray for safety and well-being			0.84		
I always have positive impressions of God's plans for me			0.73		
I learn to be sincere in my daily activities/Saya				0.83	
I learn to be honest when carrying out my responsibilities				0.87	
I learn to work hard to achieve my dreams				0.84	
I learn to be grateful for the blessings and grace that are bestowed upon me				0.85	
I learn to be disciplined in anything I do				0.88	
I learn to rely on God when dealing with everyday life				0.79	
I learn to be brave when giving my opinion				0.78	

I learn to accept all challenges in life with an open heart				0.80	
Overall, I have learnt many positive values in my life through the online learning activities				0.78	
I form a close bond with the teachers during the online learning activities					0.82
I get to know many new friends when I participate in online learning activities					0.72
I manage to allocate time for both studying and social activities					0.87
I manage to complete the tasks given by the teachers on time					0.81
I manage to apply good ethics in my life					0.84
I obtain good guidelines through the online learning activities					0.89
I manage to share my problems with my teachers					0.73

Table 2 indicates that all loading factor values for each item reached an acceptable value of more than 0.30. The item loading factors that have a greater value than 0.30 are categorised as possessing a good internal consistency (Hair et al., 2013). Ramayah et al. (2012) recommended that a range of the outer loading between 0.4 - 0.69 could be retained if the value of the AVE is greater than 0.5. From Table 2, it can be observed that the outer loading of the entire construct ranges between 0.5 - 0.8 which is an acceptable range. This finding also indicates that the questionnaire has five factors, namely the emotional, physical, spiritual, internal, and external values. Each component contains six, seven, five, eight and seven items respectively, which have been illustrated in Table 2. The constructs confirm the SOLE model and can be used to measure student adaptability, particularly in online learning. Table 3 explains the value of HTMT (a measure of similarity between latent variables) for each construct.

Table 3: The values of HTMT used to measure the discriminant validity

Construct	Emotional	External Values	Internal Value	Physical	Spiritual
Emotional					
External	0.581				
Internal	0.397	0.756			
Physical	0.466	0.807	0.62		
Spiritual	0.375	0.679	0.83	0.669	

Table 3 illustrates the value of HTMT which was used to measure the discriminant validity. It is also important to determine the relationships between the identified constructs. Gold et al. (2001) suggested that a HTMT value of less than 0.9 indicates satisfactory discriminant validity. Hence, it is proven that there is discriminant validity among the constructs.

Assessment of the structural model

This section provides the result for the values of the structural model. It comprises the R, F and Q squares. R square is an assessment of the model's predictive accuracy and it depicts the amount of variance in the endogenous construct. The Q square is utilised to evaluate the original values in relation to the predicted value (Ramayah et al., 2018). The F square measures how strongly the constructs have an influence to explain a given endogenous construct in terms of the R square. Table 4 identifies the value of the R square which was used to analyse how well the data fits the SOLE model.

Table 4: The values of R square used to measure the structural model

	R Square	R Square Adjusted
SOLE	0.681	0.678

Table 4 illustrates the value of the R square. It was used to evaluate the explained variance and to indicate the strength of the prediction, especially in the multiple regression model. A rough rule of thumb is that the R² values of 0.25, 0.50, and 0.75 are respectively weak, moderate, and strong (Hair et al., 2011). Additionally, Chin (1998) recommended that an R-square can be in the ranges of 0.67 (substantial), 0.33 (moderate), and 0.19 (weak). Thus, it is understood that the R square for SOLE model is substantial as proposed by Chin and Todd (1995). It is proven that if the R-squared (R²) value ranges from 0 to 1, the model has perfect predictive accuracy (Henseler et al., 2009). Table 5 exhibits the path co-efficient in order to identify the correlation where the dependent variable is a function of a single independent variable.

Table 5: The values of regression analysis of SOLE model

Construct	OS	SM	SD	T	P Values
Emotional > SOLE	0.183	0.184	0.039	4.726	0.000
Physical > SOLE	0.324	0.325	0.047	6.899	0.000
Spiritual > SOLE	0.487	0.486	0.051	9.461	0.000

The regression analysis is employed to analyse the significant relationship that exists between the independent and dependent variables. Furthermore, it is applied to determine the significant relationship between constructs. From Table 5, it can be observed that there are significant relations between emotional components towards SOLE ($t=4.726$, $p < 0.005$), practice components towards SOLE ($t=6.899$, $p < 0.000$), and religious knowledge towards SOLE ($t=9.461$, $p < 0.000$). Moreover, the positive sign implies that there is a direct relationship between the dependent and independent variables. Figure 1 illustrates the value of items that are loading on their predicting factors.

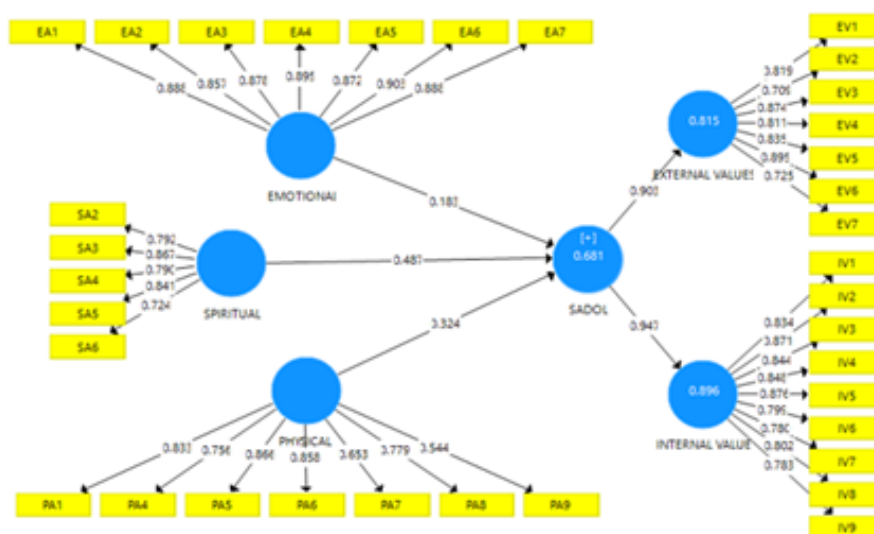


Figure 1: SOLE model and its predictors

Figure 1 shows the value of the loading items. These are the main elements used to predict the students' adaptability. It shows that each developed item is reliable and valid, and can therefore be used to measure the learners' preparedness. It reveals that each construct is significant when used to evaluate how the students should prepare for and adapt in relation to online learning. Additionally, it also proves that the SOLE model can be used in other studies that relate to the students' well-being. Educators should also pay attention to each component to achieve the learning objective of every session.

6. Discussion

The main purpose of the current study is to measure the reliability and validity of the SOLE instrument. According to the findings, it is vital for teachers as well as learners to maintain good communication in order to achieve the learning goals as part of the learning process. It has been proven that the major crises that influence and impact online learning during COVID-19 relate to communication, technical issues, internal and external challenges, and academic achievement. It is also suggested that the students' satisfaction may boost their performance (Avsheniuk et al., 2021).

The current study also emphasises the importance of the physical, emotional, and spiritual components in adopting virtual learning. It has also been proven that the motivation element and other essential skills are necessary factors in order to adapt well to online learning (Baticulon et al., 2020). Additionally, the elements for students to achieve in and adapt well to online learning include emotional and social well-being as well as motivation (Holliman et al., 2021).

SOLE also can be used to identify whether the students face difficulties during the online lessons. A previous study also found that numerous students face mental health issues, especially during panic-gogy (Aristovnik et al., 2020). The current study highlights several essential items that can be used to measure the condition of the students, particularly during online learning. These also assist

the learners in solving the problems that they face before starting an online class. They will further help the students to gain the motivation they need to benefit from the online learning. Furthermore, this study also reveals that the developed constructs are essential elements to avoid the students experiencing depression and anxiety, especially during their online learning.

Apart from being a sophisticated e-learning tool, it is crucial to analyse the students' condition to determine whether they can cope with the new norms of online learning. Thus, it is important to highlight the virtuous values that are essential components for ensuring that they experience a worthwhile lesson in online sessions. The uniqueness of SOLE is that it identifies the students' adaptability during the online learning through the practice of spiritual daily habits. The current study reveals that the students recognise the significance of reciting prayers before joining the class. This serves as a practice of soul preparation to instil inner peacefulness among the students. The students also agreed that spending time studying and engaging in religious activities is important to being able to adapt during the lesson process.

The results show that fundamental aspects such as the physical, emotional and spiritual components could assist both learners and educators in producing a high-quality online learning product. Additionally, education in Islam includes the knowledge provided by both internal and external values to instil a good attitude (*akhlaq*), a balanced lifestyle, virtuous values, a firm faith, and positive attributes among the learners (Badrasawi, 2018).

In addition, this study is also in line with a previous study which explained that internal values such as being grateful contribute to positive feelings and strong characteristics. This is integral to the field of education (Fitra, 2017). SOLE items also encompass various elements that assist the students in adapting well to online learning as well as attaining the objective of their education. This is because the aspects of religiosity, social attributes, and a good personality have a positive impact when it comes to enhancing a student's character (Zurqoni et al., 2018).

Moreover, the current study is significant since this instrument identifies the internal values that are crucial to human development as well as to the field of education. Moreover, it is stated that righteous attributes such as integrity are some of the central values that strengthen the attributes of an individual's educational character (Nur et al., 2020). In addition, this study also contributes to the adaptability of Islamic practice among the students. It is agreed that learners who can apply Islamic practice in their daily lives will experience a well-adapted learning environment, including a good relationship with their educators (Ab Halim & Munawar, 2021). Thus, it has been proven that this instrument will lead to the students' having a righteous attitude whether they are in a virtual learning session or in their physical environment.

7. Conclusion

This study reveals that good quality education should encompass several components which contribute to the students' adaptability. All aspects such as the physical, emotional and spiritual factors strongly influence the students' adaptability. It also discusses the internal and external values which form the students' characters, enabling them ultimately to obtain a sustainable education to improve their well-being.

The current study also proves that it is important to have appropriate measurements to guide the students' adaptability as part of the learning process. This is due to the fact that there have recently been serious problems in online learning such as academic dishonesty, academic anxiety, and demotivation when attending online lessons (Simamora, 2020; Al-Kumaim et al., 2021). This points to the value of having a good attitude as contributing significantly to a positive impact on quality education, as well as shaping students towards recognising the significance of education in their lives.

The limitation of this study is that it was conducted during the pandemic. It is therefore proposed to apply SOLE in the post-pandemic period to identify how the students adapt to virtual lessons. In addition, it is suggested that SOLE could also apply to primary and secondary students because SOLE contains an element to assist students' adaptability such as physical, emotional, spiritual, internal and external values which are necessary to sustain the students' well-being, especially during the pressure and challenges encountered in the online learning period.

In terms of the practical implications, SOLE can be used to assess whether students encounter difficulties during the learning period. This is because SOLE can measure the level of adaptability in relation to the emotional, physical and spiritual aspects. These components are vital when seeking to mitigate mental health problems among the students. Hence, it is understood that a counsellor also could apply this assessment to assist educational institutions to reduce problems relating to the well-being of students.

8. References

- Abdul Aziz, A. R., Shafie, A. A. H., Mohd Soffian Lee, U. H., & Raja Ashaari, R. N. S. (2020). Strategi Pembangunan Aspek Kesejahteraan Kendiri bagi Mendepani Tekanan Akademik Semasa Wabak COVID-19 [Strategies for the Development of Aspects of Self-Wellness to Meet Academic Stress During the COVID-19 Outbreak]. *Malaysian Journal of Social Sciences and Humanities (MJSSH)*, 5(12), pp. 16 - 30. <https://doi.org/10.47405/mjssh.v5i12.594>
- Ab Halim, T., & Munawar, A.I. (2021). Relations of school environment and teachers to Islamic morals practices of Malaysian secondary school students. *International Journal of Islamic Thought*, 19(6), 1-13. <https://doi.org/10.24035/ijit.19.2021.190>
- Ainoutdinova, I. N., Khuziakhmetov, A. N. & Tregubova, T. M. (2017). Advantages and disadvantages of distance education for university students in Russia. *Modern Journal of Language Teaching Methods*, 7(9/2), 72-86.
- Al-Kumaim, N. H., Alhazmi, A. K., Mohammed, F., Gazem, N. A., Shabbir, M. S., & Fazea, Y. (2021). Exploring the impact of the COVID-19 pandemic on university

- students' learning life: An integrated conceptual motivational model for sustainable and healthy online learning. *Sustainability*, 13, 2546. <https://doi.org/10.3390/su13052546>
- 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. <https://doi.org/10.3390/su12208438>, 1-34
- Al-Kumaim, N. H., Alhazmi, A. K., Mohammed, F., Gazem, N. A. Shabbir, M. S., & Fazea, Y. (2021). Exploring the impact of the Covid-19 pandemic on university students' learning life: An integrated conceptual motivational model for sustainable and healthy online learning. *Sustainability*, 13, 2546. <https://doi.org/10.3390/su13052546>
- Avsheniuk, N., Seminikhyna, N., Svyrydiuk, T., & Lutsenko, O. (2021). ESP students' satisfaction with online learning during the Covid-19 pandemic in Ukraine. *Arab World English Journal (AWEJ) Special Issue on Covid 19 Challenges*, (1), 222-234. <https://doi.org/10.24093/awej/covid.17>
- Babang, M. P., Anggraini, F. L., Dwimasani, S., & Rosdianti, V. I. R. (2016, October 12-17). *Embedding character building based on local wisdom in biology subject materials*. The 2nd International Seminar on Science Education (ISSE), Graduate School - Yogyakarta State University (Vol. 2).
- Badrasawi, K. J. I., Preece, A. S., Hashim, C. N., & Azizi, N. M. S. (2018). The concept of *murabbi* in Muslim education with reference to selected teaching methods of the Prophet Muhammad (s.a.w). *Al-Shajarah (Special Issue)*, International Islamic University of Malaysia, pp. 327-357.
- Bao, W. (2020). Covid-19 and online teaching in higher education: A case study of Peking University. *Human Behavior and Emerging Technologies*, 2(2), 113-115. <https://doi.org/10.1002/hbe2.191>
- Baticulon, R. E., Alberto, N. R. I., Baron, M. B. C., Mabulay, R. E. C., Rizada, L. G. T., Sy, J. J., Tiu, C. J. S., Clarion, C. A., & Reyes, J. C. B. (2020). Barriers to online learning in the time of Covid-19: A national survey of medical students in the Philippines, *MedRxiv*, 1-19. <https://doi.org/10.1101/2020.07.16.20155747>
- Çebi, A., & Güyer, T. (2020). Students' interaction patterns in different online learning activities and their relationship with motivation, self-regulated learning strategy and learning performance. *Education and Information Technologies*, 1-19. <https://doi.org/10.1007/s10639-020-10151-1>
- Chin, W. W. (1998). The partial least squares approach for structural equation modeling. In G. A. Marcoulides (Ed.), *Modern methods for business research*. Lawrence Erlbaum Associates.
- Chin, W. W., & Todd, P. A. (1995). On the use, usefulness, and ease of use of structural equation modeling in MIS Research: A note of caution. *MIS Quarterly*, 19(2), 237-246.
- Chotimah, U., Kurnisar, K., Ermanovida, E., & Juainah, N. (2021). Building religious, honesty, discipline, and student curiosity character through hots-based online civic education learning. *Jurnal Civics: Media Kajian Kewarganegaraan*, 18(1), 118-126. <https://doi.org/10.21831/jc.v18i1.39088>
- Daud, N., Norwani, N. M., & Yusof, R. (2018). Students' financial problems in higher education institutions. *International Journal of Academic Research in Business and Social Sciences*, 8(10), 1558-1565. <https://doi.org/10.6007/IJARBS/v8-i10/5312>
- Dhuli, I., & Sakshi, M. S. (2017). Online learning. *International Education & Research Journal*, 3(8), 32-34.
- Dixon, M. D. (2015). Measuring student engagement in the online course: The Online Student Engagement scale (OSE). *Online Learning*, 19(4), 201.

- Erfinia, D. C. (2016). *Forming quality of human resource in Kompas 'caring waste to save city' through science education*. The 2nd International Seminar on Science Education (ISSE) Graduate School-Yogyakarta State University, 2 October 2016, 218-224.
- Fitarahmawati & Suhartini. (2020). *Empowering critical thinking and problem-solving skills during pandemic through contextual distance-learning in biology*, Proceedings of the 6th International Seminar on Science Education (2020). *Advances in Social Science, Education and Humanities Research*, 541, 39-47.
- Fitra, M. (2017). Gratitude characteristic analysis and its intervention in various countries in the globalization era. *International E-Journal of Advances in Education*, 3(9), 510-517. <https://doi.org/10.18768/ijaedu.370412>
- Flynn, G., & Himel, J. (2020). *School closures highlight inequality in education as classes move online*. Cambodianess. <https://cambodianess.com/article/school-closures-highlight-inequality-in-education-as-classes-move-online>
- Gherhes, V., Stoian, C. E., Farcasiu, M. A., & Stanici, M. (2021). E-learning vs. face-to-face learning: Analyzing students' preferences and behaviors. *Sustainability*, 13, 4381. <https://doi.org/10.3390/su13084381>
- Gholami, R., Sulaiman, A. B., Ramayah, T., & Molla, A. (2013). Senior managers' perception on green information systems (IS) adoption and environmental performance: Results from a field survey. *Information and Management*, 50(7), 431-438. <https://doi.org/10.1016/j.im.2013.01.004>
- Gold, A. H., Malhotra, A., & Segars, A. H. (2001). Knowledge management: An organizational capabilities perspective. *Journal of Management Information Systems*, 18(1), 185-214. <https://doi.org/10.1080/07421222.2001.11045669>
- Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: Indeed a silver bullet. *The Journal of Marketing Theory and Practice*, 19(2), 139-152.
- Hair, J. F., Ringle, C. M., & Sarstedt, M. (2013). Partial least squares structural equation modeling: Rigorous applications, better results, and higher acceptance. *Long Range Planning*, 46(2), 1-12. <https://doi.org/10.1016/j.lrp.2013.01.001>
- Hair Jr., J., Sarstedt, M., Hopkins, L. G., & Kuppelwieser, V. (2014). Partial least squares structural equation modeling (PLS-SEM): An emerging tool in business research. *European Business Review*, 26(2), 106-121. <https://doi.org/10.1108/EBR-10-2013-0128>
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43(1), 115-135. <https://doi.org/10.1007/s11747-014-0403-8>
- Holliman, A., Waldeck, D., Jay, B., Murphy, S., Atkinson, E., & Collie, J. (2021). Adaptability and social support: Examining links with psychological wellbeing among UK students and non-students. *Frontiers in Psychology*, 12, 636520. <https://doi.org/10.3389/fpsyg.2021.63652>
- Ilker, E. (2016). Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics*, 5(1), 1. <https://doi.org/10.11648/j.ajtas.20160501.1>
- Izuli, D. (2021). Teaching and learning aids to support the deaf students studying Islamic education. *Pertanika Journal of Social Sciences & Humanities*, 29(4), 2263-2279. <https://doi.org/10.47836/pjssh.29.4.09>
- Jaeni, U., Basuki, I., & Moedjiarto, M. (2020). Cooperative learning model in tilawati Al Quran to cultivate student characters: Multi-case study. *Studies in Learning and Teaching*, 1(3), 151-164. <https://doi.org/10.46627/silet.v1i3.53>
- Jalli, N. (2020). *Lack of Internet access in Southeast Asia poses challenges for students to study online amid COVID-19 pandemic*. The Conversation.

- <https://theconversation.com/lack-of-internet-access-in-southeast-asia-poses-challenges-for-students-to-study-online-amid-covid-19-pandemic133787>
- Krismanto, W., Aziz, I. N., Imam, N. A., Pagarra, H., Wandira, S., & Puspitarini, D. (2020). Development and validation of instruments to measure students' e-learning readiness. *International Journal of Psychosocial Rehabilitation*. ISSN: 1475-7192.
- Koçoğlu, E., & Tekdal, D. (2020). Analysis of distance education activities conducted during Covid-19 pandemic. *Educational Research and Reviews*, 15, 536-543. <https://doi.org/10.5897/ERR2020.4033>
- Maheran, Z., Junaidah, H. A., Bahari, R., Hasan, S. J., & Zolkafil, S. (2021). Benefits and challenges of adopting Google Classroom in Malaysian University: Educators' perspectives. *Ilkogretim Online - Elementary Education Online*, 20(1), 1296-1304. <https://doi.org/10.17051/ilkonline.2021.01.123>
- Marley, W. W. (2018). Exploratory factor analysis: A guide to best practice. *Journal of Black Psychology*, 44(3), 219-246. <https://doi.org/10.1177/0095798418771807>
- Martin, F., Stamper, B., & Flowers, C. (2020). Examining student perception of readiness for online learning: Importance and confidence. *Online Learning Journal*, 24(2), 38-58.
- Meşe, E., & Sevilen, Ç. (2021). Factors influencing EFL students' motivation in online learning: A qualitative case study. *Journal of Educational Technology and Online Learning*, 4(1), 11-22. <https://doi.org/10.31681/jetol.817680>
- Mila, A. W., Sumarwati, & Kundharu, S. (2019). Islamic religious values in dhukutan traditional ceremony as character education for elementary school students. *El Harakah*, 21(1), 65-81. <https://doi.org/10.18860/el.v21i1.5615>
- Morgan, H. (2022). Alleviating the challenges with remote learning during a pandemic. *Education Sciences*, 109, 1-12. <https://doi.org/10.3390/educsci12020109>
- Muganga, A., Leah, N. K., Namanyane, T., & Shaoan, M.R. (2021). The impact of online learning on international students' studies amid the Covid-19 pandemic during the 2020 Spring semester: A case study of Southwest University. *Asian Journal of Education and e-Learning*, 9(1), 16-35. <https://doi.org/10.24203/ajeel.v9i1.6508>
- Mukhtar, K., Jved, K., Arooj, M., & Sethi, A. (2020). Advantages, limitations and recommendations for online learning during Covid-19 pandemic era. *Pakistan Journal of Medical Sciences*, 36(COVID19-S4). <https://doi.org/10.12669/pjms.36.covid19s4.2785>
- Nur, A. S., Haddar, G., Hikmah, N., Ratna, K., & Afdal. (2020). Integration of character education strengthening: Constraints in its application to thematic learning in elementary school. *Journal of Critical Reviews*, 7(11), 2403-2415.
- Prudon, P. (2015). Confirmatory factor analysis as a tool in research using questionnaires: A critique. *Comprehensive Psychology*, 4(1), 1-15. <https://doi.org/10.2466/03.CP.4.10>
- Raducu, C.-M., & Stanculescu, E. (2021). Adaptability to online teaching during Covid-19 pandemic: A multiple mediation analysis based on Kolb's theory. *International Journal of Environmental Research and Public Health*, 18(8032), 1-13. <https://doi.org/10.3390/ijerph18158032>
- Rahman, S. A., Amran, A., Ahmad, N. H., & Taghizadeh, S. K. (2015). Supporting entrepreneurial business success at the base of pyramid through entrepreneurial competencies. *Management Decision*, 53(6), 1203-1223. <https://doi.org/10.1108/MD-08-2014-0531>
- Ramayah, T., Cheah, J., Chuah, F., Ting, H., & AliMemon, M. (2018). *Partial least squares structural equation modeling (PLS-SEM) using SmartPLS 3.0: An updated and practical guide to statistical analysis* (2nd ed.). Pearson.

- Ramli, A. (2016). *Implementation of pesantrentadabburalamssg-dt to improve the character "baku" student SMK Pasundan 1 Bandung*. The 2nd International Seminar on Science Education (ISSE) Graduate School-Yogyakarta State University, 2 October 2016, pp.43-51.
- Rapanta, C., Botturi, L., & Goodyear, P. (2020). Online university teaching during and after the Covid-19 crisis: Refocusing teacher presence and learning activity. *Post-digit Science Education*, 2, 923-945. <https://doi.org/10.1108/MD-08-2014-0531>
10.1007/s42438-020-00155-y
- Razak, A. A., & Lukman, Z. M. (2019). Self-esteem and depression: Relations with Muslims' happiness. *International Journal of Research and Innovation in Social Science*, 3(4), 405-409.
- Razak, A. A., Nawati, N. H. Md., Noor, A. L. Mohd., Daud, B. C., & Ismail, M. B. (2021). Students' adaptability in online learning based on Malaysian students' perception. *Malim: Jurnal Pengajian Umum Asia Tenggara*, 22, 139-152, <https://doi.org/10.17576/malim-2021-2201-11>
- Sadeghi, R., Sedaghat, M. M., & Sha Ahmadi, F. (2014). Comparison of the effect of lecture and blended teaching methods on students' learning and satisfaction. *Journal of Advances in Medical Education & Professionalism*, 2(4), 146-150.
- Setiyawati, E., Wulandari, F., Arifin, M. B., Rudyanto, H., & Santia, I. (2018). Using online learning systems to measure students' basic teaching skill. *International Journal of Engineering & Technology*, 7(4.7), 463-467. <https://doi.org/10.14419/ijet.v7i4.7.27360>
- Simamora, R. M. (2020). The challenges of online learning during the Covid-19 Pandemic: An essay analysis of performing arts education students. *Studies in Learning and Teaching*, 1(2), 86-103. <https://doi.org/10.46627/silet.v1i2.38>
- Shivangi, D. (2020). Online learning: A panacea in the time of COVID-19 crisis. *Journal of Educational Technology Systems*, 49(1), 5-22. <https://doi.org/10.1177/0047239520934018>
- Suntonrapot, D. (2019). Factors affecting self-discipline as good citizens for the undergraduates of Chiang Mai University in Thailand: A multilevel path analysis. *Universal Journal of Educational Research*, 7(2), 347-355. <https://doi.org/10.13189/ujer.2019.070206>
- Tuan, N. (2015). The effectiveness of online learning: Beyond no significant difference and future horizons. *MERLOT Journal of Online Learning and Teaching*, 11(2), 309-319.
- Wijayanti, L., Purwanto, A., Asbari, M., Chi Hyun, C., Santoso, P., & Hutagalung, L. (2020). *Teachers' empowerment, self-regulation and being istiqamah as key features of job performance*. <https://dinastipub.org/DIJEMSS>, 1(4), 468-478. <https://doi.org/10.31933/dijemss.v1i4.94>
- Xhelili, P., Ibrahim, E., Rruci, E., & SHEME, K. (2021). Adaptation and perception of online learning during Covid-19 pandemic by Albanian University students. *International Journal on Studies in Education*, 3(2), 103-111. <https://doi.org/10.46328/ijonse.49>
- Zulvia, T., Rehani, R., & Riswandi, K. (2020). Implementation of Islamic character based education in students' religious extracurricular activities. *Jurnal Penelitian*, 17(1), 95-106. <https://doi.org/10.28918/jupe.v17i1.2650>
- Zuriah, N., & Rahmandani, F. (2020). *Analysis of online learning implementation and student learning activities in the Covid-19 pandemic era and its problems*. Proceedings of the 1st International Conference on Character Education (ICCE 2020), 167-176.

Zurqoni, Z., Retnawati, H., Apino, E., & Anazifa, D. R. (2018). Impact of character education implementation: A goal-free evaluation. *Problems of Education in the 21st Century*, 76(6), 881-899. <https://doi.org/10.33225/pec/18.76.881>

Appendix 1

Questionnaire on the Students' Adaptability to Online Learning

PHYSICAL ASPECT/ASPEK FIZIKAL								
1. I get a great deal of beneficial information on how to participate in online learning/ Saya dapat banyak maklumat berguna berkaitan dengan pembelajaran dalam talian.								
2. I get access to many skills that are taught by experienced teachers/ Saya dapat banyak kemahiran yang diajar oleh guru yang berpengalaman.								
3. I get to identify that some of the teachers are still practising the traditional teaching style/ Saya dapat mengesan bahawa kebanyakan guru masih terikat dengan kaedah pembelajaran lama.								
4. I get the opportunity to explore the guidelines on how to use e-learning tools/ Saya dapat berpeluang menerokakan cara-cara menggunakan bahan untuk pembelajaran dalam talian (online).								
5. I get to learn from teachers who are experienced at preparing the teaching materials/ Saya dapat belajar dengan guru yang berpengalaman menyediakan bahan pengajaran. *								
6. I get to learn from teachers who have many skills when conducting online learning/ Saya dapat belajar dengan guru yang mempunyai banyak kemahiran mengendalikan pembelajaran dalam talian.								
7. I get good Internet data and coverage during the online learning/ Saya dapat bekalan dan liputan internet yang bagus semasa pembelajaran dalam talian.								
8. I get to prepare a Plan A and B when joining the online activities/ Saya dapat mengadakan Plan A dan B semasa pembelajaran dalam talian.								
9. I can subscribe to the Internet data without any financial issues/ Saya dapat membeli bekalan data internet tanpa sebarang masalah kewangan.								
EMOTIONAL ASPECT/ASPEK EMOSI								
1. I always find that online learning is very interesting/ Saya selalu mendapat bahawa pembelajaran dalam talian sangat menarik.								
2. I always communicate with the teacher during the online learning activities/ Saya selalu berkomunikasi dengan guru semasa pembelajaran dalam talian.								
3. I always enjoy joining in the online learning activities/ Saya								

selaluseronokmengikutiwaktu pembelajaran dalam talian.								
4. I am always well prepared before joining in with the online learning/Saya selalubersediaawalsebelummengikutipembelajaran dalam talian/								
5. I always solve my problems before attending online classes/Saya selalumenelesaikan masalah yang adasebelummenghadirikelas dalam talian.								
6. I always have a high level of motivation to attend online classes/Saya selalubermotivasitinggiuntukmengikutikelas dalam talian.								
SPIRITUAL ASPECT/ ASPEK SPIRITUAL								
1. I always say my prayers before attending online classes/Saya selaluberdoasebelummemulakankelas dalam talian.								
2. I always allocate time for studying and religious activities/Saya selalumembahagikan masa antarawaktu pembelajaran dan aktiviti keagamaan.								
3. I always perform my religious practices consistently/Saya selalumelakukan amalan agama secara konsisten.								
4. I always perform my <i>solah</i> early/Saya selalusembahyang pada awal waktu.								
5. I always pray for safety and well-being/Saya selaluberdoa untuk kesejahteraan dan keselamatan.								
6. I always have a positive impression of God's plans for me/Saya selalumempunyai sangkaan baik dengan ketetapan Tuhan.								
INTERNAL VALUES								
1. This part will ask how you acquire values through online learning/Kenyataan ini berkaitan dengan pandangan anda mengenai kesan yang diperolehi dari pada pembelajaran dalam talian.								
1. I learn to be sincere in my daily activities/Saya dapat mengaplikasikan nilai ikhlas dalam melakukan amalan seharian.								
2. I learn to be honest when carrying out my responsibilities/ Saya dapat mengaplikasikan nilai Amanah dalam menunaikan tanggungjawab.								
3. I learn to work hard to achieve my dreams/ Saya dapat mengaplikasikan nilai kuat berusaha mencapai apa yang diimpikan.								
4. I learn to be grateful for blessings and grace that are bestowed upon me/ Saya dapat mengaplikasikan nilai bersyukur dengan segala nikmat yang diberikan kepada saya.								
5. I learn to be disciplined in anything I do/ Saya dapat mengaplikasikan nilai berdisiplin dalam sesuatu pekerjaan.								

6. I learn to rely on God when dealing with everyday life/ Saya dapat mengaplikasikan nilai bergantung kepada Tuhan dalam melaksanakan urusan kehidupan.								
7. I learn to be brave when giving my opinion/ Saya dapat mengaplikasikan nilai berani dalam mengemukakan sesuatu pendapat.								
8. I learn to accept all challenges in life with an open heart/ Saya dapat mengaplikasikan nilai redadengan segala uji dalam kehidupan.								
9. Overall, I have learnt many positive values in my life through online learning activities/Secara keseluruhannya, banyak nilai positif yang dapat saya terapkan dalam kehidupan saya yang hasil pembelajaran secara dalam talian.								
EXTERNAL VALUES								
1. I form a close bond with the teachers during online learning activities/Saya dapat menjalin hubungan yang baik dengan guru semasa pembelajaran dalam talian.								
2. I get to know many new friends when I participate in online learning activities/Saya dapat mengenal ramaikawan baharu semasa belajar dalam talian.								
3. I manage to complete the tasks given by the teachers on time/Saya dapat menyiapkan tugas yang diberikan oleh guru tepat pada waktu.								
4. I manage to apply good ethics in my life/Saya dapat mengamalkan etika yang baik dalam kehidupan saya.								
5. I manage to allocate my time for both study and social activities/Saya dapat membahagikan masa antara belajar dan aktiviti sosial.								
6. I obtain good guidelines in online learning activities/Saya mendapat garis panduan yang baik dalam pembelajaran dalam talian.								
7. I manage to share my problems with my teachers/Saya dapat berkongsi masalah yang dihadapi dengan guru.								