



APPROPRIATING CHARACTERISTICS OF THE 21st CENTURY TEACHERS TO TRANSFORM THE THAILAND 4.0 POLICIES

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Abstract:

The use of both qualitative and quantitative data collection methods from a range of data sources provided of triangulation; observation, interview, and questionnaires to determine and administer on learning acknowledge managements for developing learning achievement of students with the appropriating characteristics of the 21-century teachers for strengthening the validity and reliability of the findings, which thus afforded a means of comparing data consistency, and regression validations for the purpose of investigating and comparing student's perceptions and students' attitudes of their teachers' appropriating characteristics were designed. Using the *Questionnaire on Teacher Characteristic (QTC)* modified from the original *Questionnaire on Teacher Interaction (QTI)* - Australian 48-item version (Fisher, Fraser, & Wubbels, 1993) and students' attitudes were assessed with a *Test Of Characteristic-Related Attitude (TOCRA)* modified from the original *Test Of Science-Related Attitude (TOSRA)* (Fraser, 1981) with a sample of 2,665 students from 105 schools throughout of Thailand of their 8 learning areas of 281 teachers' appropriating characteristics in the 21-Century of Thailand 4.0 policies as a means of collecting empirical data, schools were randomly chosen from November 2015 to October 2016 of the Educational Service Office Area under the Office of Basic Educational Commission throughout of Thailand. It has found that each QTC scale differentiated significantly ($p < 0.001$) between classes. Cronbach's alpha reliability coefficients for the scales were adequate (0.78-0.87), while confirmatory factor analyses provided support for the theoretical framework behind the questionnaire (0.54-0.82 omitted). The authoritative profile was the most common characteristic style based on Thailand students' perceptions in their appropriating characteristics of the 21-century teachers. The multiple correlation R^2 is significant for the QTC and considered

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associations with the TOCRA, and value indicates that 52% of the variance in students' attitude. The memorizing learning areas of R^2 value are higher than 50% and most of the appropriating characteristics of the 21-century teachers of eight learning areas, the R^2 value indicate that less than 50%, especially; science and mathematics learning areas, and students in upper secondary level indicate that 12%. It was concluded that, if teachers' appropriating characteristics in the 21-Century of Thailand 4.0 policies want to promote favourable student attitudes in their classes, they should ensure the presence of the former set of interpersonal characteristics.

Keywords: characteristic, appropriating characteristically teacher, the 21-Century, Thailand 4.0 policies, the Questionnaire on Teacher Characteristic (QTC), the Test Of Characteristic-Related Attitude (TOCRA)

1. Background

1.1 Thailand 4.0 Policies

The Thai government is working hard to promote "Thailand 4.0" as a new gimmick and economic model aimed at pulling Thailand out of the middle-income trap, and push the country in the high-income range. Why Thailand 4.0? In the first model, "Thailand 1.0," emphasis was placed on the agricultural sector. The second model, "Thailand 2.0," focused on light industries, which helped upgrade the country's economy from the low-income to middle-income status. In the third model, "Thailand 3.0," the country is currently emphasizing heavy industries for continued economic growth. During this period, Thailand has become stuck in the middle-income trap and faces disparities and imbalanced development (Languopin, 2016).

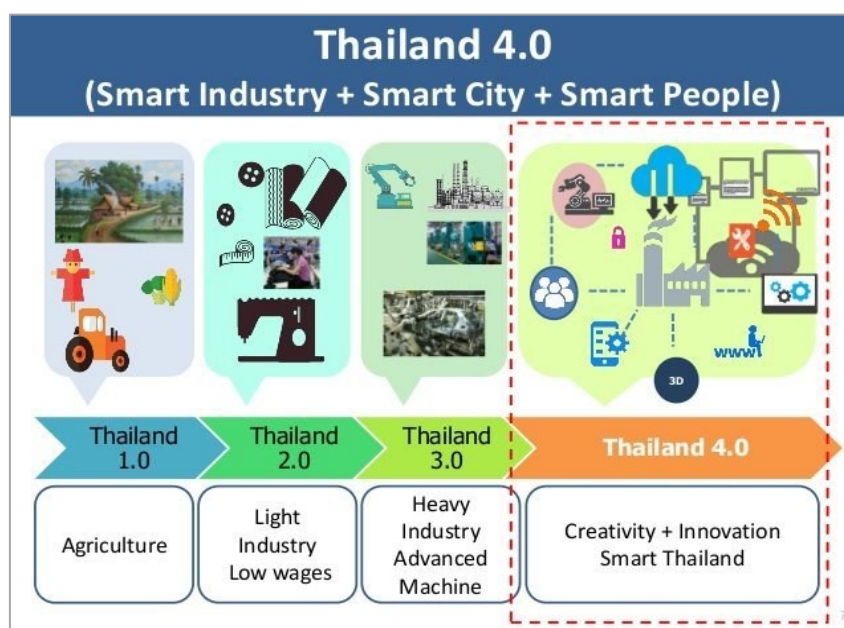


Figure 1: The Thai government is working hard to promote "Thailand 4.0" as a new gimmick
Source: (Languopin, 2016).

Thailand 4.0 focuses on a “value-based economy,” as the country needs to deal effectively with disparities and the imbalance between the environment and society. Prime Minister General Prayut Chan-o-cha explained that Thailand 4.0 has three elements, which mark a significant change in the country’s economy and production. The first element aims to enhance the country’s standing to become a high-income nation through developing it as a knowledge-based economy with an emphasis on research and development, science and technology, creative thinking, and innovation. In the second element, Thailand will move toward an “inclusive society” with equitable access to the fruits of prosperity and development. During a press trip organized by the Public Relation Department of the Foreign Office, members of the press were invited to witness a rural community as an example of Thailand 4.0. The Thailand 4.0 new model will change the country’s traditional farming to smart farming. Traditional SMEs to smart enterprises and traditional services to high-value services, under the concept of “less for more” rather than of “more for less” are policed (Thailand Business News, 2016). What have affected of Thailand teachers?

1.2 Thailand in the 21st – Century

Americans are deeply concerned about their present and future prospects in a time of economic uncertainty. Policymakers have a make or break opening and an obligation to chart a new path for public education that will secure our economic competitiveness. This guide summarizes the challenges and opportunities that, if left unaddressed, will curtail our competitiveness and diminish our standing in the world. The warning signals are blinking red. We can thrive in this century only with informed leadership and concerted action that prepares Americans to compete. The Partnership for 21st Century Skills has emerged as the leading advocacy organization focused on infusing 21st century skills into education. The organization brings together the business community, education leaders and policymakers to define a powerful vision for 21st century education to ensure every child’s success as citizens and workers in the 21st century. The Partnership encourages schools, districts and states to advocate for the infusion of 21st century skills into education and provides tools and resources to help facilitate and drive change. Information and communications technologies (ICT) often have supported changes in organizational structures and practices for communication, information sharing, analysis and simulation of business processes. Early studies of ICT use showed little productivity gain from technology investments.

However, later studies found significant productivity gains associated with specific ways that technology is used. For example, reviews of firm-level studies (Pilat, 2004; Gera & Gu, 2004) found that the greatest benefits are realized when ICT investments are accompanied by other organizational changes that ICT use makes

possible, such as new strategies, business processes and practices, and organizational structures.

1.3 The 21st – Century Education

The actual structure of the modern education system has changed little since its conception during the industrial revolution of the 19th century. We live in a world that is rapidly transforming and our students deserve an education system that is relevant to the 21st century. There has been much debate about exactly what a 21st century education should look like with academics producing long-winded articles packed full with migraine-inducing jargon... but not a lot of change has actually taken place in the classroom. The sad fact is that much of what is happening in the classroom today is no different to what has been happening for the past 50 years. According to some educators, sociologists and economists, the challenges that today's students will encounter after they graduate include of many of the skills they are learning in school today will be obsolete by the time they graduate, many of today's students will have over 5 different careers during their lifetime, and many of the occupations that our students will have are yet to be invented. This 21st Century Framework can be summarized in a beautifully simple way. Today's learners need to develop the 3Rs + the 4Cs (Saentaweesook, 2013).

The 3Rs - *Reading, Writing, and Arithmetic*, these have been central to education all though the 19th and 20th Century. In this Framework the 3Rs include all core subject knowledge, thus reinforcing traditional education. The 4Cs – *Critical, such as; Thinking, Communication, Collaboration, and Creativity*, these 4Cs have to admit and expect such great common sense. It means these are educational concepts from the dawn of Western education. The type of skills Socrates challenged his young student Plato to develop in the 4th Century B.C. And it's not just the Great Greek Thinkers that valued these skills. Other great thinkers from Rousseau to Chomsky have argued that education should place a greater value on creativity and critical thinking. Leaving behind the world's great thinkers and moving forward to Thailand in the 21st century, let's consider why these skills are so important. Well firstly, how many people do you meet on a regular basis that make a living on their core subject knowledge alone? A far greater number of people rely on their ability to communicate, create, work in teams and solve problems. These are skills which have no 'sell by date' and from which our students can benefit. So this 21st Century Framework is clear, concise, makes sense and it's nicely packaged...this is beginning to sound too good to be true. The question now is how will it fare in classrooms across Thailand? Other teachers made the point that in Thailand where individual assessments and quantifiable scores are constantly demanded by parents, administrators and the MoE some juggling (and creative thinking) was going to be required on the part of the teachers.

1.4 Education of Thailand in the 21st – Century

In the 21st century, a high technology, information and communication industry, and a complicated service industry make up a substantial part of the economy and development of the world. Science and technology create various alterations in producing goods and services. Digital device has taken the place of analog equipment. Travelling has been made faster by technology. Almost all business transactions can be completed electronically. Communication can also be done through various devices conveniently. Machines in most manufacturing companies are computerized making manual work easier. Modern trading is the norm in business overshadowing conventions of traditional businesses. The future world of work will be beyond the present norms. It means that Thai society needs a labor force equipped with more up-to-date knowledge and skills in information and communication technology. Change is inevitable but Thai can see this as an opportunity for change. Thai academic and vocational education can take the opportunity to make a proper change accordingly. Though academic education and vocational education are different in terms of their objectives, curriculum structures, and practice, they both need to be adjusted to such change so that the Thai graduates would fit the 21st century labor force and the needs of the country (Cleesuntorn, 2016).

The future scenarios of the political, social, cultural and economic sectors will depend on the contributions of the students of our schools today. More than ever before, education must be visionary and future-oriented, in the face of stunning scientific and technological innovations and changes, unprecedented socio-economic challenges and opportunities, surprising socio-political reforms, and amazing cultural reawakening. The reflections on the surmising of education are in the Asian context. The perceptions, whether made explicit or otherwise, are of the historical trends and persistent problems and development aspirations which underline the regional scene. This may seem to tie the surmising issues to a specific context and is open to at least two opposing reservations. On one count, it may be pointed out with justification that general reflections on the nature and process of education are equally applicable to other and different areas and contexts (UNESCO Principal Regional Office for Asia and the Pacific, 2015).

1.5 Thailand Educational System

Education in Thailand is provided mainly by the Thai government through the Ministry of Education from pre-school to senior high school. A free basic education of twelve years is guaranteed by the constitution, and a minimum of nine years' school attendance is mandatory. Basic education and the school structure are divided into six years of primary education and six years of secondary education, the latter being further divided into three years of lower- and upper-secondary levels.

1.6 The Professional Education Plan for Thai Teacher Development

Continuing Professional Development (CPD) of teachers has been seen as one of a key element to improve teacher quality and the quality of education in many countries, as well as in Thailand. The current Thai education reforms have recognized the importance of CPD for teachers to maintain and update their knowledge and skills to be able to teach students effectively. They also recognized the need of effective leadership in schools to lead, manage, and support teachers in order to achieve such change. (Tantranont, 2009).

The profession in education which the *Teachers and Educational Personnel Council Act* in 2003 prescribes it to be a practice of licensed profession, mandates standards for the profession stipulating its primary duty relating to the teaching and learning process and promotion of learning among learners through various methods; including responsibility for administration of public and private Educational Institutes at early child, basic and higher education levels below a degree level; and educational administration outside Educational Institutions at the educational district level; as well as education support; provision of services or undertaking of activities in relation to the teaching and learning process, supervision and education administration in various educational agencies consisting of the profession of teachers, such as: to develop and promote professionalism in education and teaching profession, to improved quality of Thai education, religion, and culture, and to promote the conformity and harmony of the member within the association.

In the government schools, the standards are similar and many primary teachers freely admit that they are forced to teach learning activities although they have little or no experience of the learning management whatsoever. Especially, a debate began in academic circles as to whether teaching English badly during the most influential years is in fact better than not teaching it at primary level. Whatever results that any formal research may provide, there clearly exists room for much improvement. The situation is further exacerbated by a curriculum, which in its endeavour to improve standards and facilitate learning, is subject to frequent change, and thus misinterpreted into syllabuses by the teachers themselves at levels often far too advanced for the cognitive development of the students.

1.7 Primary and Secondary School Teachers

Primary and secondary school teachers do not enjoy the same long breaks as the students and are required to work through the vacations on administrative duties. Many of these tasks concern their familiarization with the frequent improvements to the National Curriculum; indeed, changes often occur faster than authors and publishers can update the textbooks and the teachers must improvise without support material and have to design their own tests and exams — neither of which is conducive to an

improvement in quality. Teacher competence and teacher quality are concepts that are often referred to and frequently applied in different educational contexts: Whitty (1996) identifies professional competence, which includes knowledge and understanding of children and their learning, subject knowledge, curriculum, the education system and the teacher's role. Professional competence also necessitates skills such as subject application, classroom methodology, classroom management, assessment and recording and undertaking a wider role.

According to the professional standards of teaching profession in Thailand (2005) the teacher competence was set for the professional guideline, consists of nine areas of competence; language and technology for teachers, curriculum development, and psychology for teachers, educational measurement and evaluation, classroom management, educational research, educational innovation and information technology, and teacher ship. The researcher believes that the nine characteristics could generate the competent teachers individually and student learning and achievement. Therefore, it is meaningful to conduct a research study to promote the teacher competence for professional development, student learning, and the achievement of the school goals and objectives. Teacher with high competence is one of the most significant factors manipulate the student learning as well as serving the schools to meet its objectives and missions. Therefore, the teachers and students at schools in three southern border provinces of Thailand also necessitate enhancement of student learning and teacher competence, which is high competence and is one of the critical obligations that schools in three southern border provinces strongly desire to be highlighting on.

1.8 An Application of Teacher Interpersonal Behaviours to Appropriating Characteristics of the 21st -Century Teachers

The Teachers' appropriating characteristics in the 21-Century of Thailand 4.0 policies' characteristics are experienced teachers committed to high quality teaching and ongoing professional learning. They use their experiences and skills to perform duties in addition to their normal teaching roles, including: contributing to curriculum development, mentoring graduates, returning teachers and those trained overseas, supervising pre-service teachers, and assisting in the professional learning of the basic schooling educations. How are the teachers' appropriating characteristics in the 21-Century of Thailand 4.0 policies' plans for their teaching? How many are there teacher characteristics use for teaching managements to students? How often senior teacher show to maintain their knowledge and skills to be able to teach students effectively? Why are students' achievements too lower that it's effects from the appropriating characteristics of the 21-century teachers or not? Are student's stupid from teachers or not? There are too many questions on the teachers' appropriating characteristics in the

21-Century of Thailand 4.0 policies of their teaching and learning management of their characteristic in their classrooms.

International research efforts over the last 30 years have firmly established classroom environment as a thriving field of study (Fraser, 1994). For example, recent classroom environment research has focused on teacher interpersonal behavior in the classroom (Wubbels, Creton, Levy, & Hooymayers, 1993; Fisher, Fraser, & Rickards, 1996); Creton, Hermans, & Wubbels, 1990), Walberg's theory of educational productivity (Walberg, 1981, 1984) holds that there are nine factors which contribute to variance in students' cognitive and affective outcomes. Testing of the model using data collected as part of national studies has confirmed its validity in showing that student achievements and attitudes are influenced jointly by a number of factors rather than by one dominant factor (Walberg, 1986; Walberg, Fraser, & Welch, 1986). Classroom and school environment factors were found to be particularly important influences on student outcomes, even when a number of other factors were controlled. These findings are consistent with the theoretical model of Getzels and Thelen (1960), which describes the school class as a social system and suggests that group behavior can be predicted from personality needs, role expectations, and classroom environment. This study was to improve, adapt, and describe the determinants and effects of the actual and preferred of teachers' perceptions to extend this notion in order to obtain more comprehensive picture of administrator interpersonal behavior within educational service area in school educational base environments in Thailand.

Although past studies have examined associations between student attitudinal outcomes and student perceptions of the learning environment in science classes (Fraser, 1998), previous studies have reported in science students' perceptions of the learning environment (Fraser, Giddings, & McRobbie, 1995; Henderson, Fisher, & Fraser, 1995; Lawrenz, 1987) and in students' attitudes to science (Catsambis, 1995; Friedler & Tamir, 1990). Student attitudes also were assessed with a seven-item *Attitude to This Class* scale based on selected items from the *Test of Science-Related Attitudes* [TOCRA] (Fraser, 1981). Using the scales of the QTI as independent variables, associations were determined with attitude to the class discussion research in many countries, in Australia (Rickards & Fisher, 1996^[22]), Singapore (Fisher, Rickards, Goh, & Wong, 1997b), Malaysia (Quek, Fraser, & Wong, 2001), Korea (Kim, Fisher, & Fraser, 2000), India (Koul, & Fisher, 2004), Brunei (Scott & Fisher, 2001), Thailand (Santiboon & Fisher, 2004) and Indonesia (Soerjaningsih & Nusantara, 2001). Santiboon (2008, 2010, 2011, and 2012) used the learning environment instruments to investigated and associated between student's perceptions of their teacher interpersonal behaviours of their classes, teacher's perception of their school administrators of their primary school.

This study discusses the school environment instrument selected for use in this research. The rationale for the selection of the *Questionnaire on Teacher Characteristic*

(QTC) modified from the original *Questionnaire on Teacher Interaction* (QTI) - Australian 48-item version (Fisher, Fraser, & Wubbels, 1993) and students' attitudes were assessed with a *Test Of Characteristic-Related Attitude* (TOCRA) modified from the original *Test Of Characteristic-Related Attitude* (TOCRA) (Farser, 1981), are followed by a discussion of the climate of school environments including how have the teachers' appropriating characteristics in the 21-Century of Thailand 4.0 policies administrated is one of unique features of educational managements within their classes and therefore. Because students' perceptions of their teacher characteristics have been favourably associated with student's attitude to their learning classes, it was decided to select an appropriate measure of students' attitudes.

1.9 The Questionnaire on Teacher Characteristic (QTC)

International research efforts involving the conceptualization, assessment and investigation of perceptions of psychosocial aspects of the classroom environment have firmly established the classroom environment as a thriving field of study (Fraser, 1994; Fraser & Walberg, 1991). Researchers in the Netherlands have extended this field by focusing specifically on the interpersonal relationships between teachers and their students as assessed by the Questionnaire on Teacher Interaction (QTI) (Wubbels, Creton, & Hooymayers, 1992; Wubbels & Levy, 1993). The Dutch researchers, Wubbels, Creton, & Holvast, 1988) investigated teacher behaviour in a classroom from a systems perspective, within the systems perspective of communication, it is assumed that the behaviours of participants mutually influence each other. The behaviour of the teacher is influenced by the behaviour of the students. Thus, a circular communication process develops that not only consists of behaviour, but also determines behaviour. With the systems perspective in mind, Wubbels, Creton, and Hooymayers (1985) developed a model to map teacher interpersonal behaviour using an adaptation of the work of Leary (1957).

Leary concluded that a person's interpersonal behaviour could be described with two dimensions, which he named Proximity and Influence. The Proximity dimension could be indicated on a continuum that has cooperative behaviour at one end and oppositional behaviour at the other. The Influence dimension could be indicated on a continuum that has dominant behaviour at one end and submissive behaviour at the other. Leary plotted a person's interpersonal behaviour on a diagram that had the dominant/submissive continuum (DS) as the vertical axis and the cooperative/oppositional continuum (CO) as the horizontal axis. The Proximity and Influence dimensions have occasionally been given other names-Brown (1965) used Status and Solidarity, and Dunkin and Biddle (1974) used Warmth and Directivity. However, Proximity and Influence have generally been accepted as universal descriptors of human interaction (Wubbels & Levy, 1993). In their application of the

model to the classroom situation, Wubbels, Creton, and Hooymayers (1985) further divided each quadrant of the original model into two sectors-giving eight sectors in all, each describing different aspects of interpersonal behaviour.

The sectors are labeled DC, CD and so on according to their position in the coordinate system, the letters coding the relative influence of the axes. For example, sectors DC and CD are both characterized by Dominance and Cooperation, but in DC Dominance predominates over Cooperation, whereas in CD Cooperation is more evident. The closer two sectors are to each other, the more similar are the teacher behaviours they represent. The Dutch researchers labeled these sectors Leadership, Helping/Friendly, Understanding, Student Responsibility/Freedom, Uncertain, Dissatisfied, Admonishing and Strict behaviour. Figure 1(b) describes the typical teacher interpersonal behaviours associated with each sector. The QTI is based on the Wubbels model with the items allocated to eight scales, each corresponding to one of the eight sections in the model. Examples of items are "This teacher is friendly" (Helping/Friendly) and "This teacher gets angry unexpectedly" (Admonishing). The higher a scale score, the more a teacher shows behaviours from that sector. Scale scores can be obtained for individual students, they can be combined to form the mean of all students of a particular teacher, and they can also be obtained from teachers. Furthermore, they can be obtained for actual or ideal interpersonal behaviour. The original version of the QTI developed in the early 1980s in the Netherlands had 77 items (Wubbels, Creton, & Hooymayers, 1985). Later, an American version of the QTI was developed that had 64 items (Wubbels & Levy, 1991).

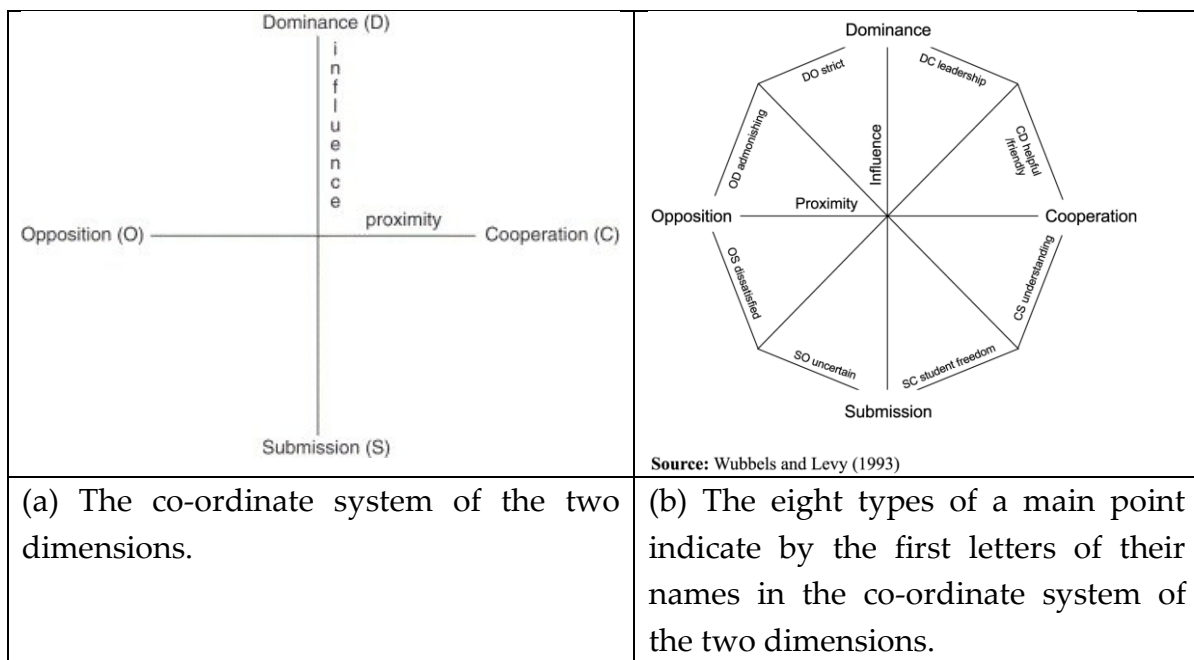


Figure 2: The Wubbels model for teacher interpersonal behaviour (Wubbels & Levy, 1993)

The Australian version of the QTI used in the study described in this article is more economical with only 48 items. The Australian version of the QTI has 48 items which are arranged in cyclic order in blocks of four to facilitate hand scoring by teachers. Items 1 to 24 assess the four scales called Leadership, Understanding, Uncertain and Admonishing behaviors, and Items 25 to 48 assess the scales called Helping/Friendly, Student Responsibility/Freedom, Dissatisfied and Strict behaviors. The questionnaire items are given in Table 1. Students respond on a five-point scale ranging from "Never" to "Always". Current experience indicates that students can complete the QTI in about 30 minutes. Most dimensions of the QTI were found to be significantly associated with student attitude scores. In particular, these two researches, students' attitude scores were higher in classrooms, in which students perceived their teachers to show more Leadership, Helping/Friendly and Understanding behaviours. Conversely, students' attitude scores were lower in classrooms in which students perceived their teachers to show greater Uncertainty, Dissatisfied, Admonishing and Strict behaviours.

1.10 Interpersonal Characteristics in Thai Teachers' Appropriating Characteristics in the 21-Century of Thailand 4.0 Policies

The study to be described in this section is distinctive in that it is centered on the basic educational school classes, whereas previous research using the QTC has focused largely on the 8-primary and secondary learning area classes throughout of Thailand. There were three parts to the present study. Firstly, as this was the first major use of the QTC four educational areas of the Throughtout of Thailand Primary Educational Service Area Office and the Secondary Educational Service area 20 of the Office of the Basic Education Commission of Thailand school classrooms, reliability and validity data on the QTC and the TOCRA were collected and analyzed. Secondly, associations between students' perceptions of their interpersonal characteristic relationships with their teachers' appropriating characteristics in the 21-Century of Thailand 4.0 policies and their attitudinal outcomes were examined. Thirdly, the use of the QTC to provide data on which the 8 learning area teachers' appropriating characteristics in the 21-Century of Thailand 4.0 policies can reflect was investigated.

Table 1: Items on the Australian QCT

1. This teacher talks enthusiastically about her/his subject.	25. This teacher helps us with our work.
2. This teacher trusts us.	26. We can decide some things in this teacher's class.
3. This teacher seems uncertain.	27. This teacher thinks that we cheat.
4. This teacher gets angry unexpectedly.	28. This teacher is strict.
5. This teacher explains things clearly.	29. This teacher is friendly.
6. If we don't agree with this teacher, we/I can talk about it.	30. We can influence this teacher.
7. This teacher is hesitant.	31. This teacher thinks that we don't know anything.
8. This teacher gets angry quickly.	32. We have to be silent in this teacher's class.
9. This teacher holds our attention.	33. This teacher is someone we can depend on.
10. This teacher is willing to explain things again.	34. This teacher lets us fool around in class.
11. This teacher acts as if she/he does not know what to do.	35. This teacher puts us down.
12. This teacher is too quick to perceptions correct us when we break a rule.	36. This teacher's tests are hard.
13. This teacher knows everything that goes on in the classroom.	37. This teacher has a sense of humour.
14. If we have something to say, this teacher will listen.	38. This teacher lets us get away with a lot in class.
15. This teacher lets us boss her/him around.	39. This teacher thinks that we can't do things well.
16. This teacher is impatient.	40. This teacher's standards are very high.
17. This teacher is a good leader.	41. This teacher can take a joke.
18. This teacher realizes when we don't understand.	42. This teacher gives us a lot of free time in class.
19. This teacher is not sure what to do when we fool around.	43. This teacher seems dissatisfied.
20. It is easy to pick a fight with this teacher.	44. This teacher is severe when marking
21. This teacher acts confidently.	45. This teacher's class is pleasant.
22. This teacher is patient.	46. This teacher is lenient.
23. It's easy to make a fool out of this teacher.	47. This teacher is suspicious.
24. This teacher is sarcastic.	48. We are afraid of this teacher

1.11 The Questionnaire on Teacher Characteristic (QTC)

The Questionnaire on Teacher Characteristic (QTC) was adapted version from the Questionnaire on Teacher Interaction (QTI). Wubbels, Creton and Hoomayers (1985) focused on the teacher variable for improving the learning environment, and developed a model to map administrator interpersonal characteristic. The original version of the QTI developed in the early 1980s in the Netherlands had 77 items (Wubbels, Creton, & Hoomayers, 1985). Later, an American version of the QTI was developed that had 64 items (Wubbels & Levy, 1991). The Australia version of the QTI containing 48 items was used in studies involving science classes in Western Australia and Tasmania. The Thai version was translated of the QTC containing 48 items that it was intended this shorter Australian version would be used and adapted measures students' perceptions of their

teachers' appropriating characteristics in the 21-Century of Thailand 4.0 policies' characteristics of the typical interpersonal characteristics. Applications of the behavior scales of the QTI from the Leadership, Helping/Friendly, Understanding, Teacher Responsibility/Freedom, Uncertain, Dissatisfied, Admonishing and Strict characteristics to *Leadership, Helping/Friendly, Understanding, Teacher Responsibility/ Freedom, Strategies, Morals and Relates, Emotional Quotient, and Unrestricting* characteristics that they were positive scales of teachers' characteristics in this study.

2. Aim of Research

To investigate of the teachers' appropriating characteristics in the 21-Century of Thailand 4.0 policies on learning acknowledge of their learning areas' managements for developing achievement of students in the Primary and Secondary Educational Service Area under the Office Basic Educational Commission throughout of Thailand.

Table 2: Summary of the Sample Sizes

Teachers' appropriating characteristics in the 21-Century of Thailand 4.0 policies' original affiliation	Accounting School Number	Accounting Students Number
The educational office Primary Educational Service Area	80	1,662
Secondary Education Service Area	25	1,003
Total	105	2,665
School Size		
Large school size	35	866
Medium school size	20	663
Small school size	30	600
Educational opportunity expansion school size	20	536
Total	105	2,665
Primary Educational Service Area		
Primary Educational Service Area in North Region	16	323
Primary Educational Service Area in Northeast Region	23	473
Primary Educational Service Area Central and Eastern	24	524
Primary Educational Service Area Southern Region	17	342
Total	80	1,662
Educational Level		
Primary Education	50	1,276
Lower Secondary Education	30	505
Upper Secondary Education	25	884
Total	105	2,665
Appropriating characteristics of the 21-century teachers		
Learning area		
Thai Language		441
Social Science, Religion, and Culture		383
Health and physical education		124
Vocational education and technology		111

Art, Music, and Dancing Art	180
Science	406
Physics	139
Chemistry	99
Biology	146
Mathematics	319
learning foreign languages	286
Total	2,665

3. Method

The study involved students in Grade 3, 4, 5, and 6 in the primary school classes in the 4 educational areas of the Primary Educational Service Area Offices. Grade 7, 8, and 9 in the Opportunity expansion school classes, grade 7, 8, 9, 10, 11 and 12 students of the lower and upper educational school classes, and grade 10, 11 and 12 students of the upper educational school classes in Throughout of Thailand in Thailand. The sample comprised of 2,665 students in 105 schools (30 small size schools and 600 students, 13 medium size school and 283 students, 12 large size school and 240 students, 25 Opportunity expansion school and 537 students, that their totals as 1,662 students of 80 schools of the 4-Primary Educational Service Area Offices, and 1,003 students of the Throughout of Thailand Secondary Educational Area Office area 20) together with their 8 learning areas of 281 teachers' appropriating characteristics in the 21-Century of Thailand 4.0 policies. The 48-item version of the QTC (Santiboon and Fisher, 2005) was used to gauge students' perceptions of student-teacher interpersonal characteristic. Student attitudes were assessed with a eight-item Attitude to the *Test of Characteristic-Related Attitudes* (TOCRA), which was based on the *Test of Science-Related Attitudes* (Fraser, 1981). The wording of the items in this attitude scale is such that they can be used equally well with a teachers' appropriating characteristics in the 21-Century of Thailand 4.0 policies' characteristics classes as with the school sample classes.

4. Results

4.1 Reliability and Validity of the QTC

Table 2 provides some statistics on the QTC for the present sample of mathematics classes. Cronbach alpha reliabilities are reported for two units of analysis, namely, the student and the class. As expected, reliabilities for classes were usually higher than those where the individual student was used as the unit of analysis. Table 3 shows that the reliability for different QTC scales ranged from 0.78 to 0.87 when the individual student was used as the unit of analysis.

Table 3: Scale Internal Consistency (Cronbach Alpha Reliability) and Ability to Differentiate Between Classrooms (ANOVA) for the QTC

Scale	Scale Mean	Mean	Std. Validation	Cronbach's Alpha Reliability	Discrim. Validity	F-test
Leadership	21.51	3.58	3.13	0.81	0.83	9.56*
Helping/Friendly	21.29	3.55	3.36	0.84	0.84	52.69*
Understanding	21.12	3.52	3.40	0.81	0.83	114.78*
Student Responsibility/ Freedom	20.31	3.38	3.64	0.80	0.83	94.05*
Strategies	19.01	3.16	5.45	0.85	0.83	68.32*
Morals and Relates	19.62	3.27	5.14	0.87	0.82	68.92*
Emotional Quotient	19.31	3.21	5.40	0.87	0.82	151.98*
Unrestricting	13.56	2.26	4.86	0.78	0.84	1206.39*

N = 2,665, **p*<0.05, ***p*<0.01, *** *p*<0.001

The results given in Table 3 shows that on average item means for each of the eight QTC scales, that they contain six items, score from 0 to 4, so that the minimum and maximum score possible on each of these scales is 0 and 24, respectively. Because of this difference in the number of items in the eight scales, the average item mean for each scale was calculated so that there is a fair basis for comparison between different scales. In the present study, the Cronbach alpha reliability of the TOCRA was found to be **0.83**.

4.2 Association between Students' Perceptions of their Appropriating Characteristics in the 21-Century Teachers of the QTC and TOCRA

The relation of the QTC to student attitude was examined in two ways. Firstly, simple correlations were calculated between each QTC scale and the TOCRA scale. Secondly, a multiple regression analysis was conducted in order to assess the relative weighting of the QTC scales as joint predictors of attitude with the TOCRA. Table 4 reports the relevant statistics.

The simple correlation values (*r*) are reported in Table 4 which show significant correlations (*p*<0.01) between teachers' attitudinal outcomes and appropriating characteristics of the 21-century teachers on all of eight scales. These associations are positive for all of the scales. That is, in school class environments where the appropriating characteristics of the 21-century teachers characteristics perceived greater Leadership, Helping/Friendly, Understanding, Student Responsibility/ Freedom, Strategies, Morals and Relates, and Emotional Quotient characteristics, excepted Unrestricting characteristic in their students, there was a more favourable attitude towards their appropriating characteristics of the 21-century teachers characteristics' management learning environment.

The second type of analysis consisted of the more conservative standardized regression coefficient (β) which measures the association between students' perceptions on each scale of the QTC and their attitudes towards their appropriating characteristics

of the 21-century teachers when the effect of relationships between the scales is controlled.

Table 4: Associations between QTC Scales and Attitudes to School Classes in Terms of Simple and Multiple Correlations (*R*) and Standardized Regression Coefficient (β)

Scale	Simple Correlation Attitude (<i>r</i>)	Standardized Regression Weight Attitude (β)	<i>t</i> -test
Leadership	0.25***	0.21***	4.42***
Helping/Friendly	0.27***	0.20***	5.15***
Understanding	0.26***	0.21**	9.06***
Student Responsibility/Freedom	0.22**	0.30***	3.26***
Strategies	0.25***	0.31***	2.66***
Morals and Relates	0.33***	0.32***	4.84***
Emotional Quotient	0.26***	0.21**	5.92***
Unrestricting	0.21**	0.26***	2.24***
Multiple Correlation (<i>R</i>)		0.7195**	
Efficiency Predictive Value (<i>R</i> ²)		0.5177**	

N = 2,665, **p*<0.05, ***p*<0.01, *** *p*<0.001

The multiple correlation *R* is significant for students' perceptions of their appropriating characteristics of the 21-century teachers of the QTC and shows that when the scales are considered together there is a significant (*p*<0.001) association with the TOCRA. The *R*² value indicates that 52% of the variance in student's attitude to their appropriating characteristics of the 21-century teachers' environment was attributable to their perceptions of their appropriating characteristics of the 21-century teachers. The beta weights (β) show that in appropriating characteristics of the 21-century teachers' management of their students' learning achievements where the appropriating characteristics of the 21-century teachers perceived greater 7 of 8 scales of teacher characteristics. There was a more favorable attitude towards their appropriating characteristics of the 21-century teachers.

Table 5: Associations between Students' Perceptions of their QCT and TOCRA in Terms of *r*, β , *R* and *R*²

Teachers' appropriating characteristics in the 21-Century of Thailand 4.0 policies' original affiliation	Multiple Correlation (<i>R</i>)	<i>R</i> ²	% of Student's Acceptations	<i>N</i>
The Primary Educational Service Area	0.729*	0.5314*	53.14	1,662
The Secondary Education Service Area	0.704*	0.4961*	49.61	1,003
School Size				
Large school size	0.656*	0.4304*	43.04	240
Medium school size	0.533*	0.2842*	28.42	283
Small school size	0.703*	0.4958*	49.58	600

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Educational opportunity expansion school size	0.669*	0.4392*	43.92	536
Primary Educational Service Area (PESA)				
PESA in North Region	0.668*	0.4462*	44.62	321
PESA in Northeast Region	0.636*	0.4053*	40.53	473
PESA in Central and Eastern Regions	0.709*	0.5022*	50.22	524
PESA in Southern Region	0.533*	0.2839	28.39	342
Educational Level				
Primary Education	0.595*	0.3542*	35.42	1,315
Lower Secondary Education	0.464*	0.2153*	21.53	505
Upper Secondary Education	0.342*	0.1173*	11.73	884
Appropriating characteristics of the 21-century teachers of learning area				
Thai Language	0.732*	0.5362*	53.62	441
Social Science, Religion, and Culture	0.775*	0.6014*	60.14	383
Health and physical education	0.791*	0.6200*	62.00	124
Vocational education and technology	0.705*	0.4968*	49.68	111
Art, Music, and Dancing Art	0.464*	0.2149*	21.49	180
Science	0.636*	0.3922*	39.22	406
Physics	0.750*	0.5627*	56.27	139
Chemistry	0.520*	0.2701*	27.01	99
Biology	0.705*	0.4968*	49.68	146
Mathematics	0.604*	0.3647*	36.47	319
learning foreign languages	0.771*	0.5937*	59.37	286

$N = 2,665$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The converse was true when the teacher was perceived as showing Strict or Dissatisfied characteristics. It is apparent that appropriating characteristics of the 21-century teachers to their students has a considerable effect on their students' attitudes towards appropriating characteristics of the 21-century teachers' acknowledgement of students learning achievement in 8 learning school groups. Generally, cooperative and somewhat dominant appropriating characteristics of the 21-century teachers seem to contribute to a favourable student attitude whereas oppositional and submissive characteristic has the opposite effect. The regression coefficients reported in Table 3 confirm that students' attitude to class was positively associated with the scales on the right side of the Wubbels model (Figure 2) and negatively associated with the scales on the left side of the model. This result is consistent with previous findings of Wubbels and Levy (1993) and suggest that, if appropriating characteristics of the 21-century teachers wish to enhance student attitudes in their classes, they should ensure they exhibit the interpersonal characteristics described on the right side of the model and reduce those described on the left side.

In terms of associations between students' perceptions of teachers' appropriating characteristics in the 21-Century of Thailand 4.0 policies with attitudes toward their classes for each selected at original affiliation office; the educational office, the

educational area, school size, the educational level, and the subject learning area. The value R^2 indicates of the variance in students' attitude to their classes was attributable to their perceptions of their teachers' appropriating characteristics in the 21-Century of Thailand 4.0 policies show in Table 4.

4.3 Comparisons between the Appropriating characteristics of the 21-century teachers and the International Professional Teacher

Seeking for relatively stable and distinguishable patterns of interpersonal characteristic, researchers found eight different types in both Dutch and American classes (Brekelmans, 1989; Wubbels and Levy, 1993), named directive, authoritative, tolerant/authoritative, tolerant, uncertain/tolerant, uncertain/aggressive, drudging, and repressive. These patterns can be characterized in terms of the two dimensions in the model for interpersonal teacher characteristic. In Figure 2(b) each of the eight types is summarized by means of a main point indicated by the first letters of their names in the co-ordinate system of the two dimensions.

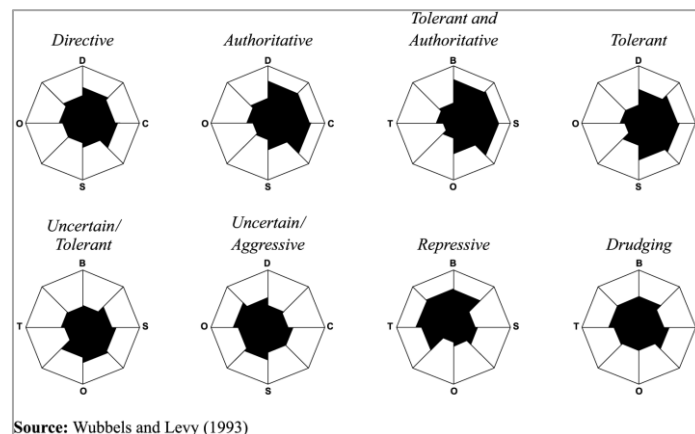


Figure 2: Graphical depiction of the sample cluster solution in term of the eight QTI scales (Wubbels & Levy, 1993, pp. 38.)

The authoritative, the tolerant/authoritative and the tolerant type are patterns in which students perceive their teachers relatively high on the proximity dimension, with the tolerant type lowest on the influence dimension. Less cooperative than the three previous types are the directive type, the uncertain/tolerant and the drudging type, with the uncertain/tolerant type lowest on the dominance dimension. The least cooperative pattern of interpersonal relationships has repressive and uncertain/aggressive type classes. In repressive type classes, teachers are the most dominant of all eight types. In Figure 2 the types are also characterized by means of graphic representations using the eight sections of the model of interpersonal teacher characteristic.

Research has also connected interpersonal communication styles to other variables. It seems that girls perceive their teachers as more dominant and cooperative than boys (den Brok *et al.*, in press; Levy *et al.*, 1992; Fisher and Rickards, 1997), that experienced teachers are more dominant and a little bit less cooperative than beginning teachers (Brekelmans *et al.*, 1993; Somers *et al.*, 1997), that people from different ethnic backgrounds perceive teachers differently (den Brok *et al.*, in press; Levy *et al.*, 1997) and that small differences between school subjects exist (den Brok, 2004; Levy *et al.*, 1992).

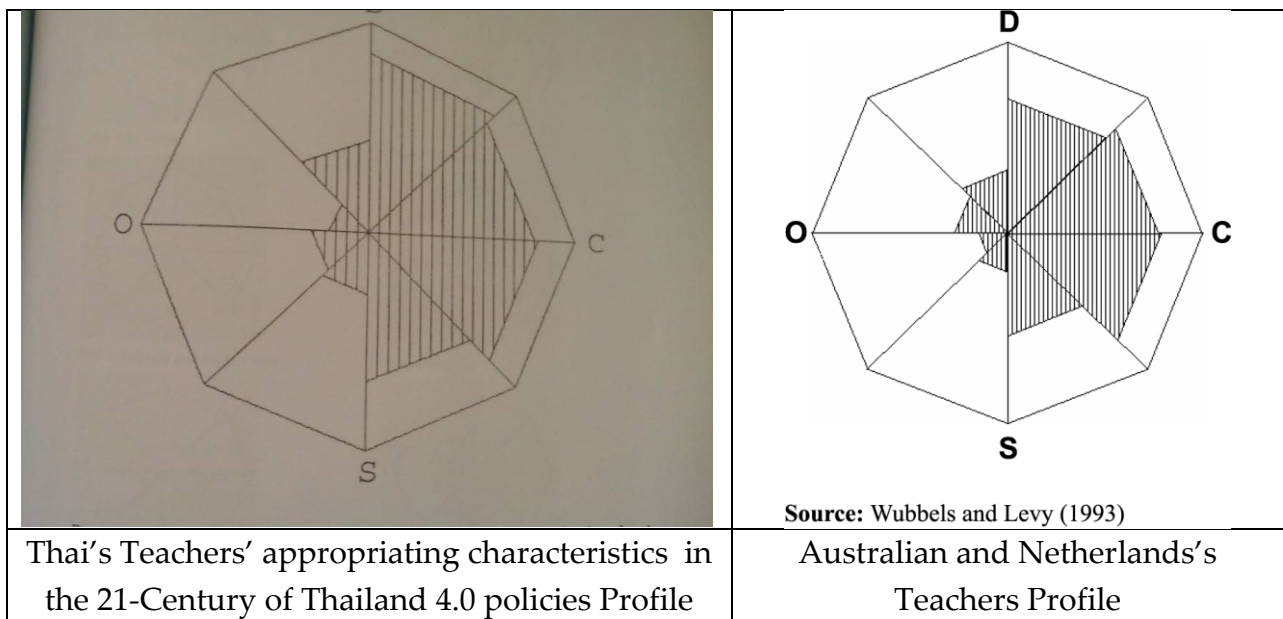


Figure 4: Comparison between Graphical depiction of the Authoritative of Thai's Teachers' appropriating characteristics in the 21-Century of Thailand 4.0 Policies and Australian and Netherlands's Teachers Profile Profiles

The finding of this study also further supports previous related research in that a variety of studies has indicated those students' perceptions in their teachers' appropriating characteristics in the 21-Century of Thailand 4.0 policies, adapted the mean score of eight scales that it's followed as the previous studied to show the profile representing the students' perceptions in their classes in Thailand. Based on the information in profile, Thai's appropriating characteristics of the 21-century teachers might decide to change the way of their characteristic in an attempt to create a more desirable classroom environment. Teachers' appropriating characteristics in the 21-Century of Thailand 4.0 policies show to improve their leadership, helping and friendly, understanding, teacher responsibility and freedom, strategies, morals and relates, and emotional quotient characteristics could organize professional development activities accordingly. Thus, the sector diagram could be used a basis for discussion of teaching characteristics.

A visual comparison of the results from this study of students' perceptions of in the teachers' appropriating characteristics in the 21-Century of Thailand 4.0 policies in Thailand with students' perceptions of science teachers in the Netherlands and Australian (see in figure 4) indicates that Thai teachers' appropriating characteristics in the 21-Century of Thailand 4.0 policies could be classified as **Authoritative**.

5. Conclusion

This study has confirmed the reliability and validity of the QTC that adapted from the QTI when used in the teachers' appropriating characteristics in the 21-Century of Thailand 4.0 policies' classes in Thailand. In term of the QTC, the eight scales were found to be associated moderately strongly with student attitude scores. In particular, student attitude tended to be higher in 8-learning area subjects classes in leadership, helping and friendly, understanding, teacher responsibility and freedom, strategies, morals and relates, and emotional quotient characteristics in their teachers. Teachers' appropriating characteristics in the 21-Century of Thailand 4.0 policies are likely to promote favourable student attitudes in their classes if they monitor and adjust their interpersonal characteristics accordingly.

This valuable information could then be used as a basis for self-reflection by teachers on their teaching performance. In particular, sector profiles could be used in staff development activities to enable teachers to identify areas for personal development in specific classroom environments. In addition, the sector diagrams could be used as a basis for discussion of critical teaching characteristics. The Authoritative atmosphere is well-structured, pleasant and task-oriented. Rules and procedures are clear and students don't need to be reminded. They are attentive, and generally produce better work than their peers in the Directive teacher's classes. The Authoritative teacher is enthusiastic and open to students' needs. S/he takes a personal interest in them, and this comes through in the lessons. While his/her favourite method is the lecture, the authoritative teacher frequently uses other techniques. The lessons are well planned and logically structured in the teachers' appropriating characteristics in the 21-Century of Thailand 4.0 policies in Thailand.

The multiple correlation R^2 is significant for students' perception for their actual of the QTC and shows that when the scales are considered together there is a significant ($p < 0.001$) association with the TOCRA. The value R^2 indicates that 52% of the variance in students' attitude to their classes was attributable to their perceptions of their teachers' appropriating characteristics in the 21-Century of Thailand 4.0 policies. The beta weights (β) show that in classes where the students perceived at very often level ($\mu > 3.50$) in leadership, helping and friendly, understanding characteristics. The students perceived at often level ($\mu = 3.01 - 3.50$) in student responsibility and freedom,

strategies, morals and relates characteristics, and the students perceived at some time level ($\mu = 2.01 - 2.50$) in emotional quotient characteristic of the 8-teachers' subject learning areas. The value R^2 indicates that 52% of the variance in students' attitude to their classes was attributable to their perceptions of their teachers' appropriating characteristics in the 21-Century of Thailand 4.0 policies.

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