

# Exploring The Role Of UTAUT For Understanding The Effects Of Utilizing The Virtual Classrooms For Gifted Students In Saudi Arabia

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## Abstract

The aim of this study is to investigate the role of UTAUT for understanding the effects of utilizing the virtual classrooms for gifted students in Saudi Arabia. A total of 230 students, who were identified as gifted and enrolled in the school's gifted programs, were participated in this study. Of this sample, 101 were at secondary school level, and 129 were at middle school level. All of them experienced the virtual classroom condition. The results indicates that UTAUT factors made significant individual contributions to the prediction of BI. 76.0% of the total variance in BI of those who participated in the study is accounted for by the combination of all UTAUT factors. Overall, the UTAUT brought useful insight on how students exhibit appropriate behavior, expectations, and engagement in the virtual classroom.

**Keywords.** Performance expectancy, Effort expectancy, Social influence, Facilitating conditions , students' intentions to use Virtual Classrooms

## Introduction

Modern technology and its innovative applications have become an integral part of our contemporary life, especially communication and information technology, whose applications have invaded many fields, penetrating all barriers (Göktaş, İbrahim & Geçer,2014). E-learning has become one of those fields that have had great luck from modern technological developments and their various means, as e-learning plays an integral role with formal or traditional education in order to expand the area of education to include large numbers that did not have a place in traditional higher education, in addition to providing valuable and diverse skills. It helps in developing the habits of the mind and extracting scientific contents in an easy and simple way(Tut et al.,2021) .

However, e-learning provides the opportunity to learn without being restricted to time or place. E-learning is in its context that sometimes makes the learner separate from the teacher, whether in time or place or both together, and multimedia is used as an effective channel to transfer education to learners, such as audio or visual media or other electronic and technological means (Çelik et al.,2015;Uluçınar,2021).

E-learning technology, with its modern tools, which have been taken from virtual learning environments as a basic base, is one of the most prominent and most applications of modern technology related to the use of the Internet (Mallik& Mallik , 2017). E-learning provides learners with scientific courses electronically to give them learning at any time and from anywhere, and it also provides an opportunity to interact with them in an

effective and distinct manner (Huseini,2015;Konca & Hakyemez-Paul,2021).

E-learning has become one of the most important requirements for the advancement of the desired educational process, not only to keep pace with modern technological developments (Alpaslan ,Ulubey, Özgür, & Ata,2021;Uysal& Gündoğdu,2019).

It is also an effective and influential method in providing serious opportunities for learning, especially for workers who did not give them the opportunity to obtain formal education and do not have the opportunity to devote themselves to education and leave their work (Islam,2019). The virtual classroom is one of the modern technological techniques that combine both e-learning and distance education (Düzyol& Yıldırım,2022; Erişti & Avcı, 2021). The goal of the virtual classroom is to create a fertile learning environment with interactive uses and fields between both the teacher and the learner (Demirdag,2016).

## Literature Review

### Defining Gifted Education in Saudi Arabian Schools

The official educational policy in Saudi Arabia asserts the importance of identifying gifted and talented students and nurturing their abilities (Ministry of Education, 1995). The definition of giftedness developed by AlNafie and colleagues (2000) defined gifted students as those who need special educational provisions that are not broadly provided in the regular school programs. In general, there are four major types of educational provisions that are provided to gifted students in the Saudi schools: (1) part-time or pull-out enrichment programs within the mainstream schools; (2) special classes

within the mainstream schools; (3) special schools; and (4) acceleration.

Based on his extensive studies, Alamiri (2021; 2019; 2015) introduced the concept of participatory giftedness and defined giftedness as the outcomes of a participatory context whereby individual's talents interact with and grow from. The context is designed to form the individual's synchronous development, the constructed knowledge, the learning process, and the creative productivity. Hence, the learning environment is socially constructed to provoke students' talents to emerge.

### Defining Virtual Classrooms

Virtual classrooms are viewed as a teaching and learning environment that simulates traditional classrooms in their organization, but in which the parties to the remote educational process communicate via the Internet with synchronous and asynchronous communication and interaction tools for the purpose of organizing various educational situations that include organization, education, evaluation, follow-up and communication, and they are controlled and presented through educational institutions. An organization for awarding accredited academic degrees (DiPietro,2010).

Or it is a system that allows live interaction between the teacher and students via the Internet in the usual class style. This system is characterized by flexibility and ease in terms of determining the appropriate times for the teacher and students, as well as providing all the usual means in electronic form such as the electronic board, written and audio dialogues, and others (Olszewski-Kubilius & Corwith,2010).

It is one of the main means of providing direct lessons and lectures on the Internet, in addition to distance training, in which the basic elements needed by both the teacher

and the student are available, and it depends on the interactive teaching method (Winter, Cotton, Gavin & Yorke, 2010).

The virtual classroom can be defined as a system that provides learning opportunities through electronic educational courses from anywhere on the Internet, with the presence of the virtual classroom program used to communicate and share screens, files, presentations and applications. It also provides opportunities for direct interaction between the teacher and learners at the same time (Potts, 2019).

Virtual classrooms provide an opportunity for collaborative work between learners, follow-up with the teacher, and provide various types of necessary assistance. Students also collaborate with each other in explaining units of the teacher-selected courses through voice chat, text, or e-mail (Nicholas, 2007).

In the electronic classes, the teacher asks questions to raise the desires of the learners and help them formulate the problems that crystallize in the lectures in an interesting and attractive way. The teacher uses multiple methods of simulation to facilitate access to the solution of the problem and urge learners to quickly choose the best solution, depending on the selection of the appropriate method for simulation.

Virtual classrooms provide a distinct way to ask assignments or homework in the form of questions that are in the form of files that are saved in special folders for each learner who relies on them to evaluate learners' performance.

### **Virtual Classrooms (VC) for Gifted Students**

Technology has provided a great contribution to the development of education around the globe. In Saudi Arabia, there has been an increasing

interest in supporting distance education and virtual learning as the essential components of the educational system. As a response to the school closures caused by coronavirus pandemic (COVID-19), the Ministry of Education (MOE) accelerated its technological capabilities and developed a variety of virtual platforms which include: Virtual Kindergarten, iEN TV virtual classrooms, iEN Satellite TV's educational channels, iEN Satellite TV Lessons on YouTube, Future Gate Portal, and Madrasati. These platforms facilitated the learning opportunities for all students in all school levels including gifted students, who also received extra opportunities through the development of virtual enrichment programs. The MOE has transformed the educational provisions for gifted students (i.e., part-time enrichment programs, special classes, and special schools) into the virtual learning and distance education practices. The Saudi Arabia's efforts has been globally recognized by The United Nations Educational, Scientific and Cultural Organization (UNESCO, 2022).

There were many ways in which information technology was employed in the field of education and learning. The Internet has become a source and indispensable source of education for the student and teacher, and a source of information for anyone else (Daniel, 2020; Tan, 2021).

VC has an important place in other educational and training institutions around the world, due to its inclusion of learners and trainees from outside and within the spatial boundaries of educational and training institutions. The educational technology innovations are used to provide online courses through virtual classrooms and broadcasts with the use of all types of multimedia via the internet, directly or by

saving it for learners and trainees to see at any time convenient for them (Potts,2019).

There is no doubt that the traditional education has challenges to meet the accelerated developments of technology and the population explosion around the world. It has been recommended that employing virtual classrooms in teaching and training has become an urgent necessity that need to be applied in holding educational courses using e-learning tools (Nicholas,2007;Rogers, 2007; Shields, 2002; Vogl & Preckel, 2014).

### **Unified Theory of Acceptance and Use of Technology (UTAUT)**

Technology acceptance and usage can be explored by The UTAUT model (Venkatesh et al., 2003). In UTAUT model (Venkatesh et al.,2003), PE, EE, SI and FC are the main variables that have the potential of determining behavioral intentions. (Chao,2019) (see fig.1.).

#### **Performance Expectancy (PE)**

According to Venkatesh et al. (2003), PE is seen as the extent to which technology benefits the user when carrying out a specific activity. This variable has a positive effect on behavior intention to use

for example VCs (Abd Manan and Hanafi,2019; Almaiah et al.,2019;Alshammari,2021).

#### **Effort Expectancy (EE)**

According to Venkatesh et al. (2003), EE is the degree of ease associated with the use of the system. This variable has also a positive effect on behaviour intention to use for example VCs(Alshammari,2021;Chao,2019).

#### **Social Influence (SI)**

Venkatesh et al. (2003) defined SI as the degree to which an individual perceives that important others believe he or she should use the system. This variable has also a positive effect on behaviour intention to use for example VCs (Kaliisa et al.,2019; Salloum and Shaalan.2018).

#### **Facilitating Condition (FC)**

As indicated by Venkatesh et al. (2003), FC is defined as a user's perception of the disposable resources and support when performing a task. This variable has also a positive effect on behaviour intention to use for example VCs (Alshammari,2021).

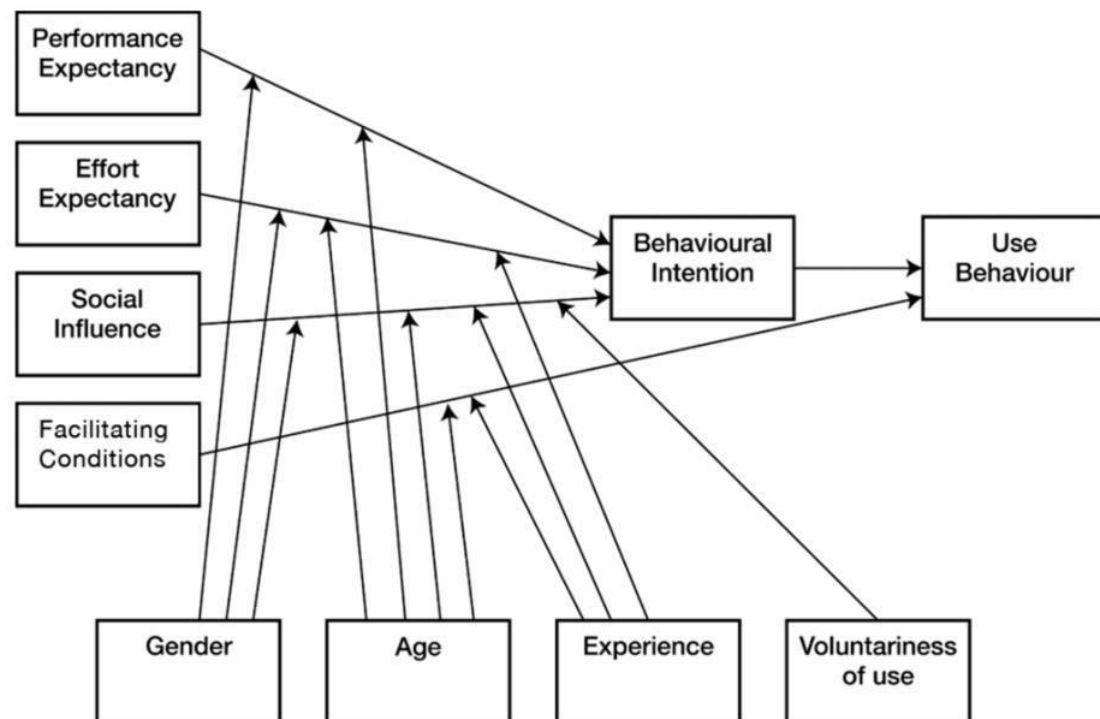


Figure. 1 UTAUT Model (Venkatesh et al., 2003, p. 447).

### Aims

The aim of this paper is to investigate the role of UTAUT for understanding the effects of utilizing the virtual classrooms for gifted students in Saudi Arabia.

### Hypotheses

**Hypothesis 1:** PE has a positive impact on students' intentions to use VC.

**Hypothesis 2:** EE has a positive impact on students' intentions to use VC.

**Hypothesis 3:** SI has a positive impact on students' intentions to use VC.

**Hypothesis 4:** FC has a positive impact on students' intentions to use VC.

A conceptual framework is showed in figure 1.

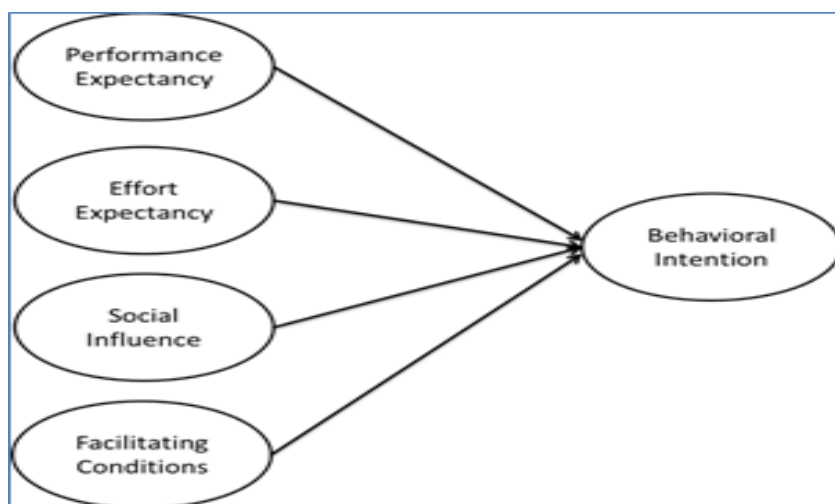


Fig 1. Research Framework

## Methodology

### Model design

This study investigates the role of UTAUT for understanding the effects of utilising the virtual classrooms for gifted students in Saudi Arabia.

### Research Sample

A total of 230 were gifted students enrolled in educational programs for gifted students in the kingdom. 120 were males, and 110 were females. Of this sample, 101 were at secondary school level, and 129 were at middle school level. All of them experienced VC.

### Instrument

A self-report 15- item survey instrument, based on UTAUT model (Venkateshet al.,2003) . It was measured on a five-point Likert-type scale. Each variable has three items.

## Data Collection

410 online questionnaires were distributed. 180 questionnaires were dropped due to the large number of missing values. Accordingly, 230 questionnaires were included with a response rate of 56 %. Data collection is done by self- administered questionnaire .Students answer questions which use a Likert scale.

## Results

### Convergent Validity and Reliability

Average Variance Extracted (AVE) value shows that all reflective constructs have AVE values  $\geq 0.50$ . The CV is valid and acceptable .Thus ,it can be stated that all indicators that measure constructs have met the conditions of CV. Moreover, the results of the Composite Reliability (CR) data show that all values were above 0.8 .This refers to high reliability. The results of Cronbach's Alpha (CA), show high reliability(See table 1).

Table 1. Convergent Validity and Reliability

	AVE	CR	CA
Performance Expectancy (PE)	0.672	0.764	0.746
Effort Expectancy (EE)	0.718	0.826	0.817
Service Influence (SI)	0.677	0.775	0.769
Facilitaitaing Condition (FC)	0.685	0.903	0.788
Behavioral Intention (BI)	0.742	0.894	0.749

Composite Reliability;  
CA Cronbach's Alpha

### Regression Analysis

As shown in table 2, all UTAUT factors made significant individual contributions to the prediction of BI. The results indicated that the following beta weights which represented the relative contribution of PE, EE, SI and FC to the prediction were observed. PE ( $b = .421$ ,  $t = 6.254$ ,  $P < 0.01$ )

AVE Average Variance  
Extracted; CR  
, EE ( $b = .389$ ,  $t = 5.115$ ,  $P < 0.01$ ), SI ( $b = .376$ ,  $t = 5.109$ ,  $P < 0.01$ ), and FC ( $b = .388$ ,  $t = 5.119$ ,  $P < 0.01$ ). They together yielded a coefficient of multiple regression (R) of 0.721 and a multiple correlation square of 0.714. This shows that 76.0% of the total variance in BI of those who participated in the study is accounted for by the combination of all UTAUT factors(see fig.2).

Table 2. Regression of UTAUT factors on BI

Variables	$\beta$	t-value
PE	.421	6.254***
EE	.389	5.115***
SI	.376	5.109***
FC	.388	5.119***
BI	.434	6.355***
$R^2$	.721	
Adjusted $R^2$	.714	

Note. PE = performance expectancy; EE = effort expectancy; SI = social, FC = facilitating conditions; BI = behavior intention.\*\*\* $p < .001$

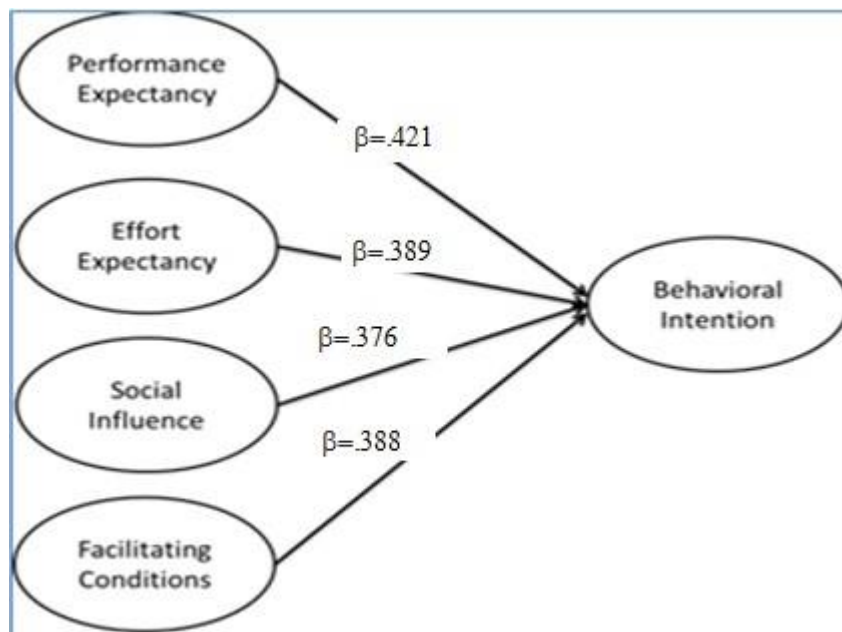


Fig.2. Regression Analysis results

### Test of model fit

As a result of the four -factor CFA, Chi square = 632.50 ( $p < .001$ ),  $df = 230$  ( $\chi^2 =$

745.30;  $df = 160$ ,  $\chi^2/df = 5.64$ ), RMSEA = .07 ( $p < .05$ ), SRMR = .05, CFI = .93, NNFI = .96, GFI = .96, and AGFI = .95. (see table 3.).

Table 3. Model fit indices from measurement models of the scale

Goodness of Fit Indexes	Measurement Model of the scale
$\chi^2$ , df	745.30
$\chi^2$ /df	5.64
CFI	.93
NNFI	.96
GFI	.96
AGFI	.95
RMSEA	.07
SRMR	.05

Here it is intended to testify hypotheses. As shown in table 4, all factors had positive effect on BI with p- value of 0.000 (<0.05). Thus, all hypotheses were supported.

Table 4. Results of Path and Hypotheses Tests

Hypotheses/ Relationships	Estimate	S.E	C.R	P	Comment	Label
H1 BI < --- PE	.342	.087	3.377	***	Sig.	Supported
H2 BI < --- EE	.325	.084	3.387	***	Sig.	Supported
H3 BI < --- SI	.344	.088	3.356	***	Sig.	Supported
H4 BI < --- FC	.365	.089	3.389	***	Sig.	Supported

## Discussion

Gifted students outperform their ordinary peers in many mental characteristics, as they have a high degree of intelligence as measured by individual or group intelligence tests, and have the ability to solve complex problems (Vogl & Preckel, 2014). The characteristics of talents and high abilities is not necessary apply to all gifted students, as individual differences exist between gifted group as they are between ordinary group (Tan, 2021).

The experience of using virtual classrooms in the distance education program is an innovative initiative with a strategic impact that is recorded among the achievements and upgrading of the educational process, where the gifted student is provided with technological techniques that make him able to keep pace with change (Potts, 2019).

The findings of this study concurred with previous research which suggest a new instructional design that mainly involves learning in virtual classrooms supported with videos and activities (Gross, 2002; Tan, 2021).

The results suggest that PE has a positive impact on students' intentions to use VC. This result corresponds to the original theoretical foundation of UTAUT model (Almaiah, Alamri & Al-Rahmi, 2019). This result is in the expected direction, because when students perceive that VC is useful to them, their intention to use it in their learning increases. The results also suggest that EE has a positive impact on students' intentions to use VC. This result also supports the original hypothesis of UTAUT model (Almaiah et al., 2019).

The results suggest that SI has a positive effect on the behavior intention of gifted students toward the use of VC. Kaliisa et al. (2019) found SI is an important element for mobile learning acceptance. However, Joo et al. (2014) found no strong evidence of SI on users acceptance of mobile learning in South Korea. Thus the impact may depend on a country and the school system and culture.

It is important to provide for the students the guidance and technical support that could improve the engagement with learning technologies (Mokhtar & Karim, 2021). The results suggest that FC has a positive effect on the behaviour intention of gifted students toward the use of VC. However, Alshammari (2021) did not find that FC had a positive effect on the behaviour intention of teaching staff toward the use of VC.

The findings of this study could provide useful insight to gifted students to be encouraged so as to accept and use of VC. Students can focus on the usefulness and benefits of VC and use this technique wisely. They should be provided with information and training on how to fully utilize VC.

The findings of this study are consistent with those of Aditya & Permadi (2017) who found that VC is positive and relevant to the students in higher education.

### **Limitations, implications, and future directions**

The entire content of the virtual classrooms was designed in Saudi Arabian's school context, and the participants of this study were all residents of one city which is Jeddah. Therefore, the findings might not be generalized to other contexts outside of Saudi Arabia or students who live in other cities.

This study was the first study in the literature exploring the role of UTAUT for understanding the effects of utilizing the VC for gifted students in Saudi Arabia. Therefore, the findings of this study might offer some clues to policy makers on how to design an virtual classrooms for instructional purposes to serve gifted students.

In reference to the UTAUT model variables, the results indicate that all UTAUT factors contribute to the understanding the effects of utilizing the virtual classrooms among gifted students. An updated virtual classrooms that address the participants' comments and suggestions could help teachers and educators to provide accelerative and enriched opportunities for their gifted students. The results of this study might help educators to develop a guideline for teachers to apply new teaching strategies in the VC to facilitate the learning environment for students.

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