

## The impact of gender on reading comprehension: teachers' perspectives

**Dr. Maryam Ahmed Alomair**

*Assistant Professor, Curriculum and  
Instruction Department – College of  
Education – King Faisal University*

**Dr. Ashwaq Ahmed Hamood Almethen**

*Assistant Professor, Curriculum and Instruction  
Department – College of Education – King Faisal  
University*

### **Abstract**

The aim of the present study was to identify teacher's perspectives on the impact of gender on reading comprehension among elementary school students. The participants were 10 female teachers from international schools within the capital who had at least 2 years of experience teaching male and female students. The primary source of data was semi-structured interviews with each teacher having to answer a total of 15 open-ended questions. The data was analyzed through thematic coding. The results revealed a number of factors associated with gender that affect comprehension. Some of these factors include differences in maturity rates and social/cultural influences and behavior among others. The participants also revealed some of the strategies they used to use to try and minimize that gap and some of the challenges they face teaching mixed gendered classrooms.

**Keywords:** Reading Comprehension, gender-based study, teaching strategies

## تأثير الجنس على الفهم القرائي: منظور المعلمين

د/ أشواق أحمد حمود المذن

استاذ مساعد بقسم المناهج وطرق التدريس

كلية التربية - جامعة الملك فيصل

د/ مريم أحمد العمير

استاذ مساعد بقسم المناهج وطرق التدريس

كلية التربية - جامعة الملك فيصل

### مستخلص

كان الهدف من هذه الدراسة هو تحديد وجهات نظر المعلم حول تأثير الجنس على فهم القراءة بين طلاب المدارس الابتدائية. كان المشاركون 10 معلمات من مدارس دولية في العاصمة ولديهن خبرة لا تقل عن سنتين في تدريس الطلاب والطالبات. كان المصدر الأساسي للبيانات هو المقابلات شبه المنظمة مع كل معلم يجيب على إجمالي 15 سؤالاً مفتوح الإجابة. تم تحليل البيانات من خلال الترميز المواضيعي. كشفت النتائج عن عدد من العوامل المرتبطة بالجنس والتي تؤثر على الاستيعاب. تتضمن بعض هذه العوامل الاختلافات في معدلات النضج والتأثيرات الاجتماعية / الثقافية والسلوك من بين أمور أخرى. كشف المشاركون أيضاً عن بعض الاستراتيجيات التي استخدموها لمحاولة تقليل هذه الفجوة وبعض التحديات التي يواجهونها في تدريس الفصول الدراسية المختلطة بين الجنسين.

**الكلمات المفتاحية:** الاستيعاب القرائي ، الدراسة على أساس الجنس ، استراتيجيات التدريس

## **Introduction:**

Along with logical thinking, comprehension has been showed to influence performance in sciences and mathematics (Akbasli, Sahin, & Yaykiran, 2016). However, as mentioned, some studies suggest that gender can directly affect student comprehension (Gilakjani & Sabouri, 2016; Koban Koç, 2016; Kanniainen, Kiili, Tolvanen, Aro, & Leppänen, 2019). If this is the case, gender can influence the type of career pursued by affecting student performance and achievements in given subjects. Currently, biological differences (e.g. differences in biological maturation) and behavioral differences (e.g. anxiety levels and activities influenced by society) are some of the aspects of gender that have been suggested to contribute to the differences in comprehension between male and female students (Cekiso, 2016, Koban Koç, 2016; Gilakjani & Sabouri, 2016). For instance, while behavior between the two genders have been shown to favor boys when it comes to comprehension (Koban Koç, 2016), other studies have found that females tend to outperform males in comprehension (Oda & Abdul-Khadim, 2018). This study sought to contribute to the current literature.

## **Significance of the study**

Currently, only a few studies have been found focusing on the effect of gender on comprehension and the results have been inconsistent. There is a need for more attention on the effect of gender on comprehension (Kanniainen et al., 2019). This proposed study was to investigate the impact of gender on reading comprehension from teachers' perspective in order to determine whether gender has any

bearing on an individual's comprehension. Depending on the results, it was possible to find solutions that will meet individual needs.

### **Theoretical framework**

Given that this research study was concerned with gender differences, it was largely be informed by a combination of the mental model and Jean Piaget's theory of cognitive development as theoretical frameworks. Saul McLeod (2018) mentioned that Piaget's defined cognitive development as “explains how a child constructs a mental model of the world” (p. 26). By combining previous knowledge or experiences with the new, reading comprehension results in mental representation of meaning of the text in the reader’s mind (Gilakjani & Sabouri, 2016). This is known as the mental model and involves various processes (reasoning and thought) and skills. Here, it is worth noting that how well previous knowledge/experience is understood has a direct impact on comprehension of new material/text. This point is supported by Shea and Ceptano who state that:

"As well, the general depth and breadth of one’s background knowledge has been noted to be a critical factor in comprehension; these have a significant impact on readers’ ability to make gap–filling inferences, predict, make logical connections, and perform other higher–level thinking skills when interacting with texts.... As students’ experiences differ, so too will the meanings they construct when engaging with text." (Shea & Ceptano, 2017, p. 52).

This theoretical framework is particularly important to this study when considering that prior knowledge and experience of the learner plays an important role in reading comprehension. According to the research study by Koban Koç, gender has a direct impact on the behavior of an individual (Koban Koç, 2016). By affecting behavior, it follows that gender also influences experiences/knowledge of an individual through the manner in which they interact with the environment around them. Here, differences in these interactions and thus experience and knowledge can be said to affect reading comprehension of an individual.

According to Piaget's theory of cognitive development, cognitive development is the result of both biological maturation and interaction with the environment (McLeod, 2018). This suggests that as an individual develops, both biological maturation and their experience with the environment results in the reorganization of mental processes and consequently to their cognitive development. For this reason, answers given by children and adults will be different because of the differences in their biological maturation and experiences with their environment (McLeod, 2018).

Like the mental model, this theoretical framework (Piaget's theory of cognitive development) is important to this study given that it highlights the significance of prior experience/knowledge of the reader as well as biological maturation. Given that girls and boys mature differently (with girls maturing faster), then it can be argued that their experiences are different compared to boys. On their other hand, given

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that different cultures dictate activities that boys and girls participate in, then it can also be argued that the experiences and knowledge of boys and girls can vary based on how they interact with their environment. With discover learning where students learn through actively exploring (McLeod, 2018) being an important part of learning, it is possible that gender can influence comprehension based on activities that boys and girls engage in.

### **Research questions**

#### **Main Question:**

R1: What are teachers' perspectives regarding the effect of gender on the development of reading comprehension?

Sub-questions:

R2: What are the teaching methods that teachers use with different genders?

R3: How does gender affect students' reading comprehension?

### **Literature review**

#### **Gender differences in academic performance**

There are many studies that have investigated the impact of gender on academic performance. For instance, a good number of studies have found that in general, female students tend to perform better than boys in read, reading tests, and writing (Reilly, Neumann, & Andrews, 2019; Wangu, 2019). According to these studies, early maturation among girls and the fact that reading, writing, and language are viewed as feminine activities are some of the reasons girls are able to perform better than girls (Reilly et al., 2019; Asgarabadi, Rouhi, &

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Jafarigohar, 2015). On the other hand, some of the studies have shown boys to perform better in mathematics, computer science, physics, and accounting (Martí-Ballester, 2019; Wangu, 2014). This has been attributed to the idea that these subjects are considered male-dominated fields and thus male students are expected to perform better (Martí-Ballester, 2019; Wangu, 2014). Due to this pressure, male students feel the need to be competitive and perform better than girls.

### **Teacher's interactions with male and female students**

Based on a number of studies, male and female students interact/engage differently with their teachers. For instance, compared to female students, male students generally demonstrate avoidance strategies in their learning and are more likely to put minimal effort in their academics (Ahslund & Boström, 2018). Though some studies have shown male students to get more attention in class, this is mostly due to their stubborn/childish behavior and poor motivation (Ahslund & Boström, 2018). Because girls demonstrate a hardworking attitude in their academics, many teachers (male or female) generally expect them to perform better than boys (Ahslund & Boström, 2018; Marsh, Martin, & Cheng, 2008).

### **Impact of gender on reading comprehension**

Some aspects of gender that have been suggested to affect comprehension include differences in the rates of maturation and cultural influences on gender behaviors and activities (Gilakjani & Sabouri, 2016; Reilly et al., 2019). These aspects are often used to explain why male and female students perform differently in different

areas of studies. For instance, while female students mature faster than boys, they generally exhibit higher levels of anxiety than boys. For these reasons, and the fact that reading and writing activities are usually viewed as feminine activities, they are expected to perform better in reading, language, and writing (Reilly et al., 2019; Asgarabadi et al., 2015; Gilakjani & Sabouri, 2016). According to another study conducted in South Africa, researchers concluded that female students perform slightly better in language comprehension because of they mature faster and spend more time with their mothers (Gilakjani & Sabouri, 2016; Cekiso , 2016). According to the researchers, while faster maturation gives female students an advantage, spending more time with their mothers allows them to develop a better grasp of language as they communicate. In addition to differences in comprehension between male and female students, researchers have also noticed that they have different needs. Whereas female students can improve by using non-decodable vocabulary, boys need non-decodable vocabulary and mixed teaching methods to improve (Price–Mohr & Price, 2017). Here, however, it is worth noting that some studies have not identified any differences in comprehension between male and female students (Völkel, Seabi, Cockcroft, & Golschagg, 2016).

Based on the findings in literature review, it is evident that gender may affect the students' reading comprehension. In particular, biological maturation and societal factors were some of the main contributing factors regarding the impact of gender on students' comprehension and reasoning. For instance, whereas faster maturation among girls presents



an added advantage, associating girls with such activities as reading as well as spending more time with their mothers and female teachers were also some of the factors attributed to better performance in reading comprehension among girls. These findings are important because they are able to show some of the main factors influencing the gender gap when it comes to reading comprehension. Apart from performing better in reading comprehension, some of the studies also found female students to perform better in other subjects than boys. Here, teachers are expected to expound on these factors and provide detailed answers regarding the influence of gender on students' comprehension and reasoning, as well as what this means for academic and professional achievements of students. It is through the results that we can then determine the most suitable strategies to support the most affected group.

### **Methodology**

#### **Rationale for methodology**

This research followed a basic qualitative study (BQS) approach. According to Merriam and Tisdell (2016) “basic qualitative study is interested in how meaning is constructed, how people make sense of their lives and their worlds. The primary goal of a basic qualitative study is to uncover and interpret these meanings” (p. 24).

As compared to quantitative research, qualitative research works with non-numerical data. As such, it tries to understand given meanings, experiences, relationships or social processes, etc. within a given setting using less structured approaches/tools (Mohajan, 2018).

By using such tools as interviews, observations and open-ended questionnaires etc., qualitative research is explanatory in nature and thus provides answers as to "how" and "why" given social phenomenon occur. According to Mohajan, this methodology is largely interested in the belief, experiences and meaning systems of people, etc. (Mohajan, 2018). As such, it is ideal for this research study given that the study not only was seeking to determine whether gender has any impact on the development of comprehension and reasoning skills but also explaining how gender exactly affects comprehension in the event that it actually does.

Moreover, compared to quantitative research which tends to be more structured and thus limiting, qualitative research allowed the participants to explain their views, ideas and understanding of the relationship between genders and reading comprehension, which, in turn, provided a better understanding of this phenomenon. Here, the participants were able to provide an in-depth explanation of their views and ideas thus making it easier to actually understand their perspective regarding the effect of genders on comprehension. Therefore, one of the biggest rationales for using qualitative research for this study was that the collected data was analyzed on a deeper level because of participant's freedom to provide detailed answers regarding the topic.

### **Study methodology**

The research methodology of this study was a basic qualitative study where participants expected to expound on their views/answers. This is important because participants may touch on important points that the

researcher may have missed and even introduce new ideas that will be of benefit to the study. As Kozleski explains, Qualitative research methods offer feedback loops that can provide information in enough depth and frequency that school practitioners... can shift, tune, and transform their practice, all hallmarks of learning to improve"(Kozleski, 2017).

### **Study design**

Basic qualitative research was used as the research design for the current study. Here, data which was collected based on semi-structured interviews. Through this approach, it was possible to understand how well teachers perceive and understand the phenomena as they expound on their answers.

### **Sample of the study**

For this study, participants were selected through purposive sampling. In order to obtain meaningful data, the population sample for the study included female teachers with at least two years of experience teaching both boys and girls. Here, a letter of invitation to participate was sent to all international elementary schools in the urban city. This letter explained the purpose of the study as well as requirements for participation. In the event that more than 10 teachers meet these criteria, purposive sampling was used to select only ten of them from the population.

## **Data source**

### **Interview**

In the current study, face-to-face or online semi-structured interviews was particularly suitable given that in-depth interviews can produce sufficient data and thus an insight into the views of teachers on the impact of gender on comprehension. For each of the participants, each of the 15 open-ended questions started with a general view which was narrowed down to more specific points depending on the answers provided. One of the biggest advantages of this approach was that in the event that any participant raises an important point, it was possible to use follow-up questions and thus obtain more data/information for analysis.

### **Trustworthiness of the study**

For this study, respondent validation will be used to enhance trustworthiness. In this case, the data/results have to be returned to the original participants of the study in order to determine whether they resonate with their experiences (Birt, Scott, Cavers, Campbell, & Walter, 2016). In doing so, participants will influence the direction of the research and research findings by either affirming or refuting given data and conclusions made from the data results. Therefore, credibility of the study will be influenced by accurate information affirmed by the participants.

### **Data collection procedure**

Data collection involved the following few steps:

- 1) Confirming the names and availability of selected participants
- 2) Arranging time and locations for the interviews
- 3) Ensuring that data collecting equipment is in good conditions (e.g. for recording)
- 4) Conducting the interviews as scheduled (participants will be asked questions and follow up questions to expound on given points. These interviews will be recorded for analysis)

### **Data analysis**

Thematic analysis was used for data analysis. This method was flexible and modified to meet specific needs of the research study (Nowell, Norris, & White, 2017). Here, thematic analysis was beneficial given that it made it possible to summarize data and produce a clear and well-organized report through which the researchers were base their conclusions.

### **Ethical Considerations**

In this research study, the first step of ethical consideration involved sending the first few chapters of the research study to the Deanship of Scientific Research at King Faisal University in order to obtain approval of the study. This was particularly important in that it gave a green light to proceed with the rest of the study. Ethical standards were also upheld through the letter of consent that guarantees confidentiality for all the participants. Rather than using their individual names, participants were simply referenced using appropriate identifiers (e.g. teacher 1 and

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teacher 2, etc.). This was particularly important given that guaranteeing confidentiality will motivate the participants to be more open in sharing their views and ideas while answering the questions. Lastly, the researchers shared the research paper with the participants as per the agreement in the consent form. In addition to fulfilling this agreement, this allowed the participants to either refute or confirm the data results and the conclusion reached from data analysis.

### **Limitations**

Because of their open-ended nature, interviews took more time to complete which is one of the limitations. In addition, the small number of 10 participants from elementary school teachers from urban cities in Saudi Arabia implies that caution must be taken in generalizing the findings of the effect gender on comprehension in any part of the world.

### **Data Analysis and Results**

#### **Findings**

Based on the data generated, several themes and subthemes significant to the perspective of participants from Saudi Arabia were identified from the codes. From each temporality, there were four emerging themes which are categorized based on the research questions.

From the research questions, interview questions were divided into three sections that include:

Section 1 (S-1) – Questions regarding the teacher's perspectives on the impact of gender on the development of comprehension and reasoning skills

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Section 2 (S-2) – Questions regarding teacher's preferred strategies when teaching different genders and mixed gender classrooms

Section 3 (S-3) – Questions about the impact of gender on student's comprehension and development of reasoning skills in various subjects

Section 4 (S-4) – Questions regarding potential challenges that teachers face when teaching single-gender and mixed gender classrooms with respect to comprehension

Themes

S-1 Themes: S1-T1 (Significant impact), S1-T2 (Little significance), S1-T3 (No significant impact)

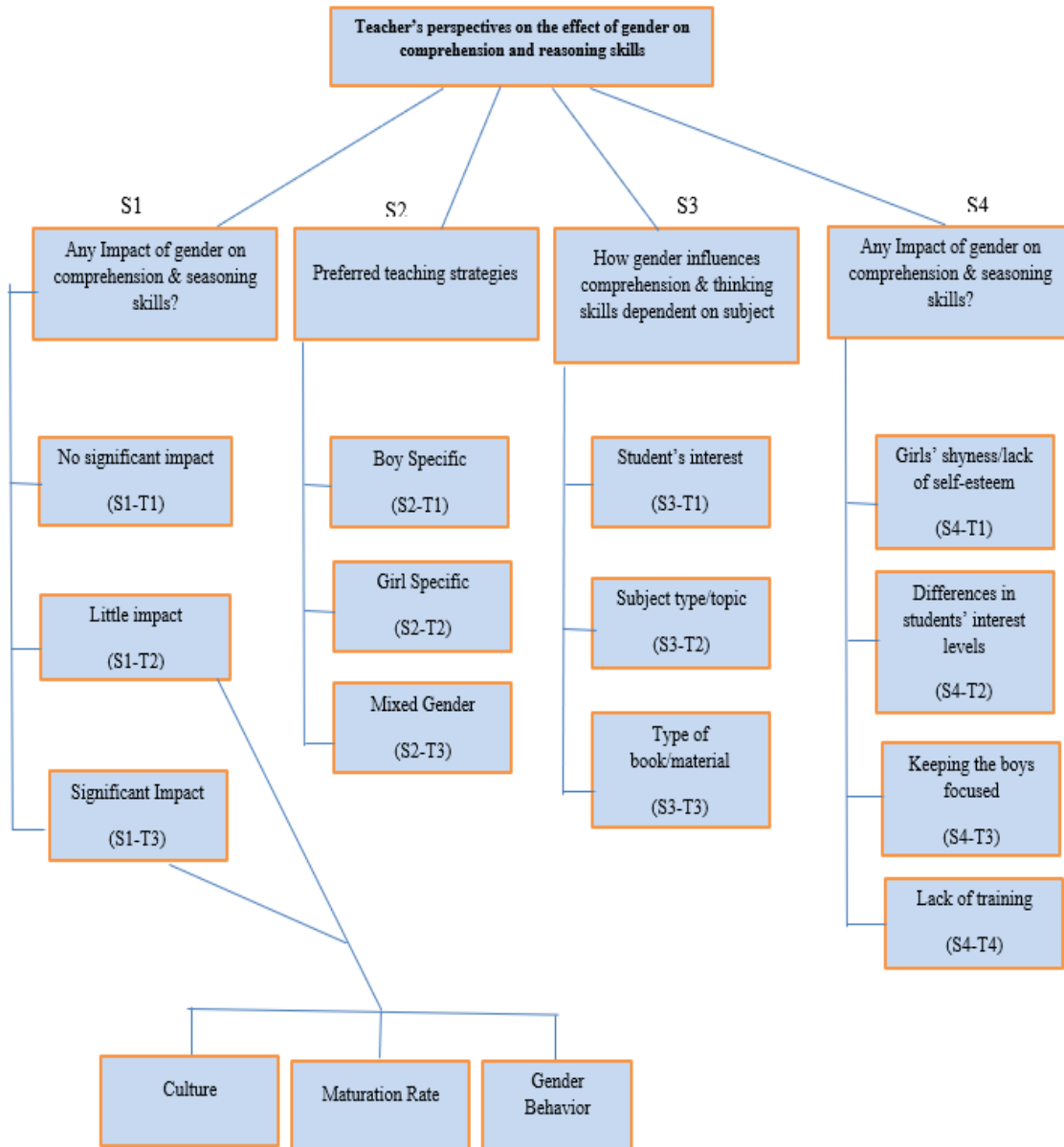
S2 Themes: S2-P1 (Boys'-specific strategies), S2-P2 (Girls'-specific strategies), S2-P3 (mixed-gender classroom strategies).

S3 Themes: S3-P1 (Students' level of interest), S3-P2 (type of topic/subject), S3-P3 (type of content/text/material)

S4 Themes: S4-P1 (girls' shyness/low self-esteem), S4-P2 (Keeping boys focused), S4-P3 (differences in the student's interest levels), and S4-P4 (lack of training)

Figure 1. Illustrates the entire map of these themes and subthemes

Figure 1: Themes and Sub-themes



Impact of gender on comprehension and reasoning skills



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The teachers' responses were mainly categorized into three types of responses. Four of the teachers claimed that gender had little impact (S1–T2) on the students' comprehension and reasoning skills. These teachers cited other factors as the primary influencers of the students' ability to comprehend and reason including, student's reading level, individual learning needs, language fluency, attitude towards reading and school in general, early childhood development and education, differences in interest levels towards the topic/content, and teaching strategy. They argued that a student's interest in the lesson or topic being studied had more influence on the energy, rigor, and time he/she would be willing to invest in the particular lesson and associated learning activities. They also claimed that students with greater interests in a topic may take more time to read, review, and reflect whereas those without such level of interest may not.

On the other hand, five of the teachers claimed that gender significantly influenced comprehension (S1–T2) through factors such as cultural influence, differences in maturity rate, and differences in gender-based behavior, gender-based motivation and interest, and family background. They argued that girls normally learn to read faster, latch onto phonetics and syntax, take their time with the text and learning materials, put more effort, and show responsibility for and devotion towards the learning activities compared to boys. This group of teachers attribute the girls' prowess in comprehending texts and higher-level reasoning to their ability to mature faster and consequently achieve higher reading proficiency, mothers reading to girls more compared to

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boys due to culture's influence on women's roles, and the girls increased interest levels in reading, self-efficacy, and motivation. They claimed that due to cultural expectations, girls seemed to spend more time at home with their mothers and father which allowed them to learn reading and writing with the help of the parents enjoy the freedom to go outside and play, thereby missing out on such learning opportunities at home.

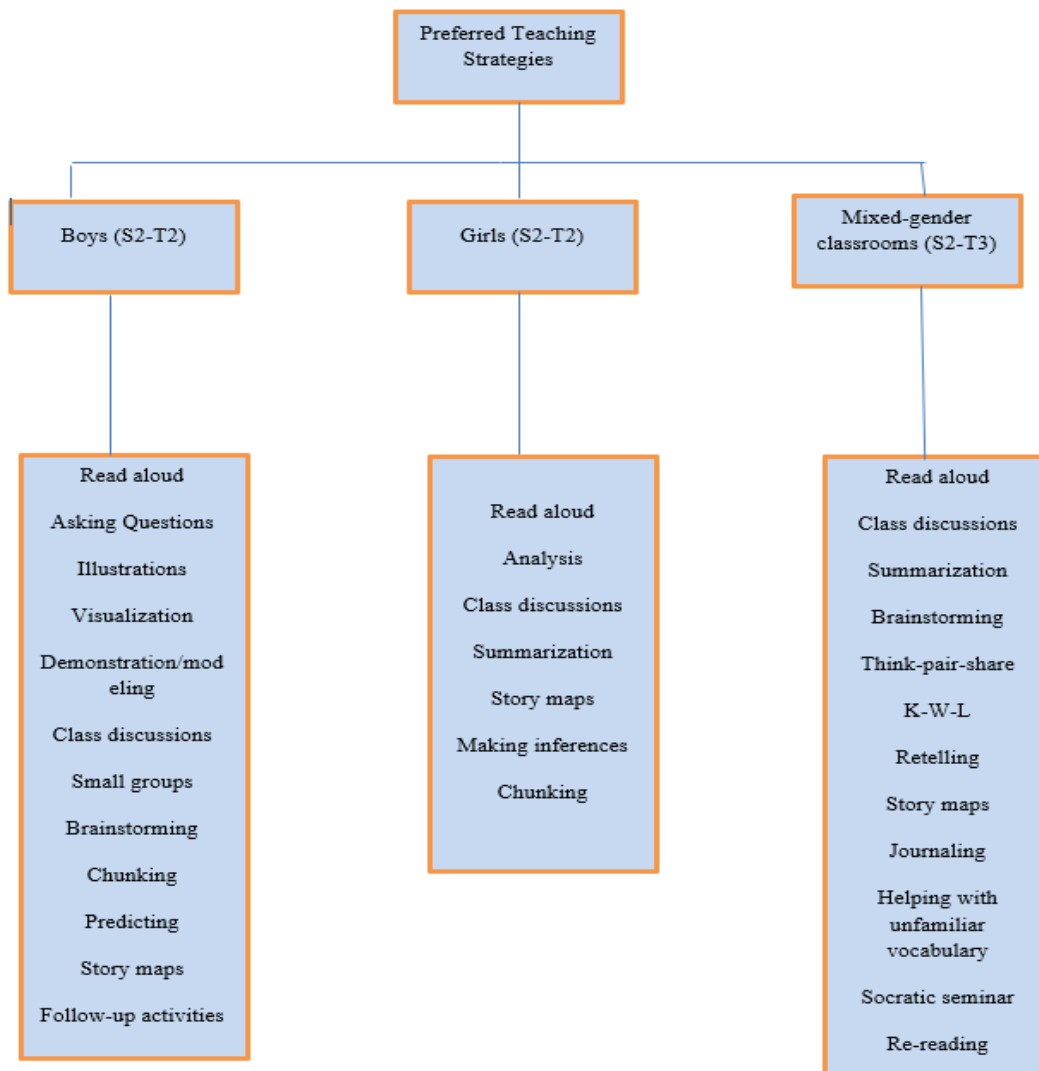
Under gender-based behavioral influences, the teachers related the ability to comprehend with level of responsibility shown by both genders. While girls take their responsibilities more seriously (at home or in their academics), boys are less responsible, playful, and outgoing. Such a difference in responsibility was suggested to influence the level of comprehension based on the energy and devotion the specific gender is willing to invest in a text. Girls were also reported to enjoy imitating how teachers explain various topics during class discussions and general presentations, a trait that was positively linked to their higher comprehension and reasoning skills. One teacher, however, argued that she was uncertain (SI-T1) of the impact gender has as she had no experience teaching mixed gender classrooms or boys. She however maintained that "Girls generally don't seem to have much trouble with comprehension. Girls are very sharp and tend to have a very good grasp of information." She also related this ease of comprehension with the girls' high sense of responsibility and differences in maturity rates, thus, as girls mature faster and tend to be more responsible in their work, they tend to comprehend text faster than boys.

### **Teaching methods teachers use with different genders**

The results showed that the read-aloud approach was the most preferred strategy in addressing the reading and comprehension needs and nurturing reasoning skills. The teachers were repeatedly mentioning the read aloud approach as the best approach for teaching boys (S2-T1), girls (S2-T2), and mixed-gender (S2-T3) classrooms. Moreover, strategies such as demonstrations/illustrations, class discussions, and the use of visuals were also mentioned repeatedly. Other less popular approaches that seemed to be preferred by one or two teachers included summarizing, jigsaw, journaling, Socratic seminar, brainstorming, modelling, re-reading, and annotating. Most of the teachers also seemed to prefer the read aloud, class discussions, demonstrations, and visualizations for the case of boys, arguing that these strategies were effective in keeping the boys focused during the learning process. Class discussions were a choice for the three classroom settings for their ability to prompt and facilitate collaborative learning. Nevertheless, a significant number of the teacher's highlighted the need to tailor the teaching strategies to the topic/content, and/or the students' comprehension and reading levels. Additionally, most of the teachers claimed that most of these strategies could be used across the three classroom contexts.

Figure 2. Shows the teachers' choice of strategies for the three classroom setups in Saudi Arabia

Figure 2: Teacher's preferred teaching strategies



### How gender affects students' comprehension and development of reasoning skills in various subject areas

The teachers agreed that reading gaps, and differences in comprehension and reasoning skills varied in different subject areas dependent on gender-based factors. The first theme of this temporal is

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the varied student interest (S3-T1) in either reading the book, learning material, or subject. The teachers seemed to agree that boys are generally easily distracted and are more interested in comics, fiction, sciences, and readings that require active learning classroom activities. The second theme was the subject type/topic (S3-T2). Some of the teacher's argued that girls do not necessarily comprehend better rather, it is dependent on the topic. One teacher said "*Gabe was really into one text but Lucero couldn't understand it so much. I was about cars.*" The boys were also reported to show little patience with unknown vocabulary, especially if the topics were not among their preferred ones, in comparison to the girls. The teachers also mentioned that girls were more interested in language arts (including English), Social studies, and reading subjects. On the other hand, boys are more interested in practical subjects such as mathematics and science.

The third theme was the type of book/learning material (S3-T3). Boys were reported to prefer fictional books, science books, learning materials that included visuals, and materials that contained more of the newly learned vocabularies as long as such materials were within their interest scope. Similarly, girls were also reported to have different priorities with respect to book/material choice often preferring engaging and engrossing texts. Boys on the other hand were reported to love less-engaging texts, that is texts and materials that would enable them complete the learning activities as quickly as possible

**The challenges teachers experience teaching mixed gendered classrooms**

The results show that teachers encounter a range of challenges when teaching mixed gendered classrooms that consequently translate to difficulties and differences observed in the student's comprehension and reasoning skills. Theme S4-T1 reflects on the teacher's challenges with Girls' shyness/lack of self-esteem. Some of the teachers argued that the girls' low esteem and/or shyness hindered their active learning which in the long-run limits their full potential. To overcome this challenge, the teachers proposed tailoring motivation strategies to the specific gender as well as individual needs rather than using a fit-for-all approach.

A second theme within this temporal is the differences in the students' interest levels (S4-T2). Considering that each gender seems to have a preferred set of interests either with respect to topic, book, subject, type of course material, and learning activity in addition to individual interests, the teacher's claimed they often find themselves at cross-roads when choosing the reading material, topic, or book. While one option or choice could work for a particular gender, it could fail to match the interests of the other gender and/or individual interests of multiple students. Making poor choices on the text, learning activity, topic, or materials could result in a further loss of interest. Student motivation emerged as the most significant factor to reading comprehension as it influences a student's interest in the topic/content and level of engagement.

The third theme under this category was challenges in keeping the boys focused (S4-T3), especially in reading sessions. To overcome this challenge, the teachers recommended using strategies that make boys read more to inspire them to read more. Such recommended strategies included read aloud, using prior knowledge, previewing and predicting, visualization, summarization and identifying the main ideas, story maps, retelling, and questioning. Parent-teacher collaboration towards nurturing the student's comprehension and reasoning skills was also highlighted by several teachers. This was considered a viable intervention as family have a habit to read to their kids all the time which help the kids to understand and know how to use strategies to comprehend what they read.

An emergent theme in this temporal was some teachers citing lack of training (S4-T4) to equip them with skills to teach mixed-gendered classrooms. While six of the participants mentioned that they had received training in teaching mixed gendered classes, as a part of their regular teacher education and training requirements, four claimed that they had not received such training. The lack of training had implications on their ability to identify and adapt teaching strategies capable of meeting the students' learning needs. This was also perhaps why one female teacher claimed that she felt a lack of control in mixed gender classrooms and when teaching boys, proposing that boys should be taught by male teachers as they tend to have more "authoritative voices." One religion teacher who had no prior training on teaching

mixed-gender classrooms mentioned that the students had trouble understanding some words from the Quran.

## **Discussion and Conclusion**

### **Teachers' perspectives**

The first research question seeks to establish teachers' perspectives regarding the effect of gender on the development of comprehension and reasoning skills. Trassi, Oliveira, and Inácio (2019) defined comprehension as the process via which individuals relate ideas to prior knowledge through multiple cognitive processes. Therefore, comprehension requires the development of reasoning skills too to achieve the desired level of comprehension. The results from this study indicate that boys and girls demonstrate a range of reading comprehension and reasoning skills dependent on multiple factors. The term gender prevails as the primary factor that influences reading comprehension and reasoning skills accomplishment besides cultural influence, student's reading level, individual learning needs, language fluency, attitude towards reading and school in general, early childhood development and education, differences in interest levels towards the topic/content, and the teaching strategy used. These findings coincide with those of past literature (Gilakjani & Sabouri, 2016; Kanniainen et al. 2019; Reilly et al., 2019) who reported gender as a major factor that influences comprehension amongst students.

This study's findings indicate a mixture of results on the impact of gender on comprehension. Some of the participants claimed that they were uncertain, others indicated that it had little impact, while the larger



number claimed that gender had a significant influence on the development of comprehension and reasoning skills amongst students. Contrary to some past research whose findings indicated that boys had higher comprehension ability (Koban Koç, 2016), the results from the current study correlates with that of Oda and Abdul-Khadim, (2018) and Reilly et al., (2019) who indicate that girls have higher comprehension and reasoning skills compared to boys.

Per the current study, the main reason why girls outperform boys in reading comprehension and the development of reasoning skills is because girls mature faster. According to Reilly et al., (2019) girls often mature faster and therefore obtain higher reading proficiency compared to boys of the same age. This finding also aligns with Piaget's theory of cognitive development. The theory claims that cognitive development occurs via the interplay of neural development (the CNS and memory), biological maturation process, and language formation facilitated by the interaction of social learning (McLeod, 2018). The reported differences in the comprehension and reasoning skills of boys and girls can therefore be explained by the differences in maturity rate.

Findings by Cekiso (2016) also suggested an interplay of the maturation rate and culture in influencing the development of comprehension and reasoning skills. Gilakjani and Sabouri (2016) also found out that in multiple cultures, girls tend to be closer to their mothers and often spend more time with them compared to boys. The current findings indicate the same for the Saudi Arabian context where the cultural expectations make girls less outgoing and spending much of

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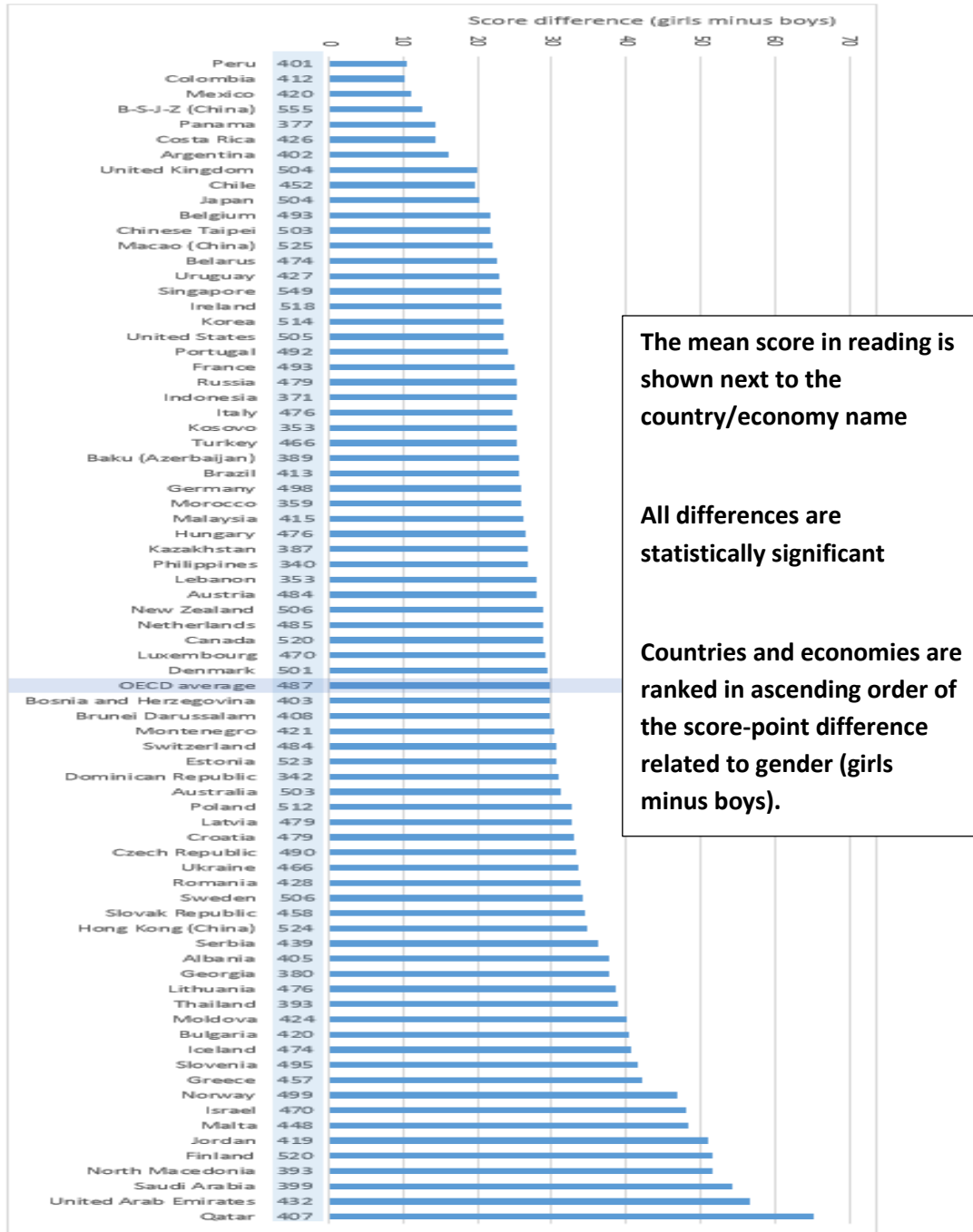
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their time at home with their parents. These mothers help them develop a good understanding of and language fluency which enables them to perform better in comprehension.

This disparity is also reflected by recent research, which has reported significant reading score gaps that favor girls across all OECD nations (OECD, 2020). Figure 3. Shows this gender difference in average reading scores for the year 2018 by the Program for International Students Achievement (PISA). According to PISA 2018, boys were outperformed by girls in reading skills by an average of nearly 30 points across the OECD nations. The figure highlights to crucial points, girls generally have higher reading ability compared to the same-aged boys, and this disparity further varies in size dependent on the nation of origin. Interestingly, the differences in reading scores between both genders in Saudi Arabia was among the widest – 54 score points (OECD, 2020).

Figure 3: Gender Gap in Reading Performance. Source: OECD, PISA 2018 Database, Tables I.B1.4 and II. B1.7.1.



**Influence of gender on students' comprehension and development of reasoning skills in various subject areas**

Differences in individual and gender-based interest levels have also emerged as significant causes of the comprehension and reasoning gaps reported in boys and girls, especially in different subject areas. Considering that there exist two forms of interests: individual and situational interests, the teacher should strive to identify the precise interest that an individual or a group of students is lacking (Dewey, 1913). The situational interest focuses on the time that an action happens that gains a person's attention. A learner's attitude and response could be driven by an environmental cue that stimulates his/her attention dependent on the interest of the impetus. Where such engagement is continued, the interest level is also maintained, achieving the objective of situational interest. On the other hand, individual interests comprise emerging and well-defined set of interests. These emerging interests arise from the regular stimulation of and maintenance of a situational interest. Individual students' interests could thus emanate from the students' personal experience or a genetic tendency to enjoy and engage in a particular familiar interest.

While individual interests vary from one person to the other, the learning environment and content are significant factors in the development of a potential individual interest. Where the learner seeks to reengage repeatedly, the content, subject, or topic of interest is considered to be well-developed, which results from a positive feeling or experience with the content, subject, or topic of interest. Individual

interests are, therefore, internally driven and help in acquiring knowledge that allows self-discovery and mastery of the subject, content, or topic of interest, which is valuable in the development of comprehension and reasoning skills. John Dewey argued that to acquire individual interest, the teacher should first gain the learner's attention (Dewey, 1913). Dewey advocate for learning strategies and activities driven by student interests and social needs, arguing that the primary focus of learner-centered teaching is to support the interests and needs of the students (Williams, 2017). Dewey's account of how interests in particular subjects, content, or activities can help explain the reported disparities in comprehension skills driven by differing individual and gender-based interests.

Additionally, gender-based behavioral differences, especially in reading interests imply that girls tend to outperform boys in text comprehension irrespective of the content while boys only tend to perform better or exert themselves only when the text, subject, or topic is meaningful and interesting to them (Price-Mohr & Price, 2017). While girls seem to prefer language arts, social studies, and much recently, science, boys often have an interest in sciences. In this scope, the OECD (2020) report found out that boys outperformed same-aged girls in mathematics while girls mainly outperformed boys in reading. Moreover, there is a wide gender-based difference in students' attitudes towards reading which ultimately affects their reading fluency and ability. Research indicates that girls enjoy and invest more of their leisure time reading compared to boys, affording them opportunities to

hone their reading and consequently comprehension skills (Reilly et al., 2019).

### **Teaching methods teachers use with different genders**

Reading is a renowned strategy for imparting knowledge, developing comprehension and cognitive skills, and enhancing learning advancement. The current study suggests the read aloud strategy to be the most preferred and utilized by the teachers for either boys, girls, or mixed gender classrooms. Exposing children to read aloud has been reported to be instrumental in nurturing lexical analysis, enhancing reasoning and listening skills, and promoting comprehension and phonological awareness (Islam & Eltilib, 2020). The read aloud approach also has positive effects on vocabulary, word recognition, and syntactic development. Through reading aloud, students are able to build skills vital for decoding and making inferences from texts. Islam and Eltilib (2020) also argued that the strategy entertains young students, hence triggering the children's curiosity and sustaining their concentration.

Other frequently used strategies were demonstrations/illustrations, class discussions, and the use of visuals. These strategies are highly effective in ensuring and sustaining concentration by keeping the children interested and engaged in the content. Moreover, the use these strategies often requires breaking down information in the simplest format possible, making them ideal for teaching even the most easily distracted students, that is boys per this study's findings. These strategies are also a favorite for teachers seeking to impart

comprehension and reasoning skills to their students for their ability to facilitate collaborative learning.

**The challenges teachers experience teaching mixed gendered classrooms**

The current study also revealed that teachers were had challenges helping the girls overcome shyness. Most of the teachers acknowledged shyness as a potential threat to a child's ability to hone comprehension and reasoning skills. Past literature support this finding as teachers are increasingly adopting strategies capable of helping shy learners overcome this challenge within the classroom. Such strategies include but are not limited to social learning strategies (such as verbal praise and encouragement, and modeling) and peer-focused approaches (including joint classroom activities) (Deng et al., 2017; Mjelve, Nyborg, Edwards, & Crozier, 2019). Shy learners often have a lower feeling of self-worth and manifest poor self-esteem that could have adverse effects on their learning outcomes.

Recent studies also reveal that children's reading comprehension and the development of reasoning skills are significantly influenced by their interest levels in the material, content, topic, or learning activity. Interest in reading and/or the topics is crucial for reading acquisition as interest-driven children are more likely to invest more time reading for leisure (Walgermo, Frijters, & Solheim, 2018). They also tend to invest more on literacy tasks and, therefore, develop advanced reading skills compared to their less-interested peers. This interest-driven learning

poses challenges for teachers as it results in undesirable gaps in the learning outcomes for different students in the same classroom.

Similar to the participants of the current study, Schmidt (2020) also grappled with the challenge of students getting easily distracted. By reviewing recent research on distracted learning, he proposed several strategies, particularly active learning, that teachers could embrace to assist their students stay focused and engaged on the learning activity (Schmidt, 2020). The teachers in the current study also recommended that the motivation techniques and approaches capable of driving desirable comprehension and reasoning skills should also factor in cultural, social economic status, expectations, and belief systems. They also recommend that such motivation strategies should be adapted to address gender specific and individual needs as opposed to using a fit-for-all approach. The participants also revealed that the input and role of parents was pivotal in nurturing the kid's interest in reading and consequently comprehension, analytic, and reasoning skills. Parent involvement could help in developing the child's vocabulary to great extents and thus called for parent-teacher collaborations to ensure optimum benefits for the students (Bano, Jabeen, & Qutoshi, 2018). If parents are to focus on improving the reading skills of their children at an early age, they ought to embrace reading as a routine activity. Moreover, parents should actively participate in nurturing the children's interest towards reading by availing reading materials as well as establishing a reading-friendly environment at home (Bano, Jabeen, & Qutoshi, 2018). On the other hand, the teachers also highlighted the



need for training in teaching mixed gender classrooms as such training would help them be proactive in the choice of teaching strategies.

Ultimately, the findings from the current study also suggest that the teacher strategy and gender interact, especially in reading comprehension among younger student populations. This could be a viable area for future research. Additionally, the current research reveals that students' reading interest outside school and the availability of reading books and materials at home significantly contributes to the development of comprehension and reading fluency skills. This further necessitates research into the possible influence of a student's home background on the development of comprehension, literacy, and reasoning skills.

### **Conclusion**

Analysis of the data revealed mixed results. The majority of teachers raised a number of strong points to explain how and why female students have higher comprehension and reasoning skills compared to their male counterparts. The fact that girls mature faster than boys is one of the factors used to explain the difference in comprehension and reasoning skills between the two genders. However, the teachers also explained that cultural/social influences also contribute to this gap. This is a very important finding that can be used to find a solution. Cultural/social expectations have a direct impact on how boys and girls behave. In addition, these expectations also influence the subjects and activities that male and female students are interested in. The reason why this is an important finding is because social and

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cultural expectations can change to motivate and support both male and female students to compete equally. Rather than looking at reading and writing as feminine activities, they can be perceived as requirements for excelling in academics. On the other hand, encouraging girls to be as competitive as boys can influence them to develop interest for subjects that were once dominated by male students. Therefore, future research studies can try and look at how changes in social and cultural expectations over time have influenced differences in comprehension between male and female students and how encouraging more changes in these expectations can benefit both genders in all parts of the world.

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