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CURRENT SITUATION OF INFORMATICS TEACHING AMONG SECONDARY SCHOOL TEACHERS IN PHU THO PROVINCE

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Abstract

The paper mentioned the current situation of informatics teaching among secondary school teachers in Phu Tho province in order to meet the requirements of renewing curricula and textbooks after 2018, in accordance with the capacity development orientation of learner. The research results show that: Teachers have different perceptions and understandings when approaching the new curriculum, whether appropriate or not suitable for pupils' qualifications, most teachers have knowledge, professional capacity, teaching methods to access the new curriculum; facilities for teaching are mostly guaranteed; Pupils are interested in discovering new knowledge. However, the factors that promote the practical applicability, to create practical products are still limited.

Keywords: *Apply, competence, informatics.*

1. Introduction

In the new General Education Curriculum, the content of Informatics subject [1] is divided into two stages: the basic education stage and the career-oriented education stage. As a fundamental technology, all four elements of STEM education (Science (S), Technology (T), Engineering (E) and Mathematics (M)) are converged. Informatics plays the central role in connecting other subjects, promoting STEM education, promoting pupils' creativity in order to create digital products with high ICT (Information and Communication Technology) content. The Informatics curriculum takes advantage of interdisciplinary integration [2] by requiring pupils to create digital products of individuals and learning groups to close the gap between academic and practical education. In order to contribute to the renovation of education, the article mentioned the current situation of IT teaching issues of the current Secondary School teachers in Phu Tho province to appreciate the current situation and be the basis for proposing content for thematic training on information technology application for teachers.

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2. Research Methods

2.1. Research sample

We have taken survey information from 30 Informatics teachers with different gender, age, seniority in secondary schools including public schools, private schools, specialized schools located on different areas in Phu Tho province, such as: Vinh Lai Secondary School - Lam Thao district, Phung Xa Secondary School - Cam Khe district, Luong Son Secondary School - Yen Lap district, Tu Xa Secondary School- Lam Thao district, Phu Khanh Secondary School - Ha Hoa district, Trung Giap Secondary School - Phu Ninh district, Hung Vuong Secondary School - Phu Tho town, Ha Thach Secondary School - Phu Tho town, Thanh Vinh Secondary School - Phu Tho town, Van Lang Secondary School – Viet Tri city, ... When conducting the survey in September 2018, the collected votes are full of information.

2.2. Survey tools

The main research tool is a questionnaire with 07 questions, each question has small contents, a total of more than 30 questions need to be provided by the teacher. The main contents that the questionnaire mentioned are: The level of training which indicates the specialty and seniority of the teacher's work; Teachers' awareness about understanding of the new 6th grade Informatics curriculum which discusses the content of the curriculum, the duration of the curriculum, teaching methods, the suitability of curriculum with pupil competencies, interconnection; Self-assessment of professional competence and method of teaching informatics including: Mastered curriculum goals, general basic knowledge, specialized knowledge in Informatics, teaching methods, teaching planning skills, plan implementation skills, the ability to apply informatics in practice, self-study ability to improve qualification and the ability to guide pupils in learning; Assessment of the current state of facilities and equipment for teaching informatics at the levels: well equipped, enough, normal, little , few; Assessing the level of pupils studying Informatics according to the following criteria: ability to acquire knowledge, practical ability, practical applicability, test-taking ability, level of thinking, ability creation; The degree of interest of pupils in Informatics; The demand for skills that need to be fostered for teachers to effectively support the subject of Informatics Application such as: Use and management facilities and tools, Presentation construction techniques, STEM Education, Application of E-learning in teaching, Career-oriented education with informatics.

2.3. Data processing methods

We perform a statistic on each criterion of a question as a percentage.

3. Research results

3.1. About the level of training

University graduation rate (university, pedagogical university, bachelor, engineer) accounts for about 80%, pedagogical college level accounts for 20%, including teaching seniority from 5 years to less than 10 years

accounting for 60%, teachers with seniority of 10 years or more accounted for 40%. This shows that the number of teachers with teaching experience occupies a moderate proportion, the young teachers are at a relatively high level, this is also an advantage in quickly approaching and acquiring new technology. Most teachers are trained in information technology, so it will ensure good conditions for implementing a new curriculum, but also a small percentage (accounting for 20%) of teachers with specialized training is Math - Informatics. This is the part of the teacher when teaching will have many advantages on the content related to mathematics such as algorithms but will also be more limited to the intensive content of information technology such as Computer science.

3.2. Teacher's awareness about understanding of the new 6th grade Informatics curriculum

According to the educational curriculum of the Ministry of Education and Training announced on December 26, 2018, the content of Informatics develops three integrated knowledge circuits: Digitization learning (DL), Information and Communication Technology (ICT), Computer Science (CS) helps pupils formulate and develop computer skills with five competencies: Using and managing information and communication technology media; Conducting appropriately in a digital environment; Solving problems with the support of information and communication technology; Applying of information and communication technology in study and self-study; Cooperating in a digital environment.

Survey results: Regarding opinions about curriculum content, many opinions are mixed. There are opinions that: The curriculum is heavy compared to pupils in rural areas and mass pupils; part of the thinking map for pupils in grade 6 is not appropriate, on the contrary, there are comments that the content of the curriculum is appropriate. Since then commenting on the suitability of curriculum with pupil competency is also in two directions, considered appropriate and not yet appropriate. These conflicting opinions account for almost equal proportions. This shows the difference in the awareness of teachers when approaching the new curriculum. About the duration of the curriculum: 100% of teachers think it is appropriate. Regarding the connection between levels: 100% of teachers believe to ensure the connection.

3.3. Self-assessment of professional competence and current teaching methods of teachers

To take advantage of the unique advantages of informatics, the method of teaching informatics in the new curriculum also has a new point. Therefore, teachers need to evaluate their professional competence as well as their teaching methods to plan for retraining, adjusting and promoting. The survey results show in the following table:

Table 1: Survey of professional competencies and teaching methods

(In which: Score is the average score of each factor with the levels *Already firm, Yes but not yet solid, Not yet* scored for respectively 2, 1, 0. Rank: based on the average of the factors to rank)

	Content evaluation	Level			Scores	Rank
		Already firm (%)	Yes but not yet solid (%)	Not yet (%)		
1	Mastered curriculum goals	90%	10%	0%	1.90	2
2	General basic knowledge	100%	0%	0%	2.00	1
3	Specialized knowledge in Informatics	90%	10%	0%	1.90	2
4	Teaching methods	70%	30%	0%	1.70	5
5	Teaching planning skills	40%	60%	0%	1.40	6
6	Plan implementation skills	30%	70%	0%	1.30	7
7	The ability to apply informatics in practice	30%	70%	0%	1.30	7
8	Self-study ability to improve qualification	30%	70%	0%	1.30	7
9	The ability to guide pupils in learning	90%	10%	0%	1.90	2

Thus, most of the teachers have mastered the program goals, the specialized knowledge of IT accounts for 90%, and 10% of the teachers have not mastered; 100% of teachers have general basic knowledge. Regarding teaching methods: over 2/3 of the teachers are solid, the rest are not solid. Meanwhile, only nearly half of teachers have teaching planning skills. For planning implementation skills, the ability to apply informatics in practice, the ability to self-study to improve qualifications is still limited, less than 1/3 of teachers are firm.

3.4. Assess the current status of facilities and equipment for teaching Informatics at the teachers' school they are teaching

In order to ensure the conditions for teaching Informatics under the new curriculum, the facilities also need to be paid due attention. Below is a table of results obtained.

Table 2: Assessment of the current state of facilities and equipment for teaching Informatics

	Facilities and equipment types	Well equipped (%)	Enough (%)	Normal (%)	Little (%)	Few (%)	Scores	Rank
1	Computer	10%	50%	20%	20%	0%	3.50	7
2	Printer	0%	30%	20%	50%	0%	2.80	10
3	Air conditioner	0%	0%	20%	50%	30%	1.90	11
4	Fan	20%	60%	0%	20%	0%	3.80	4
5	Projector	0%	30%	40%	20%	10%	2.90	9
6	Software for teaching	20%	60%	10%	0%	10%	3.80	4
7	Local area network (LAN)	0%	90%	0%	10%	0%	3.80	4
8	Internet connection	20%	70%	0%	10%	0%	4.00	2
9	Textbook	20%	70%	10%	0%	0%	4.10	1
10	Reference books	0%	40%	50%	10%	0%	3.30	8
11	Computer labs	30%	40%	20%	10%	0%	3.90	3

In general, the most basic facilities for informatics teaching are: textbooks, computer labs, Internet connection, local area network (LAN), computers, software for teaching is guaranteed, on average about 80% is full or more. However, more effective teaching aids are missing such as reference books, projectors, printers, air conditioners. This ratio shows that investment in facilities for learning Informatics is still ensured in schools. However, schools also need to consider investing in projectors, which is a device for visual teaching.

3.5. Assessing the level of pupils studying Informatics at the school where they teach

Pupil's competence is one of the factors contributing to the success of the lesson. Therefore, it is necessary to properly assess the pupils' capacity so that the teachers can choose the teaching method and organize the appropriate form of teaching, helping them to achieve Informatics competency as required.

Table 3: Assessment of pupils' level in Informatics

	The degree of evaluation	Excellent (%)	Good (%)	Medium (%)	Weak (%)	Poor (%)	Scores	Rank
1	Ability to acquire knowledge	20%	20%	60%	0%	0%	3.60	2
2	Practical ability	10%	40%	50%	0%	0%	3.60	2
3	Practical applicability	10%	30%	40%	20%	0%	3.30	4
4	Test-taking ability	10%	60%	30%	0%	0%	3.80	1
5	The level of thinking	0%	40%	40%	20%	0%	3.20	5
6	Ability creation	10%	20%	50%	20%	0%	3.20	5

Survey results show that: Pupils ensure the ability to acquire knowledge, take tests; ability to practice. The ability to apply in practice, the level of thinking and creativity are limited. This will be solved in accordance with the ideology of the new Informatics curriculum which is organized for pupils to solve practical problems; prepare pupils the ability to search, receive and create knowledge in the era of industrial revolution.

3.6. The degree of interest of students in Informatics at the school they teach

The chart shows that pupils are interested in Informatics, in which the percentage of pupils interested is 60%, 30% is very interested. The level of interest and care in each content is different. Students are particularly interested in creating their own products. This may be explained by discovering new knowledge that has many applications in the future.

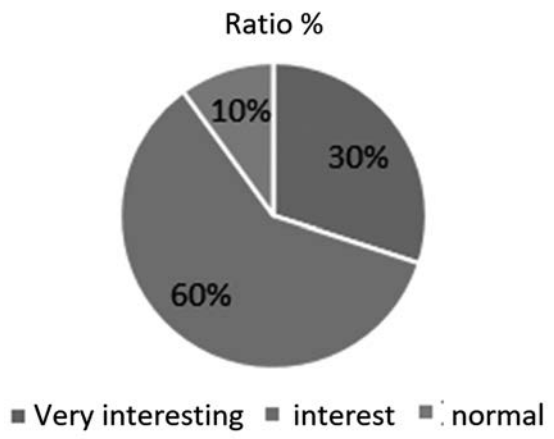

Figure 1: Student's interest level in Informatics

3.7. The demand for skills that need to be fostered for teachers to effectively support the subject of Informatics Application

The core content of the new 6th grade IT currciculum includes the topics: Computers and the community; Computer network and Internet; Organize storage, search and exchange of information; Ethics, law and culture in a digital environment; Informatics applications; Solve problems with the help of computer. To help pupils acquire informatics capacity, teachers need teaching skills suitable for each topic. The combination of skills helps the lesson be more effective. Among the necessary skills, some of the following skills are of interest: Use and manage facilities and tools; Presentation construction technique; STEM education; E-learning applications in teaching; Career-oriented education with informatics. Evaluation of the above skills when teaching topic of Informatics Applications, the chart shows: 100% of teachers think presentation construction techniques are important; Use and management of facilities and tools are considered important and very important; 60% of teachers considered STEM education to be very important, and 40% of teachers considered it normal; half of the teachers considered E-learning important in teaching, the other half considered normal; Career-based education with informatics is considered important and very important with a total ratio of 70%, the rest considered normal. No factor is considered unimportant. As such, teachers have great demand for fostering skills related to the use and management of facilities and tools; presentation technology and career education with information technology. This is the trend of education 4.0.

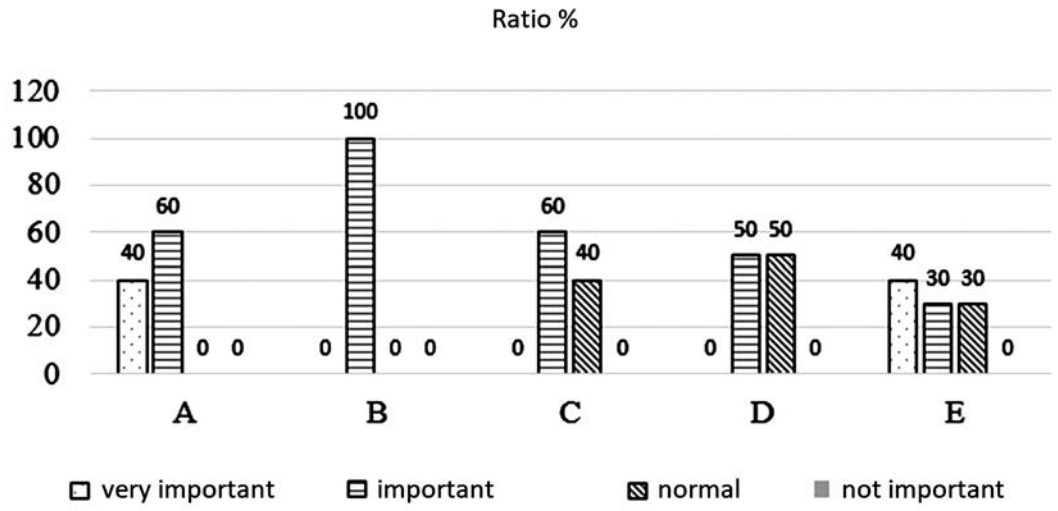

Figure 2: Diagram of demand for skills of teachers

Inside:

A: Use and manage facilities and tools *B: Presentation construction technique*
C: STEM education *D: Application of E_learning in teaching*
E: Career-oriented education with informatics

4. Conclusion

The survey results and reality show that: Teachers have different perceptions and understandings when approaching the new curriculum, whether appropriate or not suitable for pupils' qualifications, most teachers have knowledge, professional capacity, teaching methods to access the new curriculum; facilities for teaching are mostly guaranteed; Pupils interested in discovering new knowledge. However, the factors that promote the practical applicability, to create practical products are still limited. Therefore, teachers need to foster more skills and techniques to further enhance the applicability in research, as well as in teaching, stimulating pupils to be creative and practical when learning the knowledge related to informatics. Therefore, I propose a refresher solution on the topic of IT applications, which focuses on improving the application of information technology in text processing [3] and designing mind maps [5].

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THỰC TRẠNG VIỆC DẠY HỌC TIN HỌC CỦA GIÁO VIÊN TRUNG HỌC PHỔ THÔNG TẠI PHÚ THỌ

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Tóm tắt

Bài viết đề cập đến thực trạng vấn đề giảng dạy Tin học của giáo viên Trung học cơ sở hiện nay ở tỉnh Phú Thọ nhằm đáp ứng yêu cầu đổi mới chương trình và sách giáo khoa sau 2018, theo định hướng phát triển năng lực của người học. Kết quả nghiên cứu cho thấy: GV có nhận thức và hiểu biết khác nhau khi tiếp cận chương trình mới, dù cho là phù hợp hay chưa phù hợp với trình độ HS thì phần lớn giáo viên đều có trình độ kiến thức, năng lực chuyên môn, phương pháp giảng dạy để tiếp cận theo chương trình mới; cơ sở vật chất phục vụ giảng dạy đa phần đảm bảo; HS hứng thú khám phá tri thức mới. Tuy nhiên các yếu tố thúc đẩy khả năng ứng dụng vào thực tế, để sáng tạo ra các sản phẩm mang tính thiết thực thì vẫn còn hạn chế.

Từ khóa: *Năng lực, Tin học, ứng dụng.*