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Secondary School Gifted Students' attitude toward the Classera Learning Management System in Saudi Arabia

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ABSTRACT

SECONDARY SCHOOL GIFTED STUDENTS' ATTITUDE TOWARD THE CLASSERA LEARNING MANAGEMENT SYSTEM IN SAUDI ARABIA

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The present study examined secondary students' attitude toward the Classera learning management system (LMS) within the context of gifted education in Saudi Arabia. The theoretical framework that guided this study was the technology acceptance model (TAM). Data were collected using the TAM survey, which consisted three subscales: perceived usefulness, perceived ease of use, and attitude. The data were collected from 306 gifted students in a secondary school in Saudi Arabia.

Results indicated that gifted students' attitude toward the Classera LMS is positive and showed that perceived usefulness and perceived ease of use were statistically significant predictors of gifted students' attitude toward Classera LMS, while qualitative data results highlighted several benefits of using the Classera LMS among gifted students and demonstrated several challenges. The results showed that Classera LMS is an easy tool to use and useful for learning among gifted students. This study suggests constant development of the Classera LMS. Yet, Classera appears ready to be used in gifted students' schools at the secondary level.

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SECONDARY SCHOOL GIFTED STUDENTS' ATTITUDE TOWARD THE CLASSERA
LEARNING MANAGEMENT SYSTEM IN SAUDI ARABIA

BY

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CHAPTER 1

INTRODUCTION

Statement of the Problem

The development of technology is transforming the entire education industry. In contemporary educational settings, many students are familiar with the most recent technological tools (Zayed, 2019). With newer tech-savvy generations and a growing number of students, there is a real need to implement learning management systems (LMS) in schools. Therefore, the use of LMS in schools has rapidly evolved in the last two decades (Aljuhney & Murray, 2016). On the other hand, lack of technology use in schools can be a barrier to instruction and can delay the learning process (Prensky, 2001).

Learning management systems are online systems that allow users to share information and collaborate online (Al-Busaidi & Al-Shihi, 2010). More than 95% of colleges and universities use LMS (Pollack, 2003) due to their critical impact in schools, and this is despite on the focus of such institutions on traditional forms of teaching as well as reluctance toward change (West, Waddoups, & Graham, 2007). Most instructional platforms have similar features (Abdalla, 2007), the most popular being Blackboard (Alshwaier, Youssef, & Emam, 2012). Some studies support the importance of using LMS in schools. Aljarrah (2011), as an example, found that using Blackboard had a significant impact on students' academic achievement and affirmed the importance of adopting and developing learning management systems in all Jordanian universities. Heirdsfield et al. (2011) also found that learning management systems

enhanced the learning experience. Similarly, Al-saai (2015) indicated Blackboard was an efficient tool in higher education. Furthermore, some studies recommend the need for further research. Alahmari and Kyei-Blankson (2016), for example, suggested their study of the Classera LMS should be replicated from the perspective of other stakeholders, such as students, to make sure all voices are heard and considered. There is a lack of research regarding K-12 students' attitude toward LMS, which could limit the discussion and prevent Saudi officials from reaching an appropriate decision regarding LMS implementation in K-12 schools.

Although 87% of Saudi higher educational institutions use LMS (Aljuhney & Murray, 2016), the Classera LMS was only recently implemented to teach K-12 students in Saudi Arabia and is still in the early stages of implementation. The present goal of the Ministry of Education in Saudi Arabia is to provide LMS to all K-12 schools in the near future (AlOhali, AlSuhaibani, Palavitsinis, & Koutoumanos, 2018; Classera, 2017) because regular and gifted students will benefit from this system. However, gifted students require differentiated educational programs and services beyond those normally provided in regular schools to realize their contributions to self and society (Marland, 1971). According to the National Association for Gifted Children (NAGC, 2018), gifted students are those who demonstrate outstanding levels of competence in one or more certain domains. Gifted students, moreover, have various distinguished abilities compared with regular students (Alawamreh, 2015) such as problem-solving and self-directed learning abilities (Kim & Seo, 2009; Pajares & Graham, 1999). In addition, gifted students need to learn in the way they prefer because some wish to study quickly in certain subjects, while others favor going more slowly through the same subjects (Alamer, 2014). Due to their expected roles in paving the way to innovation (Bocconi, Kampylis, & Punie, 2012), "gifted students deserve to be at the center of our attention" (Alamer, 2014, p. 111), and appropriate technology

should be used to foster gifted students' creativity (Bocconi, Kampylis & Punie, 2012) because they have specific tendencies in their learning, requiring individualized approaches from teachers (Tassel-Baska, 2008).

Although it has been recommended that schools should provide gifted students with suitable differentiated instruction (NAGC, 2018), gifted students in Saudi Arabia have been taught using the Classera LMS since 2015, and this application was the first LMS used in Saudi public K-12 schools (Alahmari & Kyei-Blankson, 2016). Being among this original cohort of users and wishing to contribute to Saudi educational technology, the researcher realized the pressing need for evaluating the Classera LMS. As an educational technology researcher, they evaluated Classera to help Saudi officials decide if it is an appropriate LMS for gifted students.

Gifted education has been a concern for many scholars (Al-Makhalid, 2015). Most believe that a primary problem is the lack of suitable facilities and equipment in gifted students' schools (Al-Zoubi, 2011; Ashwal, 2013; Bani Abdel Rahman & Al-Zoubi, 2014); therefore, many studies have emphasized the need to use tools that will foster the outstanding abilities of gifted students (Alamer, 2014; Marland, 1971; NAGC, 2018). Also, the need for further research regarding gifted students' use of technology has been recommended by numerous studies to keep up with technology improvement (Periathiruvadi & Rinn, 2012).

Educational technology has to be carefully planned and closely investigated during its implementation (ElTartoussi & Tamim, 2009) because learners are directly impacted by the success or failure of the technology in delivering knowledge effectively. If technology is not investigated or its benefits and challenges are not taken into consideration, officials might fail to deliver the desired educational outcomes. Moreover, the implementation can be more costly than other interventions (Al-Fahad, 2010). An important step of investigating a new tool is to examine

the students' attitude because "student's attitude plays an important role in improving the efficiency of an e-learning system" (Hussein, 2017, p.160). "If learners do not like the instruction, it is unlikely that they will learn from it" (Reiser & Dempsey, 2012, p. 91) because user's attitude is a major determinant of whether the user will use or reject the system (Davis, 1989). Many educational technology experts have stated that the users' attitude is an essential factor involved in evaluating an instructional tool (Reiser & Dempsey, 2012). The first level of evaluation is the assessment of the learners' attitudes (Kirkpatrick, 1959) which, according to Gagné, Wager, Golas, and Keller (2005), is one of five major categories of learning. These studies, among others, reveal the importance of examining users' attitude toward instructional tools, including learning management systems. In addition, Saudi students' attitude toward LMS has not been fully investigated (Binyamin, Rutter, & Smith, 2017); therefore, secondary school students' attitude toward Classera LMS is important to examine, especially gifted students' attitude because they have different characteristics than their non-gifted student peers (NAGC, 2018). Accordingly, the current study examined the attitude of gifted students in secondary schools toward the Classera LMS.

Purpose of the Study

Using quantitative methods, the purpose of this study was to examine the relationship between two predictor variables (perceived ease of use and perceived usefulness) and attitude toward the Classera LMS among gifted students at the secondary school level in Saudi Arabia. An existing survey was adopted and distributed to more than 300 gifted students in Jeddah City, Saudi Arabia.

Research Questions

To address the literature gaps regarding the Classera LMS, the following questions were posed:

- 1- What are the attitudes of gifted students toward the Classera learning management system at the secondary school level?
- 2- To what extent do perceived usefulness and perceived ease of use predict gifted students' attitudes toward using the Classera LMS at the secondary school level?

Significance of the Study

Evaluating the Classera LMS can provide a practical means to differentiate learning for gifted students, especially when the new LMS has never been assessed with this population. Therefore, the researcher's practical goal was to use the findings of this research to inform implementation of Classera and help to improve the educational system in Saudi Arabia and ensure Classera's capability to be used effectively with gifted students.

This study is significant for its potential to help Saudi Arabian education officials make informed decisions regarding using Classera for gifted students, especially since Classera currently remains in a secondary phase of implementation. This study can also help Classera developers tailor it to fit the needs of gifted students and help teachers and school boards resolve Classera LMS' potential problems and address its limitations. The researcher, moreover, sought to contribute new findings to literature regarding K-12 students' attitude toward LMS.

The researcher worked as a teacher in a gifted students' school for six years and expects to return to that school to teach after finishing this study. Thus, it is hoped this study will help the researcher and other Saudi teachers better understand their gifted students' attitude.

Theoretical Framework

Smyth (2004) emphasized that a conceptual framework is required as a starting point for researchers to reflect on their investigation and develop an awareness of the basis for a study. Therefore, the theoretical framework of this study is the Technology Acceptance Model (TAM) developed by Davis (1989) illustrated in Figure 1. The TAM is based on the theory of reasoned action (TRA) by Fishbein and Ajzen (1975). The model "has been extensively incorporated as a methodology to measure attitude toward technology adoption from users in multiple domains" (Rigopoulos, Psarras, & Askounis, 2008, p. 900). The TAM was adopted for this study because it has been used in many studies to measure the "users' attitude toward adoption of several IT based services" (Rigopoulos, Psarras, & Askounis, 2008, p. 900). The version adopted for this research "has been adopted and expanded in many studies in various types of technologies including e-mail, word processor, World Wide Web, enterprise resource planning (ERP) systems and proved high validity" (Cakir & Solak, 2015, p. 597). The model's validity has been established in many empirical studies (e.g., Adams, Nelson & Todd, 1992; Alharbi & Drew,

2014; Chau, 1996). However, it has rarely been used within the context of Saudi Arabia to understand students' attitudes toward learning management systems (Binyamin et al., 2017).

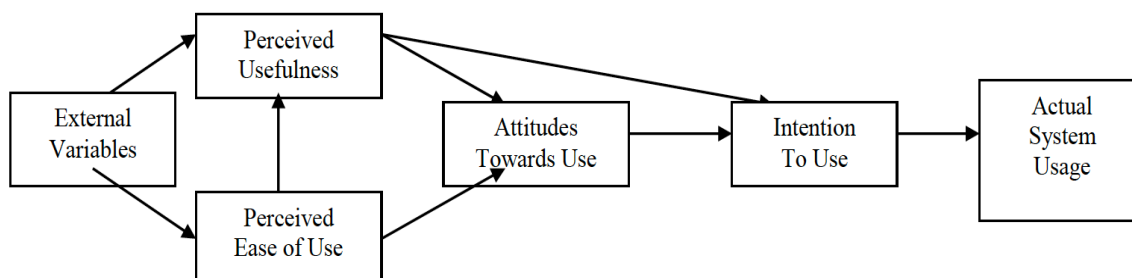


Figure 1: Technology Acceptance Model (Davis, 1989).

Abdalla (2007) used the TAM to evaluate the effectiveness of the e-Blackboard system for United Arab Emirates University students. Abdalla's study adopted the TAM to examine users' perceptions, ease of use, usefulness, attitudes, and cognitive behavior. The study found ease of use and usefulness positively influenced students' attitude toward e-Blackboard systems. Similarly, Binyamin et al. (2017) used the TAM to understand students' acceptance of Blackboard in Saudi Arabia. The study found that students' actual use is influenced by their behavioral intention, which is affected by the students' attitude and perceived usefulness, while perceived ease of use has an impact on the students' attitude and perceived usefulness alike.

The TAM suggests a user's attitude is influenced by two major beliefs: perceived usefulness and perceived ease of use. Additionally, perceived ease of use directly influences perceived usefulness. Both perceived ease of use and perceived usefulness were influenced directly by system design characteristics. According to Surendran (2012), the main system

design characteristics, or external factors, are usually social factors, cultural factors and political factors.

Research using the TAM suggests that if users find a technology easy to use and useful, they develop a positive attitude toward this technology (Fathema, Shannon, & Ross, 2015). Accordingly, the TAM is important for examining the attitude of Classera users because the model can explain users' reactions to a new technological experience. In other words, the attitude of Classera users can be explored by examining the factors stated by the theory.

Perceived Usefulness

This construct refers to whether the user believes the technology can meet his or her needs. Davis (1989) defines perceived usefulness as “the prospective user’s subjective probability that using a specific application system will enhance his or her job or life performance” (p. 985). The perceived usefulness construct is similar to Bandura’s (1982) “outcome judgment” variable (Davis, 1989). TAM has developed a psychometric scale of six items for perceived usefulness, which then can be used to predict the user’s performance, productivity, efficiency, usefulness, and job performance. Meeting these requirements means the application is useful for its role. The perceived ease of use is the best predictor of perceived usefulness (Abdullah, Ward, & Ahmed, 2016).

Perceived Ease of Use

Surendran (2012) explained perceived ease of use as “the degree to which the prospective user expects the target system to be free of effort” (p. 175). Perceived ease of use explains how users are attracted to using the system because of its ease (Jogiyanto, 2007). It assesses the extent

to which the user can easily learn how to operate the application, if it is easy to command the application to do the task, if communication between users in an application is comprehensible, and if the application is flexible to link and associate with and among others.

“The importance of perceived ease of use is supported by Bandura’s (1982) extensive research on self-efficacy” as “self-efficacy is similar to perceived ease of use” (Davis, 1989, p. 321). Bandura (1997) defined self-efficacy as “beliefs in one’s capabilities to organize and execute the courses of action required to produce given attainments” (p. 3). Bandura’s (1977) original self-efficacy theory has been used in educational settings at various grade levels (e.g., elementary, secondary, postsecondary; Schunk, 1995). Furthermore, self-efficacy has been examined as to how it influences learning, motivation, and achievement. Liaw (2008) stated that perceived self-efficacy is an important factor that influenced learners’ satisfaction with Blackboard. Self-efficacy was also stated as “a strong predictor of academic success” (Hodges, 2018, p. 453). In fact, self-efficacy has been found to be the strongest predictor of student perceived learning (Alqurashi, 2017). Generally, attitudes toward technology integration and technology self-efficacy were stated as internal factors by several researchers (Al-Ruz & Khasawneh 2011; Chen 2008; Lin, Wang, & Lin 2012; Sang et al. 2011; Tezci 2011a). According to Sang et al. (2011), internal factors influence technology integration outcomes. Thus, examining “internal variables can partially explain the success of technology integration in the classroom” (Fu, 2013, p. 119), especially that self-efficacy was found as a significant predictor of student satisfaction (Artino, 2008).

Attitude Toward Using the Technology

An individual's attitude to use is "concerned with the user's evaluation of the desirability" of employing a particular application (Surendran, 2012, p. 176). Ajzen (1988) described the attitude as a predisposition to respond favorably or unfavorably to an object, person, or event. In other words, attitude is "the positive or negative feelings or evaluations generated when an individual uses new technologies" (Jiwasiddi, Adhikara, & Triana, 2019, p. 4). According to Davis (1989), if the user has a positive attitude toward a system, then they are more likely to accept it. TAM "postulates that user opinions on usefulness and ease of use define attitudes in the utilization of the system" (Bahaj, Aljaaidi, & Ahmed, 2019, p. 654). Thus, perceived usefulness and perceived ease of use directly affect the user's attitude toward using technology (Alharbi & Drew, 2014; Asiri, bt Mahmud, Baker, & bin Mohd Ayub, 2012). The current study utilized these constructs (perceived usefulness and perceived ease of use) to explain the students' attitude toward the Classera LMS. The user's attitude, as a result, determines whether the user finds the technology useful and worthy of being used.

The TAM introduces a crucial concept that helps predict the outcome of newly implemented technology. Examining gifted students' attitude through a TAM lens can provide data to determine if the Classera LMS is useful for gifted students at the secondary school level and fits their characteristics. Results from this study will help to ascertain users' attitudes toward the Classera LMS.

Definitions

Classera is a learning management system that facilitates the learning experience. It has many features like other LMS, such as forums, quizzes, and announcements. It also assists in managing the learning process by keeping learners' data organized, facilitating course planning, creating content for learners while tracking their achievements, and producing reports about it. The system is also able to facilitate communication with teachers while providing testing and assessment tools. Additionally, Classera LMS supports the Arabic language (Alahmari & Kyei-Blankson, 2018). The main goal of implementing Classera in K-12 schools is “to allow students to learn at their own pace while encouraging peer interaction and increased parental involvement in learning” (Alahmari & Kyei-Blankson, 2016, p. 12).

Gifted Student Schools in Saudi Arabia are public schools. The first gifted public school in Saudi Arabia was established in 2010 in Jeddah City. It was the first school among the Gulf countries in which all students were gifted. The school districts around the country recruited exceptional gifted students to study at the middle and high schools for six years. Students start at the intermediate level at age 12 and graduate from high school at age 18 (Clark, 2012; Stephens, Warren, & Harner, 2015). All elementary students are encouraged to register for administration of the IQ test conducted by the Saudi National Center for Assessment. The Gifted Student Schools accept students who have the highest scores. In these schools, students benefit from the intense math and science curriculums. They also benefit from a limited number of students in each class, with 20 students being the maximum. In Jeddah City, all gifted students and their teachers have used Classera for the last four years.

Delimitations

Several delimitations influence this study.

1. The researcher used to teach in the targeted school and it is possible that some students may respond positively to survey prompts to satisfy him. To minimize such bias, the participants will not be asked to provide their names.
2. Although participants were told how important their participation was, at this age they may have clicked on any option just to finish the survey. To minimize rushing through the responses, the participants were informed that they would not be allowed to leave the class even if they all completed the assessment because their teacher will return and resume teaching the class.

Conclusion

This study examined the attitude of gifted students toward the Classera learning management system at a secondary school for gifted students in Jeddah City, Saudi Arabia. The theory guiding this study is the Technology Acceptance Model (Davis, 1989). A quantitative research methodology was adopted to achieve the study's goals. The researcher believes this study will enrich the scholarly literature of educational technology, specifically the literature related to using learning management systems for gifted students in Saudi Arabia.

CHAPTER 2

LITERATURE REVIEW

Technology in Gifted Education

The Association for Educational Communication and Technology (AECT) defined educational technology as “the study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources” (Molenda & Januszewski, 2008, p. 237). The concept creation includes “analysis, design, development, implementation, and evaluation” (Reiser & Dempsey, 2012, p. 4). This definition emphasizes how educational technology not only uses and develops media but also increases the value of the systematic design process to facilitate and improve the learning process and outcomes. According to Reiser and Dempsey (2012), technological resources include the hardware and software associated with the educational technology field.

To understand how technology has been used in the education of gifted students, Periathiruvadi and Rinn (2012) explored best practices and evaluated empirical research related to the use of technology with gifted learners. The study examined 23 peer reviewed articles picked from a total of 159 descriptive articles and 24 empirical articles published between 2000 and 2012. Eleven used quantitative methods, and seven used qualitative methods, while the remaining five articles involved mixed methods of data collection. All articles examined technology use for gifted adolescent students. The major themes in the articles explored how gifted students’ attitudes toward technology can affect their learning. However, most articles

examined students' attitudes toward different technology, e.g., gamifications and computer-based assessments, while LMS were not mentioned, which is considered a limitation of this study, because it did not adequately analyze the effectiveness of a specific technology tool for gifted students. Yet, these examined studies mentioned critical features for technology use in gifted education such as note-taking software, open-ended problem-solving, and a hypermedia learning environment.

Because “online learning was one of the prominent topics of interest” (Periathiruvadi & Rinn, 2012, p. 163) in the reviewed articles, the study found several articles reporting on the effectiveness of Web-based technology and highlighting its considerable benefits for gifted learners. Empirical research on online learning has revealed its effectiveness for both younger and older students. However, although gifted students of all ages “equally enjoyed the flexibility and online social interaction” (p. 163), younger gifted students considered online courses less demanding than older students did and they indicated a strong interest in it. The study, moreover, found that current research on using technology for 21st century skills “has shown positive results for improving critical-thinking skills and differentiating curriculum for gifted students” (p. 164). The overall findings revealed that gifted students have positive perceptions about educational technology. Furthermore, it also found research “of gifted students and technology training for teachers of gifted students was limited” (p. 163). The study indicated that descriptive and evaluative reports can offer a strong basis for future research and revealed a clear need for more research on gifted students.

Chen, Yun Dai, and Zhou (2013) proposed systematic research to conceptualize, incorporate, and utilize the current technology in gifted education. The study reviewed the extant literature to understand the current situation of technology use in gifted education. The

researchers used three main functions of technological support as a working framework: “a) technology enables gifted education to expand its capacity of service; b) technology enhances the quality of gifted education; and c) technology transforms gifted education by creating new directions and possibilities” (p. 166). The researchers indicated gifted education often establishes a unique context for technology use. In their research, several studies asserted the importance of taking full advantage of technology innovations in education. Similar to Periathiruvadi and Rinn (2012) findings, some reviewed studies stated that technology can provide “authentic opportunities for developing higher order thinking skills and creativity” (p. 172). There was a general consensus in the reviewed studies that technology has great potential for enhancing the quality and efficiency of gifted education. The study concluded that technology significantly helped gifted centers increase capacity. This study provided an overview of technology use in gifted education and suggested future research topics regarding it. It concluded there is a profound need to articulate the role of technology and test its effectiveness for gifted education. According to the study, only a few researchers have discussed exactly how technology has been employed to increase the efficiency of gifted education programs. Moreover, “very few studies have empirically examined the instructional effects of using specific technologies” (p. 172). Similar to Periathiruvadi and Rinn (2012), Chen et al. did not analyze the effectiveness of a specific technology tool, but did identify that attitudes toward technology need to be discussed in future research regarding how to use technology more effectively, as “attitudes toward technology can directly influence the effectiveness of technology use” (p. 172).

Unlike the already mentioned studies, Alawamreh and Elias (2015) limited their study to a specific technology, EduWave, a Web-based learning management system. The researchers tried to find how to propose suitable Web-based learning that considers gifted students in

developing countries. The researchers used a survey to find which factor (intrinsic motivation, training, or compatibility) has the greatest effect on gifted students' acceptance of e-learning. The study emphasized that compatibility of technology with the user's learning style is the most significant factor affecting gifted students' acceptance of e-learning. Therefore, only suitable instruction must be used with gifted students, which is identical to the recommendation of the National Association for Gifted Children NAGC (2018). Some other studies found similar findings (e.g., Al-Zoubi, Rahman, & Sultan, 2015; Al-Ajez & Murtaja, 2012) that contend the right equipment is essential to achieve the goal of establishing these centers.

Learning Management Systems in General Education

Unlike gifted education, learning management systems have often been discussed in general education. Al-saai (2015), for instance, measured the effectiveness of the Blackboard system in higher education from faculty members' and students' points of view as well as how the sample has benefited from the system. A questionnaire was distributed to 737 students and 105 faculty members at Qatar University. The study found both students and teachers believed Blackboard was an effective tool for the university. The study recommended further training on the system for faculty members and assigning a certain time on new students' orientation day to teach them necessary details about the Blackboard system. Using the TAM, Abdalla (2007) evaluated the effectiveness of an e-blackboard system from the perspective of 518 undergraduate students in the United Arab Emirates University. A survey measured their perception of the system as well as the ease of use and usefulness and their attitude and cognitive behavior. The study found that the ease of using web-based application and its usefulness positively influenced the students' attitude toward the application. Binyamin, Rutter, and Smith (2017) used the same

model (TAM) to understand the students' acceptance of Blackboard in Saudi Arabia. Using a quantitative approach, a survey was distributed to 142 students at King Abdulaziz University. The findings revealed that the students' actual use was influenced by behavioral intention, which was affected by the students' attitude and perceived usefulness, while the perceived ease of use had an impact on the students' attitude and perceived usefulness alike. The study findings also showed that LMS might play an important role in students' learning. Because the study sample included only 19 females and 3 Ph.D. students, further research was recommended to include more females and Ph.D. students. More studies have also recommended including external variables (e.g., psychological, demographic or technical) in the context of LMS in Saudi Arabia.

Heirdsfield, Walker, Tambyah, and Beutel (2011) examined the effectiveness of online environments for students' learning. The quantitative data were gathered through a survey of 43 academic staff, 324 undergraduates, 96 graduate students, and 39 postgraduate students at Queensland University of Technology, where Blackboard was the learning management system for all students. Additional qualitative data were gathered by interviewing nine staff and six students. The study found students could communicate with each other as a benefit of the system, and as a result of online interactions, students felt their learning experience was enhanced. The most valued feature identified by the students was that Blackboard enabled them to easily access all types of unit materials and information at any time.

The LMS studies mentioned used a quantitative approach. However, Heirdsfield et al. (2011) added the qualitative approach to gather further data through interviewing nine staff and six students. All these studies were conducted at the higher education level because LMS have been used widely in higher education (Pollack, 2003). The Blackboard system was the most mentioned LMS in the studies, which could be because Blackboard is the most used LMS in

education (Alshwaier, Youssef, & Emam, 2012). Overall, the learning management systems' studies reveal a significant role of using LMS in education, which illustrates its capability to make the teaching and learning process more effective.

Per Reiser and Dempsey (2012), educational technology professionals put most of their efforts into instructional media design, production, and implementation. In the Classera LMS, educators provide students with selected educational resources such as videos, articles, games, quizzes, and discussions to facilitate learning. The variety of resources might provide students with a deeper learning and more flexible learning environment that can be used inside or outside of the classroom.

In 2015, the Saudi Ministry of Education temporarily implemented the Classera LMS in some K-12 schools located in the southern region of the country during the Saudi war with the Houthi rebels. In the same school year, Classera was provided for gifted students to help unleash their talents and increase their learning engagement so they could have access to local and international content and communities (Classera, 2015). In 2017, the system was being used in 300 K-12 schools throughout the country. By 2018, 1,500 K-12 schools had used Classera. The latest stage of Classera implementation came in the fall of 2019, when the system was put into operation in total of 2,000 K-12 public schools. Thus, Classera is considered to be the first learning management system adopted and implemented by Saudi K-12 schools to deliver educational content and resources to students (Alahmari & Kyei-Blankson, 2016). The present goal of the Ministry of Education in Saudi Arabia is to provide LMS to all schools from elementary to high school in the near future (AlOhali, AlSuhaibani, Palavitsinis, & Koutoumanos, 2018; Classera, 2017).

Unlike Blackboard, only four studies were found regarding the Classera LMS. One of them is Alabassi and Alhadyan's (2017), who explored the use of the Classera LMS in the southern region schools of Saudi Arabia. The main purpose of their study was to identify "the advantages of using Classera and the challenges that students and teachers may face during its use" (p. 35). Using the descriptive method, a survey questionnaire was given to 38 female teachers and 24 female students from the middle and high school levels at the King Salman Virtual School. This study was conducted when the Classera system was applied temporarily in the southern region during the Saudi war with Yemeni rebels. The study found that Classera helped teachers gain easier access to information sources, communication between teachers and students became more accessible, and students' motivation increased. The most positive feature was Classera enabled students to replay lessons an unlimited number of times, which is like the Blackboard feature stated by Heirdsfield et al. (2011). On the other hand, slow internet was the most agreed on obstacle among students and teachers. In addition, lack of teacher training on the system was identified as an impediment to using the system effectively. The study suggested that schools should prepare the required infrastructure before operating the system and provide more training on the system for the teachers. This study assessed Classera's usefulness from the users' perspectives which, as a result, affected students' attitudes (Davis, 1989). Yet, this study was conducted during the temporary stage of Classera implementation. More importantly, study participants were not gifted.

Alahmari and Kyei-Blankson (2016) explored the perspectives of Saudi teachers regarding the use of Classera in K-12 classrooms. At the time the research was conducted, the Classera system had been implemented as an experimental step in the 2014-2015 school year. The study was piloted in 12 public schools around the country using a quantitative approach to

explore the benefits of using Classera in teaching and its barriers that may prevent effective instruction. An online survey was used to gather the data from 70 in-service teachers. Study results revealed high levels of teacher satisfaction with the benefits of using Classera, including easy content delivery. The most often identified benefit was Classera increased students' participation and improved the quality of their responses. The study, moreover, found that most teachers (83%) had positive attitudes toward Classera, although there were several barriers preventing them from using Classera effectively: low internet access, lack of technology resources in schools, teachers' busy schedules, and being forced to teach the whole textbook. According to the study, challenges such as teacher proficiency and time for training on the system still persisted and needed to be taken into consideration to ensure the successful adoption and implementation of Classera in all K-12 schools across Saudi Arabia. The researchers recommended replicating their study to find out "the perspective of other stakeholders such as students, parents, and administrators" (p. 28) so all voices could be heard and considered.

The same researchers conducted another study (Alahmari & Kyei-Blankson, 2018) to examine the differences between public and private school teachers regarding the adoption and implementation of Classera in Saudi K-12 schools. The researchers used a quantitative approach to explore the teachers' perceptions about the benefits, challenges, and concerns of using Classera. The study was conducted in the fall of 2016 when Classera had been implemented in nearly 20 public and more than 150 private schools. An online survey was used to gather data from 86 teachers in public and 202 teachers in private schools. According to the study, the difference between private and public school teachers regarding their experiences with Classera was not statistically significant. The study findings indicated teachers in both public and private schools had positive experiences, in which 81% of public school and 84% of private school

teachers were satisfied with using Classera. This is similar to the findings in their previous study (Alahmari & Kyei-Blankson, 2016). Low internet access was the greatest challenge perceived by public school teachers, while private school teachers indicated their busy schedules were the most challenging factor preventing them from using Classera effectively. The study, moreover, indicated that infrastructure resources and Classera training limited the usefulness of the system.

Unlike the other Classera studies, Alhabeeb (2015) used a qualitative approach, which makes this the only known qualitative study regarding Classera. Alhabeeb (2015) interviewed 15 school principals in Riyadh City to identify Classera implementation requirements for all private schools using Classera. This descriptive study found four essential requirements for using Classera effectively: human requirements, technical requirements, financial requirements and administration requirements. The study found human requirements, which were described as teachers and students being able to use computers effectively, were the most important requirements for Classera implementation in K-12 schools. Technical requirements were the second most important requirement for Classera implementation. Administration requirements were needed least for the implementation. Alhabeeb's (2015) results were similar to Alahmari and Kyei-Blankson's (2016) findings that lack of necessary requirements could be a barrier for using LMS effectively because "when the basic needs of technology integration are not completely provided, there is always a possibility of the failure in applying any technology-based program" (Alahmari & Kyei-Blankson, 2016, p. 28). In addition, Alhabeeb (2015) advised more faculty training on the system. The need for teachers' training on the system was also highlighted as a necessary requirement for Classera implementation by all other Classera studies (Alabassi & Alhadyan, 2017; Alahmari & Kyei-Blankson, 2016, 2018). Teacher training has also been indicated as a limitation of other LMS, such as Blackboard (Binyamin et al., 2017; Periathiruvadi

& Rinn, 2012). Similar findings were also found in gifted education; Periathiruvadi and Rinn (2012) stated that “technology training for teachers of gifted students was limited” (p. 163). Furthermore, internet access and lack of required technology or infrastructure were also identified as a barrier by all Classera studies (Alabassi & Alhadyan, 2017; Alahmari & Kyei-Blankson, 2016, 2018; Alhabeeb, 2015). Other Classera limitations have been indicated in different studies, such as teachers’ busy schedules (Alahmari & Kyei-Blankson, 2018). However, Classera literature has found that Classera is capable of enhancing the learning process, increasing students’ participation, and improving their responses.

Overall, Classera studies have indicated similar benefits to the use of other LMS because most learning management systems have similar features (Abdalla, 2007). Most mentioned the benefit of using Classera is its capability for increasing students’ participation and improving their responses (Alahmari & Kyei-Blankson, 2018). The literature reveals the use of LMS is an integral part of successful teaching (Almekhlafi & Almeqdadi, 2010). Therefore, implementation of LMS in K-12 schools has become indispensable, especially after the tremendous change these systems have brought about in higher education (Al-saai, 2015). However, implementation of LMS in K-12 schools is considered a recent movement, especially in Saudi Arabia, where Classera was the first LMS implemented by the Saudi public K-12 schools (Alahmari & Kyei-Blankson, 2016). Consequently, the literature reveals a clear lack of studies regarding LMS in K-12 schools, especially in the context of gifted education. Past studies have recommended the need for further research; some recommendations have been about learning management systems in general. Al-saai (2015), for example, encouraged further research to focus on empirical studies about learning management systems. Other recommendations are on Classera, with Alahmari and Kyei-Blankson (2016) recommending their Classera study be replicated to find “the

perspective of other stakeholders such as students” (p. 28). Additionally, further studies regarding the use of technology for gifted students have been encouraged (Periathiruvadi & Rinn, 2012). Gifted education literature has assured the importance of implementing technology due to its efficiency for gifted students. However, LMS were rarely discussed in the context of gifted education, specifically for secondary schools, while LMS were often discussed in general education. Apparently, there is a dearth of research regarding LMS in secondary schools, especially Classera studies, which were very limited.

Furthermore, the literature reveals a focus on the users’ attitude toward LMS in that most studies have indicated both teachers and students have a positive attitude toward using LMS in schools (e.g., Abdalla, 2007; Heirdsfield et al., 2011). The literature has paid special attention to the importance of examining the users’ attitudes toward a new technology because students’ attitudes toward a system are a fundamental part of the evaluation process of an instructional tool, especially with recently implemented systems. However, the literature shows a lack of studies regarding K-12 students’ attitudes, especially Saudi students (Binyamin et al., 2017). As a result, further research has been recommended to investigate K-12 students’ attitudes toward LMS (Alahmari & Kyei-Blankson, 2016).

Technology Acceptance Model

Smyth (2004) emphasized that a conceptual framework is required as a starting point for the researcher to reflect on his investigation and develop an awareness of the basis for his study. Therefore, the theoretical framework of this study is the Technology Acceptance Model (TAM) developed by Davis (1989). The TAM is based on the theory of reasoned action (TRA) by Fishbein and Ajzen (1975). The model “has been extensively incorporated as a methodology to

measure attitude toward technology adoption from users in multiple domains” (Rigopoulos, Psarras, & Askounis, 2008, p. 900). The TAM was adopted for this study because it has been used in many studies specifically to measure the “users’ attitude toward adoption of several IT based services” (Rigopoulos, Psarras, & Askounis, 2008, p. 900). The version adopted for this research “has been adopted and expanded in many studies in various types of technologies including e-mail, word processor, World Wide Web, enterprise resource planning (ERP) systems and proved high validity” (Cakir & Solak, 2015, p. 597). The model’s high validity has been proven in many empirical studies (Adams, Nelson & Todd, 1992; Alharbi & Drew, 2014; Chau, 1996). However, it has rarely been used within the context of Saudi Arabia to understand students’ attitudes toward learning management systems (Binyamin et al., 2017).

Abdalla (2007) used TAM to evaluate the effectiveness of the e-Blackboard system for United Arab Emirates University students. The study adopted the TAM to measure user perception, ease of use, usefulness, attitude, and cognitive behavior. The study found ease of use and usefulness positively influenced students’ attitude toward the e-Blackboard system. Similarly, Binyamin et al. (2017) used the same model to understand students’ acceptance of Blackboard in Saudi Arabia. The study showed that students’ actual use is influenced by their behavioral intention, which is affected by the students’ attitude and perceived usefulness, while the perceived ease of use has an impact on the students’ attitude and perceived usefulness alike.

The model suggests the user’s attitude is influenced by two major beliefs: perceived usefulness and perceived ease of use. The perceived ease of use, in turn, directly influences perceived usefulness. Both perceived ease of use and perceived usefulness were influenced directly by system design characteristics. According to Surendran (2012), the main system

design characteristics, or external factors, are usually social factors, cultural factors and political factors.

Based on TAM, if users find a technology easy to use and useful, they will develop a positive attitude toward this technology (Fathema, Shannon, & Ross, 2015). Accordingly, the TAM is important for demonstrating the attitudes of Classera users since the model can explain users' reactions to a new technological experience. In other words, the attitudes of Classera users can be explored by examining factors stated by the theory.

Perceived Usefulness

This construct refers to whether the user believes the technology can meet his or her needs. Davis (1989) defines perceived usefulness as “the prospective user’s subjective probability that using a specific application system will enhance his or her job or life performance” (p. 985). The model has developed a psychometric scale of six items for perceived usefulness to predict the user’s performance, productivity, efficiency, usefulness, and job performance. Meeting these requirements means the application is useful for its role. The perceived ease of use is the best predictor of perceived usefulness (Abdullah, Ward, & Ahmed, 2016).

Perceived Ease of Use

Surendran (2012) explained perceived ease of use as “the degree to which the prospective user expects the target system to be free of effort” (p. 175). Perceived ease of use means how users are attracted to the system because of its ease (Jogiyanto, 2007). Like perceived usefulness, the perceived ease of use construct has a scale of six items to evaluate whether the user can

easily learn how to operate the application, if it is easy to command the application to do the task, if communication between users in an application is comprehensible, and if the application is flexible to link and associate with and among others.

“The importance of perceived ease of use is supported by Bandura’s (1982) extensive research on self-efficacy” as “self-efficacy is similar to perceived ease of use” (Davis, 1989, p. 321). Bandura (1997) defined self-efficacy as “beliefs in one’s capabilities to organize and execute the courses of action required to produce given attainments” (p. 3). Self-efficacy is “the level of confidence that someone has to perform a particular task, activity, action or challenge” (Alqurashi, 2017, p. 22). In another words, self-efficacy is people’s beliefs “about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives” (Bandura, 1994, p. 71). Self-efficacy beliefs conclude how people might think, feel, be motivated, and, as a result, how they act and behave.

Bandura (1991) stated that “people’s beliefs in their efficacy influence the choices they make, their aspirations, how much effort they mobilize in a given endeavor, [and] how long they persevere in the face of difficulties and setbacks” (p. 257). Students who are efficacious are more persistent in meeting their goals, more motivated, and more likely to take learning risks (Spicer, 2009). Contrarily, if a person believes he cannot achieve a mission, he will not make any effort to make it happen (Bandura, 1997). Therefore, self-efficacy is a belief that can encourage or restrain students from learning to their full potential (Spicer, 2009).

Liaw (2008) stated that perceived self-efficacy is an important factor that influences learners’ satisfaction with Blackboard. Self-efficacy was also stated as “a strong predictor of academic success” (Hodges, 2018, p. 453). In fact, self-efficacy was found as the most significant predictor of students’ perceived learning (Alqurashi, 2017). Generally, attitudes

toward technology integration and technology self-efficacy were stated as internal factors by several researchers (Al-Ruz & Khasawneh 2011; Chen 2008; Lin, Wang, & Lin 2012; Sang et al. 2011; Tezci 2011a). According to Sang et al. (2011), internal factors influence technology integration outcomes. Thus, examining “internal variables can partially explain the success of technology integration in the classroom” (Fu, 2013, p. 119) – especially, that self-efficacy was found as a significant predictor of student satisfaction (Artino, 2008).

Bandura’s (1977) original self-efficacy theory “has been applied in educational settings to various grade levels (e.g., elementary, secondary, postsecondary)” (Schunk, 1995, p. 281). Furthermore, self-efficacy has been examined in different research regarding how it influences learning, motivation, and achievement. While “much of the research on self-efficacy in online learning environments was conducted in higher education” (Alqurashi, 2017, p. 47), overall “research on self-efficacy in online environments is in its infancy” (Hodges, 2008, p. 10).

The gifted students’ community is known for its competitive environment. Therefore, “students who observe similar peers perform a task are apt to believe that they, too, are capable of accomplishing it” (Schunk, 1995, p. 281). Moreover, “gifted students’ better performance when intrinsically motivated depends to some extent on the level of challenge involved in the work” (American Psychological Association, 2017, p. 22). Consequently, the number of personal accomplishments is increased, and the level of anxiety and stress is reduced (Bandura, 1997). As student anxiety increases, the ease of use of the LMS decreases and vice versa (Saade & Kim, 2009).

Attitude Toward Using Technology

The attitude to use is “concerned with the user’s evaluation of the desirability” of employing a particular application (Surendran, 2012, p. 176). Ajzen (1988) described the attitude as a predisposition to respond favorably or unfavorably to an object, person, or event. In other words, attitude is “the positive or negative feelings or evaluations generated when an individual uses new technologies” (Jiwasiddi, Adhikara, & Triana, 2019, p. 4). According to Davis (1989), if the user has a positive attitude toward a system, then he/she is more likely to accept it and vice versa. The TAM “postulates that user opinions on usefulness and ease of use define attitudes in the utilization of the system” (Bahaj, Aljaaidi, & Ahmed, 2019, p. 654). Thus, perceived usefulness and perceived ease of use directly affect the user’s attitude toward using technology (Alharbi & Drew, 2014; Asiri, bt Mahmud, Baker, & bin Mohd Ayub, 2012). The user’s attitude, as a result, determines whether the user finds the technology useful and worthy of being used.

The TAM introduces a crucial concept that helps to predict the outcome of newly implemented technology. Examining gifted students’ attitudes through the TAM lens can provide data to determine if the Classera LMS is useful for gifted students at the secondary school level and if it fits their characteristics. Therefore, the TAM theory can guide the intended study by providing a basis for analyzing the obtained data. The analysis, as a result, may help identify the users’ attitudes toward the Classera LMS.

Conclusion

Past LMS studies have expanded the LMS literature, which has helped to promote the importance of LMS implementation in schools and the significance of LMS evaluation. Existing

literature has identified specific issues regarding learning management systems, such as their benefits and how they positively impact the learning process. Although most studies have indicated that learning management systems have enhanced the learning process, some studies have uncovered several limitations to using LMS in education. Most studies about LMS and self-efficacy were focused on higher education, which reveals the dearth of studies in these areas in K-12 schools. Technology in general education has often been discussed, but LMS is rarely examined in the context of gifted education. Thus, the current study sought to fill these gaps and examine the attitudes of gifted students toward the Classera LMS in secondary schools.

CHAPTER 3

METHODOLOGY AND PROCEDURE

Research Design

The purpose of this study was to examine the attitude of gifted students in secondary schools toward Classera LMS and to examine to the extent to which perceived ease of use and perceived usefulness predict students' attitude toward Classera LMS. Therefore, this study used a quantitative methodology, specifically a multiple regression design. The quantitative approach collected quantifiable information and sought to analyze the obtained data using statistical methods in an unbiased manner (Creswell & Plano Clark, 2010). This study employed a cross-sectional design (Creswell, 2021) intended to examine students' attitude toward Classera LMS and assess how this attitude relates to perceived usefulness and perceived ease of use at one point in time. The TAM survey was used to allow the participants to self-report their attitudes about Classera LMS use. Additionally, three open-ended prompts were added to allow for increased understanding of the students' attitude.

Research Questions

This study was guided by the following research questions:

1. What are the attitudes of gifted students toward the Classera learning management system at the secondary school level?

2. To what extent do perceived usefulness and perceived ease of use predict gifted students' attitudes toward using the Classera LMS at the secondary school level?

Instrumentation/Data Collection

The TAM survey consists of three subscales: perceived usefulness, perceived ease of use, and attitude. The psychometric scale for perceived usefulness is intended to measure the application's performance, productivity, efficiency, usefulness, and performance. Similarly, the perceived ease of use scale is intended to evaluate how easily a user can learn how to operate the application, if it is easy to command the application to do the task, if communication between users in an application is comprehensible, and if the application is flexible enough to link and associate with others. Both perceived usefulness and perceived ease of use have been shown to predict user's attitudes toward using technology (Alharbi & Drew, 2014; Asiri, bt Mahmud, Baker, & bin Mohd Ayub, 2012), where attitude refers to the user's evaluation of the desirability of employing a particular system application.

Validity and reliability evidence for the TAM survey has been demonstrated in previous empirical studies (e.g., Adams, Nelson, & Todd, 1992; Alharbi & Drew, 2014; Chau, 1996). Moreover, it has been shown to provide reliable and valid data in many studies with different types of technologies, including word processors, email, and the world wide web (Cakir & Solak, 2015). The TAM survey has been used in numerous studies to measure users' attitudes toward adoption of different IT based services (Rigopoulos, Psarras, & Askounis, 2008). The TAM survey is used in the current study to measure the outcome variable (attitude) and two predictor variables (perceived usefulness and perceived ease of use; see Table 1).

Table 1

TAM Survey

Variable	Survey items
1. Students' attitude	<ol style="list-style-type: none"> 1. Using Classera in my study is good. 2. Using Classera in my study is favorable. 3. It is positive for me to use Classera in school. 4. I think it is valuable to use Classera in school. 5. I think it is wise to use Classera in schools.
2. Perceived usefulness	<ol style="list-style-type: none"> 1. Using Classera in my studies would enable me to accomplish tasks more quickly. 2. Using Classera would improve my study performance. 3. Using Classera in my study would increase my productivity. 4. Using Classera would enhance my learning efficiency. 5. Using Classera would make it easier to learn. 6. I would find Classera useful in my studies.
3. Perceived ease of use	<ol style="list-style-type: none"> 1. Learning to operate Classera would be easy for me. 2. I would find it easy to get Classera to do what I want to do. 3. My interaction with Classera would be clear and understandable. 4. I would find Classera flexible to interact with. 5. It would be easy for me to become skillful at using Classera. 6. I would find Classera easy to use.

The survey items were closed-response items using the following response options (5 = *strongly agree*, 4 = *agree*, 3 = *neutral*, 2 = *disagree*, and 1 = *strongly disagree*). The total scores were computed as the mean score across items. The survey items were translated into Arabic to assist the participant. At any time while filling out the survey, participants had the option to choose the displayed language from Arabic to English or vice versa by clicking on the language icon available on each page of the survey.

Because qualitative data offer increased scope for interpretation (Vogelsang, Steinhüser, & Hoppe, 2013), three open-ended prompts were added to the survey to obtain additional data to understand students' attitudes. One prompt ("Why do you think it is positive for you to use Classera in school?") only appeared to those who "agreed" or "strongly agreed" that Classera is positive for them (i.e., conditional branching was used). Participants who "disagreed" or "strongly disagreed" with the same item ("It is positive for me to use Classera in school") were directed to the open-ended prompt: "Why do you think Classera is not positive for you to use in school?" The third open-ended prompt ("How do you find Classera useful in your studying?") was offered to all participants.

Participants

The sample of participants chosen for this research consisted of 306 male students in the secondary level at a public school for gifted students in Jeddah City, where all students and teachers were using Classera as a learning management system (LMS). This school is the first school in the Gulf countries in which all students are gifted; it was established in 2010. All elementary students in Jeddah City are encouraged to take an IQ test constructed by the Saudi National Center for Assessment. After that the test administration, the school contacts the highest-scoring Saudi students to offer them the chance to continue their secondary education there. Chosen students benefit from the intense math and science curriculum, and the maximum number of students in each class is limited to 20. The school district aims to recruit exceptionally gifted students to study in the middle and high school for six years. In Saudi Arabia, students start the intermediate level at age 12 and graduate from high school at age 18 (Clark, 2012; Stephens, Warren, & Harner, 2015).

Procedure

IRB approval was granted by Northern Illinois University before collecting the data. All participants were informed that their participation was optional and they had the right to withdraw from the study at any time without consequences. Moreover, all participants were asked for their written assent to participate in the survey (Appendix A). Because all students in the sample are under the age of 18, their parents' written permission was obtained (Appendix B) before distributing the survey. Additionally, permission from the school board in Jeddah City was obtained (Appendix C). Also, there was no expected physical risk for the study participants.

The data were collected across several weeks because the participants were asked to complete the survey during one of their classes. Therefore, verbal permission was requested from the teachers prior to administering the survey during their class time. The total time required to collect the data was three weeks. All collected data were saved in a password-protected electronic file on the researcher's laptop.

Quantitative Data Analysis

After collecting the survey data, SPSS was utilized to analyze the data. Descriptive statistics were computed to address the first research question, and multiple linear regression was used to address the second question. Cronbach's alpha was computed to assess the reliability of the data. The quantitative variables were described by the mean, median, mode, and standard deviation. Distributional characteristics of the data were presented in bar graphs and histograms. The assumptions of normality and homoscedasticity of residuals were assessed, and multicollinearity and the potential presence of outliers also were assessed. Normality was

examined by constructing a histogram and a Q-Q plot of the residuals (Bates, Mächler, Bolker, & Walker, 2015; Field, 2013). The homoscedasticity assumption was examined by examining a scatterplot of the residuals on the fitted values (Bates et al., 2015; Field, 2013). Absence of multicollinearity implies that the predictor variables are not excessively correlated with each other and was assessed by examining the variance inflation factor (VIF) statistic, where VIF values over 10 suggest the presence of multicollinearity (Menard, 2010). The presence of regression outliers was assessed by examining studentized residuals (Field, 2013; Stevens, 2009), where outliers were identified as values that exceeded the 0.99 quantile of a t -distribution with $n - 1$ degrees of freedom, where n is the sample size.

Qualitative Data Analysis

To facilitate analysis of responses to the open-ended prompts, the responses were entered into an Excel file. Then the researcher used an inductive approach to generate substantive codes from the data. The responses were read line by line to create the codes using existing concepts and key phrases from the responses (open coding). The open coding strategy was achieved by segmenting data into meaningful expressions and then attaching relevant annotations and concepts to these expressions (Flick, 2008). Axial coding was then applied, which entails grouping related codes together (Corbin & Strauss, 2015) by highlighting similar codes with the same color to identify relationships between categories. The grouped codes were titled with a related theme (Table 2). The codes and themes were shown to a faculty member in the College of Education at Jeddah University who is a familiar with qualitative research, and the faculty member agreed with 94% of the codes-to-theme alignments, which surpassed the 80% threshold that is suggested by Miles and Huberman (1994).

Table 2

Codes, Themes, and Examples of Responses to Open-Ended Prompts

Prompt Number	Theme	Code	Example
1	Easy to use	Simple interface	I did not need any help on how to use Classera because it has a simple interface.
		Submit assignments easily	Submit my assignments easily with no complications.
	Communicate with the teacher	Talk to teachers at any time	I think it was positive because I was able to communicate with my teacher at any time.
		Teacher's respond at any time	He (teacher) can respond at a time convenient for him.
	Effective tool for learning	Gives me a chance to review	Because it gives me the chance to review the lesson even after the class finishes.
		A resource	I used to waste time going through YouTube and other resources to find the best examples for lessons that I found complicated to understand.
	Flexible	Make up the class	Because it is helpful if I missed a class.
		Can log in at any time	I can log in and study at my convenient time.

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	Interesting	More interactive	It utilizes class work and makes it more interesting and interactive.
		Learning in a new way	Studying in a whole new way.
2	Software errors	Website freezing	Classera hangs a lot of times.
		Poorly developed	It (Classera) has a lot of problems.
	Ineffective for learning	Not helping with learning	Because it is a useless tool, it did not add anything to my learning process.
		Being distracting	I got distracted by notifications from other applications.
	Time consuming	Type the username and password	I do not want to turn on my device, type the username and password... I just want to open my book and start learning.
		Waiting assignments to be posted	I wait too long for assignments to be posted.
	Extra load	More worksheet	Because it adds an extra worksheet to what we already have in our curriculum.
		Replicate the textbook practice exercises	Some exercises are the same to what we have finished in the textbook.
3	Effective tool for learning	Summaries available	Summaries of lessons and video clips have helped me more than I expected.

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	Repetition of questions in different forms	Answering different questions about one idea helped me to recall information after a long time.
Easier learning	Easy to navigate	Classera is a very organized website that I can navigate easily. It made studying easier than ever, especially with submitting my assignments.
	All materials in one place	We can do our assignments in Classera without being forced to an external link or another system.
Informative	A lot of materials	I can read or watch a variety of the materials provided over and over until I understand the topic.
	Has demonstration	you cannot misunderstand anything if you have looked for a demonstration in the extra practices section

The qualitative responses were synthesized with and distinguished from the reported quantitative analysis to construct narratives to explain the gifted students' attitude toward Classera LMS, and these narratives connected to the literature review findings.

Establishing Trustworthiness of Qualitative Data

Lincoln and Guba (1982) established four tenets of data trustworthiness: credibility, transferability, dependability, and confirmability. Credibility means the data are representative of

participants. Transferability refers to the degree to which the results of qualitative research can be generalized or transferred to other contexts or settings. Dependability occurs when the same results would be obtained if the study were to be conducted twice. Confirmability refers to the degree to which the results could be confirmed or corroborated by others.

Different scholars have elaborated on ways of establishing the four tenets of trustworthiness. Creswell (2009) proposed eight primary validity strategies with qualitative data to enhance the accuracy of findings: triangulate different data sources of information, use member checking, use rich description to convey the findings, clarify the bias, present negative or discrepant information, spend prolonged time in the field, use peer debriefing, and use an external auditor. At least three of these strategies were used in this study. Because some strategies can establish more than one tenet of trustworthiness, they are listed together.

Although the researcher has a bias toward the use of technology, he is aware that not all technology is effective in all education situations. In fact, negative attitudes toward Classera LMS were found in this study and were analyzed and discussed. Presenting contradictory data makes the study “more realistic and hence valid” (Creswell, 2009, p. 192). Additionally, this study was supervised by a faculty member in the College of Education at Northern Illinois University. The faculty member met the standards identified by Lincoln and Guba (1985) for external auditors (e.g., high level of methodological sophistication).

Adherence to Ethical Guidelines

The participants were not asked to provide personal information such as their names. Nothing of value was offered to the students to participate in the survey. The researcher explained to them how their participation might help enhance the development of the Classera

LMS. The students were told that they had the right to withdraw from the survey process at any time without consequence.

Delimitations

The sample of this study was chosen from a school for gifted students in Jeddah City, which is considered a modern city, and as a result, its residents are more familiar with technology than those in most other Saudi Arabian cities. This may limit generalizing this study to other gifted students living in other Saudi cities.

This study was limited to male students, because male and female students are segregated in Saudi secondary schools. Therefore, the study findings are not intended to represent female gifted students.

Saudi secondary schools provide six years of study while some other countries and cultures may provide different lengths of study. Thus, the chosen sample of this study may not represent the secondary school level in some other countries or cultures.

The coding process was solely done by the researcher, yet the codes were offered to an experienced faculty member who agreed with 94% of the codes and themes.

CHAPTER 4

RESULTS

This purpose of this study was to examine the attitude of gifted students toward the Classera LMS in secondary schools and to examine the extent to which perceived ease of use and perceived usefulness predict students' attitude toward the Classera LMS. The theoretical framework of this study was the Technology Acceptance Model (TAM). Based on TAM, three multi-item subscales (Figure 2) were used: 1) students' attitudes toward Classera LMS, 2) perceived usefulness, and 3) perceived ease of use. The following research questions were posed:

1. What are the attitudes of gifted students toward the Classera learning management system at the secondary school level?
2. To what extent do perceived usefulness and perceived ease of use predict gifted students' attitudes toward using the Classera LMS at the secondary school level?

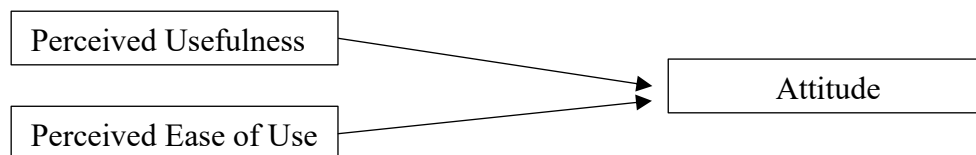


Figure 2. Study constructs.

Quantitative Findings

Reliability analysis showed good reliability for the constructs of student attitude toward Classera (Cronbach's alpha =.884), perceived usefulness (alpha =.915), and perceived ease of use (alpha =.905), with all values exceeding the threshold of .70 suggested by George and Mallery (2003). There were no missing values for any of the three variables.

Descriptive statistics were computed for each construct. Table 3 shows the mean Attitude score was $M = 3.55$ ($SD = 0.94$), the mean Perceived Usefulness score was $M = 3.53$ ($SD = 0.95$), and the mean Perceived Ease of Use score was $M = 4.05$ ($SD = 0.80$). A paired-samples t -test was conducted to compare the mean for the perceived usefulness and the perceived ease of use constructs. The results showed a statistically significant difference between the two constructs' mean, conditions; $t(305) = -11.75$, $p < .001$ (see Table 4).

Table 3

Descriptive Statistics for Subscales of the TAM Survey

	Mean	Std. Deviation	<i>N</i>
Attitude	3.55	0.94	306
Perceived Usefulness	3.53	0.95	306
Perceived Ease of Use	4.05	0.80	306

Table 4

Paired Differences

	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		<i>t</i>	<i>df</i>	<i>p</i>
				Lower	Upper			
Pair 1 Usefulness – Ease of Use	-0.52	0.77	0.04	-0.60	-0.43	-11.75	305	<.001

The distributions of the Attitude, Perceived Usefulness, and Perceived Ease of Use constructs (Figure 3) each were left-skewed with skewness = -0.69, -0.57, and -1.06, respectively. Kolmogorov-Smirnov ($p < .001$) and Shapiro-Wilk tests indicated that the distribution departed significantly from normality for each variable ($p < .001$, Table 5). Boxplots for scores from the three constructs (Figures 3 and 4) show the presence of outliers, but no extreme values.

Table 5

Tests of Normality for TAM Survey Subscale Scores

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	<i>df</i>	<i>p</i>	Statistic	<i>df</i>	<i>p</i>
Attitude	0.14	306	<.001	0.95	306	<.001
Perceived Usefulness	0.09	306	<.001	0.96	306	<.001
Perceived Ease of Use	0.12	306	<.001	0.91	306	<.001

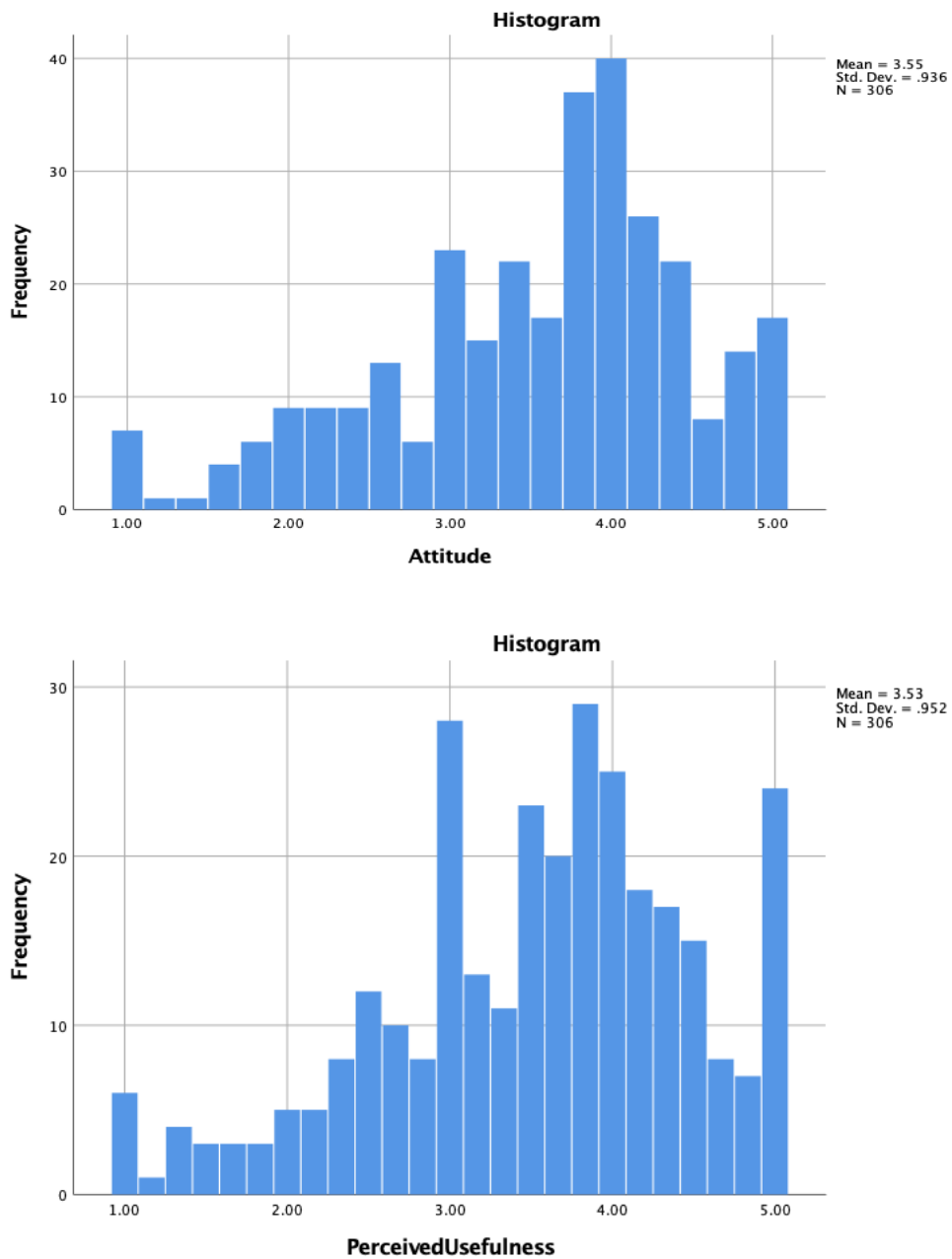


Figure 3. Histograms for scores from attitude, perceived ease of use, and perceived usefulness subscales. Continued on following page.

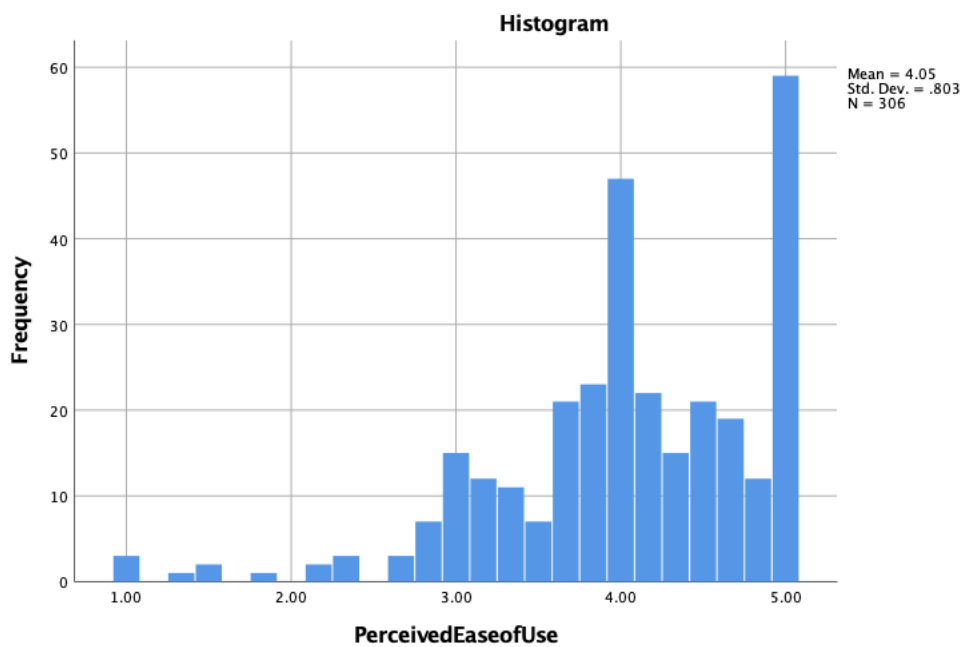


Figure 3 continued.

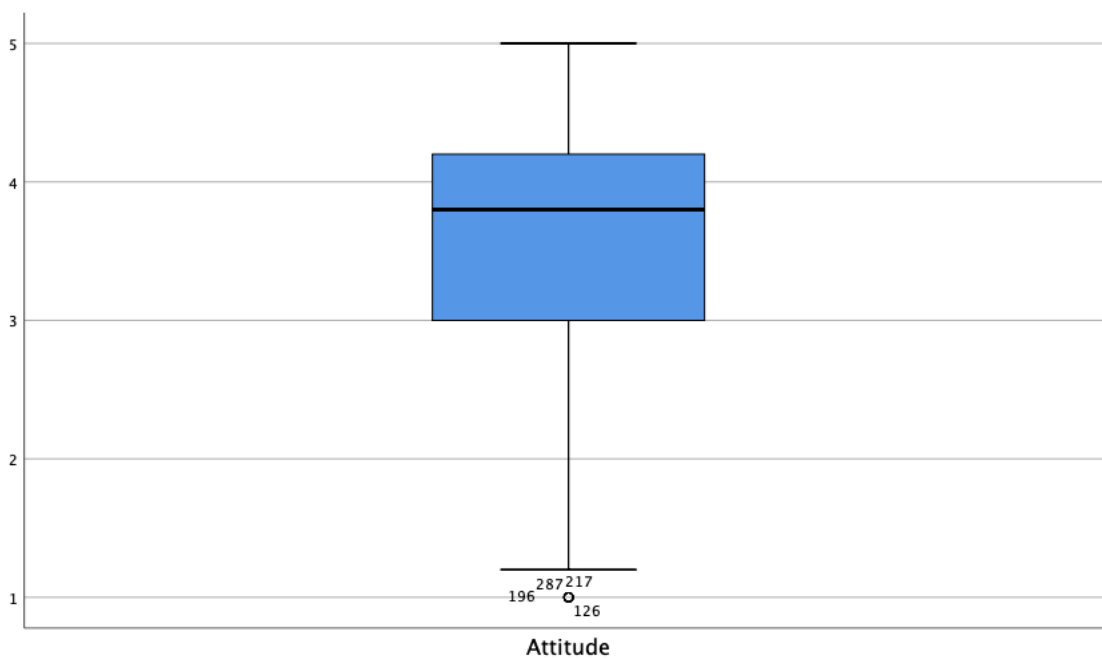


Figure 4. Boxplots of attitude, perceived ease of use, and perceived usefulness scores. Continued on following page.

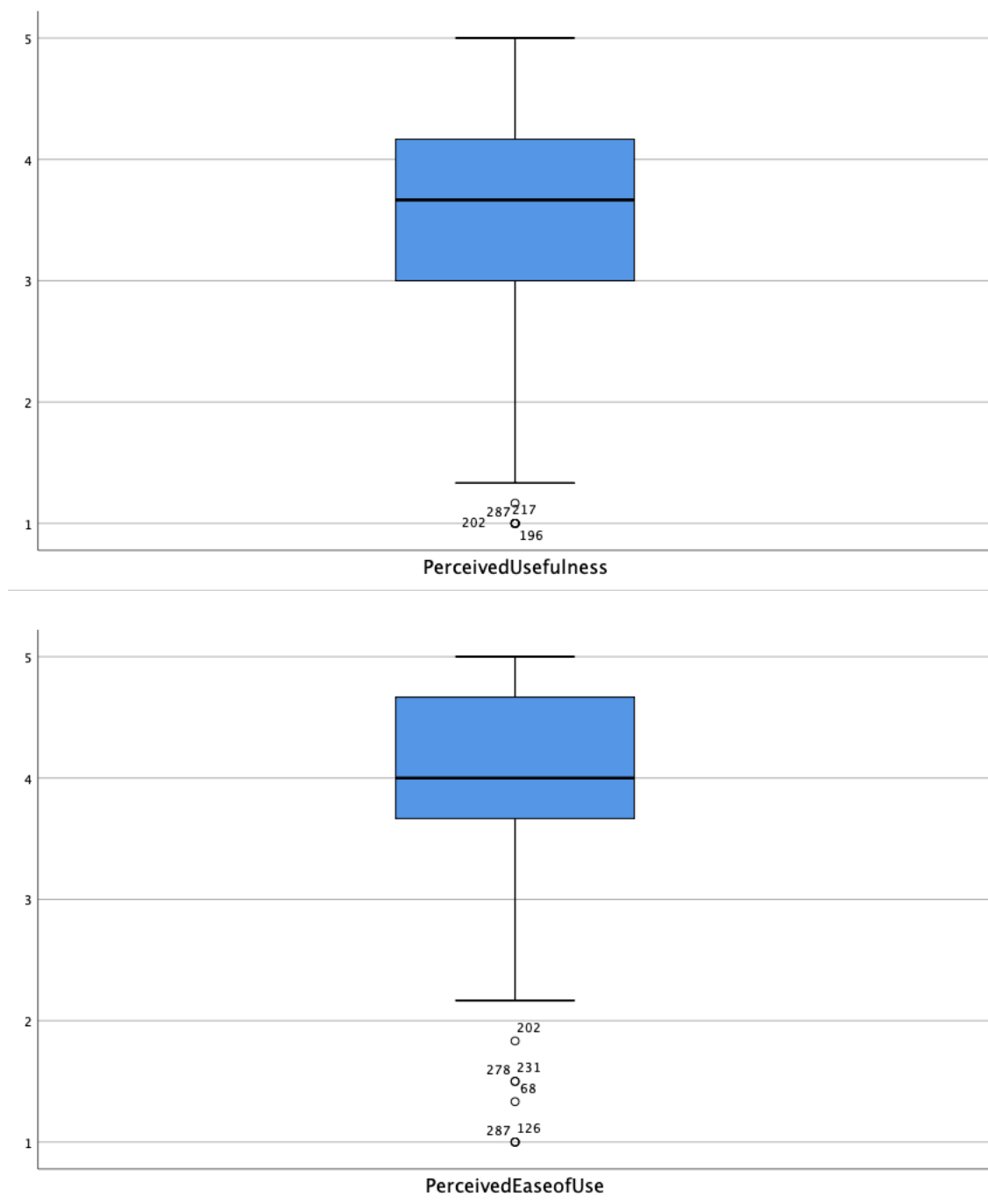


Figure 4 continued.

Table 6 shows the correlations among the study variables. A moderate ($r = .63$) correlation was evident among the two predictors. However, VIF statistics (VIF = 1.65 and VIF

= 1.65 for Perceived Usefulness and Perceived Ease of Use, respectively) suggested that excessive multicollinearity did not present an issue (Myers, 1990). A multiple linear regression model next was fitted to predict students' Attitude toward Classera from Perceived Usefulness and Perceived Ease of Use.

Table 6
Correlations among Study Variables

		Correlations		
		Attitude	Perceived Usefulness	Perceived Ease of Use
Pearson Correlation	Attitude	1.00		
	Perceived Usefulness	.81***	1.00	
	Perceived Ease of Use	.66***	.63***	1.00

Note. *** $p < .001$

The results from the multiple linear regression (Tables 7 and 8) indicated that the two predictors together significantly predicted Attitude toward Classera: $F(2, 303) = 344.57, p < .001$, explaining 70% of the total variation in Attitude scores. When each of the predictors was considered individually (Table 8), Perceived Usefulness ($\beta = 0.65, p < .001$) and Perceived Ease of Use ($\beta = 0.26, p < .001$), each were statistically significant and positive predictors of Attitude. Based on computed Pratt indices, perceived usefulness (Pratt index = 0.75) was determined to be a relatively more important predictor than perceived ease of use (Pratt index = 0.25).

Table 7

ANOVA for Regression of Attitude Scores on Perceived Ease of Use and Perceived Usefulness

Model		Sum of Squares	<i>df</i>	Mean Square	<i>F</i>	<i>p</i>
1	Regression	185.70	2	92.85	344.57	< .001
	Residual	81.65	303	0.27		
	Total	267.34	305			

Table 8

Regression Coefficients for Regression of Attitude Scores on Perceived Ease of Use and Perceived Usefulness

Model		Unstandardized Coefficients		Standardized Coefficients	<i>t</i>	<i>p</i>	Pratt index
		<i>B</i>	Std. Error	Beta			
1	(Constant)	0.09	0.15	--	0.58	0.56	--
	Perceived Usefulness	0.64	0.04	0.65	15.87	< .001	0.75
	Perceived Ease of Use	0.30	0.05	0.26	6.31	< .001	0.25

The histogram of residuals (Figure 5) shows a relative symmetric, normal distribution. The homoscedasticity of residuals appears to be supported based on examination of the scatterplot of the residuals on the predicted values (Figure 6). Lastly, the assumption of linearity appeared to be supported (Figure 7).

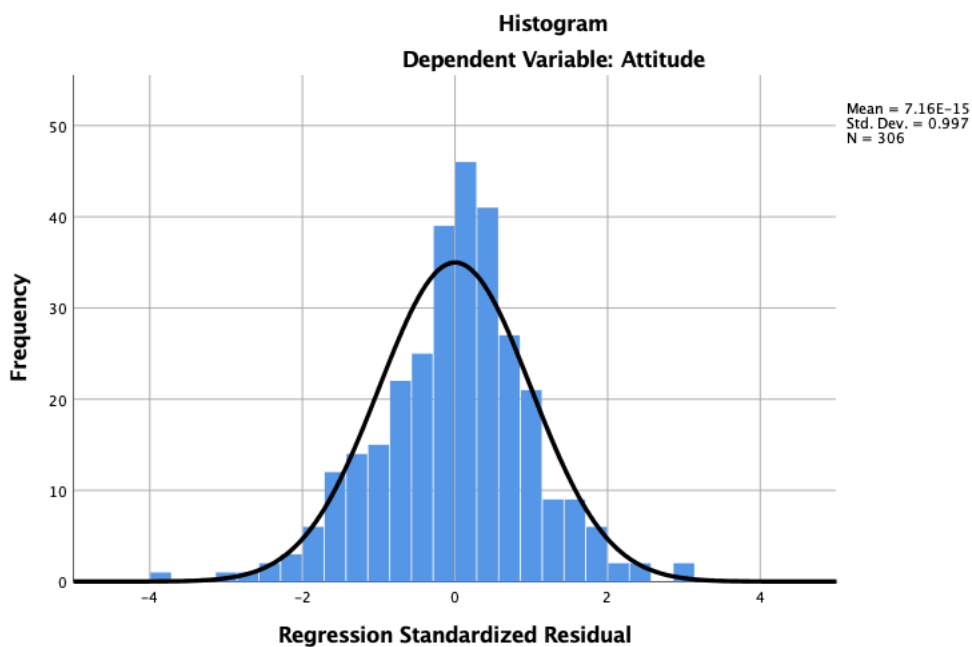


Figure 5. Histogram of regression residuals.

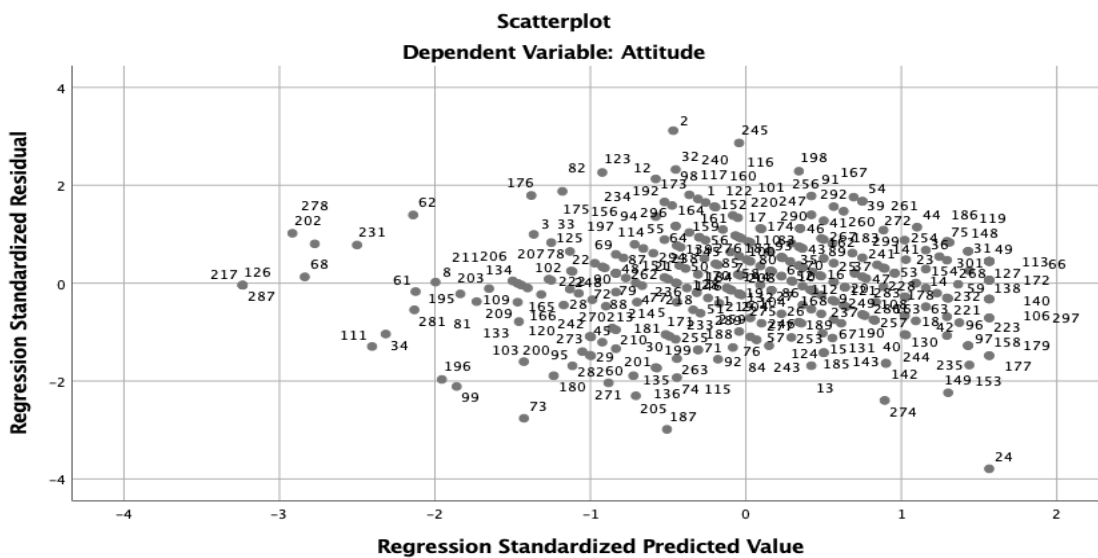


Figure 6. Scatterplot of regression residuals on predicted values.

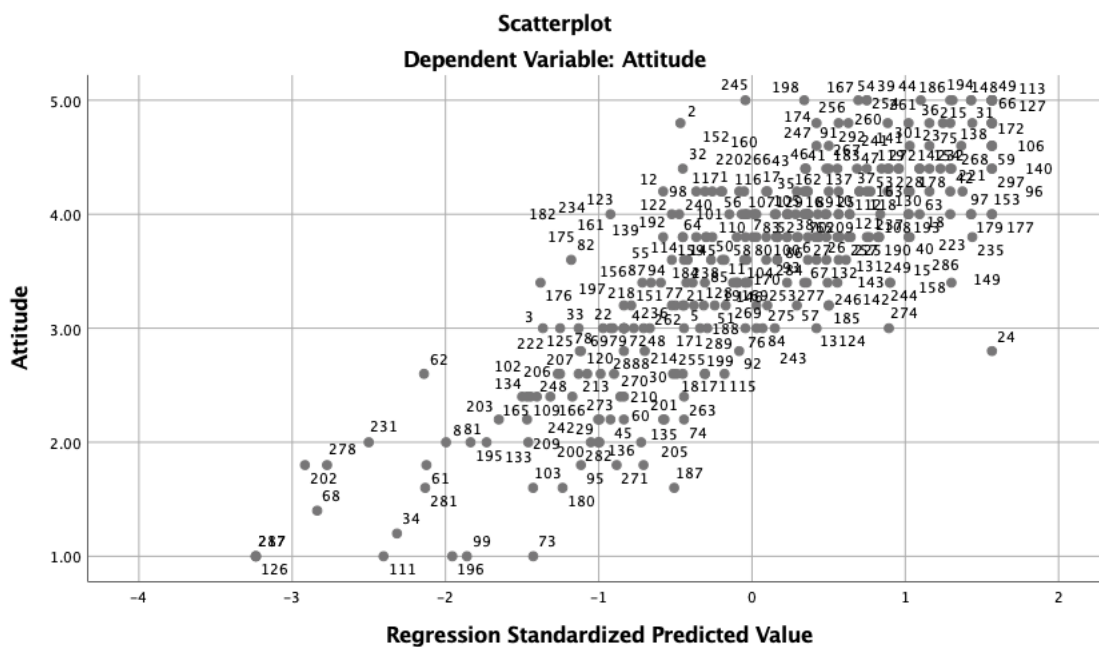


Figure 7. Scatterplot of attitude scores on the predicted values.

Qualitative Findings

By design, responders to the first open-ended prompt “Why do you think it is positive for you to use Classera in school? strongly agreed or agreed with the statement “It is positive for me to use Classera in school.” One hundred and eighty-four responses were received for this prompt, which were categorized into three major themes: 72 responses fell into the theme of Classera being easy to use, which makes this theme the most dominant among all the themes. One participant, for example, wrote: “It is positive for it being easy to submit my assignment once I finished it without worrying about forgetting to bring it to school or hand it to the teacher.” Another wrote “Classera has many benefits, most important one is being easy to deal with.”

Classera was the first LMS each of the participants in this study had used. Following the onset of the Covid-19 pandemic and after students had become accustomed to using Classera for several years, a new LMS (Madrasati) was designated as the sole LMS to be used for K-12

education in the country. That may explain why many responses fall into the theme of Classera being easy. In fact, multiple responses compared the current LMS with Classera with favor to Classera for it being easier to use. For example, one student stated: “I think Classera is positive to use for learning because it was easier and more understandable than Madrasati and Microsoft Teams.” Another student stated: “Classera was much easier and not complicated like Madrasati.”

The second most frequently mentioned reason for Classera being positive to use in school was that Classera was effective for communicating with the teacher. Several responses reflected admiration for the interactive communication students could make with their teachers, especially outside school time. One student rationalized his positive point of view about Classera being “because I can contact my tutor once the question raised to my mind, or when I faced any issue, no matter what time it is.” Another said, “Classera was positive because the teachers send us reminders and new announcements.” Similarly, one response was “because Classera has a section for the teacher’s announcements, which kept me posted, and consequently, I was able to keep up with what I was supposed to do.”

The third most frequently mentioned responses to the first prompt were themed under Classera is an effective tool for learning. Like the rest of the responses on this survey, most responses were brief, such as “because it was efficient,” “because it is more effective than Madrasati,” and “Classera improved my learning.” However, several responses mentioned additional details and justifications. For example, one student said “Classera was positive because I can revise the lesson until I understand it,” and another said: “because every section has at least one video that explains the content visually, this was the most important for me.”

One student stated that in the current LMS, he missed the extra materials he previously had gone through when using Classera.

The remaining responses to the first prompt were about Classera being positive for their learning because Classera was helpful for absenteeism. So, most of these responses complemented Classera's flexibility. But the smallest frequency of responses fell into the theme of Classera being interesting to use. Although Classera encourages students' activities in the system by giving points for active students, only two responses mentioned the system was interesting or exciting. The first one said, "It utilizes class work and makes it more interesting and interactive," and the second one said "Classera can make you learn in a whole new different way."

The responses to the second prompt "Why do you think Classera is not positive for you to use in school?" were also categorized into four themes. Only 33 participants responded to this prompt. The first theme was the technical problems, which was the most frequently reported problem. Only students who answered strongly disagree or disagree with the statement "It is positive for me to use Classera in school" were directed to this prompt. However, one student who responded strongly agree with this statement also reported technical problems in his answer to the first prompt. He wrote: "I love Classera because it was easy to use. Students do not need to download any applications or extensions because it is a website-based software. Yet, I have faced different technical issues including a lot of freezing." While another participant rationalized his negative impression about Classera as it was "poorly developed," another student answered "Classera is a headache because it freezes all the time." Although only 12 students reported technical problems, it was still the most frequently reported problem. This indicates that some gifted students found it difficult to use Classera. Thus, Classera developers should act

promptly to undertake the needed improvements, especially if Classera will be used for non-gifted students where this issue might be a bigger obstacle. The second theme was Classera's ineffectiveness. The responses corresponding to the ineffectiveness theme, however, were not justified sufficiently. For instance, one student complained about being distracted by his phone's notifications, and the three others preferred the traditional way without mentioning any justification. Classera being time consuming was the third theme reflecting negative perceptions about Classera, with nine students reporting this concern. One student believed that waiting for an assignment to be available on Classera was stressful and time consuming. Another student expressed his frustration of taking the time to prepare his electronic device and log in and described that as "a waste of time." The last theme that reflected negative perceptions about Classera was Classera presenting an extra load. Only four students reported this concern; two of them expressed their anxiety of having additional practice without taking out any of the textbook practice from before implementing Classera. Similarly, another student wrote: "if you did not replace or reduce the textbook practices, Classera would be unwelcomed addition."

The answers to the last prompt "how do you find Classera useful in your studying?" divided into three themes. Most responses (48 responses) were about Classera being an effective tool for learning. Several emphasized the benefits of each unit's revision section and how much their studying improved when they went over this section. For example, one student stated that "the repetition of questions in different forms in the revision section made it easier to recover the information later on." Another student reported: "Classera was useful because it has a variety of different worksheets which helped me to assess my understanding of the lesson." Most of the responses in this theme mentioned the benefit of the revision section in each unit and how it helped to make the information last longer in the students' memory.

The second theme for responses to the last prompt was that Classera has made learning an easier process. Again, finishing everything related to school in one place was as a major benefit that made their learning process easier. Most students expressed their preference of Classera over Madrasati because Classera has an easier interface, including an organized list showing the interactive classes, assignments, and quizzes. When a student clicks on one of the list items, they are taken there without being taken out of the Classera website. One student specified: “Unlike Madrasati, we were able to do our assignments in Classera without being forced to an external link or another system.” In Madrasati, students are directed to Google Forms for quizzes and to Microsoft Teams for classes. This might explain why many responses mentioned Classera was easier, especially to do assignments and quizzes.

The third theme emerging from responses to the last prompt was Classera being informative. Thirteen students appreciated the rich content Classera had for each unit. One student’s response was “You cannot misunderstand anything if you have looked for a demonstration in the extra practices section.” Another said, “The revision section is a crucial part because of its brief and organized information.”

Conclusion Based on Qualitative Findings

Three open-ended prompts were added to the TAM survey to gain a deeper understanding of the students’ attitudes. Only students who did not have positive impressions about Classera were directed to the second prompt. Because most students had a positive attitude, more responses were received for the first prompt than for the second prompt.

Classera being easy or having made learning easier was the theme that was supported by the most responses. Some students have compared Classera with the traditional way of learning,

while some others compared it with the Madrasati LMS. Although the currently used LMS, Madrasati, was not mentioned in the survey, many responses have compared it to Classera, with the majority favoring Classera, especially for its clear interface. In fact, only one student who preferred Madrasati over Classera said it was because one day the teacher started the lesson in Classera while the students were not able to see the slides on their screens and “this never happened on Madrasati.”

Some Classera features were not clearly positive or negative based on the students’ responses. For example, the extra practices in each unit were reported in the second prompt’s responses as nearly useless and an extra load, while they were reported in the other prompts’ answers as a crucial benefit.

CHAPTER 5

DISCUSSION, IMPLICATIONS, RECOMMENDATIONS FOR FUTURE RESEARCH, AND CONCLUSIONS

The purpose of this study was to examine the attitude of gifted students in secondary schools toward the Classera LMS and to assess the extent to which perceived ease of use and perceived usefulness predict students' attitude toward the Classera LMS. The data were collected during the Fall semester of 2020. Data were analyzed and the results were as described in the previous chapter. This chapter will discuss this study's results and connect them to the current literature in the field, highlighting similarities and differences. Finally, it will discuss implications, recommendations for future research, and conclusions.

The first research question in this study asked: "What are the attitudes of gifted students toward the Classera learning management system at the secondary school level?" To answer this question, descriptive statistics were computed, and the results show that gifted students' attitudes toward the Classera learning management system were above average, with the mean response across items on the attitude scale ($M = 3.55$) falling between neutrality and agreement toward the scale statements. The findings are consistent with previous research conducted by Periathiruvadi and Rinn (2012), Heirdsfield, Walker, Tambyah, and Beutel (2011), Alabassi and Alhadyan (2017), Alahmari and Kyei-Blankson (2016), and Alahmari and Kyei-Blankson (2018).

The overall findings of the reviewed articles in Periathiruvadi and Rinn's (2012) study revealed that gifted students in PreK–12 levels have positive perceptions about using technology for their learning. Similarly, Heirdsfield et al. (2011) found “students’ perceptions of Blackboard were generally favorable” (p. 7). Alabassi and Alhadyan (2017) also found both students and teachers have positive idea about Classera LMS ($M = 4.49$ and $M = 4.21$, respectively, on the attitude scale). Alahmari and Kyei-Blankson (2016), on the other hand, found most teachers (83%) had a positive experience using Classera, “with mean response values ranging from 3.47 to 4.37” (p.18). This result is similar to their finding in another study (Alahmari & Kyei-Blankson, 2018) in which over 80% of public and private school teachers were satisfied ($M = 3.94$ and $M = 3.96$, respectively) with using the Classera LMS.

To further inform quantitative results pertaining to research question 1, I examined qualitative responses to the open-ended prompt. In this study, the gifted students held positive attitudes regarding the Classera LMS for a number of reasons. One of the themes in the qualitative analysis was Classera being effective for communicating with the teacher. Some of the responses specified communications being effective outside school time. Alabassi and Alhadyan (2017) also found that communication between teachers and students became more accessible after using Classera. Periathiruvadi and Rinn (2012) found gifted students enjoyed interacting with their peers through the online courses. Heirdsfield et al. (2011) also stated that students valued connecting with their classmates through Blackboard. This suggests meaningful communication among users influences the users’ attitude.

The other theme from the qualitative analysis was that Classera was an effective tool for learning. This theme is consistent with Chen, Yun Dai, and Zhou (2013), who found a general consensus that technology has great potential for enhancing the efficiency of gifted education

(e.g., powerful presentation tools). Similarly, Periathiruvadi and Rinn (2012) found several studies reporting the effectiveness of web-based technology. Also, Al-saai (2015) found that both students and instructors believed Blackboard was an effective tool for learning. The responses comprising this theme, such as “Classera was positive because I can revise the lesson until I understand,” were similar to the findings from several studies involving Blackboard (e.g., Al-saai, 2015; and Heirdsfield et al., 2011) and identical to the findings of Alabassi and Alhadyan (2017) using Classera, which found the greatest benefit of learning through Classera was that it enabled students to replay lessons an unlimited number of times. The effectiveness of Classera as one of the primary drivers of participants’ positive attitude toward it may have been particularly enhanced in the present study because gifted students tend to learn more about particular content, they have a desire to study at their own pace, and they can have passion for extra coursework (Olszewski-Kubilius & Lee, 2004). The effectiveness of technology use can be directly influenced by the user’s attitude (Russel, Bebell, O’Dwyer, & O’Connor, 2003).

Multiple linear regression was used to answer the second research question “To what extent do perceived usefulness and perceived ease of use predict gifted students’ attitudes toward using the Classera LMS at the secondary school level.” The results indicated that the two predictors together explain 70% of the total variation in Attitude scores. Similarly, Binyamin et al. (2017) found that 65% of variance in attitude was explained by perceived usefulness and perceived ease of use. The results also indicated the two predictors (perceived usefulness and perceived ease of use)—considered both collectively and individually—significantly and positively predicted the gifted students’ attitudes toward Classera LMS in secondary schools. This finding is consistent with Abdalla (2007) that found usefulness and ease of use positively predicted the students’ attitude toward Blackboard. Binyamin et al., (2017) also found perceived

usefulness and perceived ease of use individually and together had a positive relationship with students' attitude.

Although perceived ease of use showed a higher mean value ($M = 4.05$) than perceived usefulness ($M = 3.53$), perceived usefulness was a more important predictor of attitude than perceived ease of use. This aligns with Binyamin et al. (2017), who found perceived ease of use had the highest mean value among the original constructs of the TAM model while perceived usefulness had the strongest relationship with students' attitude. The relatively greater importance of perceived usefulness when predicting gifted students' attitude could have occurred because students have the power of critical thinking and goal-directed behavior characteristics (Clark, 2008). Kahveci (2010) found that most gifted high school students stated that their use of technology was very relevant to their learning. In high school, gifted students usually prepare themselves to enroll in the best colleges, so they become more critical and reasonable about their studying.

To further inform quantitative results pertaining to research question 2, I examined qualitative responses to the open-ended prompt. One of the themes shows that the Classera LMS was easy to use. Among the identified themes in this study, this theme was associated with largest number of coded segments, which could be because the participants had just started to use another LMS (Madrasati) after they had become accustomed to using Classera LMS over the course of several years. In fact, multiple responses compared the Madrasati LMS with Classera, favoring Classera for being easier to use. However, the ease of use of the LMS was not frequently stressed in the literature. In fact, teacher training in the use of learning management systems was reported as a problem in different studies involving Blackboard (e.g., Al-saai, 2015; Binyamin et al., 2017; Periathiruvadi & Rinn, 2012), and Classera (e.g., Alabassi & Alhadyan,

2017; Alahmari & Kyei-Blankson, 2016, 2018; Alhabeeb, 2015). Nevertheless, mention of training in the Classera LMS was not observed in the data collected for the current study nor was teachers' ability to use Classera mentioned. That could be because the teachers chosen for this school have better knowledge of technology than a typical teacher, because only outstanding teachers were chosen to teach in gifted student schools in Saudi Arabia, or because the open-ended prompts used in this study were directing the participants to a way that is not related to the teachers' ability to use Classera. It also could be that gifted students are more persistent in overcoming technical obstacles than their non-gifted peers and are more skilled in computer technologies. Furthermore, prior research has shown that teachers' and students' ability to use computers effectively is the most important requirement for Classera implementation in K-12 schools (Alhabeeb, 2015).

The usefulness of Classera was apparent in the three themes that emerged from the data. Most responses indicated how Classera was effective, similar to the third theme pertaining to responses to the first prompt. The second theme was about how Classera has made learning an easier process. All course content being in one place was reported by students as a major benefit. One student specified: "Unlike Madrasati, we were able to do our assignments in Classera without being forced to an external link or another system." The responses in this theme align with Heirdsfield et al. (2011), who found "the value of having unit information such as what readings were needed every week, assessment tasks, and due dates in the one place was seen as a major benefit by 70% of students" (p. 5). Consequently, an LMS can make the learning process smoother and increase its quality (e.g., students meet deadlines and attend more courses with less effort). The third theme of the usefulness open-ended prompt was Classera being informative. Easier access to sources reduced the number of times traveling to campus and minimized the

need for face-to-face contact (Heirdsfield et al., 2011). The Classera LMS also was reported by teachers as helpful for easier access to information sources (Alabassi & Alhadyan, 2017).

Providing needed information in one place could qualify it and help avoid distractions from unrelated information if students are forced to use another source, such as a search for information on the internet.

This study also indicated several reasons some students did not find Classera use positive. The first theme involved technical problems, which was the most-reported problem among students who did not have a positive attitude toward the Classera LMS. Based on responses associated with this theme, it is clear the system was sometimes not responsive to user clicks. Therefore, Classera developers should not ignore this issue. In particular, it was reported by gifted students who might have increased problem-solving ability. These technical problems might bring a larger problem for non-gifted students whose problem-solving abilities may not be as advanced. Although only 12 students reported technical problems, it was the most reported problem. Compatibility of technology with users' learning styles was found by Alawamreh and Elias (2015) as the most important factor affecting gifted students' acceptance of e-learning. On the other hand, Classera is a relatively new LMS, which means minor technical issues are expected.

The second theme was Classera being ineffective for learning. Not all answers emerging from the ineffectiveness theme, however, were justified sufficiently. For instance, one student complained about being distracted by his phone's notifications while using Classera, while other responses preferred the face-to-face classes without mentioning any justification. Classera being ineffective contradicts Periathiruvadi and Rinn's (2012) study, which found current research on using technology for 21st century skills "has shown positive results for improving critical-

thinking skills and differentiating curriculum for gifted students” (p. 164). Also, this theme contradicted the findings from Binyamin et al. (2017), who found LMS may play an important role in students’ learning. In addition, Classera being ineffective contradicts several studies involving Blackboard, such as Al-saai (2015) and Heirdsfield et al. (2011) as well as findings of studies involving Classera conducted by Alabassi and Alhadyan (2017) and Alahmari and Kyei-Blankson (2018).

Classera being time consuming was the third observed theme. This is not dissimilar to the findings of Heirdsfield et al. (2011), who found that Blackboard was perceived as being time consuming, but contradicts the findings of Alahmari and Kyei-Blankson (2016), who found Classera helped reduce both cost and time for delivery of information. The last theme observed among students who did not have a positive attitude toward Classera involved the perception of Classera as an extra load. Only four students reported this concern; two of them expressed anxiety about having additional practice exercises without taking out any of the practice exercises that existed in the textbook before using Classera. This is similar to the finding of Alahmari and Kyei-Blankson (2016), who reported that Classera should replace textbooks and its practice exercises rather than supplement them.

Although lack of internet access and required technology or infrastructure were stated as major barriers in each of the Classera studies identified (Alabassi & Alhadyan, 2017; Alahmari & Kyei-Blankson, 2016; Alahmari & Kyei-Blankson, 2018; Alhabeeb, 2015), no participant in this study reported internet access or infrastructure as a barrier to having a positive attitude toward Classera. This could be because the school chosen for this study was equipped with two computer labs. More importantly, every class in the chosen school had a computer, a projector, and a smartboard. Several classes were equipped with cutting-edge technology; one was

sponsored and equipped by Samsung, another was equipped by a businessman, and several others were equipped by teachers' personal efforts. This observation may also have occurred because the lack of a fast internet connection is no longer an issue in Saudi K-12 schools, especially after the onset of the Covid-19 pandemic, because the internet providers in Saudi Arabia were competing to provide affordable internet plans during this period.

Implications and Limitations

This study provided insight into the attitude of gifted students toward the Classera LMS at the secondary level. The results of this study indicated that students valued the advantage of Classera being easy to use and emphasized its usefulness. This study suggests the need to further develop the Classera LMS and continually address bugs in the system. In the meantime, Classera appears ready to be used in all gifted students' schools at the secondary level, especially to increase the capacity of gifted students in these schools and to reach more gifted students in the rural areas. Using Classera could also speed the process for the Ministry of Education's plan of building a school for gifted students in every city in Saudi Arabia by using Classera for elective classes and allowing gifted students to remain in their present schools.

Although each of the participants in this study was a student, it is necessary when discussing the findings of this study to compare the results obtained from these students with results from other studies obtained from teachers who used Classera. This was a consequence of the lack of existing studies that involved Classera. On the other hand, the lack of existing studies investigating K-12 students' attitude toward LMS also presented a barrier for comparison. Therefore, this study recommends that additional studies on K-12 students' attitudes toward LMS, especially in Saudi Arabia, be carried out. Also, further research on educational

technology for gifted students is needed due to a dearth of literature in this field. Because the collected data for this study were mainly based on self-report, future research should use different measurement techniques such as classroom observation or interviews. Interviews would provide follow-up prompts and greater depth of inquiry than responses to open-ended prompts, and observation would provide another data source to assist in triangulating results. The students' attitude toward the new LMS, Madrasati, also should be investigated. Investigating different variables might confirm the relative advantages of Classera versus the Madrasati LMS.

Conclusion

The purpose of this study was to examine gifted students' attitudes toward the Classera LMS in the secondary level. The results of this study agreed with gifted education literature and LMS literature by confirming the gifted students' positive attitude toward LMS. The empirical analysis confirmed the previous evidence regarding the primary relevance of perceived usefulness and perceived ease of use with users' attitude toward technology. Perceived ease of use has a higher mean than perceived usefulness in the quantitative data, while the theme of Classera being easy to use has received the most coded segments in the qualitative data.

The Covid-19 pandemic has changed the perception of how to deliver knowledge to learners and increased the need for distance education. The pandemic, moreover, has shown that many things can be done with fewer limitations, such as cost and location. Before the pandemic, the LMSs proved their role as an integral part of successful teaching (Almekhlafi & Almeqdadi, 2010). Now increased awareness has been raised, along with the will to leverage the potential advantages of learning management systems in education.

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APPENDIX A

PARTICIPANTS' ASSENT FORM

Title of Study: Secondary School Gifted Students' Attitude Toward Classera LMS in Saudi

Arabia

Investigator: Mansour Alamri. Ph.D. candidate. Department of Educational Technology, Research and Assessment. Northern Illinois University, Z1812775@students.niu.edu

Key Information

- This is a voluntary research study to examine students' attitude toward the Classera LMS.
- The purpose of this study is to examine the students' attitude toward the Classera system to help educators and officials in Saudi Arabia enhancing the system to meet gifted students' characteristics.
- In this study, I will collect your attitude on the Classera LMS by conducting a survey, which takes around 20 minutes to complete.
- The research might benefit current and future gifted students who use Classera. The data will be kept confidential.

I agree to participate in the research project titled *Secondary School Gifted Students' Attitude Toward Classera Learning Management System in Saudi Arabia* being conducted by Mansour Alamri, a Ph.D. candidate at Northern Illinois University. I have been informed that the purpose of the study is to examine the attitude of gifted students toward Classera LMS. I understand that if I agree to participate in this study, I will be asked to complete the survey. I am aware that my participation is voluntary, and I can withdraw at any time without penalty or prejudice, and that if I have any additional questions concerning this study, I may contact Mansour Alamri at [REDACTED]. I understand that if I wish further information regarding my rights as a research subject, I may contact the Office of Research Compliance at Northern Illinois University at (815) 753-8588. I understand that the intended benefits of this study include potential enhancement of Classera system in the future. I have been informed that there are no potential risks that I could experience during this study. I understand that all information gathered during this experiment will be kept confidential by the researcher. After removing all identifying information from collected data, I permit the researcher to use the information for future research studies or/and distribute it to another investigator for future research studies without additional informed consent from me. I realize that Northern Illinois University policy does not provide compensation, nor does the University carry insurance, to cover injury or illness incurred as a result of participation in University-sponsored research projects. I understand that my consent to participate in this project does not constitute a waiver of any legal rights or redress I might have as a result of my participation, and I acknowledge that I have received a copy of this consent form.

Your signature below indicates that you have decided to volunteer as a research participant for this study, and that you have read and understood the information provided above.

Signature of Participant

Date

APPENDIX B

PARENTS/GUARDIANS OF MINORS PERMISSION

Title of Study: Secondary School Gifted Students' Attitude Toward Classera LMS in Saudi Arabia

Investigator: Mansour Alamri. Ph.D. candidate. Department of Educational Technology, Research and Assessment. Northern Illinois University, Z1812775@students.niu.edu

Key Information

- This is a voluntary research study to examine students' attitude toward the Classera LMS.
- The purpose of this study is to examine the students' attitude toward the Classera LMS to help educators and officials in Saudi Arabia enhance the system to meet gifted students' needs.
- In this study, I will collect your child's attitude toward the Classera LMS by conducting a survey, which takes around 20 minutes to complete.
- The research might benefit current and future gifted students who use the Classera LMS. The data of this study will be kept confidential.

I agree to allow my son to participate in the research project entitled *Secondary School Gifted Students' Attitude Toward Classera Learning Management System in Saudi Arabia* being conducted by Mansour Alamri, a Ph.D. candidate at Northern Illinois University. I have been informed that the purpose of the study is to examine the attitude of gifted students toward Classera LMS. I understand that if allow my son to participate in this study, he will be asked to answer 21 questions. I am aware that my son's participation is voluntary, and he can withdraw at any time without penalty or prejudice, and that if I have any additional questions concerning this study, I may contact Mansour Alamri at [REDACTED]. I also understand that if I wish further information regarding my or my son's rights as a research subject, I may contact the Office of Research Compliance at Northern Illinois University at (815) 753-8588. I understand that the intended benefits of this study include potential enhancement of the Classera system in the future. I have been informed that there are no potential risks that my son could experience during this study. I understand that all information gathered during this experiment will be kept confidential by the researcher. After removing all identifying information from collected data, I permit the researcher to use the information for future research studies or/and distribute it to another investigator for future research studies without additional informed consent from me. I realize that Northern Illinois University policy does not provide compensation, nor does the University carry insurance, to cover injury or illness incurred as a result of participation in University-sponsored research projects. I understand that my approval for my son to participate in this project does not constitute a waiver of any legal rights or redress that my son might have as a result of his participation, and I acknowledge that I have received a copy of this consent form.

Your signature below indicates that you have agreed to allow your son to volunteer as a research participant for this study, and that you have read and understood the information provided above. You will be given a signed and dated copy of this form to keep.

Signature of Parent/Guardian

Date

APPENDIX C

SCHOOL BOARD RECRUITMENT REQUEST

Dear Director of Jeddah School Board:

I am currently a Ph.D. candidate in the Department of Educational Technology, Research and Assessment at Northern Illinois University in United States. I need to collect data from gifted students for my dissertation, entitled *Secondary School Gifted Students' Attitude Toward Classera Learning Management System in Saudi Arabia*. Students will be asked to complete a survey, which may take 20 minutes, to explore their attitude toward the Classera Learning Management System. The survey includes 18 Likert-scale questions and three open-ended questions. Written permission will be obtained from parents. Interested students will fill out a consent form before starting the process.

Your approval to start this process is highly appreciated. Thank you.

Sincerely,
Mansour Alamri
Ph.D. candidate
Department of Educational Technology,
Research and Assessment
Northern Illinois University
[REDACTED]

Research adviser
Pi-Sui Hsu, Ph.D.
Associate Professor
Department of Educational
Technology, Research and Assessment
Northern Illinois University
[REDACTED]