



## The Qualities and Competencies of School Educators in the Era of Industrial Revolution 4.0

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**ABSTRACT:** Professional virtue is a collection of those qualities embedded in the social practice of teaching that is necessary to the professional task and that, as such, form the core of expertise needed. This study conducted to explore the qualities and competencies of school principals, vice-principals, and headteachers in the era of Industrial Revolution 4.0. The study used a questionnaire survey with thirty-six school principals, vice-principals, and headteachers from four elementary schools and three high schools in Southern Vietnam. The results of this study indicated that the necessity and feasibility of the principals' professional virtues and specific competencies were within the range of "average" to "high" response. Our research is that it is essential and feasible for school leaders to manage administrative affairs, to improve the professional values, specialized skills in school governance, to establish an educational atmosphere in the school, school relationships with the family and society and to make use of foreign language, information technology and science writing available.

**Keywords:** Quality, Competency, School Principal, Vice-principal, Headteacher.

### I. INTRODUCTION

Industry Revolution 4.0, which is also internationally known as the digital revolution, is the trend towards automation and data exchange in manufacturing technologies. Industrial Revolution 4.0 has had a substantial and significant impact on the whole culture, society, and many fields, which is not only the change of economy (optimizing production processes with digital technology and intelligent technologies) but also the change of education in Vietnam. The change of society and economy with the Industrial Revolution 4.0 values the critical contribution to the community and society above qualifications and family background. The economy in the Industrial Revolution 4.0 requires the improvement of human resources that all people, especially students, have to have ten skills including complex problem-solving skills, coordinating with others, critical thinking, creativity, human resource management, emotional intelligence, negotiation, cognitive flexibility, judgment, and decision-making and service orientation [10]. Therefore, to meet the requirements of the fourth industrial revolution, education in Vietnam need to be transformed into a new form, called education 4.0, to train high-level human resources. The change of education should be performed not only by students but also by educators, especially school principals, vice-principals, and headteachers who are the highest-ranking administrator in an elementary, secondary, or high school.

The school principal is the most critical factor in pursuing and accomplishing the objectives of schools [18]. As the manager of the school, the principal is expected to continually improve the status of conditions within the school to increase student academic achievement and facilitate school improvement. Thomas (1978) [17] described three primary types of school

principals, including (i) the director who handles the administrative affairs, other related problems and manages the school syllabus' contents; (ii) the administrator who allows the teachers to manage the school syllabus' contents when he/she handles the issues of school or other related problems; (iii) the facilitator who encourages and help the teachers to improve their professional knowledge and teaching, and be involved in the process instead of the procedures.

The role of the principal as a leader has changed gradually according to the change of Industry Revolution 4.0 and become more complicated. The traditional functions of principals who have responsibilities for management and administrative affairs have expanded to instructional leaders to perform their primary task, which is promoting effective teaching and learning [13]. Instructional leadership is a significant duty for school principals [1]. It is undoubtedly true that many successful schools are managed by principals who show instructional leadership behaviours and follow instructional leadership practices [13].

Successful school principals, or effective school leaders, are lifelong learners and models of getting knowledge who seize and participate in professional development opportunities, encourage and promote cooperation with the colleague of teacher and students, and make all attempts to improve teachers and support them to participate actively in educational opportunities inside and outside the school [5-7, 9].

The school principal is responsible for managing the entire educational activities of the school. Their main tasks include as follows:

- Learning and improving continually professional knowledge.
- They are creating mechanisms for work systems in school towards industry 4.0.

- They are applying Information Technology in organizing professional development activities, which are about developing knowledge, skills, values, and professional attitudes (Qaleb & Alem, 2008) for teachers.
- They are assisting teachers to select teaching method because teaching has been recognized as the factor which has the most influence on student academic achievement [12].
- They are planning instructional activities for teachers and students.
- They are making school development plans.
- Evaluate and command the teacher's professional knowledge periodically.
- They are improving the school's relationship with family and society.

The professional virtues and specific competencies of school principals, vice-principals, and headteachers are not a new topic. However, few studies have focused on this subject in Vietnam, especially for principals and administrators in Ho Chi Minh City, Vinh Long, and Soc Trang. Fill this gap, and this research is conducted to find out the evaluation results about the necessity and feasibility of the principal's capabilities in educational management. The research starts with reviewing the empirical literature of the virtues and competencies of principals to meet the requirements of their responsibilities and role in schools. A research methodology is introduced in the second section, followed by results and discussion. The last section is the conclusion.

## II. METHODS

**Participants:** Participants were selected randomly from seven schools, Vietnam. All participants provided informed consent after receiving an explanation of the purpose of the research. The survey instrument distributed to 63 Vietnamese school principals, vice-

principals, and headteachers, of which 36 questionnaires returned, for a 57.1 percent return rate, which exceeds the 30 percent response rate most researchers require for analysis [3]. The sample of this study, drawn from 36 students who completed the survey instrument. There were more headteachers (69.5%) than vice principals (19.4%) and principals (11.1%) among the 36 Vietnamese who surveyed.

**Measure:** Questionnaires designed to survey school principals, vice-principals, and headteachers at the Ho Chi Minh City University of Education, Ho Chi Minh City, Vietnam. First, social-demographic items introduced in the questionnaire. Then, Vietnamese undergraduate students' perception of non-language-majored students' autonomy in learning English measured by a total of 39 questions. The responses of the participants provided in three different levels based on a 3-point Likert scale [2].

**Analyses:** All participants were provided informed consent after receiving an explanation of the purpose of the research. The Statistical Package for the Social Sciences (SPSS) version 20 used for data analyses. The coding procedure was performed as follow: 1 = Strongly disagree, 2 = Neither agree nor disagree, 5 = Strongly Agree. According to Narli (2010) [14], the interval width of the 5-Likert scale should be computed in order to set up the group boundary value for result discussions. Interval Width = (Upper value – Lower value)/n = (3-1)/3 = 0.67. Group boundary values are built that help to discuss research results based on the above interval width, which are pointed in Table 1.

**Result:** The mean scores of 6 items about Professional Virtues of school principals, vice-principals, and headteachers are shown in Table 3.

**Table 1: An overview of survey participants.**

		n	%
Type	Principal	4	11.1
	Vice-principal	7	19.4
	Headteacher	25	69.5
School	Tran Van Kieu elementary school, district 10 in Ho Chi Minh City	9	25
	Phan Đình Phùng elementary school, district 3 in Ho Chi Minh City	3	8.3
	Nguyen Du high school, district 10 in Ho Chi Minh City	6	16.6
	PhuThinh Belementary school in Vinh Long province.	3	8.3
	Thi Tran Cai Von B elementary school in Vinh Long province	3	8.3
	Vinh Xuan high school in Vinh Long province	6	16.6
	Hoang Dieu high school in Soc Trang province	6	16.6
n: Number of participants; %: Percentage			

**Table 2: Group boundary values of 3 Likert scale.**

1.00 – 1.67	Very high
1.68 – 2.34	Average
2.35 – 3.00	Very low

**Table 3: The necessity and feasibility of the principals' professional virtues.**

S.No.	Professional Virtues	Necessity		Feasibility	
		M	SD	M	SD
1.	Having professional virtues of a school leader.	2.97	0.17	2.97	0.17
2.	Executing the policies of educational innovation.	2.94	0.33	2.94	0.23
3.	Developing speciality knowledge frequently.	2.94	0.33	2.92	0.28
4.	Improving professional knowledge frequently.	2.94	0.33	2.94	0.23
5.	Learning and improving computer skills.	2.97	0.17	2.97	0.17
6.	Learning regularly the knowledge and skills with new educational equipment	2.89	0.32	2.78	0.42

Among the six items of principals' professional virtues, the indicators that have the highest levels of necessity with the same score are having professional virtues of a school leader (M = 2.97; SD = 0.17) and learning, improving computer skills (M = 2.97; SD = 0.17). The indicator that has the lowest level of necessity is regularly learning the knowledge and skills with new educational equipment (M = 2.89; SD = 0.32).

Among the six items of principals' professional virtues, the top 2 indicators that have the highest levels of

feasibility with the same score are having professional virtues of a school leader (M = 2.97; SD = 0.17) and learning, improving computer skills (M = 2.97; SD = 0.17). The indicator that has the lowest level of feasibility is regularly learning the knowledge and skills with new educational equipment (M = 2.78; SD = 0.42). The mean scores of 15 items about Specific competencies in school administration of school principals, vice-principals, and headteachers are shown in Table 4.

**Table 4: The necessity and feasibility of the principals' specific competencies in school administration.**

S.No.	Specific competencies in school administration	Necessity		Feasibility	
		M	SD	M	SD
<b>Plan</b>					
1.	Making a plan which improves school effectively towards technology and digitization.	2.89	0.32	2.67	0.59
2.	Creating mechanisms for work systems in school towards industry 4.0	2.94	0.33	2.86	0.42
3.	Making a plan which improves Information Technology for teachers to meet the requirements of the industrial revolution 4.0	2.83	0.47	2.64	0.59
<b>Do</b>					
4.	Applying Information Technology in organizing professional development activities for teachers.	2.94	0.23	2.89	0.32
5.	Assisting teachers to select teaching method which applies the internet and computers.	2.94	0.23	2.94	0.23
6.	Organizing Information Technology training courses periodically for teachers.	2.83	0.45	2.69	0.58
7.	Assisting teachers to select teaching methods meeting the diversity of student's level and personality.	2.86	0.42	2.75	0.50
<b>Check</b>					
8.	Evaluating periodically the teacher's ability to apply Information Technology.	2.67	0.54	2.58	0.55
9.	Commanding and rewarding teachers who apply effectively Information Technology.	2.86	0.49	2.69	0.67
<b>Act</b>					
10.	Managing the education curriculum.	2.92	0.28	2.86	0.35
11.	Managing information system.	2.89	0.32	2.89	0.32
12.	Making strategic plans.	2.89	0.32	2.86	0.35
13.	Solving the problems.	2.94	0.23	2.89	0.32
14.	Developing critical thinking skills.	2.94	0.23	2.89	0.32
15.	Having a global mindset.	2.78	0.54	2.64	0.59

The scale "Specific competencies in school administration" has four subscales, including **PLAN**, **DO**, **CHECK** and **ACT**. Among the three items of "**PLAN**", the indicators that have the highest levels of necessity is creating mechanisms for work systems in school towards industry 4.0 (M = 2.94; SD = 0.33). The indicators that have the lowest levels of necessity is planning, which improves Information Technology for teachers to meet the requirements of the industrial revolution 4.0 (M = 2.83; SD = 0.47). The indicator that has the highest level of feasibility is creating mechanisms for work systems in school towards industry 4.0 (M = 2.86; SD = 0.42). The indicator that has the lowest level of feasibility is planning, which improves Information Technology for teachers to meet the requirements of the industrial revolution 4.0 (M = 2.64; SD = 0.59).

Among the four items of "**DO**", the indicators that have the highest levels of necessity with the same score are applying Information Technology in organizing professional development activities for teachers (M = 2.94; SD = 0.23), assisting teachers to select teaching method which applies internet and computers (M = 2.94; SD = 0.23). The indicators that have the lowest levels of necessity is organizing Information Technology training courses periodically for teachers (M = 2.83; SD = 0.45).

The indicator that has the highest level of feasibility is assisting teachers to select teaching method which applies the internet and computers. (M = 2.94; SD = 0.23). The indicator that has the lowest level of feasibility is organizing Information Technology training courses periodically for teachers (M = 2.69; SD = 0.58). In the two items of "**CHECK**", the indicator that has the highest level of necessity is commanding and rewarding teachers who effectively apply Information Technology (M = 2.86; SD = 0.49). The indicator that has the highest level of feasibility is commanding and rewarding teachers who apply effective Information Technology (M = 2.69; SD = 0.67).

Among the six items of "**ACT**", the indicators that have the highest levels of necessity with the same score are solving the problems (M = 2.94; SD = 0.23) and developing critical thinking skills (M = 2.94; SD = 0.23). The indicator that has the lowest level of necessity is having a global mindset (M = 2.78; SD = 0.54). The top three indicators that have the highest levels of feasibility with the same score are managing information system (M = 2.89; SD = 0.32), solving the problems (M = 2.89; SD = 0.32), developing critical thinking skill (M = 2.89; SD = 0.32). The indicator that has the lowest level of feasibility is having a global mindset (M = 2.64; SD = 0.59).

The mean scores of eight items about Specific competencies in making an educational environment in

the school of school principals, vice-principals, and headteachers are shown in Table 5.

**Table 5: The necessity and feasibility of the principals' specific competencies in making an educational environment in school.**

S.No.	Specific competencies in making an educational environment in school	Necessity		Feasibility	
		M	SD	M	SD
1.	Building the online learning community.	2.64	0.68	2.36	0.76
2.	Building learning community within the school through the internet.	2.72	0.57	2.58	0.65
3.	Building a learning community in their locality through the internet.	2.58	0.65	2.22	0.79
4.	Creating conditions for teachers to research and apply international experience initiatives.	2.78	0.48	2.47	0.69
5.	Ability to communicate.	2.94	0.23	2.89	0.32
6.	Value orientation	2.92	0.28	2.83	0.38
7.	Adjusting to change.	2.97	0.17	2.89	0.32
8.	Building and nurturing motivation.	2.83	0.51	2.75	0.55

**Table 6: The necessity and feasibility of the principals' specific competencies in improving the school's relationship with family and society.**

S.No.	Specific competencies in improving school's relationship with family and society	Necessity		Feasibility	
		M	SD	M	SD
1.	Making a plan to connect the school with the student's family.	2.97	0.17	2.97	0.17
2.	Making a plan to connect the school with other local schools.	2.75	0.55	2.69	0.53
3.	Organizing activities to connect the education of school with student's family.	2.97	0.17	2.89	0.39
4.	Sharing the knowledge of education with students' family	2.89	0.32	2.83	0.38
5.	Sharing the knowledge of education with government agencies in their area.	2.81	0.47	2.69	0.58
6.	Connecting the activities at school with international activities.	2.64	0.64	2.28	0.82

**Table 7: The necessity and feasibility of the ability to use foreign languages, information technology and write scientific researches.**

S.No.	The ability to use foreign languages, information technology and write scientific researches	Necessity		Feasibility	
		M	SD	M	SD
1.	Using educational types of equipment.	2.81	0.58	2.89	0.39
2.	Applying information technology.	2.92	0.28	2.72	0.62
3.	Doing researches on educational issues to find out effective educational management strategies.	2.86	0.35	2.69	0.58
4.	Learning from domestic and foreign colleagues.	2.78	0.54	2.44	0.65

Among the eight items of principals' Specific competencies in making educational environment in school, the three indicators that have the highest levels of Necessity, listed in descending order, are respectively: adjusting to change (M = 2.97; SD = 0.17), ability to communicate (M = 2.94; SD = 0.23) and value orientation (M = 2.92, SD = 0.28). The indicator that has the lowest level of necessity is building a learning community in their locality through the internet (M = 2.58, SD = 0.65). The top 3 indicators that have the highest levels of Feasibility are ability to communicate (M = 2.89, SD = 0.32), adjusting to change (M = 2.89, SD = 0.32) and value orientation (M = 2.83, SD = 0.38). The indicator that has the lowest level of feasibility is building a learning community in their locality through the internet (M = 2.22, SD = 0.79).

The mean scores of 6 items about Specific competencies in improving the school's relationship with family and society of school principals, vice-principals, and headteachers are shown in Table 6.

Among the six items of principals' Specific competencies in improving school's relationship with family and society, the two indicators that have the highest levels of necessity with the same scores are making a plan to connect the school with student's family (M = 2.97, SD = 0.17) and organizing activities to connect the education of school with student's family (M = 2.97, SD = 0.17).

The indicator that has the lowest level of necessity is connecting the activities at school with international activities (M = 2.64, SD = 0.64). The three indicators that have the highest levels of feasibility, listed in descending order, are respectively: making a plan to connect the school with student's family (M = 2.97, SD = 0.17), organizing activities to connect the education of school with student's family (M = 2.89, SD = 0.39) and sharing the knowledge of education with students' family (M = 2.83, SD = 0.38). The indicator that has the lowest level of feasibility is connecting the activities at school with international activities (M = 2.28, SD = 0.82).

The mean scores of 4 items about the ability to use foreign languages, information technology, and write scientific researches of school principals, vice-principals, and headteachers are shown in Table 7.

Among the four items of principals' ability to use foreign languages, information technology, and write scientific researches, the indicator that has the highest level of necessity is applying information technology (M = 2.92, SD = 0.28). The indicator that has the lowest level of necessity is learning from domestic and foreign colleagues (M = 2.78, SD = 0.54). The indicator that has the highest level of feasibility is using educational types of equipment (M = 2.89, SD = 0.39). The indicator that has the lowest level of feasibility is learning from domestic and foreign colleagues (M = 2.44, SD = 0.65).



### III. DISCUSSION

This research examined the necessity and feasibility of the school principals, vice-principals, and headteachers' professional virtues and specific competencies. The main findings indicate that most professional virtues and specific competencies of principals are necessary and feasible. Specifically, learning and improving computer skills and improving professional knowledge frequently are necessary and feasible factors of school principals, vice-principals, and headteachers to lead the school development in the Industrial Revolution 4.0. Principals should learn enough Information and Communication Technology (ICT) skills and professional knowledge to direct teachers, support, motivate and put forward initiatives for teachers to integrate technology in the classroom and the process of teaching and learning.

Making strategic plans such as setting and imparting school goals to teachers and solving the problems about implementing the strategic plans in order to accomplish objectives and goals of the school are essential and also feasible for principals to manage and lead the school effectively. These findings are following findings reported by Hallinger *et al.*, (1996) [8] and Leithwood *et al.*, (2008) [12], who concluded that identifying school development objectives and setting a clear school mission were basic methods for principals to lead their school successfully. Besides, our results support a prior study made by Gülcan (2012) [6], that making a plan and organizing activities to connect the school and education of school with student's family is essential because school-family communication is one of the factors affecting students' outcomes in learning. These missions are performed successfully by school principals, vice-principals, and headteachers.

Our finding is also directly in line with previous findings of Glanz (2005) [5], Fink and Resnick (2001) [4], and Gupton (2010) [7], which reported that improving professional knowledge frequently and making all attempts to support and improve teachers is essential to become a successful principal. Commanding and rewarding teachers who apply Information Technology effectively are also important factors to promote teachers in teaching and facilitate students' success. This finding is under findings reported by Sowell (2018) [16], which showed that the principals encourage their teachers with acknowledging the professional work of teachers and complement their work, such as teaching and managing students. These supportive acts assist the principals in building a more trustworthy relationship with teachers [11].

However, our results also reported that it is not entirely feasible for principals to connect the activities at school with international activities and to learn from domestic and foreign colleagues because of their lack of foreign language skills. This finding provides a good starting point for discussion and further research. This study has several limitations. The main limitation of the present studies naturally is the sampling process used. The sample was drawn from Ho Chi Minh City, Vinh Long, and Soc Trang in Vietnam.

### IV. CONCLUSION

The function and the role of the principal have continually changed and been complicated to meet the expectations of a constantly changing education in the Fourth Industrial Revolution. The main conclusion of our research that can be drawn is that Professional Virtues, Specific competencies in school administration, making an educational environment in school, improving school's relationship with family and society and the ability to use foreign languages, information technology and write scientific researches are essential and also feasible for school principals, vice-principals, and headteachers to manage administrative affairs and lead the school successfully. All results obtained from this research are necessary for managing schools effectively and successfully of principals. With the finding of connecting the activities at school with international activities, future research should consider the effects of foreign language skills on the functions and tasks of a successful principal more carefully, especially English skills.

**Conflict of Interest.** The authors confirm that there is no conflict of interest to declare for this publication.

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