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## The Mediation of Teacher Self-Efficacy Between Transformational Leadership and Collaborative Culture in Digital Era Among Teachers in Oman

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### Abstract

Information technology is a major factor behind educational changes and has developed to disseminate shared knowledge. New technology-assisted learning tools including smartphones, tablets, laptops, smartboards, MOOCs, simulations, dynamic visualisations, and virtual laboratories have changed learning in educational institutions. Conventional classroom instruction does not offer higher engagement, quicker assessments, or an instant learning environment. Conversely, technology and digital learning resources fill this gap. By using mixed-methods research approach, this study aims to investigate the current levels of teacher transformational leadership, teacher self-efficacy, and teacher collaborative culture among Omani teachers in selected schools in Oman, by adaptation of four widely-used instruments in a different culture and context; to examine the relationship among teacher transformational leadership, teacher self-efficacy, and teacher collaborative culture in a more rigorous way; to enhance interactions between transformational leadership, self-efficacy, and collaborative culture within Oman's cultural and educational context by providing some suggestions based on the statistical results and data analysis. A quantitative research design will be employed specifically survey as the research method. The population of this study consist of teachers from selected primary schools in Oman who will be selected using probability sampling design which is the simple random sampling technique. Quantitative data will be analysed using-factor analysis, descriptive statistics, correlation analysis, multiple regression analysis and structural equation modelling analysis. This study has theoretical value for expanding our understanding of leadership and collaboration in education, as well as practical implications for educational institutions looking to effectively use digital tools.

**Keywords:** Self-efficacy, transformational leadership, collaborative culture, Digital Era.

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### Introduction

Researchers and specialists in the field of management—particularly leadership—usually focus on developing modern theories, models, and approaches that enable leaders to develop their organizations and breathe new life into them. Therefore, they constantly strive to invent new theories, develop existing models, or revamp old ones. This is to arrive at concepts and approaches that enhance the ability of modern organizations to confront contemporary changes and ongoing challenges. Therefore, in light of the challenges facing organizations—both internal and external—they require a specific leadership style capable of managing situations

and capitalizing on opportunities to achieve organizational goals and enhance their ability to effectively confront these challenges. Perhaps the emergence of transformational leadership during the 1980s was a response to the demands of the academic community, which called for achieving effectiveness in the performance of organizations and institutions.

## **Literature Review**

### **Transformational Leadership in Education**

Reza (2019) argued that while Downton (1973) first used the term "transformational leadership," it was not until James MacGregor Burns' book "Leadership" was published in 1978 that the idea gained international recognition and credibility (Reza, 2019). Bass then developed the theory of transformational leadership in 1985, which maintains that a leader may motivate and inspire followers to perform and achieve goals that go beyond ordinary expectations. Since then, the idea of transformational leadership has continued to evolve and is still a significant and active component of leadership literature (Reza, 2018). Under this leadership style, people are just as capable of influencing superiors and counterparts as their subordinates. Their fundamental personal values—such as justice, fairness, honesty, and honor—are an inspiration to these leaders. These values are considered absolute and cannot be exchanged or negotiated. Transformational leaders create harmony and unity among their followers by making ultimate principles personal standards. More importantly, they align followers' personal beliefs and goals with those of the organization (Firmansyah, et al., 2022). Additionally, transformational leadership is concerned with caring for employees, understanding their needs, and figuring out how to support them. It uses their personal attention to build trust and commitment.

A leader who demonstrates transformational leadership can greatly influence their followers and motivate them to set aside their personal interests for the benefit of the organization. They are able to motivate followers to put in extra effort to accomplish shared objectives, change followers' awareness of the issues at hand by assisting others in viewing old problems in new ways, and attend to the self-development needs of their followers (Firmansyah, et al., 2022). According to Qamaruddin et al. (2020) in Firmansyah, et al. (2022), transformational leadership identifies the need for change, develops a new vision, inspires dedication to implement the idea, and changes followers both individually and collectively. A leader that practices transformational leadership inspires followers to be more imaginative, gets rid of reluctance to share ideas, and solves problems in novel ways that call for critical thinking and reasoned arguments rather than conjecture. By posing questions and challenges, this type of leader helps his followers become more competent by encouraging them to always look for innovative ways to complete tasks. His followers so view their work as a location to develop abilities in order to consistently develop a tough and persistent personality, rather than just as a routine.

### **Quality of School Education in the Digital Era**

The definition of quality varies from nation to nation (Opesemowo, Iwintolu, & Afolabi, 2023). It is usually defined as the standard of something as measured against other things of a similar kind. That is, it is the degree of excellence of something (Iwu, et al. 2018). The history of education has always placed a high priority on providing high-quality instruction. Developing moral values, encouraging critical thinking, and upholding social cohesion were the

fundamental goals of education in ancient societies such as Greece, Rome, and China (Mduwile & Goswami, 2024; Tedla & Kilango, 2022).

Hence, a number of prominent individuals have made significant contributions to the field of quality education, in addition to the World Bank and UNESCO, which emphasize the importance of high-quality education as a fundamental human entitlement and a critical catalyst for societal and economic progress (Mduwile & Goswami, 2024). John Dewey, an American educator and philosopher renowned for his progressive views on education, is one important figure. According to Dewey, learning should be experiential, student-centered, and centered on developing critical thinking and problem-solving abilities (Hadi et al., 2021). His contributions to educational philosophy have influenced educational theory and practice for a long time. Another is Paulo Freire, a philosopher and educator from Brazil who is well-known for his use of critical pedagogy in the classroom. According to Freire, education should promote equality and social justice while emancipating and empowering students. His concept of 'critical consciousness' and emphasis on discussion, reflection, and action have inspired educators worldwide to adopt a more innovative and inclusive approach to education.

In general, "quality education" appears to be a subjective concept, and people's views can differ. However, there are different definitions of what constitutes an outstanding education, indicating the concept's complexity and diversity. For instance, UNICEF (2014) cited in Mduwile and Goswami (2024) mentions five criteria for a high-quality education: "useful outcomes; child-friendly pedagogy; relevant curricula; conducive environments; and healthy learners" (p. 4). Together, these elements form a system that provides high-quality education and grants students the fundamental right to effective learning. Quality education is about making sure that pupils learn. Thus, education quality is related to the learning outcomes of students; for school administrators, it includes raising the general standards for math, reading, and handwriting; and for teachers, it can be related to better working conditions. Therefore, as noted by Abdool Hay (2018), the relationship between the teacher and the student, time spent on tasks, classroom quality, and efficient school administration may all be used to enhance the learning outcomes of students.

### **The Role of Collaborative Culture in Schools**

Organizational culture is the pattern of shared values and beliefs that people use to understand how organizations operate and serve as the basis for the norms and way of life of the organization. Therefore, it is the standards that organizations create based on their experiences addressing environmental issues (Sihite et al., 2022). In particular, the need for increased cooperation between educators, parents, students, and the community at large has been a strand of educational reform movements throughout the past 20 years (Nwe et al., 2021).

Every member of the school community must aim for achievement and foster a positive work environment where everyone supports and cares for one another. The conventions, values, and ideas that school members uphold form the foundation of the school's culture. People tend to isolate themselves and stop from cooperating when a school adopts a traditional culture. Teachers are encouraged to collaborate and support one another's learning in collaborative school environments. a culture that encourages ongoing research and common behaviors that enhance learning. A collaborative school culture may emerge as educators participate in intentional discussions about student learning and academic success in professional learning

communities. A collaborative school culture that fosters a professional learning community among staff members results in higher student accomplishment.

Accordingly, the idea of collaborative culture includes "collectivism, long-term orientation, uncertainty avoidance, and power symmetry," which represent organizational-level counterparts to Hofstede's (1991) national cultural characteristics. According to Acquah (2020), collectivism is the aspect of collaborative culture that indicates how much an organization values group consciousness over individualistic awareness when interacting with its members. Collectivists emphasize group efforts to collaborate and value communal qualities (Kumar et al., 2021). Furthermore, collectivism describes how stakeholders and organizational partners support cooperatives rather than taking an individualistic stance while interacting with their partners.

### **The relationship between self-efficacy and the culture of cooperation in school education**

Traditionally, teaching has been described as a profession with a high degree of autonomy, which is often appreciated by teachers, but can easily lead to feelings of isolation from colleagues (Cochran-Smith and Lytle 1992, Hargreaves 2001, Levine and Marcus 2010). An isolationist school culture in which collaboration between teachers is not common practice, seriously limits powerful learning environments (Schleicher 2016), may cause professional struggles (Watson 2006) and tends to weaken beliefs of confidence and self-efficacy (Hargreaves 2001, TschannenMoran and Woolfolk Hoy 2007). Given this context, an increasing amount of research stresses the importance of teacher professional development (PD) that includes effective characteristics that relate to collaborative inquiry and active learning, combined with a clear focus on the content as well as coherence with the school vision and teachers' knowledge and beliefs (Desimone 2009, Opfer 2016). Such collaborative forms of teacher professional learning could contribute to a more.

Research reports consistently describe teaching as a demanding career with teachers experiencing high levels of stress and emotional exhaustion (e.g., Herman et al., 2018; Kyriacou, 2001; Skaalvik & Skaalvik, 2017a). Research also shows that the high level of stress in the teaching profession is associated with reduced motivation for teaching and increased levels of attrition (Klassen & Chiu, 2011; Skaalvik & Skaalvik, 2011a). Teacher stress has often been associated with demanding withinschool factors or negative aspects of the school climate, for instance, work overload, discipline problems, and lack of decision latitude (McLean et al., 2017). However, teacher research also reveals that positive social relations between the teachers and between the teachers and the school administration, including social support, have important positive implications for teacher motivation, well-being, and job satisfaction (Simbula et al., 2011; Skaalvik & Skaalvik, 2018). Moreover, the quality of the social interaction, which is an important aspect of the school climate, may be influenced by collective teacher efficacy—teachers' beliefs that they may succeed through joint effort (Lee et al., 2011; Skaalvik & Skaalvik, 2021). Teachers' perceptions of the school environment as supportive and inclusive have also been shown to be positively associated with their perceptions that the teachers at school share educational goals and values (Skaalvik & Skaalvik, 2011a, 2019, 2021). We conceptualize the sharing of educational goals and values as prerequisites for adaptive teacher interaction. Built on previous research, Skaalvik and Skaalvik (2021) hypothesized that positive social relations with colleagues, collective teacher efficacy, and common values were strongly interrelated constructs that could be used as indicators of a

second-order collective teacher culture factor. In a study of 760 Norwegian teachers, they found that a model with a collective teacher culture as a second-order latent construct indicated by positive social relations, collective teacher efficacy, shared values, and value consonance was predictive of job satisfaction, feeling of belonging, and perceived autonomy.

## **Related Theories**

### **Transformational Leadership Theory**

The theory of transformational leadership was first presented as a supervision system in the late 1970s (Burns, 1978). It is a style of leadership in which managers and employees collaborate to raise morale and motivation. Transformational leaders encourage people to alter their beliefs, expectations, or motivations in order to work toward a shared mission or objective rather than prescribing changes to their employees. It attracts more respect, trust, and adoration, according to Bernard Bass, who developed this hypothesis. The majority of experts believe that the leadership style that works best in today's schools is transformational leadership (Anderson, 2017). Individualized consideration, intellectual stimulation, inspirational motivation, and idealized influence are the four primary elements of transformational leadership, according to Bass. Individualized consideration entails the leader providing coaching and mentoring tailored to each person's requirements, and intellectual stimulation necessitates that people embrace change and seek out novel perspectives. Leaders must convey high standards in a supportive manner in order to inspire motivation. Idealized influence occurs when a leader has a goal to which they are dedicated and who instills a sense of purpose in the various people. Educational researchers view transformational leadership's systemic components as a crucial contemporary practice.

### **Self-Efficacy Theory**

The study will be guided by the self-efficacy theory that Albert Bandura introduced in 1977. He initially created this hypothesis as a way to assess a person's ability to handle events and complete tasks. According to Bandura (1977), self-efficacy beliefs are influenced by four main factors: (1) achieving performance goals, which refers to what people try to do regardless of whether their efforts are successful; (2) vicarious performance, which refers to what we see others doing; (3) verbal influence on how others view our abilities and limitations; and (4) imaginary performance, which refers to what we believe we will be able to do well or poorly. Since its creation by Bandura in 1977, self-efficacy theory has impacted hundreds of psychology research in a wide range of domains that are significant to social lives, such as education, social work, and the workplace.

According to Bandura, the aim of self-efficacy theory is predicated on how a person handles activities and obstacles and accomplishes his or her objectives (Kendra, 2019). To complete a task, people apply this principle of self-efficacy. The basic tenets of this theory state that individuals who have high levels of self-efficacy are more likely to engage in activities than those who do not.

### **Collaborative Culture Theory**

A collaborative culture is one in which people cooperate, exchange ideas, and help one another to accomplish shared objectives (Hargreaves, 2001). For transformational leadership approaches to be successfully implemented in schools, a collaborative culture is necessary. It

fosters collaboration between educators and staff on pedagogical and digital innovations, increases stakeholder trust and accountability, and makes it easier for innovative teaching strategies and technology to be adopted. A number of theories offer a starting point for comprehending collaborative culture in corporate and educational contexts. This study is based on Social interdependence Theory.

### **Theoretical Framework**

In order to explain how educational leadership affects school quality in the digital age, the theoretical framework combines Bandura's Self-Efficacy Theory, Transformational Leadership Theory (Bass & Avolio), and ideas of Collaborative School Culture. According to the paradigm, collaborative culture and teachers' self-efficacy temper the direct relationship between transformational leadership and the quality of education in schools. This framework makes it possible for the study to investigate not just whether transformational leadership enhances educational outcomes, but also how and when this happens—more especially, when schools encourage teamwork and give teachers more authority.

Thus, as shown in the framework, the variables include the following.

**Independent Variable (IV):** Transformational leadership is the IV for this study, and it will be examined in terms of the following constructs: Idealized Influence (leaders are moral role models with vision and integrity), Inspirational Motivation (leaders express clear objectives and arouse passion), Intellectual Stimulation (leaders promote creativity and problem-solving), and Individualized Consideration (leaders offer individualized encouragement and mentoring).

**Dependent Variable (DV):** As indicated by the framework, the DV in this study is collaborative culture in the Digital Era. and it will be examined in terms of constructs like coaching (peer or leader-led mentoring and instructional support), co-organization/co-planning (that is, joint planning of teaching strategies and materials), co-teaching (shared responsibility in classroom instruction), and consultation (which deals with professional dialogue and advice sharing).

**Moderating Variable (MV):** This study has one moderating variable; teachers' self-efficacy. Verbal persuasion (other people's support and feedback), physiological and affective states (which deal with stress management and emotional well-being), vicarious experiences (which involve witnessing peers' successful teaching), and enactive mastery experiences (which involve accomplishments that increase confidence) will all be taken into account when evaluating teachers' self-efficacy.

### **An Overview of Oman and the Education System**

In planning the education system, the Omani philosophy of education is guided by the Ministry of Education. Furthermore, the framework for policies and strategic plans for all educational bodies in Oman contains a number of predetermined principles and objectives. “The principles and objectives are guidelines on how to build and develop all elements of the education process” (Education Council, 2017: 20). This philosophy comes from a number of sources, such as the Islamic faith, the thoughts of His Majesty the Sultan of Oman, the Basic Statute of Oman, the characteristics and needs of the Omani society, the future plans of the state and the characteristics of Lerner and modern educational tendencies (Education Council, 2017). The Table 2-1 below explains the sixteen principles of Education in Oman.

The education system in the Sultanate of Oman is a central system, in which the Ministry of Education is responsible for drawing up policies. For example, the Ministry is concerned with appointing teachers and school administrations, developing curricula, and other daily procedures. Since the education system in the Sultanate of Oman encourages school principals to take leadership in their schools, they operate through a system in which the Ministry of Education plays the role of the body providing support on behalf of the government to run the business. Schools therefore depend on the Ministry for most operational aspects such as bylaws, but the system is a strong centralized system based on decision making results in a low level of administrative responsibilities and autonomy within schools. The Education Council in the Sultanate of Oman is also the body responsible for drawing up policies for all stages of the education system and its components, directing and supporting its institutions, following up on its performance and working to improve it, and upgrading it to the required levels (Education Council, 2017). The Ministry of Education is the body responsible for school education. And that is through the schools that are spread in all the governorates of the Sultanate of Oman, where there is a general directorate for education in each governorate that follows up the implementation of educational policies in the schools of the governorate (Education Council, 2014 - Ministry of Education, 2008).

## **Methodology**

### **Research Design**

This study examines the relationship between transformational leadership and collaborative culture in improving the quality of school education in the digital era: The moderating role of teachers' efficacy. Hence, it must be rooted in a specific methodology. An overview or plan for conducting a study that guarantees the greatest amount of control over variables that may impact the validity of the research findings is known as a research design. According to Creswell (2015) research designs are the strategies employed in studies to collect process analyze and present data. They represent different study models each of which has its own set of names and approaches. Rigid research designs are essential because they dictate the reasoning behind the conclusions that researchers must draw from their studies and direct the methodological decisions that researchers must make while conducting their investigations (Creswell, 2015). Turner, Cardinal and Burton (2017) explained that combining elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) is defined as mixed-methods research, which can be used for the purposes of increasing understanding and corroboration. According to Greene (2006) cited in Johnson et al. (2012), mixed-methods inquiry is an approach to investigate the social world that ideally involves more than one methodological tradition and more than one way of knowing, along with more than one kind of technique for gathering, analysing, and representing human phenomena.

This study uses a sequential explanatory mixed-methods approach to investigate how teacher self-efficacy mediates the relationship between collaborative culture and transformational leadership in Omani schools in the digital age. The use of a mixed-methods approach is justified by its capacity to integrate the contextual richness of qualitative insights with the statistical power of quantitative data, enabling a more thorough comprehension of the study problem (Creswell & Plano Clark, 2011).

### **Pilot Study**

According to Tharbane et al. (2010), piloting is the initial phase of the complete research protocol and is frequently a smaller-scale study that aids in the planning and adjustment of the major study. More precisely, in order to assess the validity of the main trial, the pilot or small-scale study frequently comes before it in large-scale investigations. By assessing the participant inclusion and exclusion criteria, preparing the medications and intervention, storing the study's measuring tools, and testing them, a pilot study is carried out that duplicates every stage of the main study and confirms the feasibility of the research. Kim (2011) asserts that a pilot study is essential to guaranteeing high-quality research. Additionally, Jeray and Tanner (2012) revealed that pilot studies are usually conducted to understand the nature of the work, the correct methodological principles of the main research and intimates the researcher with the likely difficulty and how to successfully address it.

## **Pilot Study Results**

### **Reliability & Validity of the study tool**

#### **First: Reliability of the questionnaire tool**

To determine the reliability of the study tool, the researcher distributed the tool to (31) individuals using a link. The responses were collected and entered into the Statistical Package for the Social Sciences (SPSS) program. The Cronbach's alpha reliability coefficient was extracted for the study axes and for the tool as a whole. The results are Table 3.6: Cronbach's alpha reliability of the study instrumentas shown in the following Table 1

NO	Axis	
1	Transformational leadership in Omani schools	.92
2	Transformational leadership and educational quality in Omani schools	.95
3	The culture of cooperation in Omani schools	.94
4	The moderating effect of a culture of collaboration on the relationship between transformational leadership and educational quality in Omani schools	.93
5	The moderating effect of teachers' self-efficacy on the relationship between transformational leadership and educational quality in Omani schools	.95
	Reability of the tool as a whole	.98

As shown in Table (1) above, the Cronbach's alpha coefficient results for the study axes ranged between a maximum of 0.95 for the second and fifth axes and a minimum of 0.92 for the first axis. The Cronbach's alpha coefficient for the instrument as a whole was 0.98, which is a high reliability coefficient, indicating the validity of the instrument and its readiness for application to the primary study sample.

To further confirm the validity of the study instrument, correlation coefficients were extracted between each item and the axes to which it belongs. The results are shown in Table (2) below:

Table (2): Results of the correlation coefficients of the paragraphs with the axes to which they belong

First axis	Correlation	Second axis	Correlation	Third axis	Correlation	Fourth Axis	Correlation	Fifth axis	Correlation
1	0.60	1	0.73	1	0.79	1	0.79	1	0.78
	0.00		0.00		0.00		0.00		0.00
2	0.77	2	0.83	2	0.85	2	0.92	2	0.583
	0.00		0.00		0.00		0.00		0.00
3	0.86	3	0.79	3	0.81	3	0.93	3	0.81
	0.00		0.00		0.00		0.00		0.00
4	0.75	4	0.87	4	0.88	4	0.83	4	0.89
	0.00		0.00		0.00		0.00		0.00
5	0.80	5	0.81	5	0.55	5	0.91	5	0.90
	0.00		0.00		0.00		0.00		0.00
6	0.88	6	0.89	6	0.82	6	0.88	6	0.92
	0.00		0.00		0.00		0.00		0.00
7	0.78	7	0.90	7	0.90	7	0.82	7	0.93
	0.00		0.00		0.00		0.00		0.00
8	0.78	8	0.90	8	0.80	8	0.89	8	0.91
	0.00		0.00		0.00		0.00		0.00
9	0.84	9	0.89	9	0.85	9	0.83	9	0.91
	0.00		0.00		0.00		0.00		0.00
10	0.51	10	0.67	10	0.89	10	0.46	10	0.71
	0.00		0.00		0.00		0.00		0.00

From Table (2), it is clear that the correlation coefficients are strong and statistically significant. The results showed that the values of the correlation coefficients ranged between (0.51) and (0.93) for the five axes, and all of them are statistically significant at a significance level of ( $0.01 \geq \text{Sig}$ ), indicating that all paragraphs are positively and strongly related to their respective axes, which reflects good internal consistency of the tool.

**The following are the analytical notes for each axis:**

- **Axis One (Transformational Leadership):** Correlation coefficients ranged between 0.51 and 0.88, all of which were significant, indicating that the items clearly measure the concept of transformational leadership as defined in the theoretical framework.
- **Axis Two (Quality of Education):** Correlation coefficients reached 0.67 and 0.90, which are high values indicating the homogeneity and stability of the items in measuring the same dimension.
- **Axis Three (Collaborative Culture):** Values ranged between 0.55 and 0.90, which are significant and significant, reflecting the strength of the relationship between the items and the axis.
- **Axis Four (Moderating Effect of Collaborative Culture):** Values ranged between 0.38 and 0.93. Although the ninth item showed a relatively lower correlation (0.38), the remaining items were high, enhancing the overall consistency of the axis.
- **Axis 5 (Moderating Effect of Self-Efficacy):** Values ranged from 0.53 to 0.93, all significant at 0.01, indicating that the items accurately measure the targeted concept.

Based on the above, it can be said that all axes of the questionnaire enjoy a high degree of internal validity and statistical reliability. Most correlation values exceeded the acceptable limit in educational studies (0.30), confirming the validity of the tool and its suitability for measuring the study variables.

### **Second: Reliability of the Qualitative Interview Tool**

To ensure the stability of the interview tool in this study, qualitative procedures were followed to ensure the consistency and stability of data across participants. Interviews were conducted with three members of the study population, and their responses were analyzed using a comparative analysis of recurring content to determine the degree of homogeneity in responses and the extent of their agreement on the main questions.

The results of the analysis revealed a clear similarity in the general attitudes of the three participants. They agreed that transformational leadership contributes to motivating teachers and fosters a positive work environment that supports creativity and innovation. There was also agreement in emphasizing the importance of providing professional and material support to teachers and involving them in decision-making as a key factor in raising their efficiency and improving the quality of education. Their responses also agreed that cooperation among teachers constitutes a fundamental pillar for exchanging experiences and improving professional performance, and that weak cooperation leads to low morale and difficulty achieving educational goals.

In the self-efficacy axis, participants' responses showed consistency in acknowledging that a confident teacher is better able to adopt modern methods and deal positively with technological change, and that flexible leadership that understands individual circumstances contributes to enhancing self-confidence and the ability to give and innovate.

This analysis shows that the three participants' responses contained similar content and consistent trends across most of the axes, reflecting the high qualitative reliability of the interview tool in terms of the stability of meanings and the lack of divergence in orientations.

This result also supported the tool's validity in measuring the concepts under study, as the data demonstrated stability across individuals and recurrence in semantic patterns and main themes.

Based on the above, it can be said that the interview tool enjoyed a high degree of qualitative reliability, verified by the consistency of participants' responses and the recurrence of the same conceptual patterns. This enhances confidence in the interview results and confirms the tool's reliability in collecting qualitative data for the study.

### **Second Validity**

This validation report aims to present the process and results of validating the research instrument used in the study entitled “The Mediation of Teacher Self-Efficacy Between Transformational Leadership and Collaborative Culture in the Digital Era Among Teachers in Oman.” The purpose of the validation was to ensure that all items in the questionnaire are clear, relevant, and aligned with the objectives of the study. Validation was conducted by three experts specializing in educational leadership, research methodology, and measurement and evaluation.

The primary purpose of the validation process was to establish the content validity of the research instrument. Experts were asked to assess each item for clarity, relevance, and appropriateness to the Omani educational context. Their comments and recommendations were used to improve the quality and accuracy of the questionnaire.

### **Method of Validation**

Three academic experts were invited to review the instrument. Each expert independently examined the questionnaire items related to transformational leadership, teacher self-efficacy, and collaborative culture. The validation process focused on ensuring that the items adequately measured the intended constructs and were culturally and linguistically appropriate. Experts provided comments and suggestions for minor revisions to enhance clarity and flow.

Overall, the experts agreed that the questionnaire items and interview items were relevant and suitable for the study objectives. Minor suggestions were provided, including simplifying certain terms, improving wording consistency, and adjusting the sequence of items to enhance logical progression. After incorporating their recommendations, the instrument achieved a high level of content validity with an average Content Validity Index (CVI) of 0.91, indicating that the items were appropriate for the constructs being measured.

### **Validation Form**

The following table presents the revised expert comments and validation outcomes Table (3) based on the updated instrument structure:

Construct	Item Numbers	Expert Comments	Suggested Revisions	Validated (✓)
Transformative Leadership	1–10	Items relevant reflect	are and the Simplify technical wording	✓

Practices in Oman Schools		<p>dimensions of items 3 and 7 for transformational leadership within the Omani school context; a few statements could be simplified for clarity.</p>
Transformative Leadership and Quality of Education in Oman Schools	11–20	<p>Items clearly link leadership behaviors with educational outcomes; experts recommend ensuring alignment between leadership indicators and measurable aspects of quality. Adjust item 12 to include measurable indicators of quality education. ✓</p>
Collaborative Culture in Oman Schools	21–30	<p>Items accurately describe cooperative practices and teamwork; experts suggest emphasizing the digital Add one item highlighting digital collaboration tools. ✓</p>

		collaboration aspect relevant to current educational reforms.	
Moderating Effect of Collaborative Culture in the Role of Transformative Leadership on Quality of Education in Oman Schools	31–40	Items are conceptually sound; reviewers suggest clarifying the moderating relationship to avoid overlap with the direct leadership-quality items.	Rephrase items 34 and 36 to specify the “interaction” effect. ✓
Moderating Effect of Teachers’ Self-Efficacy in the Role of Transformative Leadership on Quality of Education in Oman Schools	41–50	Items are well-structured and consistent with self-efficacy theory; experts recommend ensuring that confidence and perceived competence dimensions are balanced.	Revise item 45 to highlight “teacher confidence in digital instructional practices.” ✓

**Table (4) Experts forms**

Name	Place of work	Academic title at the university	Date
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Dr.Hamda Saadi	Al Rustaq College	Associate Professor	30.05.2025
Dr.Mohd Kayuomi	Al Suhar University	Associate Professor	25.05.2025
Dr Omar Eid	Rustaq College	Associate Professor	01.06.2025

## Conclusion

This Research took into account the study's overall background in order to emphasize its objective. In this way, it explained the importance of the research and outlined the essential elements of the project in terms of setting and substance. We would be able to learn about the study's location and the variables being examined through this. Lastly, a few fundamental terms that are relevant to the current investigation were clarified.

Based on the results of previous studies in theoretical literature it was concluded that transformational leadership has a significant positive effect on behavior. This study demonstrates the significant impact of transformational leadership on educational within the digital age. School leaders are crucial in creating an environment that fosters innovation and integrates digital technology effectively. Educational administrators must understand that transformational leadership involves inspiring and motivating staff members, promoting innovation, cultivating creativity, and providing continuous support. Transformational leadership has a significant impact on the school climate. Principals through transformational leadership can support individual teacher performance by enhancing cooperation and facilitating collaboration. However, it is important to underline that these impacts are mediated by the school climate, so that principals affect teacher performance indirectly. Every innovation that is created through technological sophistication that is increasingly developing in line with the times is able to provide positive benefits for human life. Unlimited access to technology can also help improve living standards and accelerate all areas of human life. The existence of positive and negative impacts in technological developments can certainly have an influence on the educational learning process in the present and in the future.

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