

## **Chapter 23: Teachers' Attitudes toward the Use of Online Homework Assignments in Elementary Schools in the United States of America**

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**Abstract:** The purpose of this study is to investigate teachers' attitudes toward the use of online assignments and the factors affecting them in an American K-12 school. Significance of online homework assignments as an integral part of education affected by the rapid spread of technology is highlighted in the literature. The theory employs the Technology Acceptance Model (TAM) as a theoretical framework for the study in order to investigate three external factors affecting teachers' use of technology with a focus on the online assignments. The factors investigated are social, institutional, and technological factors. Qualitative data is collected by semi-structured interviews with five teachers in an elementary school in Southern California. Findings from the empirical study show that American teachers tend to develop positive attitudes toward using online assignments. The findings also reveal that leadership represented in schools and school districts play the most influential role in teachers' use of technology. This is so as it provides schools with basic supplies and facilities, e.g. technology hardware and software. A school district also sets the rules of using such technologies. Parents, students, and coworkers also prove to be supportive to teachers' in order to use technology. The platforms used offer variety of benefits such as assignment submission, ease of feedback communication, and automatic grading techniques or assistance. This study is expected to contribute to the Saudi Ministry of Education in it works along the Saudi 2030 Vision and its goals.

### **1Introduction**

Homework assignments are important components of K-12 education whether used for practice, assessment, or an introduction for the new topic. Recently, the adoption of technology has affected every aspect in education including assigning and submitting homework. Bonham, Deardorff, & Beichner (2003) state that in the U.S about 100,000 students submit their assignments for computerized grading over the web while attending real (nonvirtual) classes. These authors also indicate that online assignments are already popular in higher education but still gaining popularity with K-12 teachers. This project focuses on teachers' attitudes toward the use of technology in assigning homework in elementary schools in the United States of America and also investigates the external factors affecting them. The Ministry of Education (MOE) in the Kingdom of Saudi Arabia, launching its digital transformation, is expected to face challenges similar to those in other developed countries. This will be discussed below.

The Saudi cabinet approved Vision 2030 in 2016, which defines the goals of the government for the coming 15 years, addresses three major themes—society, economy, and nation— and concludes with assigning goals and commitments for each theme (Ministry of Education, 2019). On the part of the MOE, one of these commitments is building a centralized student database that tracks students from early childhood through K-12 and beyond into tertiary education. Digital transformation “Future Gate” is one of the MOE’s initiatives toward meeting Vision 2030 goals. Al Ohali, Al Suhaibani, Palavitsinis, & Koutoumanos (2018) indicate that Future Gate, a learning management system, is a country- wide, large scale

initiative that upon its completion will set up a learning management system for 25,000 schools, 4,500,000 students, and 500,000 teachers in Saudi Arabia. Elgimari, Alshrani and Alshihri (2017) point out that one of Saudi Arabia's Vision 2030 goals is to involve 80 percent of families in the school activities and learning processes of their children. Thus, online assignments are one way to achieve this goal with the assistance of digital transformation.

The education sector is considered as one of the vital sectors that has a close connection with society and has a strong connection in developing the Saudi economy (Ministry of Education, 2019). However, efforts made by the MOE to adopt technology in education are faced by a number of limitations and challenges. Al Ohaili et al. (2018) break down some of these challenges into six categories: the school, the teacher, the student, the project, the technology, and the research and policy. Moreover, Dureiti, Tasisa, & Panigrahi (2013) categorize these challenges into infrastructure-related challenges, language and content-related challenges, capacity building-related challenges, and the challenges related to financing the cost of technology use. On the teachers' part, technology adoption, including online homework assignments, are faced with barriers such as low internet access, lack of technology training, and busy schedules. In this capstone project, social, institutional, and technological factors are highlighted to answer the following research question: What factors affect teachers' attitudes toward the use of online homework assignments. This question is supplemented by another question of how often do teacher use online homework assignment.

This project develops a thorough understanding of online homework assignments implementation and the factors affecting use: the benefits and challenges of using online homework assignments as an alternative to traditional homework. Furthermore, the results and recommendations of this study are expected to benefit similar studies in Saudi Arabia. Overall, this study will contribute to Vision 2030's goals: "a vibrant society, a thriving economy and an ambitious nation" (MOE, 2019).

## **2 Online homework Assignments Definitions**

Homework is commonly seen as being an integral part of students' education. Homework/assignment is defined by Collins and O'Brien (2011) as "work assigned by a teacher for students to complete outside of the classroom; this homework involves either practice or reinforcement of skills and concepts learned in the classroom or preparation for upcoming instruction. According to Cooper (1989), homework involves the tasks assigned to students by teachers, and these tasks are meant to be accomplished outside the class.

Cooper and Gestern (2005) explain that homework can be used for one or more purposes. Practice homework, which reinforces learning and skills, is the most common purpose. Second is preparation homework, which introduces the material presented in the future lesson. Third is extension homework, which requires students to apply the skills they already have in new situations. Fourth is integration homework in which students are asked to apply different skills to a single assignment, such as book reports, science, and writing projects.

Recently, homework can be assigned to students via two types, traditional homework assignment and online homework assignment. Traditional homework consists of paper and-pencil assignments that students are to complete at home, whereas online homework consists of assignments to be completed using the internet or another source of connectivity (Nordstrom, 2012). However, it has become common today to eliminate traditional homework

in order to minimize the use of paper (Dodson, 2014). Although one can assume that paper is usually recycled, the recycling process is in itself energy-costly. In addition, traditional homework is usually graded and returned to students the next class, which delays their feedback. In contrast, online homework is often graded automatically, especially in a learning-management system (LMS).

Students now are able to complete homework assignments through a number of software packages developed by education experts (Demirci, 2010). Some online homework systems allow electronic grading, which is beneficial to teachers. Smolira (2008) points out that online homework can provide instant feedback and also frees teachers by reducing the time spent in manually grading assignments. Furthermore, some of homework systems allow unlimited number of reattempts to students, up to the deadline. Yet, there are still questions if online homework as an alternative for traditional homework is wise. Teachers' attitudes towards the use of online homework may predict the assignment of online homework rather than paper and pencil homework and vice versa.

### **3 Significance of Online Homework Assignments**

Online homework has become an important element of educational technology. According to Nordstrom (2013), online homework assignments offer instructors the opportunity to meet the diverse needs of diverse students. A number of websites, platforms, and systems have been developed to allow students complete their assigned homework online. Mendicino, Razzaq and Heffernan (2009) report that although most of the users of web-based homework assistance at the college level, the use of web-based homework for K12 students will increase as the digital divide between students narrows and teachers become comfortable with the low-cost systems. The significance of using online homework lies in its benefits for educators, students, and the cost of paper.

For educators who teach a large number of students, online homework can be a time and effort saver. Dodson (2014) points out that in online homework, there are no wasted moments of issuing and collecting homework, and papers cannot get lost in transit from home to the classroom.

Moreover, Alhami and Alsmadi (2011) mention that automatic grading of multiple-choice online assignments is straightforward and does not require any artificial intelligence. They also suggest a method of creating an automatic grading system for extended response questions in order to save a great deal of time. Although automatic grading might not fully replace teachers' work, it can reduce the amount of time spent in correcting assignments, leaving teachers time to focus on preparing lessons and planning other activities.

Arasasingham, Martorell, & McIntire (2011) add another benefit: online assignments "can be engaging to students, present opportunities for self-directed study to learn the desired material, provide effective feedback and supply a range of opportunities for practice". Smorilla (2008) also states that online homework provides immediate and instant feedback to the student, thus reducing the problem of receiving the feedback days or weeks later. Moreover, Zisow (2002) suggests that students email assignments to the teacher rather than waiting until the next class. He also emphasizes the use of technology for assigning homework in grade school gives students important practice with computer technology that they will need in the future.

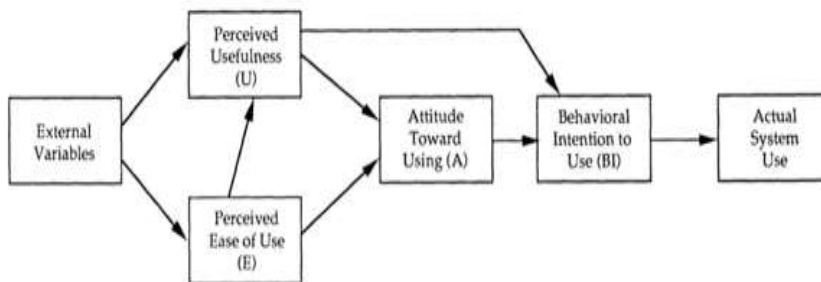
Finally, Dodson (2014) remarks that minimizing the amount of paper used in the classroom not only reduces tree harvesting but also saves the school district money. He suggests that replacing paper and pencil homework with online assignments can cut the cost of the paper, the deforestation of the natural environment, and the energy used to produce and recycle the paper. Johnson (2011) adds that a school of one hundred teachers spends approximately \$25,000 per year on paper and \$7500 on printing this paper. Thus, it is wise to think of the money spent on paper as an investment in technology equipment and school facilities.

#### 4 Factors Affecting Teachers' Use of Online Homework Assignments

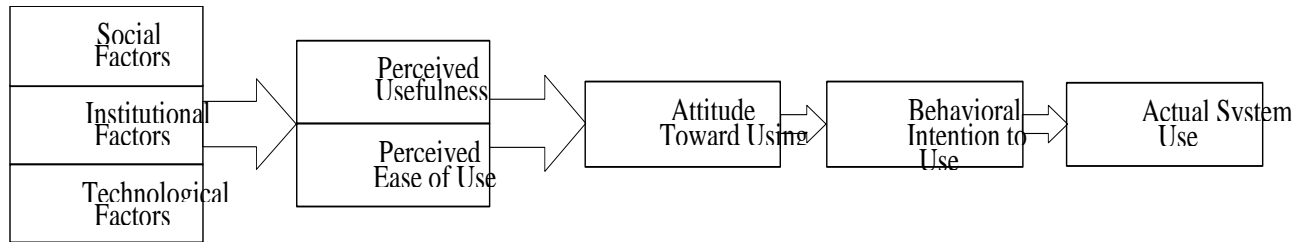
Researchers aiming at investigating teachers' attitudes towards the use of technology have adopted different theories. Among these theories are the Theory of Planned Behavior (Ajzen, 1991), the Theory of Reasoned Action (Fishbein & Ajzen, 1975: cited in Fishbein & Ajzen, 2011), and the

Technology Acceptance Model (Davis, Bagozzi, & Warshaw, 1989). The Technology Acceptance Model (TAM) will be the supporting model of this study as it provides a theoretical tool to understanding how teachers' technology acceptance is affected by external variables (Figure 1).

TAM was derived from the social psychology Theory of Reason Action TRA (Fishbein & Ajzen, 1975). Davis *et al.* (1989) indicate that TAM uses TRA as a theoretical basis for specifying the causal linkages between two key beliefs: perceived usefulness and perceived ease of use, and users' attitudes, intentions and actual computer adoption. Hence, the purpose of TAM, as Davis *et al.* (1989) point out, provides a basis for tracing the impact of external factors on internal beliefs, attitudes, and intention. In this study, external factors based on the Technology Acceptance Model will include social, institutional and technological influences (Figure 2).



**Fig.1:**Technology Acceptance Model TAM (Davis et al., 1989).



**Fig.1:** Technology Acceptance Model (adopted from Davis et al, 1989).

#### *4.1 Ease of Use and Perceived Usefulness*

Perceived usefulness is defined by Davis *et al.* (1989) as the prospective user's subjective probability that using a specific application system will increase his or her job performance within an organizational context. Perceived ease of use is also defined by Davis *et al.* (1989) as the degree to which the prospective user expects the target system to be free of effort. According to Davis *et. al* (1989), perceived ease of use influences perceived usefulness, and both constructs together influence user attitude which has its influence on behavioral intention and ultimately the actual user behavior.

#### *4.2 Social Factors*

Social factors play a significant influence on teachers' attitudes toward using online homework assignments. For many parents, online homework is an unfamiliar type of practice at home. Anastasiades, Vitalaki & Gertzak (2008) emphasize that the problem is further complicated when it comes to parents not being computer aware yet which affects their involvement as mentors of their children's successful online use. Moreover, Davies (2011) states that although parents want their children not to be excluded from educational benefits of going online, they are put under strong pressure to protect their children from the distractions and risks that can be found online. In addition, ChanLin, Hong, Horng, Chang, & Chu (2006) refer to other influences such as social values and peers (co-workers) support as impacts on teachers' use of technology.

#### *4.3 Institutional Factors*

Among the factors influencing teachers' attitudes towards the use of online homework assignments are the institutional factors. Harvey and Hurworth (2006) indicate that system value and belief of school are primary institutional factors influencing the continuous use of technology; these are mainly driven by the school leaders through motivation in the form of rewards and financial support to technology integration. In addition, Eiklemann (2011) refers to the availability of technology tools, support for individuals in schools and participation in decision making as institutional factors that can affect teachers' adoption of technology. Higher authorities of education also contribute to the institutional factors as they support the school budget and set the policy of technology use in the first place.

#### *4.4 Technological Factors*

Issues related to the technological factors that influence teachers' use of technology are the quality of the system, information and service. According to Delone & Mclean (1992) response time, system reliability, navigability, and ease of use are important measures of system quality. Delone & Mclean also indicate measures related to the quality of information, among which are the quality of data and graphs, clarity with which information is presented to users, importance, currency, clearness, legibility and interpretability. Machado, Meirelles, Filenga & Filho (1992) pinpoint some fundamental service quality features such as user training, a help desk, and support. Furthermore, system cost can also be an affecting factor due to the payment they require to allow teachers and students to access. Doorn, Janssen & O'Brien (2010) State that online systems for submitting homework has potentially increased the cost while claiming that online homework offers unique advantages such as individualized questions and study plans, interactive involvement with the material, immediate feedback and automatic grading.

This study contributes to the researches adopting the Technology Acceptance Model (Davis *et.al.*,1989) to determine which variables play a crucial role in teachers' acceptance of the use of technology in relation to online homework assignments. The three factors mentioned above are to be added to the external variables in the model to help investigate external factors that influence teachers' perceived ease of use and the perceived usefulness and finally the attitude, intention and actual use of online homework.

## 5 Methodologies

Teachers of the 21<sup>st</sup> century are encouraged to integrate technology in their classrooms. Using internet to assign homework is part of this integration. Hence, the purpose of this study is to investigate teachers' attitudes toward the use of online homework assignments. The research follows qualitative action approach. Action research methodology helps researchers overcome the limitation of traditional methodologies (Somekh, 2005). The author also highlights that "An action research involves the development of knowledge and understanding of a unique kind". The study design will cover external variables affecting teachers' use of technology in assigning online homework. In this section, participants and the study site will be presented as well as the data collection and its analysis followed by ethics of human subjects.

This study is carried out at an Elementary School in Southern California. This school has around 975 students and 85 staff. According to its website and its school district, this school is one of the two schools in the Etiwada School District that awarded the coveted California

Distinguished School award and also recognized as a Gold Ribbon School by the California

Department of Education. Population of the study includes teachers of different subjects in different grades, (1<sup>st</sup> to 5<sup>th</sup>) who will be divided according to the grades they teach. Five participants are randomly selected from each strata to be interviewed to investigate their actual use of online assignments and the factors affecting their use.

The tool used in collecting data is interview. "In qualitative research, interviewing is often the major source of the qualitative data needed for understanding a phenomenon under study."

(Merriam & Tisdell, 2016). The type of interview to be used in this study is semi-structured. As Merriam& Tisdell (2016) include, semi-structured interviews are flexibly worded or a mix

of more and less structured questions. Teachers interviewed are asked questions under three factors: social, institutional and technological. Further questions might be asked when additional information needed; for example, How do parents affect your use of online homework assignments? Tell me more about this. Notes are taken during interviews as well as audio recording to ensure that all data will be collected.

Firestone (1987) suggests that qualitative studies persuade the thorough de-emphasizing individual judgement and stressing the use of established procedures, leading to more precise and generalizable results (cited in Miles & Huberman, 1994). Qualitative data analysis is defined by Miles & Huberman (1994) as consisting of three flow of activities: (1) data reduction, (2) data display and (3) conclusion drawing. Data analysis in this research follow these three aspects to present more coherent findings. Some quantitative data analysis are also used for frequencies and counts as well as charts for easier summary.

In terms of ethics, participants anonymity and confidentiality are taken in consideration to make sure that no harm is to result to the participants of teachers, parents, administrators, or schools. Participants are informed that data collected are to be solely for this study and that their names and confidentiality are respected and protected at all stages. Participants are also voluntary in this study and not be forced to provide information. All data collected is used solely for this study.

## **6 Results and Discussions**

The purpose of this research project is to investigate teachers' attitudes toward the use of online homework assignments in American schools. The data was collected through semi-structured interviews held with five teachers in a K-5 elementary school. Results of the study followed the sections of the theoretical frame adopted from Technology Acceptance Model (TAM). These sections included usefulness and ease of use, social, institutional, and technical factors.

Interviews with participants started by the first question of how often they used online assignments. Four teachers mentioned that they used it daily. Teacher 1 said "I use online assignments through Google Classroom between five to ten assignments per week". Teacher 2 explained "we use online assignments daily for almost every subject, but they also take home a paper copy as well". Teacher 5 went further and added the point that s/he gave online assignments in class at least once or twice a day and they had the choice of doing it at home if they want for extra.

### *6.1 Usefulness and Ease of Use:*

Teachers were asked about the usefulness of online assignments and they all agreed that that they were helpful. Teacher1 said that online assignments helped in unfinished learning, reteach, and find where students struggle. Teacher 2 said "It grades them automatically so I'm able to see the students and how well they're doing each time." Teacher 3 thought that it was useful because it could save paper, and they were able to change things a little more for students so they could provide differentiation that way. Teacher 5 said "When they're taking a test, they see what they missed right away when they submit, whereas paper takes a little while for the teacher to grade it and give it back to them. But I don't like giving everything online, because I don't like kids just looking at their screen all day. So, I do still give a lot of paper and pencil assignments, because they need to write and they need to be able to take notes". Teachers also agreed that they found technology easy in assigning online homework.

Teacher 1 mentioned that technology was easy to use and it's a "generation thing". Teacher 2 said "once you learn how to use technology, you find it to be easier".

### *6.2 Social Factors:*

Social factors were one of the external variables investigated through interviews. Participant teachers were asked about students, parents and coworkers influence on their use of technology in assigning online homework. As for students, teacher 1 mentioned that it depended on students' mindset, e.g. some of them were self-motivated and able to complete what s/he assigned to them online while with others s/he had to structure and focus on them to make sure that they were staying on task. Teacher 2 expressed, "Students are more willing to do online assignments because it's exciting for them and they like to be on the computer, so I try to implement it as much as I can". Teachers 3 and 4 thought that students' access affected teachers' use of technology because some students didn't have technology at home which made him/her make another assignment available and decide which to make online or not. "It was definitely hard in the beginning because a lot of the kids didn't know how to use it. In the second grade, a lot of kids didn't know just the simple things. You get frustrated, but then once they start to use it, it's a good thing." Teacher 5 said.

Another social factor participants were asked about was parents. Teacher 1 said "I think that about 90% of the parents are very well informed and can help their children, but there's 10% of parents who just aren't very computer literate, so it's hard for some parents to get them help their kids online." Teacher 3 and 4 also agreed that most of the parents were open and willing to participate in online assignments. On the other hand, teacher 2 reported that they sometimes face pushbacks from some of the parents' part who were very hesitant at first. Teacher 5 continued that those parents want to get paper copy at home but once they learn how to navigate online, they become more comfortable with it. S/he said "parents appreciate that I did not have kids on computer all day... there are also parents who didn't want online assignments for their kids because they didn't have a tutor, internet or only had one computer".

Participant teachers were asked about coworkers' impact on their use of online assignments. Teacher 1 mentioned that some teachers use more technology than others and that this depends on their teaching style. S/he didn't think that other teachers affected his/her use of technology but they helped her find new resources. Teacher 2 and 4 also thought that coworkers in his/her team are open and usually willing to try things. Teacher 3 indicated that this effect is different every year depending on who is in their team. S/he mentioned that there are sometimes teachers who are more "veteran teachers", but s/he continues that as long as they are open and try to learn how to use technology, the whole team makes thing together. Teacher 5 also agreed admitting that there were a lot of teachers who were a lot better in technology and that they helped him/her, "I taught in a preschool four years ago, so it was a little harder for me because everything was changed with the technology. We did not have this technology for years ago".

Teachers were also asked if there were certain social issues or values that might have affected their use of online assignments due to the diversity of students in the area but their answer was that other than economic and language barriers there was no issue worth mentioning.

### *6.3 Institutional Factors*



Another aspect investigated through interviews was institutional factors. Teachers were asked about the school districts' leadership, policy, and budget impact on their use of online assignments. All of five participants agreed that school districts have been supportive and open to the use of technology. Teacher 1 mentioned that there were a lot of training programs in their school district. S/he continued "There are people who take upon themselves trying new

technology and then teach others". Teacher 3 said "They provide training for everything they are expecting us to use, and not only there are mandatory trainings, but there are also additional optional trainings for teachers who need more support".

All participants agreed that learning websites and platforms used by the school should follow the school district policies. Teacher 1 indicated that these policies have gone through significant transition. S/he said "If we had this conversation last year, there were a lot more programs that we were using, but because they were not following privacy rules for students and parents, we had to stop using a ton of the websites". Teacher 3 added "They are very strict on every single website that we want to use. They first contact the company, make sure that they're not selling the students information, and then either they approve it or they don't approve it. So, we've had things taken away, and we've had some things added; most important thing is that students are safe and their information is safe".

Regarding questions asked about school facilities and budget impact on teachers use of technology to assign online homework, teacher1 said "We're pretty lucky to work here... They are very giving... There is nothing that I ask for that I don't get." Teacher 2 agreed with this and said "We basically have what we need. Teachers who are more comfortable using ipads in the classroom to present, they're provided to them" Teachers 3,4 and 5 all agreed with this and added that each student is also provided with a Chromebook (Figure 3).



**Fig. 3: Chromebook laptops provided for students in class.***6.4 Technological factors:*

The third section of factors investigated through interviews was technological factors. Participants were asked about the platforms they use, their cost and special features. All of the teachers mentioned that they use Google Classroom for almost everything. Teacher 1 said “We obviously use google classroom and from Google Classroom we use all of our platforms”. Teacher 2 and 4 remarked that they use Google Classroom every day and that students are used to looking for their assignments and submitting them in it. Teacher 3 also agreed saying, “We assign homework on Google classrooms; we use all the google, google doc, Google Slides.. anything under Google, we use a lot of it because it's free and it's all bedded by the district”. Teacher 5 remarked that s/he gave online assignments only in the class as an extra. Teachers mentioned other platforms like:

Pop Brain, Think Central, I ready, Khan Academy, Imagine Learning, Freckle, Newsela (See Appendix 2 for extra information). They said that they used these websites because they were aligned with their textbooks that came with the purchase of the program.

Regarding the cost of these platforms, teachers mentioned that the school district or the school would pay for it. If teachers would prefer to use other websites that they think would support students' learning, they usually pay. Teacher 1 said” Yes, there is a cost, all of them cost either the school district, the school, or me personally... I think the schools probably shouldn't have to pay for things like Spelling City or Quizlet because these are free options and if I want to use those, I take upon myself and buy them”. Teacher 3 added “The district pays for about all those things or has purchased it already. sometimes the principal can decide to purchase something. One example is called Next Gen Math. It's a math platform that has to be purchased each year. So, our principal purchases that for us to use”. Teacher 2 also added “If teachers do want to purchase like other subscriptions, they can, but they'd have to do it with their own money”. Teacher 5 mentioned that s/he is used only what the school district provided them.

Participants were asked about features of the platforms they used. All of them agreed that the platforms they use protected students' privacy. Teacher 1 mentioned that the platforms they used didn't allow other students nor their parents to see what kids are doing, and they were not getting any emails from that website. S/he also added that the reason why s/he paid for Quizlet subscription was that s/he could create her/his own flashcards and send them out, the same with Spelling City that allows testing students and giving them more specialized learning”. Teacher 2 said “If the kids are practicing, for example, on Quizlet we get to see how often they are going on like how well they are doing and what they are practicing.” Teacher 3, 4, and 5 agreed with this and remarked that they are trying to find websites that extends what they are teaching in the classroom or reteach. Teacher 5 also added that all of the websites s/he used were easy to use.

**7 Conclusions**

In the introductory section of this study it was highlighted that the digital transformation “Future Gate” was one of the Ministry of Education's efforts into achieving Saudi vision

2030. Online assignments being a significant part of the digital transformation in education was investigated in an American elementary school to contribute to similar progress in the Saudi context. A qualitative research was adopted to collect the data by using interviews to capture factors affecting teachers' attitudes towards the use of online assignments. Results of the study were discussed to answer the research questions. This final section presents a number of significant points related to the findings, recommendations and limitations of this study.

Regarding the question of how often teachers use online assignments, the study found that teachers showed positive attitudes towards the use of technology in assigning online homework as they use it almost daily. Results relating to the research main question were discussed in three parts: social, institutional and technological factors. Findings related to the social factors showed that the majority of the students, parents and coworkers have positive effects on the teachers' attitudes toward using technology. Most of the students found using technology exciting and their parents seemed to be supportive. Coworkers were also open and willing to learn and use new technology. However, institutional factors represented in schools and school districts seemed to have more significant effects on teachers' use of online assignments. Variety of learning platforms were paid for to provide teachers and students with teaching, assessing, practicing, and learning sources. Those efforts also resulted in successful digital transformation during COVID-19 pandemic that forced schools shut down. Students were provided with 'Chromebooks' in the class and also allowed to use them at home. On the other hand, technological factors aspects including the platforms, their cost, and features seemed to have positive effects on teachers' use of technology in assigning online homework. The platforms were either free or paid by school districts. However, some teachers who found some websites to be useful, paid for the subscription in these websites for extra features like in 'quizzlet', "and spelling city". These platforms and websites provided variety of features such as submitting assignments, grading, immediate feedback, and reteaching.

In the light of the empirical study findings, there are a number of recommendations suggested. First, findings showed that the leadership role in teachers' use of technology in assigning online homework is critical as it sets policies for technology use in schools as well as providing these schools with technology hardware and software. This suggests the significance of investing in technological education improvement in the part of policymakers in education systems. In this respect, some schools may need to be equipped with basic requirements, facilities that help implement technology such as constant electricity power, internet connection and computer service. In addition, principals in schools should support teachers' adoption of technology by allowing them to attain appropriate training to enable them to use technology effectively. Second, even though most of the of the parents were positive about their children doing online homework, it was taken into consideration other parents' concerns such as not having devices, limited access to the internet, or not liking their kids spending long time on computers. Thus, traditional, paper-based homework, was also assigned, and some online homework was optional or done in the class. This is also an emphasis that technology has its benefits, but extensive use of online assignments is not recommended especially with early levels students. Third, on the basis of participants responses about features that the platforms offer, policymakers are advised to consider teachers' feedback and concerns about the software provided as well as giving them the credit to contribute in choosing, evaluating, and improving software tools integrated in their classrooms. Finally, this study contributes to the Saudi context as it offers a better

understanding of technology integration in the United States schools. Moreover, further studies are suggested regarding internal factors that affect teachers' attitudes towards' the use of technology suggests.

It is important to note that results of this empirical study might not generalize to other contexts but should be considered in the light of some limitations. First, the number of participants might have been too small. Moreover, choosing one school to conduct the study did not offer variety of participants and settings. This is due to American schools' restrictions regarding students' privacy and safety that any research approval should go through certain procedures.

Another issue was the limited access to school due to the close down of schools during COVID19 pandemic which made it hard to receive teachers' responses to interview requests. As a result, the researcher wasn't able to reach teachers from all elementary levels which left the researcher to question whether the study would apply to the early elementary levels as with the first-grade teachers.

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### **Appendix 1: Interview Questions**

- How often do you use online assignments?
- How useful / not useful do you find online assignments?
- How easy / hard do you find online assignments?
- How do you describe your attitude to online assignments?
- Do you intend to use more online assignments?
- Do you think you can really use more online assignments?

#### **A) Social Factors:**

- How do students affect your use of online assignments?
- How do parents affect your use of online assignments?
- How do coworkers affect your use of online assignments?
- What are the social values that affect your use of technology?
- Are there any other social issues that impact your use of technology in using online assignments?





#### **B) Institutional Factors:**

- What's the leadership role in your use of online assignment?
- What's the role of the school's policies in your use of online assignment?
- How do the school facilities and the budget affect in your use of online assignment?



#### **C) Technological factors:**

- What apps /LMS do you use for online assignments?
- Is there a cost involved?
- What special features do they offer?






### Appendix 2: Learning Platforms


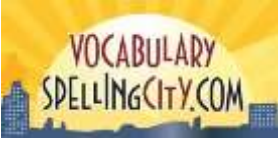

	Website Name	Link	Description
1		<a href="https://edu.google.com/">https://edu.google.com/</a>	<ul style="list-style-type: none"> <li>• Developed by Google for teachers and students.</li> <li>• free services of creating, sharing, submitting, and grading assignments.</li> </ul>
2		<a href="https://www.turnitin.com/">https://www.turnitin.com/</a>	<ul style="list-style-type: none"> <li>• Writing assessment tool set originally used to check plagiarism.</li> <li>• Allows instructors to provide feedback to' submitted assignments and send them to their students' grades books.</li> </ul>
3		<a href="https://www.microsoft.com/">https://www.microsoft.com/</a>	<ul style="list-style-type: none"> <li>• A free form Microsoft software used for information notes gathering and multi-user collaboration.</li> <li>• Mainly used to create and organize notes. Allows sharing drawing, screen clipping and audio.</li> </ul>
4		<a href="https://www.turnitin.com/">https://www.turnitin.com/</a>	<ul style="list-style-type: none"> <li>• Provides students and teachers with digital materials associated with subjects their school purchased including eBooks, teacher guide, assessments,</li> </ul>

			and reports.
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5		<a href="https://getepic.zendesk.com/">https://getepic.zendesk.com/</a>	<ul style="list-style-type: none"> <li>•</li> <li>• A digital library for students under 12. Provides access to eBooks, audiobooks, learning videos, and quizzes.</li> <li>• Offers free subscription for educators and librarians in elementary schools.</li> </ul>
6		<a href="https://www.renaissance.com/">https://www.renaissance.com/</a>	<ul style="list-style-type: none"> <li>• Pre K-12 assessment and practice software for reading and Math.</li> <li>• Includes software as Accelerated Reader, Renaissance Flow, Star Accelerated Math, MyOn Reader, and MyOn News . Freckle also joined its programs</li> </ul>



7		<a href="https://www.curriculumassociates.com/">https://www.curriculumassociates.com/</a>	<ul style="list-style-type: none"> <li>• Curriculum associate that offers student instruction, interactive lessons, practice problems, and students can play a game after completing each lesson.</li> <li>• Teachers can receive performance and progress reports of their students in Math and Reading.</li> </ul>
8		<a href="https://www.khanacademy.org/">https://www.khanacademy.org/</a>	<ul style="list-style-type: none"> <li>• Offers free of charge subscription for instructional videos, practice exercises mainly in Math and subjects related to it.</li> <li>• Provide tools for teachers to track students' progress.</li> </ul>
9		<a href="https://www.brainpop.com/">https://www.brainpop.com/</a>	<ul style="list-style-type: none"> <li>• Creates short curricular animated movies for K-12 grades. Interactive quizzes to test students' knowledge.</li> </ul>
10		<a href="https://newsela.com/">https://newsela.com/</a>	<ul style="list-style-type: none"> <li>• Offers daily published content that supports ELA, Social Studies, Science, and Socialemotional Learning.</li> <li>• Every article comes in 5 reading levels and assessments of students' reading activities.</li> </ul>
11		<a href="https://quizlet.com/">https://quizlet.com/</a>	<ul style="list-style-type: none"> <li>• Offers flashcards, games, and tests to help students practice what they learned.</li> <li>• Teachers can use it to create classes to share their quizlet content.</li> </ul>

12		<a href="https://www.imaginelearning.com/">https://www.imaginelearning.com/</a>	<ul style="list-style-type: none"> <li>• For pre-K through sixth grade</li> <li>• Students learn through playing games and completing short lessons. Teachers receive reports on students' progress.</li> </ul>
13		<a href="https://www.spellingcity.com/">https://www.spellingcity.com/</a>	<ul style="list-style-type: none"> <li>• Offers spelling words practice in flashcards format, spoken, and interactive games.</li> <li>• Supports teacher by providing them with resources, spelling lists, setting assignments and grading tests.</li> </ul>
14		<a href="https://www.freckle.com/">https://www.freckle.com/</a>	<ul style="list-style-type: none"> <li>• Allows students to practice subjects at their own level.</li> <li>• Provides videos, articles, assessments, teacher guide, and lesson plans.</li> </ul> <p>Allows teachers to track their students' progress. Joined Renaissance platform recently.</p>