



Kindergarten teachers' perspectives on creative  
Digital Leadership Roles and Technology  
Capabilities among their principals

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**Abstract**

The purpose of this study was to investigate Saudi Kindergarten teachers beliefs regarding Creative Digital Leadership Roles and Technology Capabilities among kindergarten principals. This study employed cross-sectional descriptive method, with the main focus on Saudi Kindergarten teachers beliefs regarding creative leadership practices among kindergarten principals. A random sampling method was used to recruit female teachers in this study. Participants were 210 female teachers. Principals' creative leadership practices as perceived by Saudi Kindergarten teachers range from average to high in all subscales(sensitivity to problems, fluency, flexibility, originality and maintaining and continuing the attitude). There was a significant difference between those who had more than 10 years Vs 5years, in favour of those who had more than 10 years, more than 10 years Vs 6-10, in favour of those who had more than 10 years, and those who had 6-10 years Vs 5years, in favour of those who had 6-10 years. There was a significant difference between those who had master's degree Vs high diploma, in favour of those who had master's degree, master's degree Vs bachelor in favour of those who had master's degree, and high diploma Vs bachelor.

**Keywords.** *Creative leadership practices, fluency, originality, flexibility , sensitivity to problems, maintaining and continuing the attitude , kindergarten principals*

## Introduction

Contemporary educational institutions operate under changing and complex conditions that impose many and great challenges that they have not witnessed before. Therefore, it is imperative for these educational institutions to face such challenges quickly and at the same time efficiently and effectively, which requires high creative capabilities in order to be able to develop new solutions, ideas and opinions that enable Educational institutions to continue and grow. Interest in creativity is increasing in light of the growing challenges posed by the phenomenon of globalization, rapid technical changes, intense competition, information revolution and international agreements. It is his duty to efficiently manage the process of change and creativity, which requires him to have the attributes of a creative leader.

In the age in which we live, the concepts of digital transformation or Industry 4.0 are often mentioned, and these concepts continue to affect almost all areas of modern society. Especially following Industry 4.0, digital transformation is seen as a process of change that can generally only be realized through the application of technological elements. Industry 4.0, also referred to as the digitalization of industry or the digital age, is expressed as an institution's digitalization of all its work and work-related processes and practices . With the rapid developments seen in the digital world, this revolution in technology and science has minimized human and machine cooperation and made it largely autonomous ((Mabry,2016,Turgut& Hakan& Stamatios,2021)

Leadership related to the use of current technology is called digital leadership (Karakose et al., 2021). Digital leadership is the art of directing, influencing others, initiating sustainable change through access to information, and building relationships to anticipate changes critical to future school success (Agustina et al., 2020). . Digital leadership is a strategy that school leaders can implement to improve student achievement and increase school competitiveness. Digital leadership is one of the most appropriate, fast, cross-hierarchical, workgroup-oriented, and collaborative approaches, focusing on innovation (Tian et al., 2020).

In this digital age, radical transformations have been seen in educational practices, as in almost every field, and the necessity for educational institutions to keep up with this digital transformation trend is clear. The technological devices predominantly used in recent years and the sustainability of education across virtually all conditions have emerged as a result of the sector's digital transformation (Karakose, Polat& Papadakis,2021). Digital leaders differ from non-leaders with different skillsets, attitudes, knowledge, and their professional and personal experiences. Digital leaders must be flexible, adaptable, and hungry for intellectual curiosity and new knowledge. They should be open to continuous learning by seeking solutions globally and should constantly encourage their collaborators and followers to learn (Karakose et al.,2021;Panshin et al.,2021).

Contemporary educational institutions work under changing and complex conditions that impose on them many great challenges that they have not witnessed before (Balyer& Özvural,2021; Erişti& Avcı,2021; Sari,2022;Śliwerski,2016). Therefore, it is imperative for these educational institutions to confront such challenges quickly and at the same time, efficiently and effectively (Silman,2015), which requires high creative capabilities to be able to develop new solutions, ideas and opinions that enable educational institutions to continue and grow (Kim & Borowska-Beszta,2018; Kırıl& Suçiçeği, 2017). Interest in the issue of creativity is increasing in light of the growing challenges imposed by the phenomenon of globalization, rapid technological changes, intense competition, the information revolution and international agreements (Rajbhandari,2017, 2018). It is the leader's duty to efficiently manage the process of change and creativity (Akyol& Ulutaş,2021; Mohamed,2014;Sari,2022).

Creative leadership is defined as the individual's ability to influence, and direct and guide others in order to gain their cooperation. It motivates them to work with high levels of efficiency to achieve organizational goals. This can be translated into effective decisions and give workers more independence, and freedom that enables them to

change the structure of the organization and develop performance in it (Luedi,2022).

Kindergarten is a distinct stage of a child's development when it is more susceptible to change and psychological and environmental adaptation. Therefore, psychologists and educators have unanimously described early childhood as a “critical stage” because of its profound impact on shaping the child’s personality, developing his abilities, and his willingness to learn. It is the stage of conscientious formation and exit from self-centeredness and the beginning of the growth of a sense of responsibility and the rights of others(Ahmed,2014). It is the stage of formation of moral and social values such as autonomy, love of work, achievement, cooperation and respect for order. It is also the first stage of establishing the language, due to the linguistic practices and activities that this educational environment provides that increase the child's vocabulary, structures and linguistic uses (Abdul-Khaleq,2005). Also, this stage is the fastest period for the growth of the mind, as the cells of the adult human mind complete their formative growth during this period, and the rationale for most mathematical and scientific concepts begins to be formed during this period as well(Kamel,2009).

“They are educational institutions that take care of children in the age stage from three or four years until the age of six, and they precede the educational stage or basic education. Kindergartens provide care for a purposeful, well-defined organization, with its philosophy, foundations, methods and methods that are based on scientific principles and theories that should follow its guidance. (Kamel,2009) ". Kindergarten is thus the first link in the educational hierarchy as an educational institution or part of an educational system dedicated to educating young children from 4-6 years old. This is characterized, as “Good” indicated, by organized play activities with educational and social values, and by providing opportunities for the child’s self-expression and training on How to work and live in harmony, in a carefully selected environment, programs and tools to encourage child development(Ahmed,2014).

The internal work regulation for kindergartens issued by the General Presidency for Girls’ Education in the Kingdom of Saudi Arabia defines

the kindergarten as “a social educational institution based on the care of children in the three years preceding their entry into the primary stage(Abdul-Khaleq,2005). Its concern includes the various aspects of their development, from language, physical, social, psychological, cognitive, emotional, and others.” aiming to provide the best conditions that enable healthy and balanced growth in these areas, by providing a program that includes play, entertainment and education(Ahmed,2014).

Sheninger (2014) listed the elements of digital leadership according to five dimensions as visionary leadership, learning culture in the digital age, excellence in professional practices, systemic improvement, and digital citizenship. In this sense, the aim of school administrators is to develop and lead a common vision for the excellence of the institution, to create a digital learning culture and to encourage innovation, the creation of professional learning environments, and the appropriate use of information technologies (Westerman, Bonnet&McAfee,2014).

Dependence on technology and the age we live in requires the evolution of leadership practices to create schools that are able to adapt to the latest technological developments (Mok& Moore, 2019). In terms of increasing the effectiveness of educational organizations, it is of significant importance for administrators to possess the appropriate leadership characteristics, and to be able to guide the institution’s employees throughout the change process (Hoy& Miskel,2010).

In light of the growth of the educational process in general in the Kingdom of Saudi Arabia, the early education stage finds more government attention represented in the General Presidency for Girls' Education, and in the popular interest of citizens(Abdul-Khaleq,2005). The circumstances that led to this concern are almost similar at the global level of social, economic and educational changes within societies, the shift in cultural concepts and the rise in the cultural awareness of families in appreciating this educational stage, and the change in the nature of family construction towards small (nuclear) families with women going out to work (Kamel,2009). In addition to the housing conditions imposed by life in cities (overcrowded buildings and apartments), and security and traffic calculations for children, all these

circumstances led to the reconsideration of the most developed countries in the position of kindergartens in the education system in a manner consistent with the view of the American educational scientist (John Dewey) (Abdul-Khaleq,2005). From "kindergarten has become a real part of the school system, as a first step in the educational process, and not just an unnecessary addition." (Ahmed,2014).

### **Problem Statement**

Given the important and effective role that leaders play in achieving the goals, as many factors of success or failure are attributed to them in various fields of work, the topic of educational leadership has attracted the attention of many researchers at the global and Arab levels. Kamel(2018) confirmed the relationship of creative leadership among kindergarten principals to the level of female teachers' job performance. The researchers were interested in studying leadership and its relationship to several variables, including, but not limited to (personality traits, decision-making, job satisfaction, and job performance).

### **Research Questions**

- 1) What is the degree of principals' creative leadership practices as perceived by Saudi Kindergarten teachers?
- 2) Are there any statistical significant differences at the level perspective ( $\alpha = 0.05$ ), in the degree of teachers' perception due to years of experience(5 years, from 6-10 years , more 11 years)?
- 3) Are there any statistical significant differences at the level perspective ( $\alpha = 0.05$ ), in the degree of teachers' perception due to academic qualifications( Bachelor, Diploma and master/PhD degrees)? .

### **objectives of the Study**

The purpose of this study was to investigate Saudi Kindergarten teachers beliefs regarding Creative Digital Leadership Roles and Technology Capabilities among kindergarten principals.

## **Methodology**

This study employed cross-sectional descriptive method, with the main focus on Saudi Kindergarten teachers beliefs regarding creative leadership practices among kindergarten principals. The study was conducted in Feb., 2022.

### *Instrument*

A 20- item survey instrument was developed particularly for this research study . The first part concerns with the demographic information, while the second parts concerns with the tools questions. The five-point Likert scale (strongly agree, agree, neutral, disagree, strongly disagree) was used to score the research tool .The internal consistency of the survey was measured through Cronbach's alpha estimated at 0.88. A group of 5 experts examined the content validity. They indicated whether questions were, irrelevant, or highly relevant . All items were highly relevant. A content validity index at the item level (I-CVI) = 0.90.

### *Participants and procedure*

A cross-sectional study was performed for all teachers in Educational administration , Arar City ,KSA. The questionnaire was built and shared on social media. The questionnaire were sent through Google Drive™ software. Teachers were asked to fill the questionnaire out by an access link. A random sampling method was used to recruit female teachers in this study. After a brief written informed consent at the beginning of the survey, questionnaire was required. The quality of the questionnaire was re-checked to eliminate those with missing data independently until a 100% consensus was reached. The data were collected within a period of about 45 days. Participants were 210 female teachers.

Prior to administering the survey, teachers were informed about purpose of the study and voluntarily stated that they accept to participate. To ensure that the respondents responded to the items honestly and sincerely, they were told not to identify themselves in any way on the scale paper. They were also informed that they should not be concerned with anything concerns their participation in the study and their

responses are for research purposes only and would be kept confidential. All data were entered in an SPSS file.

### Results

To answer the first question, "What is the degree of principals' creative leadership practices as perceived by Saudi Kindergarten teachers?", means and standard deviations obtained by the study subjects were extracted. As shown in table 1, principals' creative leadership practices as perceived by Saudi Kindergarten teachers range from average to high in all subscales (sensitivity to problems, fluency, flexibility, originality and maintaining and continuing the attitude).

*Table 1.*

*Means and standard deviations for principals' creative leadership practices*

No.	Item	Mean	Standard Dev.	Level
sensitivity to problems				
1	She assigns time to discuss the teacher's problems	4.22	1.09	High
2	She has problem solving skills	3.10	2.00	Average
3	She develops her ability to solve problems	4.20	1.01	High
4	She has the ability to anticipate problems before they happen	4.19	1.04	High
Fluency				
5	She has an intuitive thinking in dealing with new situations	4.18	1.06	High
6	She has the ability to manage dialogue	4.14	1.09	High
7	She invests her previous experience in dealing with new situations	3.13	2.02	Average
8	She deal wisely with all innovations	3.11	2.05	Average
Flexibility				
9	She has an open mind with the new situations	3.10	2.00	Average
10	She flexibly enforces rules and regulations	4.20	1.01	High
11	She collaborate with teachers to develop innovative solutions to problems	4.19	1.04	High
12	She develops work methods according to	3.13	2.00	Average

	the problems she faces			
Originality				
13	She possesses the ability to devise effective ways to carry out the work	4.14	1.09	High
14	She can combine different ideas into one	3.13	2.02	Average
15	She can produce many solutions to the problem	3.11	2.05	Average
16	She is able to develop new and innovative solutions to problems	4.16	1.09	High
Maintaining and continuing the attitude				
17	She encourages teamwork	4.21	1.01	High
18	She does not give up on finding solutions to problems	4.19	1.04	High
19	She insists on achieving goals	4.20	1.01	High
20	She controls your emotions in critical situations	4.17	1.04	High

To answer the second research question; " Are there any statistical significant differences at the level perspective ( $\alpha = 0.05$ ), in the degree of teachers' perception due to years of experience(5 years, from 6-10 years , more than 11 years)?, ANOVA was used. The result of the ANOVA shows (see table 2) that the F-value was less than the alpha level  $P = 0.013 < 0.05$ .

Table 3 showed that there was a significant difference between those who had who had more than 10 years Vs 5years(  $MD= 29.387 < 0.05$ ), in favour of those who had more than 10 years, more than 10 years Vs 6-10 (  $MD= 23.021 < 0.05$ ), in favour of those who had more than 10 years, and those who had 6-10 years Vs 5years (  $MD= 24.870 < 0.05$ ), in favour of those who had 6-10 years.

Table 2

ANOVA for of teachers' perception due to years of experience variable

	Sum of Squares	df	Mean Square	F.	Sig.
Between Groups	85.35	3	28.45	8,50	0,013 sig.
Within Groups	118.46	206	0.575		
Total	167.78	209			

Table 3

Multiple comparisons

Variables	Mean Difference	Std .Error	Sig.
more than 11 years Vs 5years	29.387	4.221	.002
more than 11 years Vs 6-10 years	23.021	5.265	.002
6-10 years Vs 5years	24.870	4.110	.002

To answer the third research question; " Are there any statistical significant differences ( $\alpha = 0.05$ ), in the degree of teachers' perception due to academic qualifications( Bachelor, Diploma and master/PhD degrees)?.", ANOVA was used. The result of the ANOVA (see table 4)shows that the F-value was less than the alpha level  $P = 0,012 < 0.05$ .

Table 5 showed that there was a significant difference between those who had master's degree Vs high diploma(  $MD= 30.500 < 0.05$ ), in favour of those who had master's degree, master's degree Vs bachelor( $MD= 32.321 < 0.05$  in favour of those who had master's degree, and high diploma Vs bachelor( $MD= 29.662 < 0.05$ ).

Table 4

*ANOVA for of teachers' perception due to academic qualifications*

	Sum of Squares	df	Mean Square	F.	Sig.
Between Groups	22.756	3	7.585	11,52	.012 sig.
Within Groups	71.729	206	0.348		
Total	94.938	209			

Table 5

*Multiple comparisons*

Variables	Mean Difference	Std .Error	Sig.
master's degree Vs high diploma	30.500	4.231	.012
master's degree Vs bachelor	32.321	4.758	.012
high diploma Vs bachelor	29.662	4.659	.012

## Discussion

The purpose of this study was to investigate Saudi Kindergarten teachers beliefs regarding Creative Digital Leadership Roles and Technology Capabilities among kindergarten principals. Concerning the first question, results indicate that principals' creative leadership practices as perceived by Saudi Kindergarten teachers range from average to high in all subscales(sensitivity to problems, fluency, flexibility, originality and maintaining and continuing the attitude).

The results of the current study revealed that school principals support technology-based professional development. According to the participant teachers, the support provided in this context were based

upon inservice courses and seminars being held, encouraging the use of technology, information sharing, cooperation between teachers, and the promotion of technological tools. Cuevas López and del Arco Bravo (2019) emphasized that the use of technology in leadership practices should be taken into account so as to ensure the efficiency and development of modern educational organizations.

These results go in the same line with previous literature . For example, Abu-Shreah and Zidan (2017) conducted a study that aimed to know the degree of schools principals practicing innovation and its relationship with the teachers' professional development. The result of showed a positive correlation between schools principals practicing innovation and teachers professional development. Saleh and Abu Mokh (2017) found that the elementary teachers' practicing degree of leadership skills from the perspectives of teachers was high overall.

As for the second research question; " Are there any statistical significant differences at the level perspective ( $\alpha = 0.05$ ), in the degree of teachers' perception due to years of experience(5 years, from 6-10 years , more than 11 years)?, it was found that there was a significant difference between those who had who had more than 10 years Vs 5years, in favour of those who had more than 10 years, more than 10 years Vs 6-10, in favour of those who had more than 10 years, and those who had 6-10 years Vs 5years, in favour of those who had 6-10 years. This result contradicts with the result of Abu Zaiter 's study (2009) where there were no differences due to the variable number of years of service as a teacher. and goes in the same line with that of Subaie(2021).

Concerning the third research question; " Are there any statistical significant differences ( $\alpha = 0.05$ ), in the degree of teachers' perception due to academic qualifications( Bachelor, Diploma and master/PhD degrees)?.", it was found that there was a significant difference between those who had master's degree Vs high diploma, in favour of those who had master's degree, master's degree Vs bachelorin favour of those who had master's degree, and high diploma Vs bachelor. A possible explanation is that those with higher degrees read more . They are

characterized as seeking reading and broad-minded. highly educated teachers are associated with higher levels of perceptions.

Digital leadership represents a strategic shift in the mindset and actions of employees to initiate necessary changes that improve teaching, learning, and leadership whilst working to establish and nurture strong relationships with all the relevant stakeholders. In the digital age, it can be said that digital transformation has taken place in the field of education, not only in learning environments but also in terms of information systems. This transformation has also been reflected across educational institutions with the fourth industrial revolution (Industry 4.0). In this context, it is emphasized that there are information systems used in educational activities, school management processes, documentation, as well as for finance and expenditure transactions (Karakose et al.,2021).

### **Conclusions and policy implications**

In this study, It has been investigated Saudi Kindergarten teachers beliefs regarding creative leadership practices among kindergarten principals. Where the degree of principals' creative leadership practices as perceived by Saudi Kindergarten teachers, the degree of teachers' perception due to years of experience(5 years, from 6-10 years , more 11 years), and the degree of teachers' perception due to academic qualifications( Bachelor, Diploma and master/PhD degrees).

Obviously, this study has some limitations. First, results are based on a questionnaire. Triangulation with other research tools, such as open-ended questions and interviews could be useful in shedding more light on the findings. Second, research population consisted of Saudi Kindergarten teachers but not the principals. Future work. is required to investigate principals' perceptions of their own creative leadership practices and the relationships between these perceptions and those of the teachers as well as their school effectiveness. Moreover, to achieve more significant results, this future work should include a larger number of participants.

The most important task facing today's school leaders is to raise individuals who are compatible with the current digital age. The digital leadership roles of school administrators are, therefore, now accepted as an important parameter. The digital transformation of schools in the digital age has become an educational priority, and from this perspective, digital content plays a fundamental role in attempting to improve the quality of education .

Nevertheless, the results of this study suggest that kindergarten principals in Arar City ,KSA enjoy an average to high degree of creative leadership practices. Thus, for other geographical areas in the kingdom, policy makers may wish to assign principals who are considered as creative in their leadership practices. Such creative leadership practices play an important role in sustaining school effectiveness.

**Data Availability**

The data used to support the findings of this study are available from the corresponding author upon request.

**Declaration of conflicting interests**

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