Condition Present, Condition Desirability and Necessary of Coding Education Management for Small Size Elementary Schools in the Northeast

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Abstract
The purposes of this research were to condition the present desirability and necessary of Coding education management. A sample group of the research is 370 small-sized elementary schools and the sample group using the formula Krejcie and Morgan, then using the Multi-stage random sampling method. Sample group has 370 directors, 370 technology teachers. The research instruments using collected data the questionnaire for 5-level estimation scale. The reliability value was 0.98. The statistics used for the analysis were mean, standard deviation and priority needs index. The results revealed that. The condition presents, On the whole is a much higher level ($\bar{x}$=3.67,S.D.=0.87). Considering each aspect found that the highest average was digital literacy development ($\bar{x}$=4.10,S.D.=0.86). Inferior to was developing the curriculum of Coding ($\bar{x}$=4.00,S.D.=0.91), coding learning community ($\bar{x}$=3.30,S.D.=0.87). The condition presents, on the whole is a much higher level ($\bar{x}$=4.20,S.D.=0.77). The considering each aspect found that the highest averages was learning ecosystem ($\bar{x}$=4.37,S.D.=0.66), inferior to was digital literacy development ($\bar{x}$=4.36,S.D.=0.80), the coding research and evaluation ($\bar{x}$=4.08,S.D.=0.83) and then necessary, on the order of magnitude is coding learning community (PNI=0.250), learning ecosystem (PNI=0.226), coding research and evaluation (PNI=0.185), coding learning (PNI=0.136), digital literacy development (PNI=0.062), curriculum of coding (PNI=0.055).

Keywords: Coding Education Management, Small Size Elementary Schools

1. Introduction

Digital alteration to effect on reform the transformation, economic, social, politics, education and humankind livelihood. The technology evolution is able to apply on teaching and still pass on knowledge though, creating learning and incubating the profession to learner has been efficient and more effective. The conform to change and personal development purposes has been in the 21st century skills and digital skills for reinforcement learning lasting in the future [1].

Wing [2], "Computation Thinking" refers to the important 21st century skills not only reading, writing, and arithmetic. We should add computation thinking to every child's analytical ability. The present all countries around the world to see the importance of education teaching computing science to learner development has been in the 21st century skills has been curriculum improvement basic education (K12), England, Estonia, Finland, Canada, United States of America [3], Australia [4], Japan, Singapore [5], South Korea, Taiwan, Hong Kong [6].

Thailand, the ministry of education to push on the Computer language learning (coding) has been primary education curriculum improvement basic education in Buddhist Era (B.E.) 2008 (revised edition B.E. 2017). The educational teaching of computing science has 3 main points: computer science (CS), information communication technology (ICT), digital literacy (DL) [7, 8]. The past 3 years but to accept coding education management is new for teachers, directors because The teachers have been worrying about learning in the classroom. Some schools have been confused about the course that is this subject and the class teacher. The instruction has been Student able to learn according formula and indicator. The particularly in the small-size elementary schools has 120 students and 15,158 schools (10 June 2019).15,158 schools have deficient to teachers technology, budget, digital technology [9] be in accord with Office of National Education Standards and Quality Assessment. Important issues have difficulty in small-size elementary school development. There were: 1) The achievement of the students in small-size schools at low grades and the problem of illiteracy. 2) Shortage of budget. 3) Teachers are insufficient. 4) Deficient Information with quality. 5) The school deficient to evaluate external quality use to improving and continually development [10]. In order that Coding education management a school for effective. Development of teachers to be the ability to the coding education management and development of personal education have to knowledge and skills need to management, supervision, promote, efficiency of learning management [11].

The purposes of this research were to mark for will condition present, condition desirability and necessary of coding education management. To impose strategy and impel coding education in the small-size elementary schools be in accord with context and demand of small-size elementary schools happen to the success and the sustained forever.

2. Materials and Methods

2.1 Objective

To examine the education condition present, condition desirability and necessary of coding education management for small-size elementary schools in the northeast.

2.2 Conceptual Framework

The conceptual framework of research on this time the researchers synthetic of principle concept theory and related research about to [4, 5, 6, 7, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31] in the research of condition present, condition desirability and necessary of coding education management for small-size elementary schools in the northeast and the details are as follows.

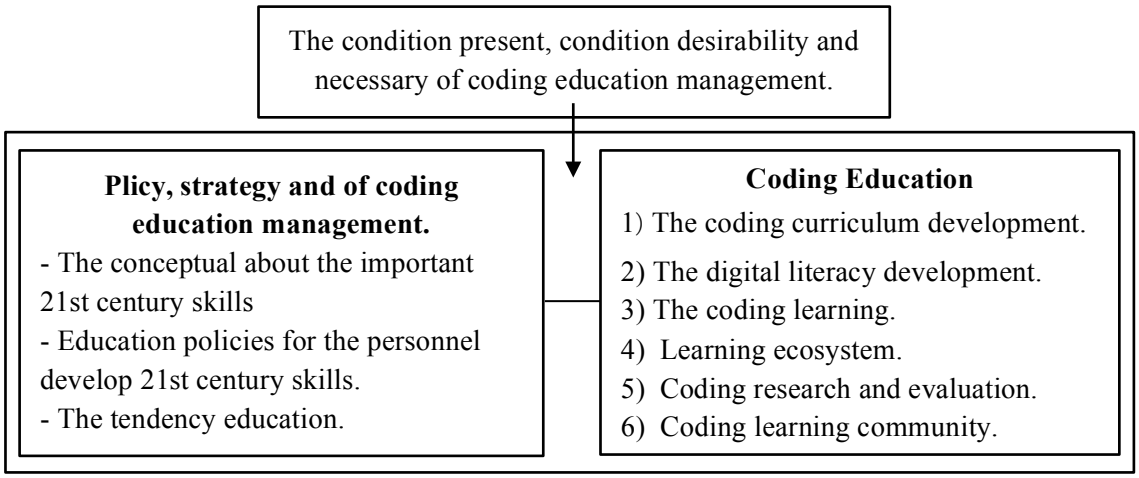

Figure 1. Conceptual framework

2.3 Research Methodology

In the research coding education management for small-size elementary schools in the northeast. The researcher has conducted the steps:

Population and samples

Population used in education. The small-size elementary schools in the northeast, office of the Basic Education commission 2021, 7,203 schools.

Samples used in education. Multistage random sampling by use criteria samples schedule of Krejcie and Morgan [32], 367 schools, by random samples on steps:

1. The regional education office No. 10 11 12 13 and 14.
2. Use education area office in the random. The random sampling that by draw lots get 2 regional education office, 10 education area office.
3. Use the small – size school is a random sampling that by draw lots get area office of 37 schools, total of 370 schools. The informant is 370 Directors, 370 technology teachers, total 740 person.

2.4 Instruments

Instrument used were a questionnaire about to condition present, condition desirability and necessary 3 steps:

Steps 1: General information listen to the respondents checklist, sex, position, position experience.

Steps 2: The respondents about to condition present, condition desirability and necessarily has quality the rating scale 5 levels, has index of item objective congruence in between 0.71-1.00, the discrimination between 0.50 to 0.87 and the reliability as 0.98: 1) The coding curriculum development. 2) The digital literacy development 3) The coding learning.4) Learning ecosystem 5) Coding research and evaluation.6. coding learning community.

Steps 3: Open-ended questionnaire for the respondents suggest more about to Coding education management for small-elementary schools in the northeast.

2.5 Data collection

The researcher takes to official letter from Faculty of Education, Khon Kaen University, assistant answering the questionnaire, enclose link the questionnaire, send the post office and the respond answered passage question online.

2.6 The data analysis

By the questionnaire receive to check the validity and analysis the quantitative data used computer software, mean, standard deviation and priority setting of the necessary by used modified priority needs index of Wongwanich [33] the formula calculation is PNIModified = $\frac{(I-D)}{D}$, condition desirability D is condition present.

In the validity and reliability, index of item-objective congruence between the question and the definition,7 expert has index of item-objective congruence between .71-1.00 show that content validity can be used and reliability of questionnaire, evaluation of alpha coefficient of Cronbach [34], discrimination is between .500 to .870, that is a questionnaire used in the research have reliability all as 0.98.

3. Results and Discussion

3.1 The results revealed

The finding of this research condition present, condition desirability and necessary of coding education management small-size elementary schools in the northeast found that.

The condition present of coding education management small-size elementary schools in the northeast was at a much level. ($\bar{x}$ = 3.71, S.D.= 0.87) Considering each aspect the highest averages were learning ecosystem ($\bar{x}$ = 4.10, S.D.= 0.86), inferior to was digital literacy development. ($\bar{x}$ = 4.00, S.D.= 0.91), lowest average to was Coding research and evaluation ($\bar{x}$ = 3.30, S.D.= 0.87).

The condition desirability of coding education management small-size elementary schools in the northeast was at a much level. ($\bar{x}$ = 4.20, S.D.= 0.77) Considering each aspect the highest averages were learning ecosystem. ($\bar{x}$ = 4.37, S.D.= 0.66) inferior to was digital literacy development. ($\bar{x}$ = 4.36, S.D.= 0.80) lowest average to was Coding research and evaluation ($\bar{x}$ = 4.08, S.D.= 0.83).

The total level of necessary of coding education management small-size elementary schools in the northeast in order importance:

1) Coding learning community (PNI modifieds = 0.250)
2) Learning ecosystem (PNI modifieds = 0.226)
3) Coding research and evaluation (PNI modifieds = 0.185)
4) The coding learning. (PNI modifieds = 0.093)
5) The digital literacy development (PNI modifieds = 0.062)
6) The coding curriculum development (PNI modifieds = 0.055)

Table 1. The condition present, condition desirability and necessary of coding education management.

Coding Education	Condition present			Condition desirability			PNI modifieds	No.
	$\bar{x}$	S.D.	Level	$\bar{x}$	S.D.	Level		
The conding curriculum development	4.00	0.91	much	4.22	0.84	much	0.055	6
The digital literacy development	4.10	0.86	much	4.36	0.80	much	0.062	5
The coding learning	3.81	0.91	much	4.17	0.79	much	0.093	4
The Learning ecosystem	3.57	0.96	much	4.37	0.66	much	0.226	2
Coding research and evaluation	3.45	0.95	moderate	4.08	0.83	much	0.185	3
Coding learning community	3.30	0.87	moderate	4.12	0.79	much	0.250	1
Total	**3.71**	**0.87**	**much**	**4.20**	**0.77**	**much**		

3.2 Discussion

The feedback of this condition present, condition desirability and necessary of coding education management have main issue into discussion:

1. The condition present coding education management small-size elementary schools in the northeast was at a much level, considering each aspect the highest digital literacy development, inferior to be the coding curriculum development, lowest average to was Coding learning community. Since have been basic education core curriculum improvement to be coding is news for teacher and director have to self-development. Be in accord with [7] improvement the basic education core curriculum 2008 (revised edition B.E.2017) and [8] refer to professional development, make to online training curriculum learning computing science for teacher and director: 1) curriculum be for teacher primary school. 2) The teacher and those interested in the programming Scratch. 3) The school director development. [24] refer to the code programming training at the beginning has been efficiency for development knowledge and confidence of the teaching, has positive results to be acknowledged of ability own better of attitude to teaching of code programming and understanding in the programming (variable, function, condition) should to development continuously for at least 1 year. [23] refer to development teacher of computational thinking, able to brief of 3: 1) development professional online and interweave. 2) The cooperation between schools. 3) The working together with schools and university.

2. The condition desirability of coding education management small-size elementary schools in the northeast was at a much level, considering each aspect the highest Learning ecosystem, inferior to be the digital literacy development, lowest average to was Coding learning

community. Since have been small-size schools has personal, expenditure and insufficient computer equipment be in accord with [9] refer to in the small-size elementary schools has 120 students have deficient to technology teachers, expenditure, digital technology, and Office of National Education Standards and Quality Assessment Important issues have difficulty in small-size elementary school development. There were:1) The achievement of the students in small-size schools at low grades and the problem of illiteracy. 2) Shortage of budget. 3)Teachers are insufficient. 4) deficient Information with quality. 5)The school deficient to evaluate external quality use to improving and continually development. [10]. [29] refer to the schools lack of incomplete technological infrastructure and covering all educational institutions in the whole system internet network, hardware, software and basic electrical system include to lack of insufficient computer equipment or accessory equipment to necessary learner learning process.

3. The necessary of coding education management small-size elementary schools in the northeast, the number one priority is Coding learning community so that the small-size schools have personal insufficient so that the teacher other subjects need to exchange the teaching techniques, instruction media with teacher technology be in accord with a concept of office of the education council [30] refer to should encourage and support to bring the process of exchanging leaning in coding, professional learning community (PLC) for exchange the teaching techniques, instruction media for learner have skill and experience computational science to have analytical skills, doing, solve the problem and adoption of digital. [6] refer to a platform that offers opportunities exchanged knowledge, programming, working together and build and trade applications and integrating computational thinking with other digital.

4. Conclusion

This study necessary the highest is Coding learning community so that the director has exchanging leaning between teacher with teacher didn't teaching coding be able to integration with the own subject. Should have mentors and platform that offers opportunities exchanged and Coding learning community and monitored continuously.

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