

Assessing Dental Educators' Preparedness for E-Learning: A Cross-Sectional Multi-Country Analysis

Dental
Educators'
Preparedness for
E-Learning

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ABSTRACT

Objective: This study assessed dental educators' self-perceived readiness for e-learning in multiple institutions in six different countries.

Study Design: A cross-sectional study

Place and Duration of Study: This study was conducted at the College of Dentistry, King Faisal University Al- Ahsa, Saudi Arabia, from April to September 2023.

Methods: Participants were invited via email to complete an online survey, which was based on the Teacher Readiness for Online Learning Measure (TRL0M) scale, to assess their readiness for online learning. Participants were recruited using convenience and snowball sampling methods. The study included educators from Egypt, India, Nigeria, Pakistan, Saudi Arabia, and Sudan.

Results: This study included 96 dental educators; 53.1% were males, and 81.3% were in public institutes. The institutes provided just (8.3%) of the internet access devices for the educators. A majority (57.3%) of the educators showed high communication self-efficacy, (53.1%) showed high-perceived institutional support, (49%) rated themselves as self-directed learners, and (62.5%) stated high learning transfer self-efficacy. The learning transfer self-efficacy construct significantly correlated with all other constructs, which indicates that these are essential factors for the success of the e-learning process. It was also clear that the educator's self-directed learning significantly correlated with institutional support and communication self-efficacy.

Conclusion: Dental educators in investigated institutes showed confidence in their self-perceived readiness for e-learning. However, institutional support is crucial to overcome resource limitations and enhance e-learning effectiveness. Institutions must take proactive steps to prepare and motivate educators to transition to e-learning.

Key Words: e-learning, Dental educators, readiness, Dental education

Citation of article: Almahdi HM, Ahmed MA, Jouhar R, Ali RMM, Mahabob N, Nasir EF, Assessing Dental Educators' Preparedness for E-Learning: A Cross-Sectional Multi-Country Analysis. Med Forum 2024; 35(9):8-12. doi:10.60110/medforum.350902.

INTRODUCTION

Online learning, also known as e-learning, has been around since 1980; it involves acquiring knowledge through electronic technologies and media channels⁽¹⁾. It has been defined as "electronically enabled learning".

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Received: January, 2024

Accepted: May, 2024

Printed: September, 2024

Different terms have been reported in the literature to describe e-learning including mobile, distance, remote, and digital learning⁽²⁾. Although there is no consensus on terminology, experts agree that e-learning is a form of distance learning that utilises various technologies and content⁽¹⁾.

E-learning has recently gained popularity in higher education, particularly dentistry, due to its appeal and flexible learning opportunities. Following the COVID-19 pandemic, there was a significant shift from traditional to e-learning in most of the higher academic institutions. This shift to e-learning poses several challenges for dental educators, who may feel unprepared to use this method as a teaching tool, especially in six different countries. However, the shift to e-learning poses several challenges for dental educators, who may feel unprepared to use this method as a teaching tool⁽³⁾.

Electronic-readiness (E-readiness), the preparedness of a certain group to engage in the information society, is essential in designing and organizing e-learning programs⁽⁴⁾. Educators' confidence and readiness are

crucial to both traditional and e-learning systems and significantly influence students' outcomes.

Hung et al.⁽⁵⁾ developed the Teacher Readiness for Online Learning Measure (TROLM) to assess e-learning readiness of educators using four domains: communication self-efficacy (CSE) in “text-based online asynchronous discussion”; institutional support (IS); self-directed learning (SDL), “a process in which learners take the initiative and responsibility for establishing personal learning goals”; and learning-transfer self-efficacy (LTSE), “how individuals effectively apply the skills and knowledge gained from a training program to a job situation.”

Assessing dental educators' e-readiness is crucial in identifying areas needing additional training to use online tools effectively, ensuring high-quality education for students and aiding educational institutions in transitioning to e-learning⁽⁶⁾. This is particularly challenging in six different countries due to financial constraints. Hence, this study evaluates dental educators' perceived e-readiness in six different countries.

METHODS

Study design and sampling: A descriptive cross-sectional study evaluated dental educators' perceived e-readiness for e-learning in six different countries (Egypt, India, Nigeria, Pakistan, Saudi Arabia, and Sudan) from April to September 2023. An online questionnaire was sent to dental educators who are working in academic institutions, having converted at least one physical teaching session to e-learning, having internet access, and being able to read and understand English.

The survey targeted dental educators using convenience and snowball sampling strategies. Authors and collaborators shared the online survey link with their contacts, who distributed it via social media groups and institutional email lists. One private and one public institute were selected in each of the six countries to ensure broad geographic coverage.

Questions and measures: The data were collected using a structured questionnaire. The first part of the questionnaire included questions about socio-demographic information: age, gender, type of institution, and academic rank. Furthermore, the questionnaire contained additional aspects regarding online learning devices, kind of internet connection, educators' views on internet cost, and time spent online. The second section of the questionnaire assessed dental educators' perceived readiness for e-learning using the 18-item TROLM scale, comprising four domains. The domains and their corresponding Cronbach alpha values are:

- Communication Self-Efficacy (CSE): 4 items, $\alpha = 0.70$

- Institutional Support (IS): 5 items, $\alpha = 0.77$

- Self-Directed Learning Evaluation (SDL): 4 items, $\alpha = 0.63$

- Learning-Transfer Self-Efficacy (LTSE): 5 items, $\alpha = 0.84$

Each domain's score was calculated by summing the respective items, providing a comprehensive measure of dental educators' perceived readiness for e-learning.

Participants' responses were grouped based on agreement or disagreement using a 5-point Likert scale. "Strongly agree" and "agree" indicated agreement, while "strongly disagree" and "disagree" indicated disagreement. Response frequencies were then classified as high or low, using the mean as the cut-off point.

Data analysis: The data collected were organised, categorised, tabulated, and analysed using Statistical Package for Social Science (SPSS, 21). The data were presented as descriptive statistics, and the t-test and One-way analysis of variance (ANOVA) were used with a significance threshold of $p \leq 0.05$ and a confidence interval of 95%.

RESULTS

This study, which included ninety-six dental educators from six countries, revealed a diverse academic landscape.

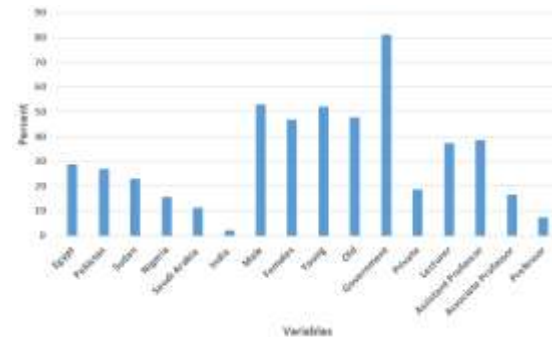


Figure No. 1: Percentages of the demographic characteristics of dental educators.

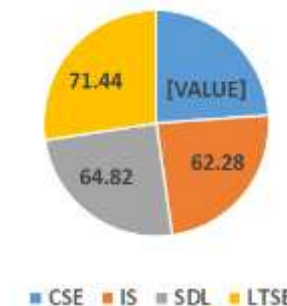


Figure No. 2: Percentages of High Agreement with TROLM construct

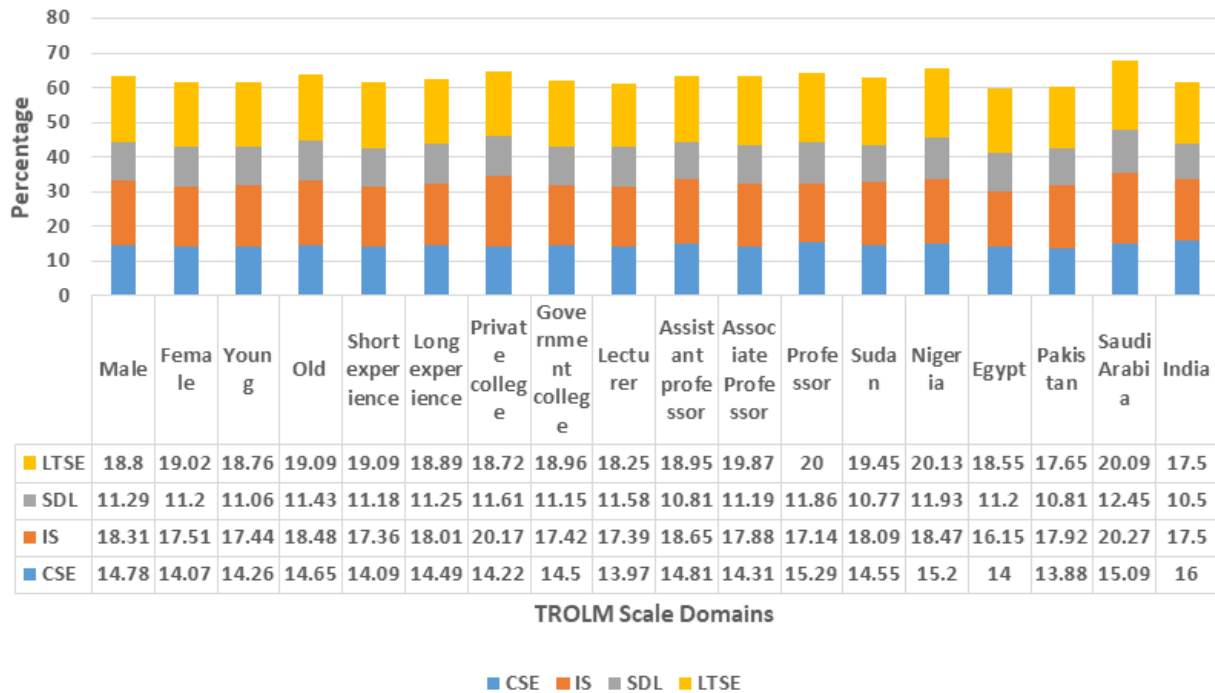


Figure No. 3: Descriptive t-test statistics of gender, age, experience, college type, position, and country on TROLM constructs (CSE, IS, SDL and LTSE).

The LTSE construct, with its significant correlations to the SDL, IS, and CSE constructs emerges as a pivotal factor in educators' learning transfer. Furthermore, the strong correlations between educators' SDL, IS, and CSE (as shown in Table 1) further emphasize the interconnectedness of these constructs.

IS was used to explain CSE, SDL, and LTSE and was tested using linear regression analysis. IS accounted for 9.6% of the variance in CSE [(R² 0.096, P ≤ .000), correlation coefficient (r = 0.324, P = .001)], 17% of the variation in SDL [(R² 0.17, P ≤ .000), correlation coefficient (r = 0.423, P = .000)], and 25.7% of the variation in LTSE [(R² 0.257, P ≤ .000), correlation coefficient (r = 0.515, P = .000)]. LTSE increases with the increase in CSE, IS, and SDL by 0.29, 0.25, and 0.08, respectively (Table 1).

Table No. 1: Linear regression of Institutional Support (IS) on TROLM dimension CSE, SDL, and LTSE (N. 96).

Construct		Mean			S. D.				
LTSE		18.92			3.457				
CSE		14.45			2.714				
IS		17.94			3.524				
SDL		11.24			1.945				
Model	R	R ²	A. R ²	S. E.	Change Statistics				
					R ²	F	df1	df2	Sig. F
1	0.718 ^a	0.516	0.500	2.445	0.516	32.655	3	92	0.000
a. Predictors: (Constant), SDL, CSE, IS									
Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.	95% Confidence Interval for B		
		B	SE.	Beta					
1	(Constant)	1.400	1.808		0.775	0.440	-2.190-4.990		
	CSE	0.288	0.101	0.226	2.863	**0.005	0.088-0.488		
	IS	0.248	0.080	0.253	3.084	**0.003	0.088-0.407		
	SDL	0.792	0.147	0.446	5.404	**0.000	0.501-1.084		
a. Dependent Variable: LTSE									

DISCUSSION

The present study assessed the e-learning readiness of dental educators in six different countries using the

TROLM scale, which explores four domains of educators' readiness: SDL, IS, CSE, and LTSE⁽⁵⁾.

The findings of this study indicate that most educators demonstrated a high level of CSE. However, it's

important to acknowledge that technological difficulties can hinder educators' progress in e-learning education, a challenge faced by many professionals in the field. Effective dental educators must have good CSE in diverse educational settings. Research has shown that increased participation in online discussions (related to CSE) is linked to positive attitudes towards learning and improved student experiences^(7, 8). Another study suggested that e-learning and teaching enhance student discussion through forums, emails, and chats⁽⁹⁾.

Indian dental educators scored the highest in CSE among the participants in this study, which can be attributed to the high levels of IS, according to Mahajan et al.⁽¹⁰⁾. Those participants with more extended experience had better CSE, which agrees with other studies^(11,12).

In this study, nearly half of the dental educators rated their institutional support (IS) as low, which negatively affected their motivation to participate in e-learning. This finding is consistent with other studies that have shown educators in higher education need adequate support in designing, implementing, and maintaining online teaching programs⁽¹³⁾. In this study, IS explained all other domains to various degrees (Table 1), which means that enhancing e-readiness requires a significant improvement in IS. This improvement would include, in addition to IS domain items, having issues resolved quickly, technical troubleshooting, advice on technical capabilities, provision of time needed to implement online teaching, and consideration of workload by institutions⁽¹⁴⁾. Dental educators' readiness relies on IS. Emphasising the institute's commitment can significantly impact e-readiness success⁽¹⁵⁻¹⁷⁾.

According to this study, half of the educators reported high engagement in SDL, identifying their learning needs and goals, selecting the appropriate resources, and evaluating their progress with or without help⁽¹⁸⁾. As SDL is a vital aspect of e-learning, teachers must cultivate self-discipline to enhance their abilities⁽⁷⁾.

Dental educators who are confident in applying their knowledge from online courses to their teaching roles (LTSE) find satisfaction in facing challenges and sharing ideas. Positive attitudes towards e-learning have increased satisfaction and the likelihood of applying this knowledge to their job performance. Furthermore, studies have revealed that an organisation's learning culture significantly impacts employee motivation and job satisfaction^(19,20). However, despite these positive aspects, practical concerns such as technophobia and a lack of resources, along with educators' reluctance to change and lack of motivation, have proven to be significant barriers to the widespread adoption of e-learning⁽²¹⁾.

The study provides information on dental educators' e-readiness based on reliable and valid tools. In addition, it gives a better insight into dental educators' e-readiness and provides a picture of how best to support

them in the transition to e-learning. However, the findings of this study are limited to educators' opinions in six countries. The limitation of the sample size, study design, and self-reporting questionnaire implies inevitable biases, including selection, information bias, and social desirability.

Dental educators' readiness depends on institutional support, and the commitment at the institute level can increase e-readiness. Institutions should prepare and motivate educators to transition smoothly from traditional to e-learning education

CONCLUSION

Dental educators in the investigated institutions demonstrated confidence in their ability to adapt to e-learning. Nevertheless, institutional backing is vital to address resource limitations and amplify the impact of e-learning. Institutions should take initiative to equip and inspire educators, facilitating a seamless shift to e-learning.

Abbreviations: e-learning, electronic learning; OLRS, Online Learning Readiness Scale; SDL, Self-directed learning; MFL, Motivation for learning; CIS, Computer/internet self-efficacy; LC, Learner's control.

Acknowledgement: The authors are thankful to the Amr Salah el din Goma, Anas Ibrahim Yahaya, Ziaullah Choudhry, Ammar Saad Hassan, Shaza Abass, Ahmed Elsamani Abdelsalam and Omowumi Moromoke Femi-Akinlosotu for their contribution in data collection.

Disclosure: The authors declare that they have no competing interests.

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Final Approval of version:	By all above authors

Conflict of Interest: The study has no conflict of interest to declare by any author.

Source of Funding: None

Ethical Approval: No.KFU-REC-2022-FEB-EA000415 dated 'Nil'

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