A Model of Factors Affecting Cyber Bullying Behaviors Among University Students

WALEED MUGAHED AL-RAHMI [ID][1], **NORAFFANDY YAHAYA**[1], **MAHDI M. ALAMRI**[2],
NADA ALI ALJARBOA[3], **YUSRI BIN KAMIN**[1], **AND FAHAD ABDULLAH MOAFA**[4]

[1]Faculty of Education, Universiti Teknologi Malaysia, Skudai 81310, Malaysia
[2]Education Technology Department, Faculty of Education, King Faisal University, Al-Ahsa 43518, Saudi Arabia
[3]Psychology Department, College of Education, Taif University, Taif 21974, Saudi Arabia
[4]Faculty of Information Science and Technology, Universiti Kebangsaan Malaysia, Kuala Lumpur 43600, Malaysia

Corresponding authors: Waleed Mugahed Al-Rahmi (waleed.alrahmi@yahoo.com) and Noraffandy Yahaya (p-afandy@utm.my)

ABSTRACT This paper attempts to mitigate this gap within the literature concerning the use of social media for cyber engagement (CE) among students. Since students often become upset when network providers intervene, this paper aims to develop a model to measure ethics issues related to engagement with social media. The conducted survey examines social media use with regard to cyber engagement, cyberbullying behaviors, and being bullied, harassed, and stalked. To achieve the objective, this paper employed a questionnaire as the main data collection method and distributed it to 242 students, all of whom use social media. The findings were obtained via a quantitative research method, structural equation modeling, and partial least squares. The findings from our empirical study indicate that the assessment of discriminant validity has become an extensively acknowledged requirement for the analysis of latent variables' relationships. Goodness of fit indices demonstrates a good fit of the model. Roughly more than half of students indicated they had been bullied, harassed, and stalked online. The proposed model will help campus administration and decision makers to formulate strategies that can significantly reduce cyber harassment among students.

INDEX TERMS Social media used, cyber harassment, cyberstalking, cyber bullying.

I. INTRODUCTION

A particularly grave problem facing society today, to the extent that it may be deemed a threat to public health [1], is cyber bullying. Modes of entertainment, learning approaches and social engagement among students have fundamentally changed particularly over the previous decade as a result of the expansion of technology and computer-driven engagement and knowledge dissemination. Significantly, new methods of communication have emerged: SMS communication, social media platforms, chat forums, emailing, webcams, instant messaging apps and websites have become pervasive, especially among youths. This influx of new technology significantly influences individuals' day-to-day lives [2]. Indeed, with regard to social engagement, digital communication apparatuses are perceived as indispensable by most students [3]. However, the prevalence of smartphones and other digital tools has increased the occurrence of cyber bullying activities. Bullying via the internet is a particular hazard for students. According to various global

media reports, cyber bullying is an international issue [4]. In terms of internet-based harassment, and in some cases student suicides, cyber bullying is prominent. One illustrative case is the bullying of a student at McClure Middle School in Seattle, which resulted in the suspension of 28 students [5]. Rather than groups of students, it is specific students who tend to be affected most by cyber bullying. However, cyber harassment has not only received a significant amount of attention from social networking platforms, the mitigation of cyber harassment has also been spearheaded by the mass media [6], almost to the extent of creating a moral panic about the issue [7]. In terms of the international prevalence of cyber harassment, over the course of their lives, 69.9% of teenagers in Portugal stated they had been victims [8] and 51% of teenagers in Singapore reported being abused a minimum of one time [9]. Additionally, 20% of Swedish female youths and 14% of male youths stated they had been subject to cyber harassment [10], as well as 21% of Canadian teenagers [11]. The extreme effects of cyber bullying have

been acknowledged, although a comprehensive investigation remains to be undertaken [12]. Moreover, the negative impact of cyberstalking has been found to be compounded when fiscal costs are also incurred, as this worsens the victim's psychological distress and sense of persecution [13]. Thus, this research aimed to specifically proposes a model for identifying the significant factors that are anticipated to play a major role in minimizing cyber harassment, cyberstalking, and cyber bullying among students.

II. RESEARCH MODEL AND HYPOTHESES

This research considers the social media used and cyber engagement to be independent variables, and cyber harassment, and cyberstalking to be mediator variables. The dependent variable is cyber bullying.

A. SOCIAL MEDIA USE

Social media is defined as "forms of electronic communications (as Web sites for social networking and microblogging) through which users create online communities to share information, ideas, personal messages, and other content (as videos)" [14]. Numerous possibilities for communication are extended to youths through social media [15]. However, these communication opportunities have engendered an increase in harassment for numerous users [16].

B. CYBER ENGAGEMENT

Cyber engagement is engage online to be communicated and share words, images, or language by or through the use of electronic mail or electronic communication, directed at a specific person, causing substantial emotional distress to that person and serving no legitimate purpose [17]. A study conducted by Fishbein and Ajzen [18] reveals the effect of cyber engagement and bullying through deviant behavior intention in theory of reasoned action (TRA). However, previous studies have indicated that cyber engagement can affect cyber bullying directly or indirectly via deviant behavior intention [19].

C. CYBER HARASSMENT

Cyber harassment is the interchangeable and synonymous use of the terms "cyber harassment," "cyberstalking," and "cyber bullying", Cyber harassment is defined by a perpetrator's "desire to frighten or embarrass the harassment victim" [20]. It has been argued by AlKaabi [21] that any crime conducted involving computer-based technology is regarded as a cybercrime.

D. CYBERSTALKING

Cyberstalking is "an escalated form of online harassment directed at a specific person that causes substantial emotional distress and serves no legitimate purpose, the action is to annoy, alarm, and emotionally abuse another person" [22]. The increasing use of cyberspace by 'criminals' has prompted a rush of legislation and, as a result, academic interest. However, in spite of the number of high-profile cases appearing

in the media, the topic has yet to be analyzed against a proper theoretical framework that combines an understanding of internet crime with an understanding of the psychological phenomenon of stalking.

E. CYBER BULLYING

Cyber bullying is when someone "repeatedly makes fun of another person online or repeatedly picks on another person through email or text message or when someone posts something online about another person that they don't like" [23]. Cyber bullying is different from cyberstalking in that it usually occurs between minors, and it is subtler in nature [24], [25].

III. RESEARCH METHODOLOGY

Data from 242 questionnaires was stored into the SPSS 23 version package software. Postgraduate students at Malaysia's Universiti Teknologi, who are present on social media, comprised the questionnaire sample. The model's validity using confirmatory factor analysis by employing SmartPLS 3.0, specifically the Partial Least Square Structural Equation Modeling (PLS-SEM). Additionally, the investigation implemented an appropriate methodology to formulate an effective model. Given that inaccuracy in the findings may stem from outlier cases, data is removed from further analysis in accordance with Hair and Olenik-Shemesh [29]. Extant literature [13], [30]–[32] was reviewed to identify appropriate factors for study: social media use (SMU), cyber engagement (CE), cyber harassment (CH), cyberstalking (CS), and cyber bullying (CB). The Table 4 presents the 25-questions questionnaire that was used in this study.

IV. RESULT AND ANALYSIS

The data was analyzed through a two-step procedure established by Hair and Ringle [26]. First, the measurement model was examined for its reliability, as well as its convergent and discriminant validity. Second, the structural model was examined to analyze the proposed relationships among the constructs, in terms of strength and direction.

A. CONSTRUCT VALIDITY OF MEASUREMENTS

The degree to which a particular factor is actually reflected in the quantified items is considered to determine construct validity [26]. A methodical assessment of the extant literature was undertaken to identify other analysts' devised and assessed items.

B. CONVERGENT VALIDITY OF MEASUREMENTS

Hair and Ringle [26] and Alzahrani et al. [30] state that convergent validity can be confirmed using three methodological procedures: composite reliability (CR), factor loadings and Average Variance Extracted (AVE). The suggested lower limit for composite reliability (0.70) was exceeded by the identified values, which were between 0.9004 and 0.9201. The recommended lower limit for the factor loadings was also surpassed, with results between 0.71 and 0.86.

TABLE 1. Confirmatory factor analysis results.

No	Variables	Code	Factors Loading	Cronbach's Alpha	Composite Reliability	AVE	R Square
1	Cyber Bullying	CB1	0.8177	0.890	0.911	0.668	0.498
2		CB2	0.7937				
3		CB3	0.8429				
4		CB4	0.8173				
5		CB5	0.7993				
6	Cyber Harassment	CH1	0.8210	0.907	0.903	0.632	0.532
7		CH2	0.7525				
8		CH3	0.8364				
9		CH4	0.7746				
10		CH5	0.7642				
11	Cyber Engagement	CE1	0.8344	0.899	0.909	0.601	0.000
12		CE2	0.8023				
13		CE3	0.8465				
14		CE4	0.7854				
15		CE5	0.8345				
16	Cyberstalking	CS1	0.8123	0.910	0.900	0.708	0.507
17		CS2	0.8239				
18		CS3	0.7360				
19		CS4	0.8228				
20		CS5	0.8004				
21	Social Media Used	SMU1	0.8340	0.923	0.920	0.698	0.000
22		SMU2	0.7109				
23		SMU3	0.8345				
24		SMU4	0.7395				
25		SMU5	0.7739				

As Table 1 indicates, the loadings show that the factors were allocated the appropriate items, which is equal to or above 0.50. The factor must be assessed through the loading of pertinent indicators, as [30] have emphasized. With results between 0.6014 and 0.7088 for the (AVE), this also exceeded the suggested figure of 0.5 as indicated by Hair and Ringle [26] and Alzahrani *et al.* [30] for all the three tests of convergent validity. As well, the square root of the average variance shared by a single construct's items should not be exceeded by the correlations between the items in two constructs, as indicated by Hair and Ringle [26]. Table 1 presents the statistical model's overall confirmatory factor analysis (CFA) with R Square. Moreover, In relation to this, Hair and Ringle [26] suggested the model estimation to be estimated through the maximum likelihood estimation procedures by using the goodness-of-fit guidelines, like the normed chi-square, chi-square/degree of freedom, normed fit index (NFI), relative fit index (RFI), incremental fit index (IFI), Tucker-Lewis coefficient (TLI) comparative fit index (CFI), the parsimonious goodness of fit index (PGFI), the rootmean-square residual (RMR) and the root mean square error of approximation (RMSEA). Table 2 presents the Summary of Goodness Fit Indices for the Measurement Model. See Table 1 and Table 2.

C. DISCRIMINANT VALIDITY OF MEASUREMENTS

The items' degree of difference within each factor, as well as the difference among the factors, was tested through discriminant validity. In accordance with [31], each construct's discriminant validity was confirmed at a significance of $p = 0.001$, as all AVE results far exceeded 0.50. Having determined each factor's item variance, it is imperative that the square root of the average variance among the relevant items not be surpassed when the item relationship between two factors, according to [26] and [30]. See Table 3.

D. ANALYSIS OF THE STRUCTURAL MODEL AND DISCUSSION

In order to investigate the different constructs' correlations, the hypotheses were assessed using the SmartPLS 3.0, which implemented the PLS algorithm. The identified path coefficients are presented in figure 1, while the hypothesis testing outcomes are outlined in figures 2. Additionally, table 3 presents the variables of cyberstalking, cyber harassment and cyber engagement, and social media in general, in relation to cyber bullying. Table 3 also provides the reliability and validity scores. The subsequent Structural equation modeling SEM stage adopted confirmatory factor analysis CFA in order

TABLE 2. Summary of goodness fit indices for the measurement model.

Type of measure	Acceptable level of fit	Values
Root-Mean Residual (RMR)	Close to 0 (perfect fit)	.034
Normed Fit Index (NFI)	Value should be equal to or greater than 0.90.	.931
Relative Fit Index (RFI)	Value should be equal to or greater than 0.90.	.934
Incremental Fit Index (IFI)	Value should be equal to or greater than 0.90.	.947
Tucker Lewis Index (TLI)	Value should be equal to or greater than 0.90.	.945
Comparative Fit Index (CFI)	Value should be equal to or greater than 0.90.	.952
Root-Mean Square Error of Approximation (RMSEA)	Value below 0.10 indicates a good fit and below 0.05 is deemed a very good fit.	.046

TABLE 3. Discriminant validity of measurements.

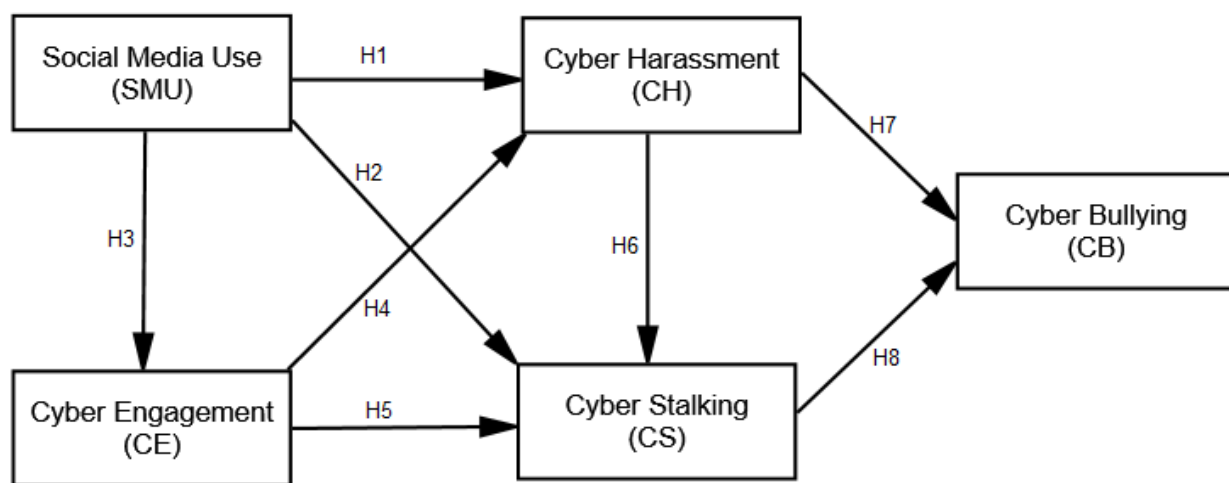| Factors	Code	CB	CH	CS	CE	SMU
Cyber Bullying	CB	0.8423				
Cyber Harassment	CH	0.6420	0.9732			
Cyberstalking	CS	0.5312	0.4329	0.9634		
Cyber Engagement	CE	0.5420	0.5510	0.4507	0.8316	
Social Media use	SMU	0.4991	0.4983	0.5501	0.4620	0.8961

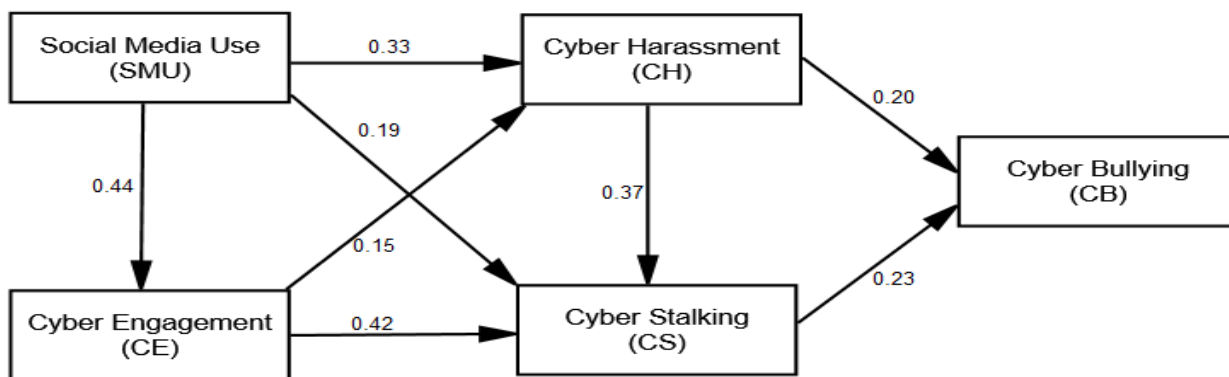**FIGURE 1.** Research model and hypotheses.

FIGURE 2. Path coefficients results.

to verify the posited hypotheses. Figure 2 indicates that all hypotheses were accepted.

The hypotheses developed for the factors' correlations, as well as the research model, are supported by the findings. The structural framework's standard errors and unstandardized coefficient results are presented in Table 4. It is apparent that the structural framework's assessment for verifying hypotheses and determining the framework's validity is sound, with robust results given in relation to the crucial statistical measures.

TABLE 4. Hypotheses testing results of structural model.

H	Independent	Relationship	Dependent	Path	S.E.	T. Value	Result
H1	SMU	⟶	CH	0.3348	0.0154	13.400	Supported
H2	SMU	⟶	CS	0.1930	0.0160	9.702	Supported
H3	SMU	⟶	CE	0.4426	0.0122	27.111	Supported
H4	CE	⟶	CH	0.1528	0.0137	7.943	Supported
H5	CE	⟶	CS	0.4241	0.0137	24.994	Supported
H6	CH	⟶	CS	0.3747	0.0142	19.624	Supported
H7	CH	⟶	CB	0.2009	0.0132	10.246	Supported
H8	CS	⟶	CB	0.2339	0.0209	9.762	Supported

Note: SE: Standard Error.

Regarding the first hypothesis, the relationship between social media use and cyber harassment achieved the following results ($\beta = 0.3348, t = 13.400, p < 0.001$). Therefore, the first hypothesis is positive and supported. The second hypothesis is also positive and supported, as the analysis indicates a relationship between social media use and cyberstalking ($\beta = 0.1930, t = 9.702, p < 0.001$). The next direct effect is the relationship between social media use and cyber engagement ($\beta = 0.4426, t = 27.111, p < 0.001$). Therefore, hypothesis number 3 is positive and supported. Moreover, hypothesis number four is also positive and supported, as the analysis also indicates a strong relationship between cyber engagement and cyber harassment ($\beta = 0.1528, t = 7.943, p < 0.001$). The next hypothesis five is also positive and supported, as a relationship exists between cyber engagement and cyberstalking ($\beta = 0.4241, t = 24.994, p < 0.001$). Cyber harassment was further found to be positively and significantly related with cyberstalking ($\beta = 0.3747, t = 19.624, p < 0.001$). The relationship between cyber harassment and cyber bullying was also found to be positive and significantly ($\beta = 0.2009, t = 10.246, p < 0.001$). Finally, the results also confirm that cyberstalking is significantly related to cyber bullying ($\beta = 0.2339, t = 9.762, p < 0.001$), thus confirming hypothesis number 8.

In sum, the entire hypotheses are supported by the results of this study, which consistent the majority of the prior studies that reported the social media use affect cyber harassment, and cyberstalking which in turn effect cyber bullying [32]–[34] that showed a negative impact on student academic performance but are contradict with others [35] that showed a positive impact on student academic performance. In the current research majority of students (84.3%) surveyed reported that they have been victims of repeated cyber bullying, cyber harassment, and cyberstalking, a greater proportion than has been found in [11]. The majority of victims also reported a double involvement in cyber harassment, and cyberstalking, both as aggressor and as victim which in turn to effect cyber bullying. Added, young students were more cyber bullying, cyber harassment, and cyberstalking [34].

Cyber bullying negatively correlated with deviant behavioral control. Psychological autonomy, warm involvement and on-line disinhibition significantly predicted Cyberbullying, while psychological autonomy, cyber victimization [39].

Added to the above, the use of social media also brings cyber harassment, and cyberstalking which in turn affect cyber bullying. However, in this research questionnaire sought responses to questions regarding specific cyber bullying, cyber harassment, and cyberstalking conduct: whether the student had carried out or been subject to such acts. From the respondents 51% got cyber bullying only, 47% got cyberstalking only, and 68% got cyber harassment only. While 84.3% respondents got cyber bullying, cyber harassment, and cyberstalking. These findings differ a little from [11] and [35]. For Facebook, more than half of the people who use this platform reported that have been the victims of Facebook bullying at least one time in the last year. Additionally, most of these students have been confronted with abusive actions on this platform. As the use of the internet becomes a daily activity practiced by students, it is expected that they face information or experiences regarding other online threats, such as being victims of online hacking and data theft [35], [36].Thus, avoiding strangers on the internet and using online fabricated personas are common protective deviant behaviors against online threats and are considered as protective measures against these attacks [11], [34]. Conversely, the web and web-based social networking have significantly expanded in simplicity and speed, and thus social networking sites also allow for the public sharing of information, engagement, and collaborative learning [19].

E. IMPLICATIONS AND CONTRIBUTION

Internationally, research on cyber bullying has rapidly evolved over the last years with the findings indicating that, similarly to university and school bullying, participation is related to a number of factors, which can be both individual and contextual. In terms of individual factors, most research findings indicate that boys and girls participate equally in cyber bullying, but with different forms of deviant behaviors [12], [36]. Therefore, this research indicates that regardless of the fact that these social media are there to enhance our social experiences but many negative experiences were identified on cyber bullying, cyber harassment and cyberstalking. Therefore, contributed develop a model for identifying the significant factors that are anticipated to play a major role in minimizing cyber harassment, cyberstalking, and cyber bullying among students.

TABLE 5. The questionnaire of this research.

Factors	No	Items
Social Media Used	1	The use of bad social media is considered a form of cyber bullying, cyber harassment, and cyber stalking.
	2	Pretending to be another person without that person's approval on social media is considered a form of cyber bullying, cyber harassment, and cyber stalking.
	3	Entering someone's personal page on social media without their approval is considered a form of cyber bullying, cyber harassment, and cyber stalking.
	4	I feel that using of social media will be easy in my study but sometime it's considered a form of cyber bullying, cyber harassment, and cyber stalking.
	5	I feel that using social media will be easy to incorporate in my study but sometime its considered a form of cyber bullying, cyber harassment, and cyber stalking.
Cyber Engagement	1	By using of social media, via interactions with other peers I had cyber engagement.
	2	By using the social media in my study has favored my personal relationships with my peers but I had cyber engagement.
	3	By using of social media, I am not satisfied with the cyber engagement.
	4	By using of social media, I had frequent conversations with peers, but I had cyber engagement.
	5	By using the social media I felt that my opinions have been taken into account via my peers but I had cyber engagement.
Cyber Bullying	1	I bullied others students through social media use outside my university.
	2	I bullied others students through social media use inside my university.
	3	I bullied others students through cyber engagement outside my university.
	4	I bullied others students through cyber engagement inside my university.
	5	I need to learn to deal with cyber bullying by myself.
Cyber Harassment	1	I harassed others students through social media use outside my university.
	2	I harassed others students through social media use inside my university.
	3	I harassed others students through cyber engagement outside my university.
	4	I harassed others students through cyber engagement inside my university.
	5	Cyber harassment has direct influence on cyber bullying. Thus, Impact on academic achievement.
Cyberstalking	1	I stalked others students through social media use inside my university.
	2	I stalked others students through social media use outside my university.
	3	I stalked others students through cyber engagement outside my university.
	4	I stalked others students through cyber engagement inside my university.
	5	Cyber stalking has direct influence on cyber bullying. Thus, Impact on academic achievement.

V. CONCLUSION AND FUTURE WORK

This study investigated the factors that affect cyber bullying on cyber harassment, cyberstalking among university students. In summary, our results indicate that exposure to social media use and cyber engagement amplifies cyber bullying, cyber harassment, and cyberstalking. These findings emphasize the importance of considering the roles that social media and cyber engagement play in everyday life in an effort to mitigate the negative effects associated with cyber bullying, cyber harassment, and cyberstalking.

APPENDIX

See Table 5.

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WALEED MUGAHED AL-RAHMI received the Ph.D. degree from the Faculty of Computing–Information Systems, Universiti Teknologi Malaysia (UTM). He has eight years of teaching experience with the Department of Computer Science, Hodeidah University, and he was a Teaching Assistant with the Faculty of Computing, UTM, for 2.5 years. He held a post-doctoral position with the Faculty of Information and Communication Technology, International Islamic University Malaysia, and the Faculty of Science, UTM. He currently holds a post-doctoral position with the Faculty of Education, UTM. His research interests include information system management, information technology management, human–computer interaction, implementation process, technology acceptance model, communication and constructivism theories, impact of social media networks, collaborative learning, e-learning, knowledge management, massive open online course, and statistical data analysis (IBM SPSS, AMOS, NVIVO, and SmartPLS). He received the Best Student Award and Excellent Academic Achievement in conjunction with the 56nd Convocation Ceremony from UTM in 2016.

NORAFFANDY YAHAYA received the Ph.D. degree in computer-based learning from the University of Leeds, U.K. He was the Head of the Department of Educational Science, Mathematics and Creative Multimedia for nine years. He has been an Associate Professor with the Faculty of Education, Universiti Teknologi Malaysia, since 2013. His research interests include multimedia in education, online learning, and ICT in education.

He is a Supervisor of more than 25 completed master degree students and seven completed Ph.D. students in the area of educational technology, online learning, and ICT in education. He had also been appointed as an External Examiner with universities in Malaysia and Australia for doctoral dissertations and had been an Assessor for master dissertation for university in New Zealand. He conducted studies on students' interaction in online learning environment, learning analytics, and massive open online courses. He has published more than 70 papers in journals and conferences proceedings in the research area of online learning, ICT in education, and the use of technology in teaching and learning.

MAHDI M. ALAMRI received the bachelor's degree in special education-gifted and talented students' education and the master's degree in education technology from King Saud University, Saudi Arabia, in 2001 and 2005, respectively, and the Ph.D. degree in education technology from La Trobe University, Australia, in 2014. He is currently an Assistant Professor with the Educational Technology Department and a Vice Dean of Scientific Research Deanship with King Faisal University, Al-Ahsa, Saudi Arabia. His research interests include blended learning, online learning, flipped classroom, social media networks, thinking development skills, problem-based learning, and special education programs.

NADA ALI ALJARBOA received the bachelor's degree in mathematics from the Education College, Saudi Arabia, in 2004, and the master's degree in education psychology from Jordan University, Jordan, in 2006. She is currently pursuing the Ph.D. degree with the Psychology Department, Umm Al-Qura University, Mecca, Saudi Arabia. She is currently a Lecturer with the Psychology Department, Education College, Taif University. Her research interests include generation conflict, school bullying, and mathematical abilities.

YUSRI BIN KAMIN received the Bachelor of Technology with Education degree in mechanical engineering and the Master of Education degree with specialization in technical and vocational education from Universiti Teknologi Malaysia and the Ph.D. degree in technical and vocational education from La Trobe University, Melbourne, Australia. He was the Head of the Department of Technical and Vocational and an Academic Manager of external program. He is currently a Senior Lecturer and the Head of the Department of Technical and Engineering Education, Faculty of Education, Universiti Teknologi Malaysia.

He is actively involved in conducting research on developing model of preparing mechanical program with the College Vocational, Malaysia, and students' preparedness for the workplace in mechanical, work-based learning, employability skill, generic green skill, and scenario-based learning. He has written numerous papers and presented at national and international conferences and seminar. He is also a Reviewer for the *Journal of Asian Academic Society for Vocational Education and Training* and the *Journal for Technical and Vocational Education Malaysia*, and a Panel of Assessor of the Malaysian Qualifications Agency. He is the President of the Association of Technical and Vocational Education Malaysia.

FAHAD ABDULLAH MOAFA received the B.Sc. degree from King Abdul-Aziz University and the M.Sc. degree from Cairo University. He is currently pursuing the Ph.D. degree with the Faculty of Information Science and Technology, Universiti Kebangsaan Malaysia, Bangi, Malaysia. He is a Lecturer of information science with King Fahd Naval Academy, Saudi Arabia.

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