

## SHORT COMMUNICATION

# Measuring Students' Satisfaction in E-learning Experience: A Validity Study on English version of E-Course Satisfaction Scale (ECSS) among Medical Students

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## ABSTRACT

Online learning is now becoming a teaching norm across disciplines and educational contexts. There is a need to measure the satisfaction level objectively and comprehensively to allow refinement of teaching and learning delivery methods. To date, there is no English validated scale to measure learners' satisfaction when learning is conducted online. We aimed to translate and validate the E-Course Satisfaction Scale which is originally in Turkish into English among undergraduate medical students. We found that this 35-items with five-point Likert-type responses English version of the E-Course Satisfaction Scale is valid and reliable to measure students' satisfaction on their e-learning experiences.

**Keywords:** Validity, Instrument, Medical students, Reliability

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## INTRODUCTION

E-learning refers to a structured teaching and learning exercise where computers and internet form the major components, and remote, virtual teaching is possible. It provides both students and instructors flexibility in planning, delivering, receiving and controlling their overall learning experiences. E-learning has become a popular, widely utilised learning platform as a result of COVID-19 pandemic. Nations including Malaysia is moving toward educational reform from the traditional face-to-face classroom teaching to virtual or online educational platform at the university level.

Students who are the recipient of teaching instructions are expected to have basic skills relevant to e-learning. These skills may include abilities to understand and operate simple computer applications and instructions in the e-learning system, to be proactive and motivated for self-learning, and to communicate effectively via online platform. As the method becoming more indispensable way of learning, factors that may influence the learning outcome should be rectified. In an ideal scenario, physically and mentally ready students are

supposedly satisfied with the learning process and actively contribute to a learning outcome, academic progress and achievement. Determining the readiness and satisfaction level among the students are crucial for the feedback effectiveness to the course instructors (1).

E-Course Satisfaction Scale (ECSS) has been developed to determine the satisfaction of students' e-learning method (2). It is a student rated scale, consists of 35 items with five-point Likert-type responses. Satisfaction in this scale refers to the perceptions of learners on the value of a course and their experiences in the learning program (3). The tool has five sub-scales measuring domains namely course content and teaching process, materials used and communication tools, attitude, environment design, and instructor-student interaction. A rate of satisfaction is measured and computed as below:

$$\text{Satisfaction Rate} = \frac{\text{Obtained mean score}}{\text{The highest obtainable scores}} \times 100$$

A rate of 70% and more is regarded as high level of satisfaction. A rate of satisfaction between 50% to 69% is regarded as moderate, and a rate of 49% or lesser is considered as low level of satisfaction (1). The reliability of the scale was 0.96 (2). The ECSS is available only in Turkish language. The study aims to validate the English version of ECSS for a broader use in English-speaking population.

## METHODS

### Translation

The ECSS underwent forward (Turkish to English) and backward (English to Turkish) translation processes by the two independent, bilingual experts. They are fluent and proficient in speaking and writing both English and Turkish. Whilst they are not native speakers, both translators are qualified professionals with postgraduate degrees. They had spent more than 5 years studying and training academically and professionally in Turkey, with Turkish as their second language. The accuracy of the translated items was then reviewed by another independent professional who also is a fluent in both English and Turkish languages. Minor amendment was done to achieve near similar meaning and language equivalence between the two versions of the scale prior to finalising the English version of ECSS.

### Subjects and Procedure

The face validity was established by randomly assigned ten ( $n = 10$ ) year 3 undergraduate medical students at the International Islamic University Malaysia (IIUM). They were approached individually through snowballing technique by the one of the author. The participants were required to read the items and provide feedback with respect to the items clarity using a 4-point Likert scale ranging from 1 (item is not clear and understandable) to 4 (item is very clear and understandable). The completed evaluation forms were analysed to get the face validity index.

To test the item consistency, we opted a universal sampling method procedure. The sampling size was determined based on subject to item ratio of 5:1; therefore, a minimum sample required was 175, for the ECSS which has 35 questions. All eligible undergraduate medical students from year 1 to 2 from School of Medical Sciences, Universiti Sains Malaysia (USM) were invited to participate in June 2020. Based on academic record, there are 141 year 1 students (52 males, 89 females) and 149 year 2 students (47 males, 102 females) during the time period of the study.

The questionnaire was prepared in a GoogleForm platform and an electronically addressed linked, online invitation was made via Whatsapp to the representative of Year 1 and Year 2 students which then be disseminated to the group leaders respectively. The group leaders then shared the study recruitment link to their group members. Participation was entirely voluntary, and they were free to withdraw their participation or to drop-out from the study.

## RESULTS AND DISCUSSION

A total of 189 responses was captured in the result sheet. Nine ( $n=9$ ) responses were excluded due to incomplete answers in the scale. We obtained 180 responses who

completed the scale satisfactorily.

The face validity index (FVI) was acceptable at a value of 0.78 supported by previous literature (7). Internal consistencies of five sub-scales were analysed using Cronbach Alpha (Table I). The materials used and communication tools, instructor-student interaction and environment design reported excellent Cronbach's alpha with 0.82, 0.86 and 0.91 respectively.

For attitude towards e-learning and course content and teaching process sub-scales, Cronbach's alpha documented were 0.57 and 0.78 respectively. This is considerably low corrected item-total correlation, affected mostly by three items which are Q24, Q26 and Q31. Q24 and Q26 state "If I had the opportunity, I would have preferred to take this course face to face" and "Using a computer is difficult and complicated for me" which fall into attitude towards e-learning dimension. Q31 states "The e-lesson I received did not meet any learning needs" which comes under Course content and Teaching Process dimension. Upon removal of these 3 items in the questionnaire, the Cronbach's alpha has increased to 0.85 for both dimensions. Total item reliability for the scale was 0.94, and it increased to 0.95 when the three items were deleted.

To our best knowledge, this is the first attempt to translate the original Turkish version of ECSS to English. An instrument is valid when it is measuring what it is supposed to measure, such as prescribed variables of different factors that lead to satisfied or unsatisfied learning experiences. It indicated that the English translated ECSS is valid at face value, supported by a good face validity index. The items are relevant to measure the proposed domains. The sentences are reported to be written in clear understandable manner; thus, face and content validity are established (4).

Determining an accepted value of Cronbach's alpha is subjective and based on an informed understanding of the data characteristics, rather than applying benchmarking of  $\alpha > 0.6$  or 0.7. Generally, higher number of items predicts a higher alpha value, and smaller number of items would possibly result in lower reliability coefficient. An alpha from 0.5 to 0.7 is acceptable and shows moderate reliability in other study (8). We adopted alpha of 0.8 as this would indicate good internal consistency of the items in the scale. The translated scale reveals a high level of reliability with a Cronbach alpha value very close to the original version which was 0.97 (2). The optimal inter-item correlation range is 0.2 to 0.4. Inter-item correlations examine the extent to which scores on one item are related to scores on all other items in a scale and provide an assessment of item redundancy.

The use of reliable tool is essential for students' preparation, lesson planning and instructors-related

**Table 1: Internal consistencies of ECSS scale for each dimension before and after item deletion.**

Dimension	Items	n	Corrected item total correlation	Cronbach's alpha prior to deleting Q24, Q26 and Q31	Cronbach's alpha after deleting Q24, Q26 and Q31
Material and communication tools	Q1	180	0.617	0.816	0.816
	Q2	180	0.537		
	Q3	180	0.657		
	Q4	179	0.629		
	Q5	180	0.468		
	Q6	180	0.673		
	Q7	179	0.619		
	Q8	180	0.596		
Student-instructor interaction	Q9	180	0.851	0.855	0.855
	Q10	180	0.807		
	Q11	180	0.805		
	Q12	180	0.586		
Instructional environment design	Q13	180	0.742	0.906	0.906
	Q14	179	0.735		
	Q15	180	0.789		
	Q16	179	0.721		
	Q17	179	0.759		
	Q18	179	0.660		
	Q19	179	0.836		
	Q20	180	0.706		
Attitude towards e-learning	Q21	179	0.795	0.567	0.846
	Q22	180	0.715		
	Q23	180	0.744		
	Q24*	180	0.005		
	Q25	180	0.615		
	Q26*	179	-0.024		
Course content and teaching process	Q27	179	0.677	0.770	0.847
	Q28	180	0.320		
	Q29	180	0.711		
	Q30	180	0.840		
	Q31*	180	-0.153		
	Q32	180	0.585		
	Q33	180	0.635		
	Q34	179	0.711		
	Q35	180	0.731		

\* item removed

variables including teaching experiences, as well as overall perception on the newly explored teaching platform.

**CONCLUSION**

In short, the English version of the E-Course Satisfaction Scale is valid and reliable to measure medical students' satisfaction on their e-learning experiences.

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