

Comparison of Critical Thinking Skills of Nurses in Japan, China and Samoa

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Abstract :

A comparison of critical thinking skills of baccalaureate nursing students in Japan, China and Samoa was conducted to measure and compare the critical thinking abilities of nursing students based on the California Critical Thinking Disposition Inventory (CCTDI). Convenience samples were used in each country with 535 participants. Comparison of the baccalaureate nursing students scores in the three countries were compared for disposition for critical thinking. Comparison of the educational systems and their impact on the potential for critical thinking was also addressed. The group profile conveyed ambivalence to the disposition for critical thinking but further analysis of the groups revealed some emerging tendencies toward positive disposition for critical thinking on several subscales. These three countries have recently increased the opportunities for baccalaureate education and baseline information related to critical thinking was desired since all the leaders of nursing met with expressed the recognition of the need for increasing critical thinking skills in nursing practice.

Key words : critical thinking, CCTDI, Japanese nursing education, Chinese nursing education, Samoan nursing education

Introduction

In recent years critical thinking skills have become increasingly dominant in clinical nursing practice and nursing education. Clinical situations have become more complex. Families are more complex. Factors that need to be considered related to family and child for implementation of a health plan are more multidimensional. Medications are more toxic. Patients are often much sicker, in pain because of invasive diagnostic procedures and/or treatments or confused because of the multiple persons who question, probe, puncture or care for them. Diversity in patient families today is seen in all countries. Extended families are diminishing as families become smaller and are more mobile. The neighborhoods are changing so that families are becoming isolated in high-rise buildings displaced from old familiar neighborhoods where families had grown up for centuries. Support systems are being dismantled. Health care is more expensive, more

technical and impersonal, and families are required to assume a greater portion of the health care costs and the provision of care often at home with limited supplies and little access to experts.

While new techniques and medicines are more effective they are also more costly. In poorer families we commonly see treatment terminated because the family can no longer afford the cost of the medication or intervention. Most health care providers have no idea of the cost of the medications, diagnostic tests, treatments and related costs of illness. They do not see the reaction of family and friends, the isolation because of fear patients and families experience. Often health care providers are insensitive to the economic realities of the patients they serve as well as insensitive to the burden of the illness on the patient and family members, the focus being the prescribed task, technically oriented, narrowly focused.

The critical thinking outcomes must reflect the nursing student's skills in analysis, interpreting,

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reasoning, research or decision making for independent clinical judgment⁽¹⁾. The American Association of Colleges of Nursing accreditation criteria in 1998 also stated that the curriculum must reflect critical thinking as an outcome of baccalaureate nursing education⁽²⁾.

Nursing curricula in some countries such as UK and USA endorsed the emphasis on product of nursing student's critical thinking skills as a registering pre-requisite competency for beginning nurse practitioners⁽³⁾. To meet the critical thinking criteria, faculties in these countries have continually evaluated the effectiveness of alternative content of teaching strategies for enhancing critical thinking through determining the nursing student's critical thinking abilities or the relationship between clinical decision making skills and critical thinking. Critical thinking has been referred to in the literature in recent years as imperative for professional nursing practice. Literature reflects that teaching critical thinking is not only a concern of nursing but also of other disciplines^(4,5). The resistance of faculty to change their ways of thinking about teaching is also a challenge in many disciplines⁽⁴⁾. People tend to teach the way in which they were taught and most people have learned in spite of poor teaching vast amounts of cognitive knowledge and minutia irrelevant in many instances to the needs of the situation. However, few have learned well how to be critical thinkers.

Currently the development of critical thinking abilities and decision-making skills for clinical practice has been emphasized in nursing education in Eastern countries such as China and Japan. Nursing curriculum in Samoa has also placed focus on teaching nursing students critical thinking abilities. While, in these three countries, the nursing boards and associations have not yet required an assessment or measure of critical thinking ability of the students or as a criterion for curricular outcome discussion is occurring for plans to include critical thinking as required content. Furthermore, unlike the nursing education environment within western countries, there are no studies that have reviewed the efficacy of teaching methodologies on critical

thinking through examining critical thinking abilities of nursing students in these three countries.

Watson and Glaser⁽⁶⁾ developed an appraisal for critical thinking, Watson-Glaser Critical Thinking Appraisal (WGCTA) that has been used with many groups of students and individuals to evaluate critical thinking abilities. The WGCTA has also been used in studies to determine change over time in student's critical thinking abilities^(7,8). The California Critical Thinking Dispositions Inventory (CCTDI) has also been used to measure differences in student's abilities. The CCTDI has seven dispositional subscales: inquisitiveness, systematicity, analyticity, truth seeking, open mindedness, self-confidence, and maturity^(9,10). The CCTDI has been translated into Chinese and used to evaluate college students⁽¹¹⁾. Both of these measures have been used to assess critical thinking abilities in nursing students and to investigate the relationship between clinical decision making skills and critical thinking abilities in four programs with significant differences in pre- and post- test scores^(12,13). Nursing students have recently been introduced to some of the concepts related to critical thinking in Japan, China and Samoa, so the researchers thought it might be interesting to compare the critical thinking ability of nursing students and nurses in these three countries.

Purpose of the study

Therefore, the purpose of this study is to measure and compare the critical thinking abilities of nursing students in three countries: Japan, China and Samoa. The study addressed the following research questions:

- Is there a difference in the critical thinking skills of the nursing students or nurses of these three countries?
- How do these groups of students compare with the data obtain from nursing students and nurses in the U.S.?
- Are the educational approaches the same in these three countries?
- Might the educational approach have impact on the critical thinking scores of the nurses in the

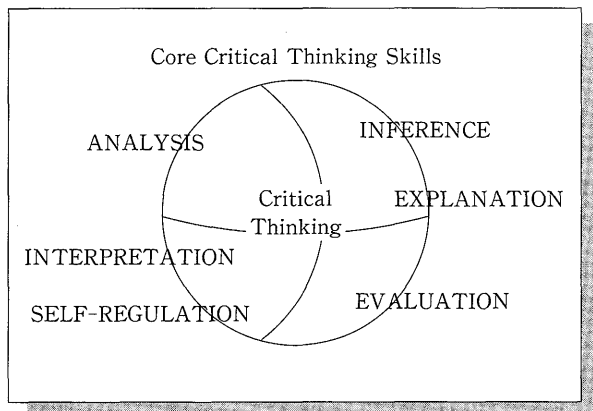


Figure 1 : Core Critical Thinking Skills⁽¹⁵⁾

three countries?

Review of the Literature

The literature was reviewed in relation to critical thinking, studies done in critical thinking with nursing personnel, the educational systems for nursing of Japan, China and Samoa.

Definition of Critical Thinking

Critical thinking ability as defined by the two year study conducted by the American Philosophical Association is a central outcome of college level education⁽¹⁴⁾. Critical thinking is a non-linear, recursive process which results in a person forming a judgment about what to believe or what to do in a given context. To accomplish this outcome the individual engages in critical thinking using a core set of cognitive skills: analysis, interpretation, inference, explanation, evaluation and self-regulation to form that judgment and to monitor and improve the quality of that judgment. Figure 1 depicts the interaction of these processes.

Facione and Facione⁽¹⁰⁾ defined the ideal critical thinker as habitually inquisitive, honest in facing personal biases and open-minded in learning and listening to other alternative ideas. The Delphi consensus identified the ideal critical thinker as " being habitually inquisitive, well-informed, trustful of reason, open-minded, flexible, fair-minded in evaluation, honest in facing personal biases, prudent in making judgments, willing to reconsider, clear about issues, orderly in complex matters, diligent in seeking relevant information, reasonable in the

selection of criteria, focused in inquiry and persistent in seeking results which are as precise as the subject and the circumstances of inquiry permit"⁽¹⁴⁾.

Petrini⁽¹⁶⁾ described critical thinking, related to nursing professionalism as the strong knowledge that can analyze multiple nursing interventions and potential outcomes or effects of interventions and weight the opinions for risk benefit analysis in many situations considering nursing professional issues. Throughout development of critical thinking skills and knowledge, nurses develop fair-mindedness to new evidence and a willingness to reconsider clinical judgment⁽¹⁶⁾. In the recent climate of nursing education within the West, there is growing focus on discussions regarding how the conceptual definitions of critical thinking are transformed into methodologies for teaching critical thinking in classroom as well as clinical practice.

To develop the nursing students' critical thinking, philosophy for nursing education in UK, United States and Australia have placed emphasis on an andragogical method to curriculum design. The philosophy of this approach is to encourage student self-directed learning and take a problem-solving approach⁽¹⁷⁾. Significant learning for this approach takes place when the subject matter is perceived by the students as being relevant to one's own purpose or interests⁽¹⁸⁾. Therefore the students need to be trusted to participate responsibly in planning their learning approaches whatever is relevant to their own life and personal growth⁽¹⁶⁾.

Critical thinking for nursing students cannot be produced without integration of theory into clinical practice^(19,20). Successful integration of classroom theory into clinical practice requires that prolonged gaps between theoretical learning and clinical practice should not exist⁽¹⁶⁾. If there is a large gap, theories related to nursing are not likely to be positively integrated into the student's clinical practices and will be left to the student's imagination, and the core competencies are lost over time⁽¹⁶⁾. Research on the learning curve over the years as well as observation by faculty has confirmed this. Recently, in Japan the academic calendar was changed to end the semester before the summer break

because students and faculty felt too much information was lost during the two months away from class confirming the previous research on the learning curve that content not used is lost approximately 75% within less than a semester. Consequently this is reflected in the difficulty of students' experiences of applying abstract knowledge 2 - 4 years after exposure and when generalizations are attempted to develop their critical and reflective thinking skills in the clinical setting.

Student's critical thinking skills are enhanced with continued reflection on student's clinical experiences. Schon⁽²¹⁾ has argued that without reflection on clinical learning experiences, nursing students have little opportunity to transfer theoretical based on-campus activities into the actual practice setting. Therefore, nursing educators need to provide learning opportunities for reflection and evaluation on the efficacy of care nursing students deliver in the actual clinical setting. Schon⁽²²⁾ wrote a subsequent book, *Educating the Reflective Practitioner: Toward a New Design for Teaching and Learning in the Professions* for those educating faculty or doing faculty development to assist in teaching methodologies to promote reflection in student learning that enhances critical thinking skills.

The current philosophies of nursing faculties in Japan, Samoa and China have started to show greater interest in developing the nursing student's critical thinking. As a result, most of the nursing faculties in these three countries are challenged to integrate alternative teaching and learning approaches on development of critical thinking into the implementation of curriculum. However, the questions are raised as to whether the educational intentions for development of critical thinking are successfully internalized into the contents and processes of nursing curriculum in Japan, China and Samoa. The educational systems of these three countries will be presented as background for the study and potential impact on outcome of the critical thinking profiles of the students.

Nursing education in Japan

The existing Japanese education emphasizes rote

learning⁽²³⁾. This has led to the entrance examinations being over-emphasized. The student's standard score in the entrance examination plays a major part in determining an academic and future career⁽²³⁾. Students are therefore forced to study so hard during the very early stages of development. Learning skills, which require the students to formulate their own questions or interests in academia and social events are not encouraged⁽²³⁾. As a result, once the students enter the universities, many students are overwhelmed when expected to think critically about the subject matter through self-directed learning⁽²⁴⁾.

The impact of a teacher-centered approach is also identified as an obstruction to self-directed learning⁽²⁵⁾. In many Japanese nursing faculties teachers tend to utilize traditional teaching, which are delineated as a teacher-centered approach. Autonomy and responsibility for independent learning to nurture critical thinking is not encouraged through this method.

Japanese Nursing curriculum designs impede the opportunity for students to develop critical thinking skills through integrating classroom theories into clinical practices. In many faculties in Japan students are usually taught early the theories related to nursing in the classroom or laboratory⁽¹⁶⁾. However, there is large gap before the students actually experience the application of the knowledge gained from laboratories or classrooms into clinical practice with real patients⁽¹⁶⁾. Furthermore, such classroom theories appear to not be linked to the clinical setting in ways that the student may observe and experience the theories come to life and be relevant. Significant is the fact that the basic subjects or theories related to nursing are taught by physicians. Physicians tend to focus class on medical knowledge rather than nursing knowledge⁽²⁶⁾. Due to these academic factors, the relationship of knowledge and skills is left entirely to the student's imagination only⁽¹⁶⁾.

Difficulty in developing a student's critical thinking can also be discussed with consideration to the current approach to student's clinical practice. The total time for student's clinical practice has

been reduced as consequence of revision of Japanese nursing curriculum in 1996⁽²⁷⁾. The poor design or lack of design for planning clinical education prevents students from caring for patients over time to see the relevance between nursing theory and application within the clinical setting as well as the effectiveness of their intervention through self-clinical evaluation. Many faculties therefore fail to provide the opportunity for the students to develop their critical thinking by empathizing reflection on their clinical experiences. The shortened hospitalization and the reduction of clinical hours require new designs and planning for effective clinical experiences to provide the student the opportunity to maximize the ability to experience theory into practice and to reflect on learning from clinical experiences, often accomplished through well designed post clinical conferences held on the same day as the clinical experience.

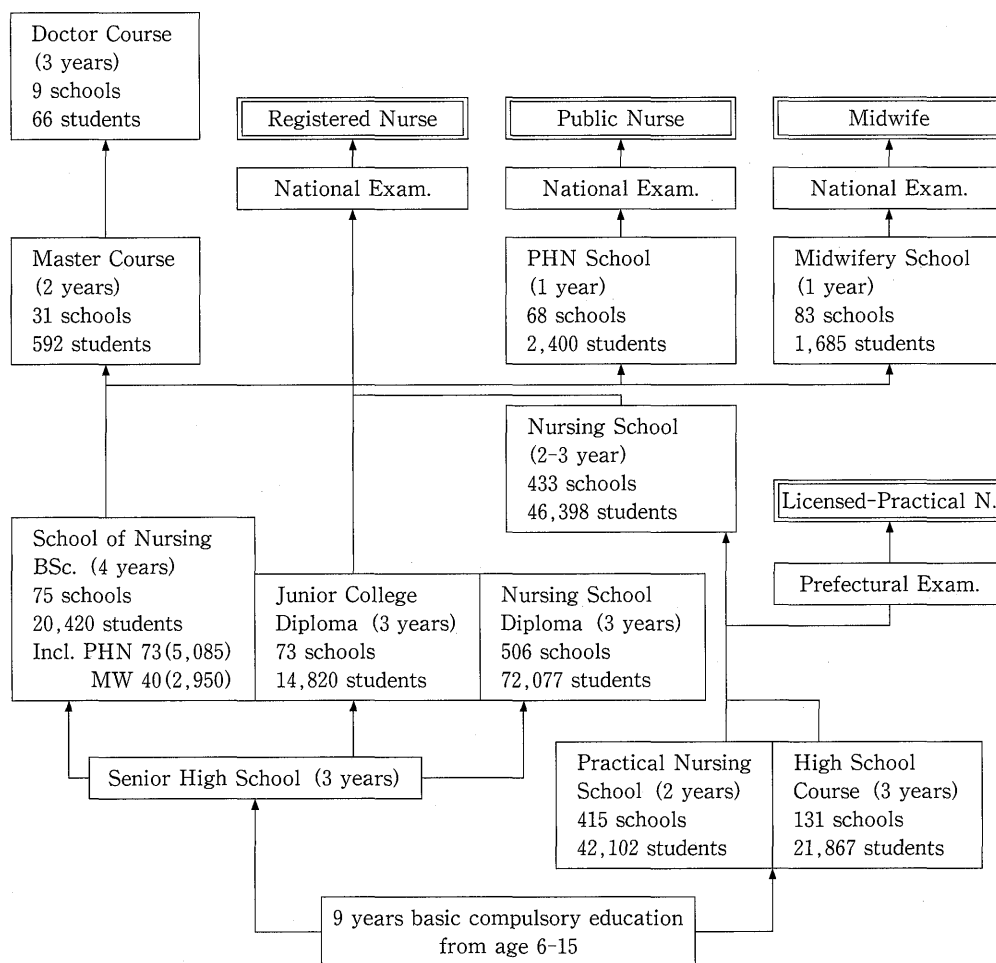
Within the contemporary clinical environment in Japan, the role of nurse has still been portrayed as being required to function subservient to physicians⁽²⁸⁾. This traditional view of the nurse has shaped Japanese nurses' attitudes towards their professional practice as being illustrated through a lack of individual thinking, inhibited motivation and autonomy for clinical decision-making^(29,30,31). Surrounded by these Japanese nursing practices, the question can be raised as to what Japanese nursing staff can do to reflect good professional practice, which encourages themselves as well as nursing students to develop critical thinking and individualism for their clinical care planning.

The hierarchical societal structure has greatly influenced the contemporary nursing education milieu⁽²⁸⁾. Within seniority/hierarchy system the new knowledge of young nursing teachers, exploring different teaching avenues for development of critical thinking is largely ignored. For instance, several faculties who have learned about critical thinking while overseas have attempted to introduce the concepts of critical thinking into the curriculum content in Japan. However, it is not an easy task for these teachers due to the influence of values existing in a seniority delineated society.

This consequently contributes for the evidence that only few nursing faculties in Japan have introduced the concepts and meanings of critical thinking into curriculum subjects⁽³¹⁾. Hisama⁽²⁹⁾ reports that individual thinking and autonomy are seldom seen in Japanese nursing because a *kangofu's* primary function is to serve physicians, who have governed nursing and health care for more than 125 years through political clout.

Cultural beliefs and traditions greatly influence education and professional practice. Japan is a homogeneous country with the inhabitants descending from a common cultural background. Therefore it is not surprising that nursing policy and nursing education are quite different in spite of the statement that nursing education is derived from the teaching of Florence Nightingale. Perception plays a major role in how individuals view situations and how they think. The curricula of schools of nursing reflect the beliefs of the designers. Eastern and Western philosophies are quite different and impact on the development and implementation of nursing education programs. In Japan there is the perception that all education is controlled by the central government.

The conflict of Eastern and Western philosophies and tradition present conflicting and confusing messages for nursing education in Japan. Japanese nursing education has been greatly influenced by Europe and America through a Japanese filter of translators or nurses who introduce new concepts. The Japanese have the largest number of books from other countries translated into Japanese without the understanding of the concepts expressed from the other countries. The Japanese traditional ethical framework has not been clearly transmitted in nursing education and nurses in Japan often lack an awareness of the confusion⁽³²⁾. Educational programs in the Western countries are based on a philosophy and tradition arising from the middle ages in Europe. These philosophies strongly influence the texts that are written and when translated lead to confusion in the students. Education in modern Japan while based on the basic education law of 1947, it is greatly influenced by culture and



Note : Courses of Public Health Nurse and Midwifery are legally for over 6 months and can be also studied at School of Nursing (BSc. 4 years).

Figure 2 : Japanese Nursing Education System⁽³⁷⁾

Chinese tradition⁽³³⁾. Japan has a rich tradition and culture that is deeply imbedded in the people arising from its long history. Japanese culture has been greatly influenced by the Chinese, Confucian education, Buddhism and by the feudal system during the shogunate government^(34,35,36). Japan has sought throughout their history information from European countries and the United States related to education, but the beliefs have not been assimilated within the people.

The Japanese nursing education system is presented in Figure 2. The data is several years old and now the number of the baccalaureate, masters and doctoral programs have all increased. In 1992 there were only 11 baccalaureate nursing programs in Japan. In 2002 there were 96 four-year baccalaureate nursing programs, 52 master's

programs and 17 doctoral programs in universities in Japan. The philosophies of the West have not been transmitted to the culture nor impacted teaching, learning, values and the practice of nursing.

Nursing Education in China

A description of the history of nursing education in China is critical to understanding the nursing education today. Basic nursing education in China began in 1884 and was run internally. In 1921, a collegiate school, supported by Rockefeller Foundation was established at the capital city medical college to educate teachers and public health nurses. In 1929, baccalaureate education began and continued until 1949 when basic education programs were downgraded and baccalaureate education ceased. At that time there were approximately 30,000 nurses in the country⁽³⁸⁾. The last baccalaure-

ate program class graduated in the early '50's. During the late '60's and through most of the '70's, basic nursing education was non-existent.

During this period, individuals were assigned to their nursing jobs with little or no preparation. The central administrative philosophy implied that one learned by doing, therefore, if one were to be a physician or nurse then one functioned as a physician or nurse: there was no need for education. In fact, many individuals who were assigned to work as nurses in hospitals in the 1960's to 70's, are currently those in key administrative positions, either as head nurses or as directors of nursing. In 1978, basic nursing education programs were again started with middle school graduates rather than senior middle school graduates as enrollees. Today, there are 512 basic nursing programs with the entry educational level of middle school.

The 30 years gap in nursing education has created serious problems in nursing education. Most of the education is being conducted by teachers who have not had good role models for clinical practice or who themselves may have had little formal education. Recently however, the country has introduced several new types of educational programs, which are trying to raise the knowledge level of the nurses. In addition, there have been programs developed to educate the teachers of the secondary nursing schools. These programs are conducted in the evening in adult school or during the day in some of the university nursing departments. The curriculum varies but the goal is to increase the knowledge and skill level of nurses who have been in practice and who are often in head nurse positions. These nurses will be responsible for teaching the students clinically as well as managing the nursing unit. Three graduate nursing programs have recently been initiated in the country, offering graduate courses to a very select group of nurses.

Nursing in this country is a female dominated profession. Recruitment and retention are difficult because of the work overload, poor management practices, low pay, low social status, low education, poor career opportunities as well as negative cul-

tural attitudes⁽³⁹⁾. At a meeting of the deans and directors of baccalaureate schools in April 1989, one of the deans reported that not only did many of the graduates from the recent baccalaureate graduating class accept jobs in non-nursing fields, but that parents do not want daughters to enter into nursing. In fact, many will not allow their daughters to study nursing especially if they pass the college entrance examination⁽³⁸⁾.

In 1984, the government re-established baccalaureate education for nurses. Initially 12 schools were opened in Medical Universities throughout China. In 1992 the first master's program was initiated in Peking University (formerly Beijing Medical University). In 1994, the China Medical Board sponsored a joint Master's in Nursing program in Xi'an Medical University with Chaing Mai University in Thailand with the degree granted from Chaing Mai which graduated 16 nurses with master's degrees every two years. As these graduates assumed teaching and administrative roles, the number of baccalaureate nursing programs has increased to approximately 100 with currently 65 master's programs. At this time there is no doctoral program in nursing because the Ministry of Education requires a certain number of nurses to have Doctoral education on the faculty and sufficient research in the discipline of nursing. Depicted below is the educational system for nursing which includes other programs that allow for nurses to advance their education (Figure 3). Currently it is required that all nurses complete a minimum of 52 units of continuing education for renewal of their license to practice. The numbers of school listed in this figure is two years old reflecting the growth that is occurring in China. Each year new baccalaureate nursing programs are opening and hospital diploma schools now required to be 4 years are closing. The curriculum of the baccalaureate nursing programs are currently being revised from 5 years with 4 years of didactic and 1 year of clinical practice to 4 years with integrated didactic and clinical based on the research conducted at Peking Union Medical College demonstrating the effectiveness of integrating theory and clinical in producing

higher functioning nurses.

The chart reflects that there are several avenues to become a registered nurse (RN); secondary nursing program, Zhuanke programs; and baccalaureate program⁽⁴¹⁾. There are significant differences in these programs based on the entry requirements. Graduates from both secondary and Zhuanke program must sit for the National Nursing Licensure Examination (NNLE) to be licensed as RNs, while graduates of baccalaureate program are granted the status automatically⁽⁴²⁾. Secondary nursing programs exist as integral academic units, which are school based and hospital based training. The goal of secondary nursing program is to provide nurse clinician with technical skills at the secondary level⁽⁴³⁾. By 1998, there are 530 secondary programs in China that provide 40,000 nurses annually⁽⁴⁴⁾. Zhuanke (conducted by universities to promote life long learning) and baccalaureate programs are incorporated into postsecondary program. Zhuanke programs have a 3 year curriculum and are said to be equivalent to the associate degree program in other countries but there are significant differences in curriculum from US associate degree programs.

The purpose of these programs is to prepare expert nurse clinicians, generally for administrative positions such as head nurse, supervisor or teacher⁽⁴³⁾. After completion of the program, graduates can engage in both clinical nursing and clinical teaching. Baccalaureate nursing programs initially had a 5 year curriculum that admit academic high school graduates who score high enough for university admission based on a highly competitive National University Admission Examination⁽⁴¹⁾. The baccalaureate programs initially produced around 300 graduates per year⁽⁴⁴⁾. Graduates from baccalaureate nursing programs are awarded a bachelor of medicine degree and are automatically designated with a registered nurse (RN) status. Within this education system in China, school based secondary education programs are still the dominant form of current nursing education in China⁽⁴⁴⁾. Ninety-Nine percent of the nurses are educated in secondary nursing programs. Nurses who have post-secondary program education account for only 1 % of the total nursing population in China⁽⁴⁴⁾.

Despite of the fact that the secondary education programs constitute the backbone of the nursing

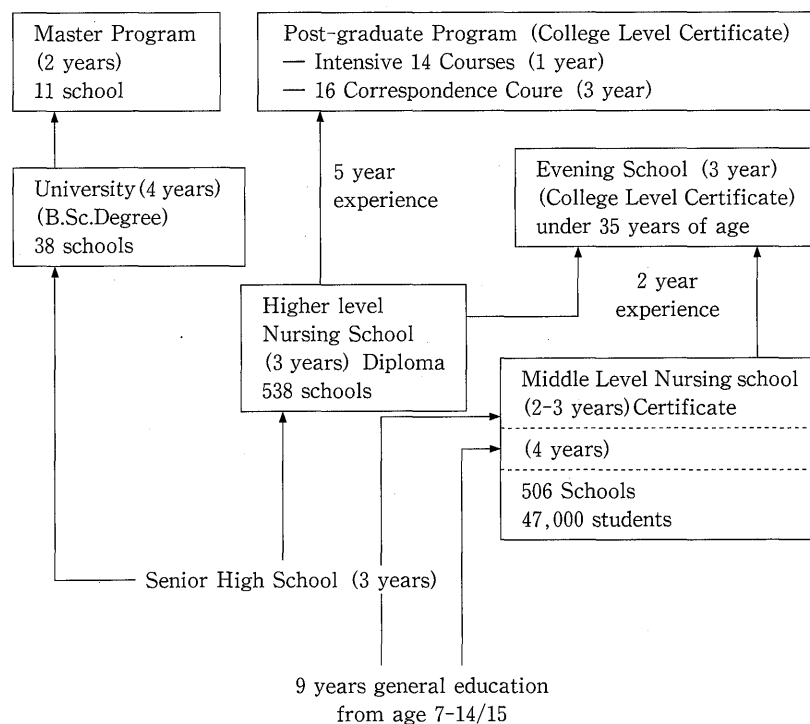


Figure 3 : Chinese Nursing Education System⁽⁴⁰⁾

education system in China, it has been a general concern that the knowledge of students from secondary programs is inadequate to prepare competent nurse. This is related to the fact that teaching methods used by secondary program tends to be didactic with emphasis on the medical model designed for the individual hospital's needs as it's reliance on nursing students as manpower⁽⁴⁴⁾. This greatly obstructs the development of student's critical thinking skills. The World Health Organization Global Advisory Groups (WHOGAG) has indicated this issue and recommended that basic nursing education should be extended at university standard⁽⁴¹⁾. With undertaking this recommendation, the Ministry of Education in China has started to show their interest in upgrading nurse's education to a university level. In fact, numerous resources from the Chinese government are currently provided to nursing programs to improve teaching environment. The government has also attempted to provide funds for faculty training to extend teacher's knowledge and skills. This effort has greatly offered upgrading nursing education that result in increasing the numbers of baccalaureate programs.

In maintaining this trend, the curriculum for nursing education has been revised and has been implemented by some faculties with the focus of the curriculum designed on the promotion of the student's critical and independent thinking skills for individual clinical judgment rather than focused on disease-orientated functional nursing practice. To produce students who are critical thinkers, self-directed learning and problem-based learning have been emphasized in the revised nursing curricula.

However, even though most of the faculties have attempted to undertake alternative methods that can foster the student's critical thinking, similar to experiences of Japanese nursing education, nursing faculties in China have faced some consternation to reflect the current intention of nursing curricula into the contents and process of curriculum. Teachers teach as they were taught so it requires faculty development programs to provide faculty with the opportunity to experience the difference

and test their ability to change their traditional approach to teaching to one that will promote critical thinking through reflective practice and interactive education⁽⁴⁴⁾.

The traditional education system continues to influence with traditional Chinese educational system beliefs that must be recognized and placed in perspective. Traditionally, the education environment in China has been emphasized on the student's achievement in universal examination rather than a fostering lifelong education skill, which requires the students to focus on how they learn. The traditional teaching methods that include rote learning and didactic teaching have also been incorporated but are being seen less as new teaching methodologies have been learned⁽⁴⁴⁾.

These traditional education approaches have been utilized by most of nursing educators in China. Lack of enthusiasm by educators to cultivate critical thinking skills is therefore maintained through delivering this method. This issue can therefore be comparable to the Japanese nursing education system. Fortunately, the young newly educated faculty are being promoted and teaching more and the physicians who were assigned to the teach nursing are being retired. Nurses are now in the majority of the faculty if not completely in the baccalaureate schools. The secondary schools however still have many physician faculties.

Another similar problem is further identified within the current nursing education in China. Even though curriculum for nursing education in China has been revised, it is still often based on medical models rather than a health model, with emphasis on primary health care that is needed for critical nursing knowledge⁽⁴⁴⁾.

The nursing education in China also appears to fail to provide the learning opportunity to integrate nursing theories and care models into clinical practices. Like Japanese nursing education, most of nursing theories and models that introduced into nursing education in China are from Western countries. These models and theories have been accepted without critical discrimination thus may be unworkable⁽⁴¹⁾. This evidence can therefore

raise the question whether nursing educators in China can provide the nursing students appropriate learning opportunity for the students to utilize nursing models into their practices.

However, positive aspect of Chinese nursing education that may potentially promote in producing critical thinkers can be identified. There is growing recognition for the need to encourage faculties to obtain advanced nursing degrees and valuable experiences in other countries. Fortunately, the current nursing faculties appear to be willing to accept the unique and new knowledge of faculties who have experienced and have more advanced education. This would therefore encourage the integration of new and alternative approaches to produce critical thinkers at an implementation level. Changes in society are rapid in the recent decade in China and are reflected in every aspect of life, it is not surprising that they are also occurring in nursing education and practice.

Nursing Education in Samoa

Nursing education was initiated by New Zealand during the time in which Samoa was administered by New Zealand so the educational system is based on the British system. Since independence of Samoa in 1962, the educational system has been administered by the government and the Ministry of Education. In 1984 the National University of Samoa was established by an act of Parliament. In 1992 the Parliament passed legislation to establish a baccalaureate nursing program in the university. Nursing education was conducted by the Department of Health. The transition of the nursing faculty to the National University of Samoa began in 1996 and the initial graduating classes received a diploma in nursing after completing the standard one year preparatory required of all students and then three years of nursing and liberal arts receiving at the end a diploma. The students now receive a bachelor's degree in nursing since 2002. The university also has a diploma granted after two years of study replacing the former enrolled nurse program. July 2002 initiated the master's programs with Midwifery being the first major. In the past the School of Nursing conducted Advanced

Diploma programs preparing nurse midwives, primary care nurses and community mental health nurses. In the Advanced Diploma programs all students became nurse practitioners as a basis for their advanced practice. In the year 2002, the Nursing department also initiated a program for baccalaureate completion for nurses who previously held diplomas in nursing either from Samoa, New Zealand, or other foreign countries. Nurses in Samoa have been required for some years now to complete a minimum of 25 credits of continuing education for renewal of their license.

The faculty of the nursing program in Samoa previously had international consultants to assist with the development and revision of curriculum to include new content and new teaching methodologies. Since the health care system of the majority of the population relies on nurses for health care it is imperative that the nurses learn critical thinking skills. Revising teaching methodologies from lecture to interactive approaches requiring reflection on practice was achieved through faculty development programs and the opportunity for the faculty to advance their own education with Master's degrees and Advanced Diploma programs from Australia and New Zealand. The nursing programs both the formal education and continuing education programs are attended by nurses from other South Pacific Island countries. Nursing students from other countries also visit for internships to learn about the independent and interdependent practice of the Samoan nurses in the community in areas such as community mental health care, palliative care, maternal child health care, and primary care. Students from Australia, New Zealand, the United States and Japan are but a few of the countries who have studied in Samoa.

The cultural beliefs of the Samoans are incorporated in their nursing philosophy which permeates their care and interactions with patients, families and students. The cultural traditions and beliefs about traditional medicines and traditional practitioners are respected. The nurses in Samoa are highly respected members of the community and are seen culturally as healers and therefore are revered.

Table 1 : Comparison of elements in Japan, China, and Samoa related to nursing education

	Japan	China	Samoa
Regulations	Central government	State Government	Nursing Board and faculty
Curriculum	Ministry of education	University, faculty	Faculty
Faculty	Ministry of education	University	University
Students	Entry 18 years average Admission by nursing faculty	Admission based on national exam	National exam, Interview
Employment	Faculty led	Student led	Varies based on government sponsored or independent

This respect of nurses requires that the nurses too are familiar with the traditions and the appropriate language to use as they provide their care and practice. Much of the nursing is done in the community, in villages and homes of the patients. Families are incorporated as providers of care within the culture.

Nursing education in the three countries reflects their cultural differences. To increase the understanding about the similarities and differences between Japan, China and Samoa related to nursing education and nursing practice, it is important to look at several areas: philosophy and its impact on education; educational systems of the three countries; nursing curriculum; characteristics of students; faculty requirements; employment expectations both hiring and practice and legislation related to nursing practice. Table 1 reflects some of the difference between Japan, China and Samoa. In Japan, the Ministry of Education gives the nursing curriculum for baccalaureate nursing programs through their regulations and the Ministry of Health, Labor and Welfare controls the curriculum for other schools of nursing. In China there is a general curriculum given by the Ministry of Education but there is clearly individual school interpretation of the curriculum. In Samoa the education is decided by the nursing board and the nursing faculty.

Nursing education in these three countries has undergone major changes in recent years. Because of growing interest in taking the higher academic nursing degrees, there is a rapid increase in the

number of 4 -year nursing baccalaureate program. Within the baccalaureate nursing program, the nursing curriculum design has evolved in focus to develop student's autonomy and critical thinking for independent clinical judgment. However, in reality, challenges will arise in the implementation.

Methodology

Research Design

A cross-sectional descriptive study was used to examine baccalaureate nursing students and nurses' disposition towards CT in Japan, China and Samoa.

Instrument

The California Critical Thinking Dispositions Inventory (CCTDI), developed by Facione and Facione⁽¹⁵⁾ in three versions was employed to measure and compare the critical thinking skills of nursing students in three countries. In this study CCTDI Japanese version was used for the Japanese students, the Chinese version for the Chinese students, and the English version for the Samoans. Both experts in Japan and China to check the accuracy of translation employed reverse-translation to English to validate the translations and check for clarity. While English is the second language of the Samoans, they have been taught in English and their English proficiency was felt to be sufficient.

The CCTDI is composed of 75 items on 6 point Likert scale and measures the seven sub-scales including: truth seeking; open-mindedness, analyticity, systematicity, self-confidence, inquisitiveness and maturity⁽¹¹⁾. The descriptions of the sub-scales by

Facione & Facione⁽¹¹⁾ are follows:

- Truth seeking sub-scale: targets the disposition of being eager to seek the truth and courageous about asking questions even the findings do not support one's interests or one's preconceived opinions.
- Open-mindedness sub-scale: being tolerant of divergent views with sensitivity to the possibility of one's own bias. The open-minded person respect the rights of other s to hold differing opinions.
- Analyticity sub-scale: prizing the application of reason and use of evidence to resolve the problem even if the problem at had turns out to be challenging or difficult.
- Systematicity sub-scale: targets the disposition towards organized, orderly, focused and diligent process in the inquiry stage.
- Self-confidence sub-scale: trust one place in one's own reasoning processes.
- Inquisitiveness sub-scale: measures one's intellectual curiosity and one's desire for learning.
- Maturity sub-scale: targets the disposition to make reflective judgment based on standards and context and evidences.

The full scale is possibly scored on a range from 70 up to 420 with marks above 280 indicating a positive overall disposition towards critical thinking. Overall total score below 210 indicates a significant opposition towards critical thinking⁽¹⁵⁾.

The total score between 210 and 280 indicates ambivalence towards critical thinking.

Each scale score ranges from 10 to 60. Sub-scale scores raging from 30 down to 10 indicate negative disposition⁽¹⁵⁾. Scores on sub-scale that are at 40 or above are considered positive, while scores ranging from 50 to 60 indicating strong positive disposition towards critical thinking⁽¹⁵⁾. A scale score between 40 and 30 indicates ambivalence towards disposition of CT⁽¹⁵⁾.

Reliability and Validity of Tool

Factor analytic methods were used for the retention of items within the various scales. Nunnally (1978)⁽⁴⁵⁾ advocates that the explication of constructs consists of determining the internal statisti-

cal structure of the set of variables said to measure a construct and the statistical cross structures between the different measure of one construct and those of the other related constructs. For the CCTDI factor analytic approaches were used directly as well as indirectly to do both⁽¹⁵⁾.

Reliability in the form of Cronbach's alpha (internal consistency) and reliability coefficients and factor analytic statistical analyses supported the existence of factors in the disposition toward critical thinking. Alpha reliability for the overall instrument was $r = .91$. The Cronbach's alpha on seven individual scales ranged from $r = .71$ to $.80$.

Sample and Settings

A convenience sample of 535 subjects composed of nursing students and nurses from three countries; Japan, China Samoa were used for this study (Table 2). In Japan 98 baccalaureate nursing students who are undertaking a four year degree program in western Japan that included both generic, including freshmen and Junior (group 1) and transfer students (group 2) who are nurses who enter the baccalaureate program in the third year to obtain a baccalaureate degree as well as 67 Japanese registered nurses who working at hospital and with the baccalaureate students who participated (group 3) were involved. General students were in their twenties and had no clinical work experiences. Transfer students had at least 5 years clinical work experiences. The majority of the registered nurses had more than 7 years clinical work experience.

In China there were 300 baccalaureate nursing students from programs in three different regions, the northeast (group 1), central (group 2) and western China (group 3). These programs are currently five year programs and in transition to four year programs. Previously, clinical was the last year of the program but is now being integrated in the course of the program. The baccalaureate participants from China were in their twenties and had little to no clinical experience.

In Samoa a convenience sample of 70 generic and baccalaureate completion students participated. The Samoan nursing students were a mixed group of generic and baccalaureate completion students

entering the baccalaureate nursing program. This student group had a variety of ages in addition to a variety of clinical experiences. The mean age of Samoan group was thirty-eight years (between sixteen and sixty-two years).

Table 2 : Study participants by country

Country	Participants
Japan	n=165
Group 1 (General)	82
Group 2 (Transfer)	16
Group 3 (Nurses)	67
China	n=300
Group 1 (North eas China)	100
Group 2 (Central China)	102
Group 3 (Westen China)	98
Samoa	n=70
Total	535

Ethical Considerations

Ethical approval to undertake this study in Samoa was obtained from the Department of Health, Direction of Nursing, the Samoan Nursing Association and the Dean of Nursing faculty. The permission to conduct the study in Japan was gained from the Dean of nursing faculty. To conduct study in China, approval was obtained from the deans of the three university nursing programs. The administrations and the participants expressed interest in knowing the results and also requested more information about how critical thinking may be taught more effectively to nursing students and to practicing nurses.

Ethical requirements regarding confidentiality, anonymity, self determination and protection from discomfort were emphasized in the study. The students participating in the study were provided with a verbal explanation of the study, and CCTDI was discussed in detail. The verbal instructions for completing the test were also given to the students by the researchers. Answers to the each item were recorded on the actual test sheet. Students were given the 20 minutes to complete the test. Demographic data were also obtained from the student records.

Data analysis

The CCTDI CAPSCORE answer sheets were sent to California Academic Press for Scoring. Upon receiving the data from California Academic Press, the data was reviewed for description and comparisons of the scores between the three groups. Using SPSS version 11.0, descriptive statistics were used to describe the critical thinking disposition for each of three groups; Japanese, Chinese and Samoa students. A one-way analysis of variance (ANOVA) followed by Tukey’s standardized range (HSD) was also used to examine differences in both total scale and sub-scales of CCTDI among three groups, Japanese, Chinese and Samoan students. The data analysis was further extended to describe and compare the critical thinking disposition between groups within both Japanese participants and Chinese participants.

The findings

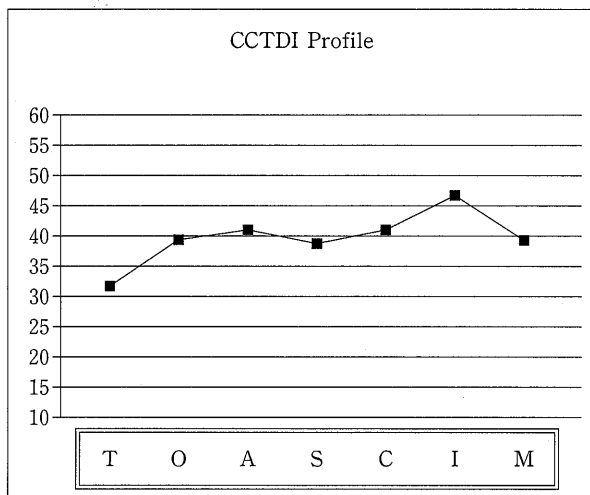
In this study, nursing students’ disposition towards critical thinking for the each of the three groups was examined. The total group profile is represented in Figure 4 illustrating a range on all scales between 32 and 46. Mean and standard deviations of the total scores and sub-scores of CCTDI reflecting the total three groups are also shown in Table 3.

Mean and standard deviations of the total scores and sub-scores of CCTDI amongst three countries; Japan, China and Samoa are shown in Table 4.

The total mean score for group of Japanese students was above 270 that indicating ambivalence towards CT. Three of seven mean sub-scale for Japanese students were above 40, indicating positive disposition towards critical thinking. Open-mindedness (41.78), Inquisitiveness (46.28) and Maturity (43.73) were incorporated in these sub-scales. In these three mean scores, Inquisitiveness scale shows particular strength. The Japanese students scored in the ambivalent range (between 30 to 37) on four sub - scales including Truth - seeking (34.87), Analyticity (36.59), Systematicity (35.13) and Confidence (33.10).

The total mean score for Chinese students was

above 277 that indicates ambivalence. Chinese students were strong (above 40) in three sub-scales regarding Analyticity (42.34), Confidence (44.47) and Inquisitiveness (46.28). By contrast, four of seven sub-scales including Truth-seeking (31.38),



(Truth-seeking, Open-mindedness, Analyticity, Systematicity, CT self-confidence, Inquisitiveness and Maturity)

Figure 4 : CCTDI profile of Japanese, Chinese and Samoan nurses

Table 3 : Mean and SD on the total scores and sub-scores of the CCTDI of the total three groups

Variable	N	Mean	SD
Truth-seeking	535	32.00	5.79
Openmindness	535	38.85	4.99
Analyticity	535	40.68	5.75
Systematicity	535	37.83	5.50
Confidence	535	41.08	8.50
Inquisitiveness	535	46.64	5.63
Maturity	535	38.54	7.25
Total	535	275.62	22.70

Open-mindedness (37.52), Systematicity (38.84) and Maturity (36.93) were between 31 and 39 that indicating the ambivalent range. In these four sub-scales, the sub-score on Systematicity (38.84) was close to positive disposition towards critical thinking. In contrast, Truth-seeking score close to negative disposition towards critical thinking.

The total mean score for group of Samoan students was above 275 that indicates ambivalence towards CT. Samoan students were strong in three sub-scales regarding Analyticity (43.23), Confidence (45.31) and Inquisitiveness (48.19). While students had negative disposition towards critical thinking on Truth-seeking (27.93). They scored in the ambivalent range on three of seven sub-scales including, Open-mindedness (37.64), Systematicity (39.90) and Maturity (33.17). However, in these three sub-scales, like Chinese students the score on Systematicity was almost 40 that indicates positive disposition towards critical thinking.

Looking at the mean scores by three groups, the cross-sectional data show the similarities between Chinese students and Samoan students. However, to understand more about the characteristic of critical thinking dispositions for each three group of nursing students, the analysis of this study further compared the total mean score as well as means of sub-score between three groups. The results of ANOVA followed by the post-hoc Tukey's HSD were given in Table 4. The ANOVA indicated that there was statistically significantly differences between three groups on the total score ($F=3.66$,

Table 4 : Sub-Scale and Total score on CCTDI of Japanese, Chinese and Samoan students and nurses

	G1 Japan (n=165)		G2 China (n=300)		G3 Samoa (n=70)		Tukey'sHSD			
	Mean	SD	Mean	SD	Mean	SD	F ratio	G1-G2	G1-G3	G2-G3
Total scores of CCTD	271.84	22.04	277.75	23.18	275.37	21.21	3.658*	*	n.s.	n.s.
Truth-seeking	34.87	5.17	31.38	5.32	27.93	5.91	45.88***	*	***	***
Open-monedness	41.78	4.15	37.52	4.73	37.64	4.99	48.46***	***	***	n.s.
Analyticity	36.59	4.48	42.34	5.38	43.23	4.95	78.73***	***	***	n.s.
Systematicity	35.13	5.48	38.84	5.05	39.90	5.08	33.56***	***	***	n.s.
Confidence	33.10	7.51	44.47	6.04	45.31	6.79	173.19***	***	***	n.s.
Inquisitiveness	46.64	5.48	46.28	5.77	48.19	5.13	3.28*	*	n.s.	*
Maturity	43.73	5.21	36.93	6.51	33.17	7.34	92.35***	***	***	***

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

Table 5 Sub-Scale and Total score on CCTDI among Japanese nursing students and nurses

	G1 : General (n=82)		G2 : Transfer (n=16)		G3 : Nurses (n=67)		F ratio	Tukey'sHSD		
	Mean	SD	Mean	SD	Mean	SD		G1-G2	G1-G3	G2-G3
Total scores of CCTD	273.38	21.23	284.44	20.33	266.94	22.22	4.67*	n.s.	n.s.	*
Truth-seeking	34.18	4.79	34.00	5.98	35.91	5.32	2.34	n.s.	n.s.	n.s.
Open-mindedness	42.90	3.75	43.31	2.58	40.03	4.33	11.32***	n.s.	***	***
Analyticity	36.78	4.60	37.88	4.79	36.06	4.25	1.2.2	n.s.	n.s.	n.s.
Systematicity	35.05	5.31	36.25	6.57	34.96	5.47	0.37	n.s.	n.s.	n.s.
Confidence	33.11	7.21	37.50	7.21	32.04	7.67	3.51*	n.s.	n.s.	*
Inquisitiveness	47.56	4.82	49.69	3.54	44.79	6.05	8.08**	n.s.	**	**
Maturity	43.79	5.39	45.81	4.26	43.15	5.12	1.72	n.s.	n.s.	n.s.

*p<0.05

**p<0.01

***p<0.001

P<.05) as well as all sub-score of CCTDI; Truth-seeking (F=45.88, P<.001), Open-mindedness (F=48.46, P<.001), Analyticity (F=78.73, P<.001), Systematicity (F=33.56, P<.001), Confidence (F=173.19, P<.001), Inquisitiveness (F=3.28, p<.05), Maturity (F=92.35, P<.001).

The Tukey's HSD indicated that the total mean score was statistically lower for Japanese students (271.84) than those for Chinese students (277.75). However, there was no difference between Japanese students and Samoan students on total mean score.

It is interesting to find that the HSD revealed that both sub-scores of Open-mindedness and Maturity were significantly higher for Japanese students than other two groups (P<.001). In contrast, Japanese students had significantly lower score on three sub-scales regarding Analyticity, Systematicity and Confidence than those for Chinese students as well as Samoan students (P<.001).

Looking at the mean scores by three groups, the cross-sectional data show the similarities between three groups on Truth-seeking that tend to be weak comparing other sub-scale scores. By contrast, the each means score on Inquisitiveness held by three groups were higher than other mean scores on sub-scale.

Comparison of the scores between groups within Japanese and Chinese participants.

The data analysis further examined the differences in the critical thinking dispositions between the groups within both Japanese and Chinese participants. The results of the comparison of the scores between three groups within Japanese partic-

ipants were presented in Table 5.

The results of ANOVA indicated that there was statistically differences between three groups within Japanese on the total score as well as several sub-scales. It was interesting to find that Tukey's HSD indicated that the total mean score was statistically lower for the third group (registered nurses) than those for second group (Transfer students). It is further identified that registered nurses showed significantly lower scores on two sub-scales regarding Open-mindedness and Inquisitiveness compared with the other two groups. Moreover, registered nurses had a significantly lower score on Confidence than those for transferred students.

The results of the comparison of the scores amongst three groups in Chinese students were shown in Table 6.

The ANOVA indicated that there were statistically significant differences between three groups within Chinese students on the total score as well as several sub-scales. Tukey's HSD indicated that the total mean score was statistically higher for the second group than those for other two groups. Furthermore, the second group showed significantly higher score on several sub-scores including Analyticity, Systematicity, Inquisitiveness and Maturity. In addition, even though there were no statistically differences between three groups in all mean scores, all mean scores for second groups were higher than those for other two groups. In contrast, the third groups showed lower scores for total as well as sub-scales than others.

Table 6 Sub-Scale and Total score on CCTDI among Chinese students

	G1 : North east China		G2 : Central China		G3 : Western China		F ratio	Tukey'sHSD		
	n=100		n=102		N=98			G1-G2	G1-G3	G2-G3
	Mean	SD	Mean	SD	Mean	SD				
Total scores	264.57	19.00	288.94	21.18	279.56	22.52	34.74***	***	***	**
Truth-seeking	30.83	4.72	31.75	5.51	31.54	5.70	0.83	n.s.	n.s.	n.s.
Open-mindedness	36.32	4.25	38.56	4.31	37.62	5.34	6.03**	**	n.s.	n.s.
Analyticity	40.01	4.48	44.30	4.72	42.67	5.97	18.27***	***	***	n.s.
Systematicity	37.18	4.14	39.77	5.62	39.55	4.90	8.52***	***	**	n.s.
Confidence	43.28	5.61	45.90	5.96	44.21	6.32	4.98**	**	n.s.	n.s.
Inquisitiveness	43.37	5.96	49.05	4.43	46.37	5.39	29.09***	***	***	***
Maturity	33.58	5.28	39.58	5.76	37.59	6.95	25.87***	***	***	n.s.

*p<0.05

**p<0.01

***p<0.001

The discussion of the findings

In this study the critical thinking abilities for nursing students and nurses of three countries; Japan, China and Samoa were examined. The findings indicate that in the total as well as the majority of sub scale areas of critical thinking held by the nursing students and nurses of these three countries, participants overall showed an ambivalence disposition towards critical thinking. When findings of this study were compared with studies in the west^(3,46), both total score and all sub-scores of this study were lower. Furthermore, the analysis of the total scores as well as several sub-scores between these three groups reveals some differences. The participants' cultural and educational background can be possible factors for these findings.

The finding of the study indicated that the groups of Japanese nursing and nurses showed an ambivalent disposition on both total and sub-scores. They also scored lower than the findings of previous studies conducted in western countries. Furthermore, even though there was no statistically different between the groups of three countries in all mean scores, Japanese nursing students and nurses scored lower than other groups from the other two countries in several sub-scales. These findings are supported by previous literature. Ishizaka (1999)⁽²³⁾ has indicated that the participant's prior learning was rote learning rather than formulating questions and researching answers problems through reflection and critical thinking. Yamashita (1998)⁽²⁵⁾ fur-

ther revealed that the current nursing education environment in most of faculty are still based on the teacher-student relationship rather than autonomy and responsibility for independent learning and required to cultivate critical thinking. Additionally the predominantly teacher-centered approach means that teachers themselves are not familiar with creating a learning environment that encourages self-directed learning. These limited teaching methodologies and learning milieu may be a compounding issue in relation to the participant's lack of confidence with critical thinking abilities when attempting to solve problems or questions through self-directed learning.

The current clinical learning environment may also be factor for the low score. Petrini (2001)⁽¹⁶⁾ and Kusama (1998)⁽²⁶⁾ have indicated the student's limited clinical learning opportunities to integrate classroom theories into their clinical as well as to reflect their clinical experiences. It is felt that this limited learning approaches may not be conducive to enhancement of critical thinking.

The ambivalent score may also be supported by the previous literature. Minami (1995)⁽³²⁾ cautions that Japanese nursing scholars lack analytic skills to discern the cultural appropriateness of borrowed ideas and theories from western countries. This consequently reflects the evidence that few nursing theory books by Japanese nurse have been published and most of imported and translated nursing books from western nursing are not relevant for Japanese culture. This means that nursing educators may

not be clearly understand about the meanings or concepts of critical thinking as well as the ways to teach critical thinking because the concepts of critical thinking have been directly developed in western nursing and education strongly in fluencnced by diverse philosophy. It is possible that these academic factors can reflect on contribute for limited critical thinking skills of the Japanese nursing students and nurses.

Further factors contributing to the low scores can be related to the existing hierarchical structure in nursing education environments. The hierarchal system has ignored contemporary knowledge of young educators and the discussion of new avenues to teach critical thinking abilities⁽²⁸⁾. This has contributed to the fact that most of the nursing faculties in Japan have not introduced the concept and meaning of critical thinking⁽³¹⁾. This educational environment could hinder the development of nursing students' critical thinking abilities.

While, one would hope that the positive scores on Inquisitiveness, Open-minded and Maturity has shown by the nursing students and nurses of Japanese group will support the devecompment of critical thenking abilities. The finding further indicated that participant of Japanese group showed particular strength in critical thinking skills regarding Open-minded and Maturity, in comparison with the participants from the other two countries. It may be said that like other participants in west, Japanese nursing students and nurses may be encouraged to be actively open-minded to allow other opinions that differ from their own in making altering judgment. However, the reason for this finding is unknown. Further research on the exploration of the impact on teaching methodologies on critical thinking is required.

In analyzing the critical thinking dispositions scores amongst the three groups: general students (freshmen and Junior), transfer students and registered nurses in Japan, it is interesting to find that several areas of critical thinking such as Open-mindedness and Inquisitiveness for Japanese registered nurses were significantly lower than those of the other two groups. The explanation for this

finding is no doubt related to the current nursing practice environment. The existing traditional values of Japanese nurses and the influence of the physician's control is still causing inhibited motivation and autonomy for self-determination and professional judgment^(29,30). It could be postulated that this limited nursing practice in Japan may be hampering Japanese nurses from developing critical thinking abilities thus professional practices.

Another possible factor for this finding could be related to the educational backgrounds of registered nurses. In this study, most registered nurses had graduated from the three-year diploma nursing school. The teaching approaches in these nursing programs are based on didactic approaches illustrated by rote learning and dominate teacher-student relationship than those in baccalaureate program. It may be possible that this limited approach could hinder the development of nurses' critical thinking skills.

The cultural and educational contexts can be related to the findings held by Chinese nursing students. The study indicated that like Japanese nursing students and nurses, participants from Chinese baccalaureate nursing programs demonstrated ambivalence disposition towards critical thinking on both total and sub-scores. Chinese nursing students also scored lower than the finding of previous studies conducted in western countries. The potential factor for the findings can be related to the participants' prior educational background as it reflects similar experiences of Japanese nursing students and nurses.

The previous literature⁽⁴⁴⁾ revealed that traditonal teaching approaches have emphasized rote learning and based on medical model rather than fostering life-long learning that require the students to explore their own questions through self-directed learning. These academic factors still exist in the contents of baccalaureate program in China and possibly reflect on creating the participant's lack of confidence and vulnerability with their abilities to solve problems through self-directed investigation of available resources and information.

Other aspects of Chinese education can be factors

contributing to ambivalent scores. Like Japanese nursing education, most of faculties in China have borrowed ideas or theories from western countries. However these ideas and theories may be unworkable for Chinese nursing due to the lack of critical consideration for the conflict of Chinese nursing orientation and western orientation⁽⁴¹⁾. This consequently reflects on creating the difficulties for nursing educator in China to teach critical thinking because the concepts of critical thinking have been directly imported from west.

However, the total mean score of Chinese nursing students was highest amongst three countries and statistically higher than those for Japanese nursing students and nurses. Furthermore, participants in China had a positive range disposition on Analyticity, Confidence and Inquisitiveness. The reasons for these findings cannot be clearly identified. However one possible factor may be related to the current educational movement from traditional approach to alternative approaches in teaching methodologies. The literature revealed that the currently the nursing faculties are likely to reflect their traditional teaching methods and practices and to accept new alternative approaches. For instance, foreign educated young faculties are being promoted and given more teaching opportunities. Furthermore now nurses are required to take continuing education for renewal of their license to practice. It could be said that these positive changes may be productive of critical thinking abilities of Chinese nursing students.

In comparing the scores of nursing students between three different baccalaureate programs in China, there were statistically differences between three groups in total mean score as well as majority of sub-scale scores. This findings may support the assumption that the receptivity of alternative approaches for critical thinking between three baccalaureate nursing programs may be different thus creating different scores between three groups. However, to demonstrate this assumption, further study on examination of the relationship between the receptivity of alternative education for development of critical thinking and the students' critical

thinking levels is required.

The Samoan culture and nursing education may influence Samoan nursing students' critical thinking. In analyzing the critical thinking dispositions scores amongst Samoan nursing students, like participants in Japan and China, the students had lower scores than students in previous studies conducted in US. Samoan nursing students showed positive ranges in several areas of critical thinking skills. The explanation may be allied with the current development of Samoan nursing education.

During the establishment of baccalaureate nursing program in Samoa since 1992, the teaching and learning methodologies have been revised to include more focus on the development of nursing students' critical thinking abilities. It may be possible that this change has positive impact on fostering Samoan students critical thinking skills.

However, the main factors could be the unique aspects of Samoan nurses' practice that are quite different from nursing practice in Japan and China. In the literature review, Samoan nursing is more active in the community, the village and home of patients due to the impact of cultural values and belief of Samoans about nursing or health care. Samoan nurses in community are therefore required to develop their critical thinking for independent practices, which does not require the presence of a physician for an order. This consequently reflects the fact that unlike nurses in Asian countries such as Japan and China, Samoan nurses are highly respected by the members of the community. In this study, the participants had a variety of ages in addition to a variety of clinical experiences. This result could demonstrate that participants in Samoa could be encouraged to develop their creative and analytical thinking through their clinical experiences. However, to support this idea, further exploration on the relationship between the characteristics of traditional Samoan nursing and development of habits of mind towards critical thinking are required.

The implication of the study

Critical thinking has become increasing promi-

ment in nursing education and practice around the world. Currently, nursing academic leaders in three countries; Japan, China and Samoa are recognizing that the ability to think critically is imperative in today's nursing practice and education. Nursing education and practice in these three countries are now going through similar change in the basic educational level of entry level nurses, upgrading nurses in practice educationally, revising curriculum and introducing more interactive approaches to teaching that over time will stimulate critical thinking.

Nursing students and nurses' critical thinking skills in these three countries were examined and compared stimulating the discussion regarding whether the current change in nursing and nursing education can stimulate critical thinking abilities of nursing students and nurses. Findings revealed from this study identify the implication for consideration in several areas: revising curriculum development of nursing education and practice and approaches to teaching for critical thinking in all three countries.

Using the nursing students and nurses' profiles in the three countries, nursing educators in the three countries might better understand the current students and nurses' disposition towards critical thinking. Considering the findings identified from the study, they need to be more flexible and open-minded to reflect their habitual and traditional teaching methods and routine practices and understanding of their influences on students and nurses' critical thinking levels. The participants' previous learning ways described rote learning, medical model and dominant teacher-students relationship may limit the development of the participants critical thinking skills. This may be particularly related to the participants from Japan and China. This suggests that nursing educators need not solely rely on the educational philosophies but need to consider how to integrate alternative approaches for developing critical thinking into implementation of curriculum. To integrate alternative approaches into the content of curriculum, the faculty may need to encourage different and unique perspective for

teaching critical thinking with reducing the hierarchical communication dominate in faculties. Additionally one would suggest that nursing educators might need to develop their analytical skill to discern cultural appropriateness of borrowed ideas and theories from western nursing. These challenges will then reflect in dissolving cultural barrier to adapt new and alternative approaches that will enhance students and nurses' creative and analytical thinking skills.

The study also reveals the consideration for the current professional practices. Nurses in both Japan and China are still low status and illustrated by their limited autonomy and individualism for their practices. This may limit the enhancement of the participants' critical thinking. The study suggests that nursing leaders need to encourage nurses to gain the opportunities for promoting empowerment for professional practices. Working together to develop nursing units will encourage both nurses and students to use critical thinking in their professional practices.

Understanding the outcomes of this study will promote reflection of the current education intention to develop critical thinking at implementation levels thus offer the ongoing development of nursing education and practice in all three countries.

Limitations of this study and recommendations for further research

Throughout the study, the limitations of the study are identified. Considering these issues, recommendations for further study are provided.

This study does not involve a random sample; generalizations of the study findings were limited based on the small sample size so that no generalizations may be made. Replication of this study with larger groups of students from a variety of schools is required to obtain a greater basis for comparison.

Studies done in the US often correlate other variables or factors with critical thinking disposition. Critical thinking disposition varies in individuals and groups and some longitudinal studies done have indicated that age and education are factors in

the scores, becoming higher at higher levels of education. Longitudinal studies in all of the countries after changes in curriculum and teaching methodologies are recommended for a period. Also additional analysis of data and further investigation looking at the individual in groups and obtaining more demographic data such as educational background, age, clinical experiences and license status that might impact on the disposition to critical thinking. Admission criteria vary by schools and country and may be sought to better understand the student profiles.

Since the instruments were developed in the US, cultural differences could result in some limitations. The cultural and educational values of these three countries are more similar than dissimilar. All have strong traditions of strong authority that should not be questioned. Developing a critical thinking evaluation method that is culturally sensitive for measuring may be seen as a challenge for researchers who are dedicated to enhancing nursing practice.

Limitations can also be related to instrument issues. It is suggested that the CCTDI is too general and has a narrow broad based measure of critical thinking. Thus it may not be sensitive enough to capture discipline-specific critical thinking skills. It is a challenge for the researcher to develop critical thinking evaluation tool that can capture a discipline-specific critical thinking skills. The use of quantitative and qualitative methods to evaluate the critical thinking skills would further extend knowledge.

Acknowledgments : The researchers want to thank the Chinese colleagues, Zhang Yi Jin, Li Xiao Mei for their assistance with validating the Chinese version for clarity and also the Samoan Department of Nursing, The University of Samoa faculty and staff of the nursing department and the Samoan Nurses Association, Dean Noguchi, the local hospital and all the students and nurses who participated in this study to make it possible. Our thanks also go to Yamaguchi Prefectural University to provide the research grant to conduct this study.

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