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Consciousness as a moderator of the relationship between school principals' knowledge and practices of the sixteen quality principles of competency-based education

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Consciousness as a moderator of the relationship between school principals' knowledge and practices of the sixteen quality principles of competency-based education

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Abstract

Grounded in the assumptions of competency-based education theorization, the study addresses the research question: How do principals' consciousness skills moderate the relationship between their knowledge and practices of the sixteen QPCBE in the context of primary and secondary schools in the Gedeo Zone in southern Ethiopia? The finding of analysis of quantitative data collected from 239 samples of principals reveals that knowledge alone is insufficient to ensure effective enactment of the quality principles. Consciousness skills substantially strengthen the translation of the competency principles into instructional and communicative practice. The result underscored the importance of the multidimensional nature of successful QPCBE implementation in schools.

Keyword: Competency-based education, Consciousness, Quality principles, Knowledge, practice

Background

The increase in the impact of globalization on education and advancement in human communication technologies has made changes in the need for educated manpower and reforms in quality, equity, and relevance of education. Progressive changes in information and communication technologies and the advancing impact of globalization have brought about vivid transformations in education systems across the world. Multifaceted interconnectedness of the world has resulted in deepened global competition, economic harmonization, and movement of manpower, producing a mounting need for an exceedingly skilled, malleable, and internationally capable labor force. Instantaneously, rapid transformations in digital communication

technologies, such as artificial intelligence (AI), digital networks, and virtual learning platforms, have transfigured the means of knowledge acquisition, sharing, and applications. These advances have obliged the education systems to commence modifications to improve the quality, equity, and relevance of education that matches with a growing demand of the 20st century labor market. Subsequently, educational institutions, including universities, high schools, elementary schools, and kindergartens, are progressively accenting competency-based learning, critical thinking, creativity, and lifelong learning skills to produce a workforce that can fit into a rapidly changing international market and competency-based economy.

In response to these rapid transformations in the global transformation in communication and workforce requirements, curriculum designs aiming at addressing learners' needs for competency and digital skills were being introduced . The notion of the curriculum could be introduced in 1950s and 1960s, the demand for its implementation has got a momentum in the twenty first century due to emerging demand from the global labour market. The reforms mainly focused on shifting from a traditional knowledge transmission-based education system to the development of critical thinking, skill, and lifelong learning that can enable learners to cope with ever-changing, unpredictable, and complex life scenarios after school years.

As an emerging major educational reform, the competency-based education system is focused on real-world problem-solving skills development and performance enhancement, where communication, collaborative learning, critical thinking, and creativity approaches are given priorities in the teaching-learning process. The underpinning philosophy of competency-based education (CBE) is ensuring mastery of skills and real-world application of knowledge through application of a learner-centred and flexible instructional platform in educational institutions and continuous assessment integrated in practical real-life exercises.

School principals' academic leadership knowledge, interpersonal skills, psychological competence, and pedagogical know-how have significant roles in the effective implementation process of CBE. Such competencies can enable principals to guide the overall teaching-learning process and assess learning outcomes. They can be more productive in ensuring students' mastery of skills to solve real-life problems and challenges after school year. Principals with qualities of transformational and instructional leadership can support the implementation of CBE by providing support and feedback for teachers, setting clear academic goals, communicating school vision and mission to teachers and students, supervising classroom instructions, and monitoring the implementation of the fundamentals of the curriculum standards. Hence, school leaders' interpersonal, managerial, and pedagogical skills play pivotal roles in the implementation of CBE . Leaders' technical knowledge and their level of awareness, reflective capacity, and conscious decision-making ability influence implementation of the reform policy in practice.

The role of consciousness in influencing the implementation of knowledge is implicated in the literature of studies on decision-making, cognitive neuroscience , and consciousness itself. Leaders' pure knowledge of facts may not be adequate for choosing a correct alternative among presented options effectively, and awareness-based choice selection improves the efficiency of the selection task, and it plays an instrumental role in determining the subject of the awareness, indirectly supporting the notion of selection of information for awareness. This is because various brain areas integrate information from different cognitive functions into a conscious whole. Therefore, the validity of consciousness is embedded in the ecology of its practices.

By implication, in this study, it is assumed that school principals' knowledge of quality principles of competency-based education alone may not guarantee their effective implementation, and there is a need for psychological competencies like consciousness to enhance the effectiveness of the

process. Psychological competencies like awareness, intentionality, reflective abilities and self-regulation skills determine the level of implementation of specific knowledge of the subject matter. Scholars suggested that transformation of the knowledge of QPCBE is not a mere direct process; rather it is influenced by cognitive sensitivity, deliberate mental engagement, and metacognitive monitoring. Educational leaders' consciousness of their QPCBE knowledge helps them to be creative, adaptive, and flexible in the implementation of the principles. Consciousness helps them to integrate cognitive information necessary from various sources of the brain to enhance CBE implementation outcomes. By fostering higher-order cognitive skills and consciousness, school leaders can have usable knowledge of QPCBE and promote demonstrated mastery of applicable and real-world problem-solving skills than learning rote memorization.

Prior empirical studies have focused on constructive learning, science education curriculum implementation, knowledge management and organizational learning and they are not directly related to studying the moderating role of consciousness on the relationship between knowledge and practice of QPCBE. Some studies have tried to explain the CBE implementation effectiveness, perception of CBE, perspectives of CBE, and others dimensions of the curriculum, but the role of school principals in influencing the realization of the QPCBE was given no or little attention by researchers.

Theoretical framework

The dynamic relationship among consciousness, knowledge, and practice is best implicated in a cognitive theory of consciousness called Global Workspace (GWT). The theory conceptualizes consciousness as an integrative broadcast system where information stored in long-term memory is selected, analysed, synthesised, evaluated, and broadcasted to many specialized cognitive systems to produce the desired behavioural outcome. This influential perspective postulates that

consciousness is a functional hub of cognitive information processing where only a small amount of information occupies the working memory at a time. The information that gets mindful attention to be processed in the workspace from long-term memory is available for reasoning, planning, and decision-making. Consciousness enables the cognitive piece of information to enter into the workspace to be coordinated with perception, emotion, memory (episodic, factual, and procedural memories), reasoning, and actions.

By implication, consciousness can influence the implementation of the knowledge of sixteen QPCBE identified by Sturgis and Casey into four overarching themes. Theme one: vision, equity and learner-centred education include being purpose-driven, commitment to equity, nurturing a culture of equity and inclusivity, activating student agency and ownership, and advancement upon demonstrated mastery. The quality principles of fostering the development of a mastery mindset, basing school design and pedagogy on learning sciences, designing for the development of rigorous higher-level skills, and ensuring responsiveness are classified under Theme II: teaching, learning, and competence development. The third theme: leadership, professional learning, and organizational capacities, incorporates cultivating empowering and distributed leadership, investing in educators as learners, and increasing organizational flexibility. The final category includes the principles of seeking intentionality and alignment, establishing mechanisms for consistency and reliability, maximizing transparency, and developing process for ongoing continuous improvement and organizational learning.

The analogy of GWT in explaining the dynamics among mindfulness, knowledge of the 16 QPCBE and the practice of the principles in the primary and secondary school contexts is demonstrated in the following Figure 1. As depicted in the figure, consciousness enables school principals and vice principals to channel their selection of knowledge of the 16 QPCBE from

unconscious information processing into conscious information processing. Conscious principals can perform selective observation of their school environments with better attention and integrate what they observed with their knowledge the principles. If they able to work on the principles cognitively, their probability to transform the knowledge into practice and work towards the objectives of CBE. They can develop feasible plan and make sound decisions related to quality CBE implementation in school settings. Moreover, their skill of consciousness helps them to assess and monitor the maintenance of the quality principles in the implementation of CBE.

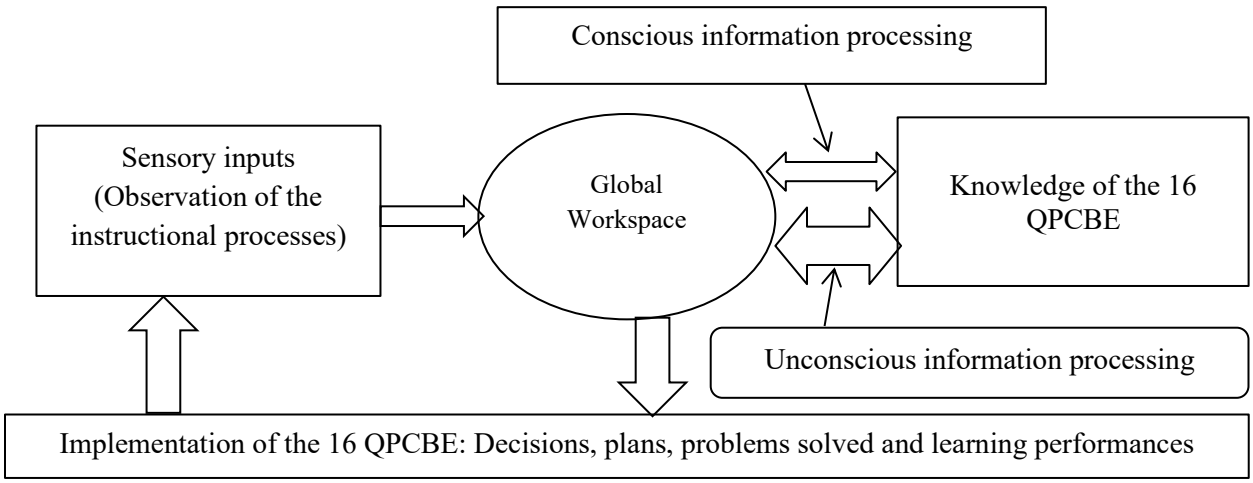


Figure 1: Conceptual framework (Source: Drawn based on the GWT)

Methodology

Study Context

Currently, outcome-based instruction, learner-centred instruction, and quality assurance is the primary focus of strategic educational leadership in Ethiopian education policy. However, contemporary studies have shown that insufficient leadership training and education, limited instructional competency, and lack of dynamic professional support become continues challenges to realize the objectives. Educational leaders are being challenged by political interference, limited

resources, restricted academic, and administrational autonomy, and weak institutional capacity that hinders them from performing adaptive and transformative instructional leadership.

In the Ethiopian education context, school leadership's competencies determine effective communication of school goals, monitoring and evaluation of academic performance, and coordination of school-based instructional process is highly constrained by limited professional competency and organizational administrative capacities. The finding of a study conducted in Gedeo Zone also show that school success is attributed to a blended leadership style where principals practice participatory and transformative instructional leadership. Such studies implied that knowledge of educational reform along with context-sensitive and adaptive leadership behaviors results in effective implementation. They indirectly support the significance of consciousness in instructional leadership.

Even though due attention is given to the role of leadership in educational quality reform in Ethiopia at the policy level, findings of studies on the role of psychological constructs such as consciousness in influencing and predicting the relationship are limited. The existing ones explain the leadership styles, administrative competencies and instructional leadership behaviours, but they give limited attention to the role of educational leaders' reflective and adaptive awareness in determining implementation quality principles of competency-based educational reform knowledge in Ethiopia. Similarly, specific to Gedeo zone, it is hard to find empirical evidence on the interactional effect of educational leaders' consciousness and knowledge of the sixteen QPCBE on the practice of the principles.

The rapidly changing contextual challenges encountered by primary and secondary school leaders to implement quality education in Gedeo zone in southern Ethiopia is an important theoretical and

practical gap to be researched. Understanding the role of educational leaders' consciousness in the implementation of quality knowledge provides an important input for better educational leadership education and training for police and instructional quality management. Hence, the study gives a theoretical and practical insight into the transformation of traditional rote memorization-inclined teaching to competency-based education by emphasizing the role of mindfulness in the process.

Approach and design

The essence of the fundamental principles of quality education has been conceptualized and communicated by scholars both objectively and contextually, inviting deductive and inductive methodological research assumptions even though various factors determine the selection. In this study, for broader implementation of the findings, objective perspective is preferred to channel the conceptual understanding of school leaders' knowledge and exercise of the sixteen QPCBEs in their school principalship and mindful attention awareness as a moderator of the relationship between the two variables. The conceptual interpretation of the study variables, theory, conceptual frameworks, and methodological procedures is based on the principles of the objective positivists' research philosophy. Objective research procedures increase the possibility of understanding how that research was done and reaching the conclusion made about the issue under investigation. Moreover, it helps to gather data from as many participants as possible, which helps to increase generalizability of the findings.

The strategy that can best fit to study the issue under investigation and to meet the objectives of the current study is a quantitative correlational descriptive research design where attempts were made to describe features of school leaders' knowledge and implementation of QPCBE and the moderating effects of their consciousness in the teaching-learning process. A correlational design

is appropriate when the purpose is to examine relationships among variables without manipulating them.

Population and sample

A sample of 239 primary and secondary school principals and vice principals serving 248,700 students attending their education in 320 schools found in Gedeo zone of Southern People Regional State of Ethiopia were taken (Zone Education Bureau, 2023) to analyse the moderating role of consciousness on knowledge-practice of the sixteen QPCBE. These schools had 288 (280 males and 8 females) primary school principals, 195 (162 males and 33 females) vice primary school principals, 30 (all males) secondary school principals and 38 (35 males and 3 females) secondary school vice principals, which is 551 in total. The list of the principals was entered into Excel to run a systematic random sampling procedure to identify the respondents. To decide interval of selection, 551 is divided by 249 (551/249 = 2). To decide the starting number from 1 to 10, a simple random sampling technique was used and number fives (for each stratum) in the list were used as starting points.

The required sample was determined by employing the following formula:

$$\boldsymbol{n = \frac{NZ^2\,P(1-Q)}{e^2(N-1)+Z^2\,P(1-P)}} \quad \textbf{+ 10 \% of the sample size}$$

Where n = the sample size, N = the number of school principals and their vices, Z = the standard normal value at the required confidence level (1.96), and P = an estimate of the population proportion. Q =1-P, e = the maximum acceptable error margin or the confidence interval, which is expressed in decimal (0.05).

$$\boldsymbol{n = \frac{551*1.96^2*0.5(1-0.5)}{(0.05)^2(551-1)+1.96^2\,0.5(1-05)}} \textbf{= 226.59 + 10\% of 226.59 = 249}$$

Table 1: Population and Sample size of the study

N	*Principalship*	*Population*	*Sample Size*

1	Secondary school principals	30	14
2	Secondary school vice principals	38	17
3	Primary school principals	288	130
4	Primary school vice principals	195	88
	Total	**551**	**249**

Study variables, methods and instrument of data collection

Educational leaders' knowledge of the 16 QPCBE, consciousness, and practices of the principles in the schools were the major variables of the study. Knowledge of QPCBE is treated as an independent variables while the practice is considered as a dependent variable. In the study, consciousness is treated as moderator variables.

Principals' remembrance of the 16 QPCBEs identified by Sturgis and Casey (2018) was considered as knowledge in this study. The principles are developed into a 97-items rating scale where the respondents were required to respond as poor (1), fair (2), good (3), very good (4), and excellent (5). Implementation of the principles in the school instructional process was considered as practice, and it was measured by 102 items having a rating scale of 1 = Never, 2 = rarely, sometimes = 3, often = 4, and always = 5 developed.

In the study, the Mindful Awareness Attention Scale (MAAS), developed and validated by Brown and Ryan within the framework of self-determination theory, was used to measure school principals' consciousness level. The scale was widely used as a self-report instrument designed to measure dispositional mindfulness, specifically the degree to which individuals maintain attention and awareness of present-moment experiences in daily life. It consists of 15 items rated on a Likert-type scale (typically 1 = almost always to 6 = almost never). Higher scores indicate greater mindful attention and awareness. The scale focuses primarily on the presence or absence of attention to and awareness of what is occurring in the present moment rather than on attitudinal components such as acceptance or non-judgment. It has shown strong internal consistency (.80 to .92) construct

validity, and predictive validity across diverse samples, making it one of the most frequently used measures of mindfulness in psychological research. It exhibited confirmatory factor analyses across nations and sample types (e.g., Chinese, Spanish, clinical, and non-clinical) that support this structure.

Methods of data analysis

Data were screened, organized, and analysed using descriptive and inferential statistical techniques encrypted in the Statistical Package for the Social Sciences (SPSS – version 27). Descriptive statistics were used to find out the mean, standard deviation, frequency, and percentage of the scores, while standard scores and hierarchical multiple regression inferential analysis were conducted to interpret levels of consciousness, knowledge, and practices, and to test the moderating effect of consciousness on the relationship between principals' knowledge and practices of the sixteen QPCBE. The interaction terms (Knowledge × Consciousness) were computed after mean-centering of the predictor variables and were analysed to reduce multicollinearity.

Results

Demographic characteristics of the respondents are summarized in Table 2 and Table 3 below. School type, positions, sex, and age of the respondents are summarized in the first table, while the second table depicts frequency distribution of respondents' educational level and experiences. A significant majority of the principals, 87.4 percent, were males. The number of primary school principals and vice principals accounted for 87 percent of the total respondents, and those from secondary schools were 13 percent of the sample. The percent of primary school vice principals, primary school principals, secondary school vice principals and secondary school principals were 45.8, 41.8, 7.9 and 5.9 percent, respectively.

Table 2: School type, position, sex, and age of the respondents (n = 239)

Characteristics		*Frequency (f)*	*Percent (%)*
School	Primary	208	87
	Secondary	31	13
Position	Primary school vice principals	108	45.2
	Primary school principals	100	41.8
	Secondary school vice principals	17	7.1
	Secondary school principals	14	5.9
Sex	Male	209	87.4
	Female	30	12.6
Age	20 – 30 years	64	26.8
	31 – 40 years	76	31.8
	41 – 50 years	60	25.1
	Above 50 years	39	16.3

As reported in Table 1 above, the majority of the respondents, 31.8 percent, were in the age range of 31 to 40 years. A significant proportion of the respondents were also in the age range of 20 to 30 years.

Table 3: Educational level and leadership experiences of the respondents (n = 239)

Characteristics		*F*	*%*
Educational level	Degree in leadership (BA and MA)	71	29.7
	Degree in other sciences (Natural and social sciences)	103	43.1
	Diploma in leadership	29	12.1
	Diploma in other sciences	36	15.1
Experiences as leadership	less than five years	51	21.3
	5 to 10 years	51	21.3
	11 to 15 years	53	22.2
	More than 15 years	84	35.1

The majority of the respondents (43.1%) of the respondents were degree holders in natural and social sciences, and 29.7 percent of them were BA or MA graduates in leadership (in school leadership or educational leadership).

Principals' knowledge of the 16 QPCBE

The current attempt to measure knowledge of the sixteen QPCBE primary and secondary school principals and vice principals using a 97-items questionnaire. The items were prepared based on the 16 quality principles of competency-based education identified described by Sturgis to guide implementation of CBE in schools. Respondents were made to rate their knowledge as poor (1), fair (2), good (3), very good (4), and excellent (5).

In the analysis, the raw scores obtained were computed into standard scores and ranked as outstanding (>3), excellent (2 to 2.99), very good (1 to 1.99), good (0 to 0.99), satisfactory (-0.99 to 0), fair (-1.99 to -1), poor (-2.99 to -2) and very poor (<-3) based on the standard deviation of the scores from the mean (Mean = 249.62 & St. Deviation = 40.56). As depicted in Table 4 below, the majority of the respondents, 101 (42.3%), found good in their knowledge of competency-based education quality. Moreover, significant proportion of them, which is 27.2 % and 13%, graded as satisfactory and fair knowledge of QPCBE. About 12 percent of the respondents rated as having very good of the principles.

Table 4: Principals' knowledge of the 16 QPCBE

Knowledge level	***F***	***%***
Outstanding (>3)	**---**	**---**
Excellent (2 to 2.99)	5	2.1
Very good (1 to 1.99)	28	11.7
Good (0 to 0.99)	101	42.3
Satisfactory (-0.99 to 0)	65	27.2
Fair (-1.99 to -1)	31	13.0
Poor (-2.99 to -2)	9	3.8
Very poor (<-3)	-	-
Total	**239**	**100.0**

Consciousness

To decide the level of respondents' consciousness, MAAS scores, having a mean value of 37.65 and a standard deviation of 7.2, are transformed to standard scores and classified as very high,

high, average, low, and very low as reported in table 5 below. The majority of the respondents scored an average (81.9%) between 1 and -1 standard deviation above and below the mean score under the normal curve.

Table 5: Levels of consciousness

Rage	***F***	***%***
Very high (>3)	**---**	**---**
High (2 to 2.99)	3	1.26
Average (1 to -1)	195	81.59
Low (-2.99 to -1)	41	17.15
Very low (<-3)	-	-
Total	**239**	**100.0**

Practice

To measure the levels of practice of the 16 QPCBEs by principals and vice principals, a 102-items questionnaire having Likert scale like options of never (1), rarely (2), sometimes (3), often (4) and always (5) was employed. The ideal possible minimum and maximum scores are 102 and 510 but the actual observed results are 158 and 400, respectively. The calculated mean, standard deviation, and range values are 233.22, 30.20, and 242, respectively.

After the obtained values of each item are added as continuous composite total scores, the data are computed to standard scores and recoded into different categorical variables using SPSS-V_{27} to facilitate interpretation and comparison. According to the percentage calculation of each category of the level of consciousness (Table 5), it was exhibited that the degree of transforming the principles into practice in school-based planning of teaching and learning, implementation of the plans, and performance evaluation are found to be satisfactory (51%) and good (34.3%).

Table 6: Level of practicing QPCBE

Rage	***F***	***%***
Outstanding (>3)	4	1.7
Excellent (2 to 2.99)	6	2.5

Very good (1 to 1.99)	6	2.5
Good (0 to 0.99)	82	34.3
Satisfactory (-0.99 to 0)	122	51.0
Fair (-1.99 to -1)	16	6.7
Poor (-2.99 to -2)	3	1.3
Very poor (<-3)	-	-
Total	**239**	**100.0**

Moderation effect of consciousness

To examine whether school principals' levels of consciousness influence implementation of the knowledge of the 16 QPCBEs, hierarchical linear regression analysis was conducted. Model 1 in Table 7 represents knowledge (KLG) and consciousness-centered values (CON) were entered to predict the outcome variable, practices of the 16 QPCBE:

$$Practice_{16\ QPCBE} = \beta_0+\beta_1(KLG\ of\ QPCBE) + \beta_2(CON) + \varepsilon$$

Where, β_0 = *intercept in the regression equation,* β_1 = *regression coefficient of knowledge,* β_2 = *regression coefficient of consciousness, and* ε = *error term.*

In the second regression Model, the interaction term between consciousness and knowledge of the 16 QPCBEs [Knowledge $_{16\ QPCBE}$ x consciousness) was entered to examine the interaction effect of consciousness on the relationship between knowledge of 16 QPCBEs and practice of the principles as expressed in the following regression equation:

$$Practice\ 16\ QPCBEs = \beta0+\beta1(KLG) + \beta2(CON) + \beta3\ (KLG \times CON)+\varepsilon$$

The interaction term is introduced to determine the influence of educational leaders' consciousness on the strength and direction of the relationship between the predictor and the outcome variables.

Table 7: Variables entered

Variables Entered/Removed[a]			
Model	Variables Entered	Variables Removed	Method
1	CON, KLG[b]	.	Enter
2	KLG_IN_CON[b]	.	Enter

a. Dependent Variable: Practice of 16 QPCBE

b. All requested variables entered.

The first model in Model Summary Table 8 below represents the main effect of the interaction of the study participants' consciousness (CON) and knowledge of 16 QPCBE (KLG) on the practice of 16 QPCBE. The output of the hierarchal linear regression analysis model reveals that there is a strong positive relationship between the predictors and dependent variables (R = .687), which shows that 47.2% (R^2 = .472) of differences in the practice of the 16 QPCBE by principals and vice principals is substantively influenced by differences in their knowledge of the principles and level of consciousness, implying moderate to strong predictive power of the model.

The difference between the adjusted R^2 (.468), or coefficient of determination, and the R^2 value is not statistically significant, suggesting that the model is not inflated by the predictor variable added into the regression equation and it is found to be stable (F = 105.646, $p < 0.001$).

In sum, the moderation effect of school principals' and vice principals' knowledge of 16 QPCBE and their consciousness (KLDG_*in*_CON) depicted an increase in the coefficient of determination (R^2) from .472 to .502, and 50.2 % of the variation in the practice of the 16 QPCBE is accounted for by the interaction of the two predictor variables. The interaction term contributed an additional explanatory power of 9.2% (R2 change = .092), and it indicates statistically significant improvement in the model (F-change = 13.801, $p < .001$) and slightly better prediction accuracy (Std. Error of the estimate changed from 22.022 to 21.448). The model exhibited that the combined effect of school principals' and vice principals' consciousness and knowledge of the 16 QPCBE significantly predicts their practice of the principles. The Durin-Watson statistic, 1.887, which is close to 2 also reveals none collinearity of the predictor variables.

The overall finding of the analysis suggests that principals' and vice principals' levels of consciousness have a moderating effect on the relationship between their knowledge of the 16 QPCBEs and their practices in school settings. This implies that knowledge of the 16 QPCBEs alone does not ensure the practice of the principles, and consciousness strengthens the implementation. School leaders having a higher level of consciousness and better knowledge of the principles are more likely to be effective in implementing the quality principles.

Table 8: Model Summary

Model Summary[c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.687[a]	.472	.468	22.02192	.472	105.646	2	236	.000	
2	.708[b]	.502	.495	21.44790	.029	13.801	1	235	.000	1.887

a. Predictors: (Constant), CON, KLDG

b. Predictors: (Constant), CON, KLDG, KLDG_IN_CON

c. Dependent Variable: 16 QPCBEs Practice

Furthermore, the ANOVA test result reported in Table 9 also confirmed the statistical significance of the two models in predicting variations in the practice of the 16 QPCBEs due to knowledge of the principles and consciousness.

Table 9: ANOVA Table

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	102469.506	2	51234.753	105.646	.000[b]
	Residual	114451.740	236	484.965		
	Total	216921.247	238			
2	Regression	108818.362	3	36272.787	78.852	.000[c]
	Residual	108102.885	235	460.012		
	Total	216921.247	238			

a. Dependent Variable: 16 QPCBE Practice

b. Predictors: (Constant), CON, KLDG

c. Predictors: (Constant), CON, KLDG, KLDG_IN_CON

The coefficient Table 10 includes the outcome of the main effects of the independent variables and their moderation on the outcome variable within the hierarchical linear regression analysis computed. The main effects equation in the hierarchical regression is expressed in model 1;

$$Practice_{16\ PQCBE} = 233.224 + 0.353(KLG) + 1.237\ (CON)$$

The model indicates that both school principals' and vice principals' knowledge of the 16 QPCBE (B = .353, β = .475, t = 8.233, p < .001) and their consciousness (B = 1.237, β = .295, t = 5.118, p < .001) are statistically significant positive predictors of practice of the principles. One unit increase in standard deviation of knowledge is associated with a 0.353 unit increase in practice of the principles. The positive coefficient values in the equation indicate that better primary and secondary school principals' and vice principals' understanding of principles of quality competence-based education resulted in an associated improvement in the practice of the principle in the instructional process. Similarly, provided that other variables in the equation held constant, one unit increase in the standard deviation of consciousness is associated with 1.237 increases in the practice of the 16 QPCBEs. That means a higher level of consciousness is associated with better practices of the 16 QPCBEs. Altogether, school principals and vice principals who have better knowledge of the 16 QPCBEs and strong mindful attention awareness are effective in realising the principles in the teaching-learning process.

Furthermore, the principals' knowledge (r = .643) and consciousness (r = .0566) have a direct strong positive correlation with the practices of the 16 QPCBE. The values of obtained tolerance (.673) and variance inflation factor (1.486) are below the accepted limit of 10 and eliminate the multicollinearity problem in the first model.

The interaction term between principals' knowledge of the 16 QPCBE and their consciousness is added to equation model 2 to determine the moderating effect of consciousness on the knowledge-practice relationship.

$Practice_{16\ PQCBE} = 99.413 – 0.164(KLG) - 2.246\ (CON) + 0.014\ (KLG_{X}\ CON)$

The second model in Table 12 represents the statistically significant moderation effect of consciousness on the relationship between knowledge and practice of the 16 QPCBE (B = 0.014, β = 1.365, P < 0.01). Level of consciousness significantly moderates the implementation of QPCBEs knowledge, which means, consciousness determines the effect size of knowledge on practice of the 16 principles of competency-based education in primary and secondary school. Attempts were made to handle the higher multicollinearity problem (Tolerance = .016 and VIF = 63.694) in model 2 due to the interaction term of knowledge and consciousness by centering the values of knowledge of the 16 QPCBEs and consciousness, even though it still affects stability and interpretability of the regression coefficients.

Table 10: Coefficient

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	233.22	1.424		163.726	.00					
	KLDG	.353	.043	.475	8.233	.00	.643	.472	.39	.673	1.486
	CON	1.237	.242	.295	5.118	.00	.566	.316	.24	.673	1.486
2	(Constant)	99.41	36.05		2.758	.01					
	KLDG	-.164	.145	-.221	-1.130	.26	.643	-.074	-.05	.056	18.01
	CON	-2.246	.967	-.536	-2.324	.02	.566	-.150	-.11	.040	25.07
	KLDG_IN_CON	.014	.004	1.365	3.715	.00	.694	.236	.17	.016	63.69

a. Dependent Variable: 16 QPCBEs Practices

The excluded variable presented in Table 11 below also confirmed the importance and significant explanatory power of the interaction term, KLG_X_CON, and it improved the regression model's statistical significance if included in the practice prediction equation (t = 3.715, p = 0.00). The positive Beta value of 1.365 and zero-order partial correlation of 0.236 suggest that principals' consciousness enhances the influence knowledge of the 16 QPCBEs will have on the implementation of the principles. The result in the table indicates a possible moderation effect of consciousness on the relationship between knowledge and practice of the principles.

Table 11: Excluded variable

Excluded Variables[a]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance
1	KLDGE_IN_CON	1.365[b]	3.715	.000	.236	.016	63.694	.016

a. Dependent Variable: Practice P

b. Predictors in the Model: (Constant), CON, KLDG

In general, the residuals statistics reported in Table 12 below suggest that the regression model predicting the practices of the 16 QPCBEs fulfills the assumptions of hierarchical regression analysis, as most residuals fall within the limits and are centered around zero. The predicted scores of the practice of the 16 QPCBEs are reasonably distributed around the mean value (mean = 233.2238, range = 311.1906 – 194.7868, and Std. deviation = 21.38). Hence, the model equation provides reasonably accurate predictions. Residual values of the difference between actual and predicted values indicate balanced distribution despite some variations (range = -49.002 to 96.79, mean = 0, Std. Deviation = 21.312), and there is no indication of overprediction or underprediction in the model equation. The majority of the standardized predicted values fall within the expected acceptable range of -3 to 3 with a mean of 0, and Std. Deviation of 1 that reveals balanced distribution. However, the maximum standardized deleted residual value is 4.932, indicating that

one or more observations may be extreme outliers in the standardized predicted value distribution. Mahalanobis's multivariate outlier is more than 16.27 critical value, indicating some cases represent multivariate outliers in the distribution. Yet, the result of Cook's distance measure's maximum value of 0.560 is below the critical value 1, highlighting there is no case in the distribution that influences the regression outcome. The maximum leverage value, the distance between predicted values and their mean, is 0.157, which is greater than the threshold of 0.033, and a few cases have relatively high leverage values in the distribution.

Table 12: Residuals statistics

Residuals Statistics[a]					
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	194.7868	311.1906	233.2218	21.38270	239
Std. Predicted Value	-1.797	3.646	.000	1.000	239
Standard Error of Predicted Value	1.521	8.600	2.544	1.110	239
Adjusted Predicted Value	192.9691	300.5164	233.1598	20.99515	239
Residual	-49.0022	96.79129	.00000	21.31229	239
Std. Residual	-2.285	4.513	.000	.994	239
Stud. Residual	-2.300	4.704	.001	1.012	239
Deleted Residual	-49.6779	105.16397	.06195	22.12685	239
Stud. Deleted Residual	-2.322	4.932	.004	1.024	239
Mahal. Distance	.201	37.272	2.987	4.355	239
Cook's Distance	.000	.560	.010	.051	239
Centered Leverage Value	.001	.157	.013	.018	239

a. Dependent Variable: Practice of the 16 QPCBE

Discussion

In this study, an attempt was made to examine the moderating effect of consciousness on the relationship between being knowledgeable of the sixteen principles of CBE identified and described by Sturgis and Sturgis and Casey . The finding revealed that both knowledge of QPCBEs and the effect of consciousness are statistically significant in predicting practices of the

principles, and consciousness has a moderation effect on the implementation of competency-based education principles.

Statistically, 42.2 percent of variations in the implementation practice of quality principles of competency-based education are attributed to knowledge of the principles and consciousness level of the school leaders and vice principals. Similarly, prior studies revealed that implementation of instructional policies is determined by school leaders' knowledge of reforms. School principals, who have better conceptual knowledge of CBE, are good at facilitating implementation of innovations in education. Such principals are better in creating conducive and supporting conditions for teachers, providing better guidance for teachers, and allocating more resources to practice reforms designed to enhance instructional quality .

Like the current findings, previous studies also found out the role of mindful awareness in influencing decision-making and effectiveness in instructional leadership practices. They concluded that school principals with higher levels of awareness, thoughtful in their attention, and reflective in their cognition are more effective in their decision-making. Such school leaders are effective in their implementation of instructional reforms, and they are characterized by depth analysis of the teaching-learning process and paying closer attention to school environment . Resonant school principals are better at transforming educational policy knowledge into practice, motivating education stakeholders, and accepting pedagogical reforms than those who are not . Therefore, basic knowledge and reflective domains of leadership education result in better practices of the sixteen QPCBEs. To ensure effective implementation of CBE in primary and secondary schools, principals' and vice principals' capacity-building training and initiatives should focus on strengthening conceptual understanding of the basic essence of the principles of quality competence-based education and mindful awareness attention.

Implications and conclusions

The finding of the current research is in favour of research leadership thoughts which emphasise that productive educational leadership is a function of both cognitive and reflective domains of leadership competence. Reflective skills such as mindfulness, being analytical and emotional intelligence are more effective in transforming educational policies into practice and improving instructional processes.

Theoretically, the finding of the present study implies that integrating cognitive domains and psychological domains of consciousness explains the educational leadership and reform implementation theoretical framework. It demonstrates the notion that consciousness skills are not solely independent predictors but are moderators that enhance the association between knowledge and practice. The result substantiates contemporary viewpoints from conscious leadership and meaningful leadership theories that emphasize the importance of awareness and reflection in enhancing leadership effectiveness in the implementation of educational policies.

International and national education and training policymakers should learn that reflective abilities, emotional intelligence, and mindful awareness are important components of leadership development. They have to realize that successful implementation of competency-based educational transformation demands more effort than simple dissemination of quality guidelines, principles, and frameworks. Educational transformation approaches that pay less attention to the psychological readiness of school leaders can compromise effective implementation of educational reform policies.

School principal and vice principal capacity-building platforms should be designed in such a way that they incorporate both deep understanding of the concept of QPCBE and competencies of mindfulness and reflective abilities. Leadership training strategies should enable school leaders to foster skills like coaching, mentoring, and reflective practice so that they can internalise educational reform policies and implement them effectively in dynamic school environments.

The finding of the present study implies a need for conscious and knowledgeable leaders because such leaders are better at nurturing favourable learning school environments. School that are led by school principals who have cognitive-consciousness integrated competencies tend to win better collaboration, instructional guidance, and more effective allocation of resources for school-based instructional processes.

Moreover, the finding depicted that 57.8 percent of variances in the practice of the 16 QPCBE are unexplained consciousness skills and knowledge of the principles, implying that follow-up researchers can investigate the influence of factors related to teachers' readiness to engage in school transformation, school organizational culture and philosophy, accessibility of resources, and systems designed to ensure external accountability. Prospective researchers in the area may also test the *knowledge - consciousness = practice* model in various educational contexts to advance the generalizability the findings.

Hierarchical regression moderation analysis revealed that school leaders' consciousness has a statistically significant moderation effect on the transformation of the knowledge of the sixteen QPCBEs into practice. The influence of other contextual and organizational factors being held constant, the regression model explains 42.2 percent of variations in practice of the 16 QPCBEs is accounted for by the interaction of leaders' knowledge of the principles and consciousness skills.

The ideal practices of the principles depend on educational school leaders' good knowledge of the principles and their consciousness skills. Effective implementation of the sixteen QPCBE by school principals is influenced by their knowledge of the principles and their consciousness. The principals' knowledge of the principles is insufficient to predict optimal implementation of the 16 QPCBEs. The knowledge serves as a conceptual foundation, whereas their consciousness or mindful awareness facilitates the transformation of the understanding of the sixteen core principles into practice.

This implies that school leaders having better conceptual understanding of the sixteen principles of quality CBE, higher level of awareness of the principles, being reflective on their tasks, and paying attention to implementation are better in realizing the principles in their school settings.

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Declaration of interest

The researcher confirms that there is no conflict of interest to declare.

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