Educational management in transitionalized world of the Faculty of Architecture and Planning in Thammasat University*

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Abstract: Education reforms in transitionalized world arose first against neo-classical education or "humanistic education" which resembled classical education in many respects, with the most concern being in both majority and minority of students. Besides, they resembled in that their effects force the instructors teach for the tests, to make the curriculums change to standard, to push the students to become the academic entrepreneurs, etc. Necessarily, the academic of the Faculty of Architecture and Planning in Thammasat University has been adjusted. Then, this quantitative in research approach focuses on educational management guidelines. The open-ended questionnaire and structural interview are main instruments. Percentage, mean, mode, standard deviation, F-test and Pearson-correlation were used for analyzing the data. The research finding reveals that the mainstream and the alternative aspects in the educational management guidelines concern with external factors such as the entrepreneurs' satisfaction, the standardization and the students' voices. The entrepreneurs' satisfaction relates to the general qualifications, identifications and abilities of the graduates under the trend of selecting between government universities and private universities in rate of 3:1. The standardization means new curriculum structure: 25% of general basic courses, 10%-15% of elective courses and 60%-65% of architectural program courses. The students' voice indicates the reduction on central control and standardized testing.

Key words: transitionalized world; educational management; entrepreneurs' satisfaction; standardization; students' voices

1. Introduction/rationale—Impacts from transitionalized world

Globalization, the new term which is complex and abstract phenomenon, has come into popular favor in the last seven years referring the post-cold war international economic paradigm. It has had a profound effect on the economics of nations worldwide. A complex and abstract phenomenon expands and accelerates the movement and exchange of ideas and commodities over vast distances. Thailand, one of the countries in South East Asia, is seemingly ubiquitous from globalization's effects.

The effects of globalization encompass a range of Thai social, Thai political, Thai economic, Thai cultural and especially Thai education changes. Then, Thai national strategies must be assimilated, adapted and developed proportionally under the agenda. Besides, Thailand government's policies in education and educational research, to transmute under integrated principles, become the mechanic for Thailand development in this transitionalized world.

Globalization of education, heightened quality requirements, changing and increasing customer expectation

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towards quality work-force and stakeholders pressures have led to the need of implementing quality assurance in education. Quality assurance (QA) is a standard-based quality assurance aiming at providing public confidence in the ability of higher education institutions (HEIs) to regulate standard in a diverse, flexible and mass system to higher education. With the implementation of quality assurance, architecture programs of higher education institutions, which are ISO (International Standardization Organization) certified, are now at a crossroad for whether to maintain the ISO certification or to concentrate on quality assurance only.

Quality assurance in education has applied the theoretical and conceptual foundation of total quality management (TQM) and performance and planning management as the panacea for the strife for education quality. The degree of success for the qualities strive is debatable as quality assurance and strategic implementation that treated as two contending rather than two collaborative partners. As educational institutions for the development of human resources and agents of social change, universities as one kind of the educational institutes need to pay critical attention to human resources, particularly the graduates.

Many education experts stated that the graduate is one of the vital elements of the education system. Hence, the graduate is required to have the competencies that can achieve the high-quality working standard, which would in turn enhance and improve the overall university-wide quality standing and its image. With the need of holistic approach in integrating quality assurance with the strategic planning, as well as the need to train the man powers/graduates of architecture program which are suitable for an era of rapidly evolving body of knowledge, several architecture schools/programs now adopt the PBL (problem-based learning) curriculum. It is possible for architecture schools/programs to start on a sound PBL philosophy, but they soon deviate from it and yet claim to be problem-based learning-driven. Then, the sustained and successful PBL curriculums are in a flux by one of the major factors named “graduates”. Graduates of architecture schools/programs must possess two synergistic characteristics: an internationalization of the PBL philosophy (to ensure quality) and enthusiasm (to ensure growth). If the graduates are conversant with the philosophy but lack enthusiasm, the curriculum will not grow. On the other hand, enthusiastic graduates lack philosophy; it is a recipe for curriculum failure.

For higher education of quality standard, it is necessary to find more about the educational management guidelines especially for the architecture programs of the Faculty of Architecture and Planning in Thammasat University in this transitional world. Based on that, this paper has three main research questions: (1) For educational management, what should be managed? (2) What should be transitionalized? (3) How does the faculty’s academic have been adjusted during transition? The main objective of this quantitative in research approach has been planned to explore the inter-relationship and inter-dependency between the strategic plan in education and entrepreneurs’ satisfaction or graduates in Faculty of Architecture and Planning of Thammasat University—users expectation in the labor force and job market. The research findings will lead to the standardization of the graduates, the curriculum development guidelines and the trend of job market need hopefully.

2. Literature review

2.1 Standard and quality

In general, the word “standard” means the basis for comparison that is a reference which point against other things, it can evaluate, namely, criterion: The ideal in terms of which something can be judged, the level of performance on the criterion being assessed that is considered satisfactory in terms of the purpose of the evaluation. Besides these, there are three major categories of standards, related to various purposes: First is about

the developmental standards that specify improvement levels to attain and use for professional development and self-assessment. Second is the minimum standard that designates the level below which performance is not acceptable and used for such purposes as licensure and job assignments? Third is about the desired performance standards that reflect what is regarding as accomplished or effective teaching and typically used for such purposes as promotions, awards and certification, etc.

2.2 Quality definition

From http://hyperdictionary.com (2007), there are six entries of "quality" definition:

(1) [n], a degree or grade of excellence or worth; the quality of students has risen; an executive of low caliber;

(2) [n], the distinctive property of a complex sound (a voice or noise or musical sound); the timbre of her soprano was rich and lovely; the muffled tones of the broken bell summoned them to meet;

(3) [n], a characteristic property that defines the apparent individual nature of something; each town has a quality all its own; the radical character of our demands;

(4) [n], high social status; a man of quality;

(5) [adj], of high social status; people of quality; a quality family;

(6) [adj], of superior grade; choice wines; prime beef; prize carnations; quality paper; select peaches.

Furthermore, it is defined as an essential and distinguishing attribute of something or someone, a degree or grade of excellence or worth and a subjective term for which each person has his or her own definition.

In technical usage, quality has two meanings: the characteristics of a product or service that bears on its ability to satisfy stated or implied needs; and a product or service free of deficiencies, degree of excellence. The quality of assessment evidence characterized primarily by authenticity of the tasks, reliability of sample of evidence and the credibility of the evidence for the intended purposes, etc.

2.3 Architecture program

It is known that most architecture programs in this world usually offer vision and demand commitment, throughout a variety of options and terms of study. The purposes of architecture curriculum are to educate expressive and skillful designers, and prepare them to act as thoughtful, effective members of society and the professional of architecture. Besides these, it seems to be interconnected and integrated into sequences of design studio and parallel coursework, moving between values of technology and craft, emphasizing both theory and practice and considering of site, material, assembly and purpose (http://www.arch.wustl.edu).

Architecture education's heart is the design studio. However, it is necessary to study more: the sequence of courses in history and theory that place architecture in the context of culture, politics, technology and philosophy; and the sequence of courses in technology sequence that build knowledge and skills around the engaging technological and practical issues within architecture.

Truly, all above reflect that architecture programs of all educational institutes in the world must concern about three main parts of curriculum: the design studio, history and theory sequences and technology sequence.

The architecture programs in Thailand of higher education of both the government and the private sectors seem to be like other countries, but may differ in details and period for study.

In conclusion, the goal and vision statements of the Faculty of Architecture, the architecture program and the architecture schools in Thailand consist of:

(1) Developing human resources that serve the best interests for the country, society, university and the faculty or school of architecture consecutively;

(2) Achieving academic excellence, in accordance with university's vision (Unity is the foundation for

achieving excellence, quality and efficiency are the goal and means of achievement, and continuous change is normal for a dynamic organization);

(3) Building up the future towards the globalize society with initiative and creative thinking in new paradigm (It is essential that the new problems should never be solved within an old conceptual framework, while maintaining a balance in art and culture transition in the development of science and technology);

(4) Producing high-quality architects of international standard to serve the profession;

(5) Producing competent architects who are specialized in particular areas of architectural profession;

(6) Producing competent and ethical graduates who could become leaders in various dimensions of the profession, promoting and enhancing substantially the development of the profession, and who will responsibly contribute to the development of the country;

(7) Producing competent architects with academic and research capabilities, who are keen to develop themselves and the profession continually?

All statements above give the purpose that learners/students who study this program must learn many branches of knowledge: social, human, economics, technical problems, technology, etc. However, it is not necessary to be strict or precise about the proportions in architecture curriculum because the proportions are as the theoretical thoughts of the architects and the mathematical techniques involved.

In Thailand, there are many higher education institutes that teach the 5-year architecture program, and except that, the Thammasat University teaches the 4+2 program, though they are unlike about the time for study, they are similar about credits for study.

The more important these details are for educational management, the more important the man-factor is, too. Man-factor means all persons who concern with learners/students such as instructors, peers, administrators and entrepreneurs. Be provable, learning process of learners/students occurs everywhere and everytime with textbooks, magazines, internet, etc., under the control of educational system. They must learn with guide or instruction from the man-factor. If the interaction among the learners/students and instructors, peers, administrators and entrepreneurs progresses positively, they can learn well, be good at architectural subjects and be the best indicator for quality assurance.

2.4 Quality and education reform

Thai education system comprises of four levels: pre-school, primary, secondary and higher education. Thailand had launched the education reform in 1966 to enhance the quality of education until educational excellence achieved in the year 2007. Goal and objectives of education reform, 1966-2007, were to realize the potential of Thai people to develop themselves for a better quality of life, develop the nation for peaceful co-existence in the world community and create learning individuals, organizations and society.

The education reform has been conducted in four areas: school/educational institute reform, teacher and educational administrator and personnel reform, curriculum reform and administrative reform. However, today's university has given up much of that automatic praise. It is common to hear academics complain about the sheer rudeness that they feel from the world around them. It may occasionally be bad manners, but often they are resenting the amount of administrative handling that is typical of modern civilization and the civilized units called universities.

Universities asked for developing and applying knowledge to complex social and economic issues. This requires a new level of interconnectivity and engagement with those concerned about the issues together with the recognition that people outside the academy are professionals demanding of their own respect as knowledge workers and knowledge generators in their own right. In turn, this requires collaboration and mutual respect in

place of the unilateral respect that they expect to be accorded as knowledge experts ("professors"). The according of respect to academics as knowledge experts has declined as knowledge has democratized and societies have rebelled against "closed shop" arrangements seen as favoring knowledge elites. These different ways of working require not only the different mental models and behaviors and the ways of thinking, but also new processes and different types of infrastructure of the educational institutes.

The understanding and knowledge about how to manage knowledge based on organizations and knowledge workers is nascent. There are no clear road maps to follow, although there are some organizations. There are differences among the understandings of different groups within the society—government, parents, learners/students and employers. Each one has different view on "What university experience is or should be".

Moreover, the announcement of Premier Bracks on the four pillars of learning was contained in UNESCO's (United Nations Educational, Scientific and Cultural Organization) Delors Report. These four pillars of education for life are learning to know, learning to do, learning to live together and learning to be. Then instructors' functions must go ahead towards student-based learning. Instructors must use more information and innovations and try to develop new methods of teaching. Teaching evaluation or teaching assessment has two kinds: pretest-posttest and E1/E2 standard. Because of the complexity of higher education, teaching evaluation has stressed only on traits and teaching behaviors of instructors such as responsibility, teaching techniques, ethics, etc.

Impliedly, it is more difficult to study about the students'/graduates' quality in architecture programs from instructors' qualities, entrepreneurs' satisfaction, the curriculum and the learning process. Then, students'/ graduates' quality in architecture programs seems to be as the framework (as shown in Figure 1).

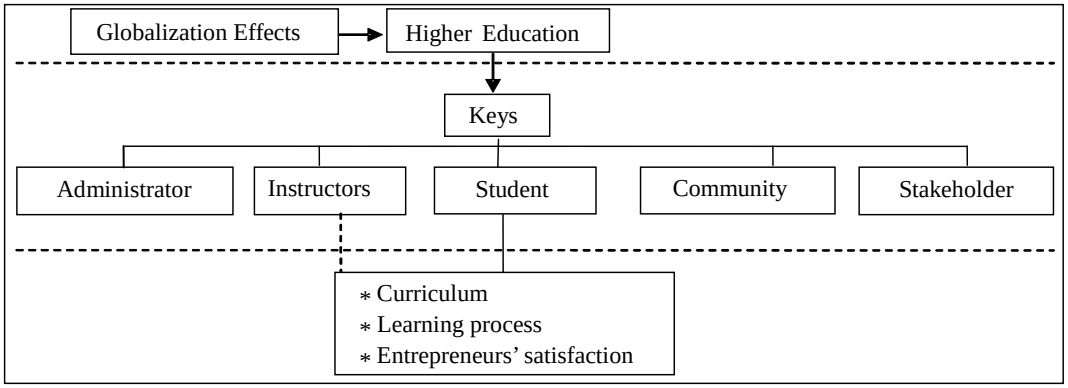

Figure 1 Conceptual framework for research

However, in Thailand, the research about entrepreneurs' satisfaction towards the graduates is scant. Most researches emphasize on graduates' satisfaction in working. Though this research must lean on many theories or concepts such as human capital theory, the Herzberg's two-factor theory, the achievement theory, the Hoppock's theory about measuring job satisfaction, the need fulfillment theory, the reference group theory, the hierarchy of need theory, the ERG (existence, relatedness and growth) theory, the acquired need theory, the expectancy theory, etc. For this research, all mentioned theories were used for finding factors that make entrepreneurs satisfy with the graduates and the trend of graduates' properties.

3. Research methodology

Based on the three main research questions and the main objective, this quantitative in research approach has

been planed to explore the inter-relationship and inter-dependency between the strategic plan in education and entrepreneurs' or graduates' satisfaction in the Faculty of Architecture and Planning in Thammasat University—users expectation in the labor force and job market. The research findings will lead to the graduates' criteria, the curriculum development guidelines and the trend of job market need hopefully.

The open-ended questionnaire and structural interview are main instruments. The open-ended questionnaire has been developed and created under the measurement theory. It has three parts with five-level scaling. It had been tested about the internal consistency with alpha coefficient (0.96). The structural interview by phone concerns with information about the policy and the trend about manpower of each entrepreneur or organization. Moreover, in this research data from secondary source has been used, too.

The research population or key informants are eighty-seven entrepreneurs in Thailand: government offices, companies or limited partnership, education institutes and others such as state enterprises, proprietor and freelance factories. Necessarily, these entrepreneurs have to run an architectural business and work with architectural graduates from the Faculty of Architecture and Planning in Thammasat University. Only forty-three samples are willing to share data for this research.

Quantitative data from the open-ended questionnaire have been analyzed by percentage, mean, mode, standard deviation, F-test (ANOVA) and Pearson-correlation, and qualitative data from the structural interview have been analyzed by content analysis technique.

The quantitative data are about the entrepreneurs' satisfaction toward the graduates on six parts: academic/knowledge, professionalism, research skill, identity, qualification and abilities. The qualitative data are about types of organizations or enterprises, working position, organization services or enterprises' welfare, number of officers or members of enterprises and organization's decision about the graduates.

Beneficially, results of this research have to be useful for universities or organizations that relate with the graduates. Overall, the most important proposition from this research should reflect the educational management guidelines that can lead especially the Faculty of Architecture and Planning in Thammasat University to be the smarter leader in architecture.

4. Research findings

The correlation between the faculty's strategies and the entrepreneurs' satisfaction indicates that there are three mainstream and alternative aspects in educational management guidelines for the Faculty of Architecture and Planning in Thammasat University: the entrepreneurs' satisfaction, the standardization and the learners/students' voices.

By the entrepreneurs' satisfaction, it is found that the entrepreneurs in Thailand including government offices, companies or limited partnership, education institutes, and others such as state enterprises, proprietor, and freelance factories, run an architectural business, which are working with one to five architectural graduates from the Faculty of Architecture and Planning in Thammasat University. Data from all graduates of the Faculty of Architecture and Planning in Thammasat University have pointed out that seventy-five percent of the graduates like to work in private companies, fifteen percent of them like to work in government offices, seven point five percent like to work in the education institutes and two point five percent like to work in other enterprises such as state enterprises, proprietor and freelance factories respectively. In addition, these are in accord with graduate-producing goal of the faculty: architecture program, interior program and planning program in rate of 85:

12.50: 2.50 respectively.

To consider sizes of organization, sixty-two point five percent of graduates of the faculty have worked in small organizations (<50 people), twenty-five percent have worked in large organizations (<101 people) and twelve point five percent have worked in medium organizations (<51-100 people) respectively.

To consider the welfare, twenty-one percent of graduates have major expenses: traveling expenses, food expenses paid per day and bonus. Subvention, bail and emergency medical fee are minor expenses that added in for some part of entrepreneurs. However, all entrepreneurs who employed graduates from the faculty have given more precedence to general qualification than other qualities of the graduates especially, such as working responsibility (mean=4.65), being patience (mean=4.60), loyalty to organization (mean=4.42), being able to learn more about work/tasks (mean=4.40), respecting the commanders (mean=4.37), good relation (mean=4.32), knowledge about tasks or work (mean=4.25) respectively. However, all entrepreneurs have been more interested in general qualifications than other qualities, no significant at the 0.05 level. This means that the graduates' criteria should reflect from the general factors and the specific factors. Furthermore, these results had accorded with finding of Ratch (2006) who studied about the factors in working of architects and the Hertzberg's two-factor theory.

In details, the government offices, companies or limited partnership, educational institutes and others, such as state enterprises, proprietor, and freelance factories, pay lower attention to knowledge of graduates than general qualifications significantly at the 0.05 level. Moreover, the government offices give the most precedence to the graduates' general qualifications such as being patience (mean=4.83), being on timing (mean=4.66) and taking responsibilities in task (mean=4.33) respectively. Moreover, the government offices give precedence to the graduates' abilities such as knowledge about information technology and tasks (mean=4.33), professional knowledge and to be able to learn more about work (mean=4.16). As in the companies or limited partnership, they give precedence to the graduates' general qualification especially about task responsibilities (mean=4.60), being patience (mean=4.53) and loyalty to organization (mean=4.40) respectively. About knowledge, the companies or limited partnership pay more attention to the learning about work/tasks (mean=4.36), knowledge about works/tasks (mean=4.26) and ability in making decision (mean=4.10). Education institutes give more precedence to the graduates' quality such as being to be on timing, taking responsibility, participating and going along with the others for working most (mean=5.00) in contrast with the education institutes which pay attention to being able to learn more about works/ tasks (mean=5.00) and the ability in making decision (mean=4.66).

To consider sizes of organization, small organizations (<50 people), medium organizations (<51-100 people) and large organizations give precedence to the graduates' qualities differently, no significant at the 0.05 level. In addition, all sizes of organization stress most on graduates' general qualification of both knowledge and abilities. The trend of selecting the graduates from the Faculty of Architecture and Planning in Thailand focuses on the government universities and private universities in the rate of 3:1.

All types of entrepreneurs almost pay attention to the graduates' characteristic and properties first, especially about the attention in working, the patience, the royalty, the cooperation and the ability orderly. Besides, the entrepreneurs aim at the graduates who have the optimistic leadership. More details about the entrepreneurs' satisfaction are shown in Tables 1 and 2.

From Table 1, all types of the entrepreneurs employ the graduates who have been good at general factors. The general factors comprising the working responsibility, being patience, royalty to organization, respecting the others and good relation are the most important factors that the entrepreneurs pay more attention to. On the other hand, abilities to learn more about work/tasks, knowledge about work/tasks and professional knowledge are the

issues of the specific factors that the entrepreneurs are interested in but do not pay more attention to.

Table 1 Mean and standard deviation of entrepreneurs' opinion toward the graduates' quality for applying the job

Entrepreneurs' opinion toward the graduates' quality for applying the job	Mean	Standard deviation	Interpretation
specific factors	3.9659	0.31471	high
(1) academic knowledge	3.8250	0.59431	high
(2) professional knowledge	4.1750	0.67511	high
(3) research ability/skill	3.3000	0.91147	average
(4) to listen to others opinions	4.1250	0.60712	high
(5) knowledge about work/tasks (job-relevant knowledge)	4.2500	0.54302	highest
(6) Thai language ability/skill	3.8500	0.66216	high
(7) foreign language ability/skill	3.4000	0.90014	average
(8) problem solving ability/skill	4.1250	0.72280	high
(9) information technology skill	4.1000	0.67178	high
(10) ability to learn more about work/tasks	4.4000	0.70892	highest
(11) computer ability/skill	4.0750	0.69384	high
general factors	4.3675	0.39444	highest
(1) academic ambition	4.3000	0.68687	highest
(2) on timing	4.3000	0.68687	highest
(3) good relation (interpersonal relation)	4.3250	0.65584	highest
(4) to respect the others	4.3750	0.62788	highest
(5) to be patience	4.6000	0.54538	highest
(6) royalty to organization	4.4250	0.50064	highest
(7) working disciplines	4.2500	0.58835	highest
(8) emotional control	4.2500	0.66986	highest
(9) working responsibility	4.6500	0.48305	highest
(10) to participate and go along the others for working	4.2000	0.64847	high
Entrepreneurs' opinion (total) toward the graduates' quality for applying the job	4.1571	0.30121	high

From content analysis about these phenomena, it is found that the reason that the entrepreneurs pay more attention to the general factors than the specific factors is about the natures of architectural work. Confirming research findings, there are the works of Ratch (2006) *Towards Quality Improvement of Architects in Responsive to Organization Need* and Pornphan and others (2007) *Entrepreneur's Satisfaction toward the Graduates of the Faculty of Architecture and Planning in Thammasat University.* It reflects that architects under the job market's need must have all of these factors. There are the relation factors (consisting of royalty, self-adaptation and language ability), the individual factors (consisting of personality, habit and merit and ethics), the self-development factors (consisting of understanding in cultural and system of the organization), the knowledge factors (consisting of research ability, marketing ability and presentation techniques) and the professional factors. Besides, these findings harmonized with the two-factor theory of Herzberg, too.

The findings above reflect the trends of job market's need in working, the main factors which are both the supporters and obstacles for the graduates are their qualities, qualifications, properties and abilities (see Table 2). They are written like this function:

$$\text{Jobless}=f\ (X_1+X_2+X_3+X_4)$$

When X_1=low quality; X_2=low qualification; X_3=bad property; X_4=uncompleted ability.

Table 2 Entrepreneurs' satisfaction toward the graduates of the Faculty of Architecture and Planning in Thammasat University diving by entrepreneurs' types

Entrepreneurs' types	Entrepreneurs' satisfaction toward the graduates of the Faculty of Architecture and Planning in Thammasat University			
	Qualities	Qualifications	Properties	Abilities
Government offices	-be patience; -be on timing; -take responsibilities	respect the commanders	good vision	information technology
Companies or limited partnership	-take responsibilities; -be patience; -be able to learn more about work/tasks	good relation	working responsibility	in working with the others
Education institutes	-be able to learn more about work/tasks; -on timing; -take responsibilities; -to participate and go along the others for working	-working disciplines; -be patience; -respect the commanders; -good relation	-good vision; -working responsibility; -loyalty to organization; -be honest to work and self; -awareness in roles	-information technology; -adaptation to organization; -urgent solving
Others: state enterprises, proprietor, freelance factories	-academic abilities; -research abilities; -to listen to others opinions; -on timing; -to respect the others			

To design the educational management for the Faculty of Architecture and Planning in Thammasat University, three mainstream and alternative aspects in educational management guidelines such as the entrepreneurs' satisfaction, the standardization and the learners/students' voices have become the important parts. All three aspects have led back to the organizing and teaching processes, the developing curriculum, the determining learning standards or requirements, etc.

Furthermore, the entrepreneurs' satisfaction relates to the general qualifications, identifications and abilities of the graduates under the trend of selecting between government universities and private universities in the rate of 3:1. The standardization means new curriculum structure. The students' voice indicates the reduction on central control and standardized testing. In order to be effective, the Faculty of Architecture and Planning in Thammasat University has formulated its own curriculum based on the National Education Act A.D. 1999. Therefore, the curriculum management of the faculty that emphasized intelligence and thinking process development must have the 25% of general basic courses, 10%-15% of elective courses and 60%-65% of architectural program courses (see Table 3).

Table 3 Analysis results of the curriculums comparison

Curriculum structure	Faculty of Architecture and Planning in Thammasat University (%)	Research result of Ratch (2006) (%)	Research result of Pornphan and others (2007) (%)
General basic courses	15-20	25	25
Elective courses	3-5	10	10-15
Architectural program courses	75-82	65	60-65

From Table 3, the suitable curriculum and learning process have concerned with general basic courses, elective courses and architectural program courses. The general basic courses are humanity, social sciences, language, mathematics, sciences, environment, technology and law that can perform qualifications and qualities of the graduates. Elective courses such as finance, marketing, economics, specific low and computer can perform the graduates' abilities.

While architectural program must have the various courses such as program principle and technology courses,

theory and design courses, material and construction technology courses, structure courses, environmental courses, architecture-related courses, etc. They can perform the graduates' profession.

All in all, the education management, guidelines for curriculum development and learning development reflect that the ratios among general basic courses, elective courses and architectural program courses in the curriculum structure must formulated. The learners or graduates potentials have been required for both thinking and working.

5. Research conclusion

Education reforms in transitionalized world arose first against neo-classical education or "humanistic education" which resembled classical education in many respects with the most concern in both majority and minority of students. Besides, their effects force the instructors to teach to the test, make the curriculums change to standard and push the students to become the academic intrapreneurs, etc. Necessarily, the academic of the Faculty of Architecture and Planning in Thammasat University has adjusted. This quantitative research approach focuses on educational management guidelines. The findings of the research reveal three mainstream and the alternative aspects in the educational management guidelines. All aspects concern with external factors such as the entrepreneurs' satisfaction, the standardization and the students' voices. The entrepreneurs' satisfaction relates to the general qualifications, identifications and abilities of the graduates under the trend of selecting between government universities and private universities in the rate of 3:1. The standardization means that new curriculum structure and the students' voice indicates the reduction on central control and standardized testing.

On the curriculum and learning process, the research results point out that the education of faculty can be self-sufficient and sustainable under new curriculum structure: 25% of general basic courses, 10%-15% of elective courses and 60%-65% of architectural program courses. Besides, architectural program courses have to involve more subjects that can develop individual properties and abilities of architectural students. On the other hand, the faculty may not adapt the curriculum structure but adapt the contents in each subject, especially contents about architectural profession, research and particular properties qualification and abilities under real situation learning process.

For graduate quality control, Thammasat University can use these research results for setting and developing the Thammasat graduate quality control.

For labor market, the entrepreneurs' satisfaction can be the catalyst and mechanism for the educational institutes to train or skill the learners/students before becoming the architects and make them to be aware of the transition in job/labor market professionally. In today's information age, jobs that used to require low levels of reading and mathematical skills now require workers to use and understand 1,000 pages of technical manuals and computer-assisted diagnosis and treatment of job-related problems (National Center on Education and the Economy, 1989).

Then, to prepare learners/students/graduates for this new transitionalized era, the curriculum, one of the important things, must be reformed. National Educational Goals and Standards have been developed for a number of subject areas. New curriculum content and teaching strategies ask that learners/students/graduates should not only master factual knowledge but also learn to apply that knowledge by reasoning and solving novel problems. If the reform is successful, content and pedagogical characteristics of instruction will need to change dramatically as will the classroom assessments (Porter & Archbald, 1994).

References:

Architectural student: Key for being entrepreneurial Faculty of Architecture, Thammasat University Thailand. (2004). PrathumThani:

Faculty of Architecture and Planning Thammasat University.
Ashcroft, K. & Foreman-Peck, L. (1996). *Quality standards and reflective tutor, in quality assurance in education (Vol. 4)*. West Yorkshire: MCB University Press, 17-25.
Brown, et al. (1997). *Assessing student learning in higher education*. London: Routledge.
Chamrernrat, J. (2000). *A development of academic performance indicators in the private universities*. Bangkok: Srinakharinwirot University.
Dressel, P. L. (1967). *Handbook of academic evaluation*. San Francisco: Jossey-Bass Pub.
Ellis, R. (1993). *Quality assurance for university teaching*. Buckingham: SRHE & Open University Press.
Miller, R. T. (1974). *Evaluating faculty performance*. San Francisco: Jossey-Bass Pub.
Ministry of Education, Thailand. (1996). *Education reform at the Ministry of Education, Thailand*. Bangkok: External Relations Division, Office of the Performance Secretary. National Center on Education and the Economy. Retrieved from http://nces.ed.gov/pubsearch/getpubcats.asp?sid=091.
Pornphan, V., et al. (2007). *Entrepreneur's satisfaction toward the graduates of the Faculty of Architecture and Planning, Thammasat University*. PrathumThani: Faculty of Architecture and Planning Thammasat University.
Porter, A. C. & Archbald, D. A. (1994). Curriculum control and teachers' perceptions of autonomy and satisfaction. *Educational Evaluation and Policy Analysis, 16*(1), 21-39.
Problems in selection procedures for the Faculty of Architecture and Planning: Student achievement comparison between different selection procedures. (2006). PrathumThani: Faculty of Architecture and Planning Thammasat University.
Ratch, R. W. (2006). *Towards quality improvement of architects in responsive to organization need*. Bangkok: Thammasat University.
Sirichai, K. (1991). A search for structure of the atistical procedure. *Social Science Research, 6*, 45-48.
Somwung, P. & Arunsri, A. (2002). Curriculum and learning reform in Thailand. Paper presented at *Invitational Curriculum Policy Seminar: School Based Curriculum Renewal for the Knowledge Society Developing Capacity for New Times*, Hong Kong.
Suthanu, S. (1996). *Important indicators for student's evaluation, Chulalongkorn University*. Bangkok: Chulalongkorn University.
The development of instructor evaluation and measurement method of the Faculty of Architecture for setting instructor-standard in educational quality assurance. (2006). Bangkok: Thailand Reasearch Fund (TRF) and Commission of Higher Education.
Uthumporn, T. T. (1980). *Teacher evaluation: Research and instrument*. Bangkok: Samanmit Printing.

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National Council of Teachers of Mathematics. (1989). *Curriculum and evaluation standards for school mathematics*. Reston, Virginia: The National Council for the Teachers of Mathematics.
National Research Council. (1989). *Everybody counts: A report to the nation on the future of mathematics education*. Washington DC: National Academy Press.
Oaks, A. (1994). Conflicting goals in the mathematics classroom. In: Buerk, D. (Ed.). *Empowering students by promotion active learning in mathematics: Teachers speak to teachers (Chapter 6) (Report No. ISBN-O-87353-415-8)*. Reston, VA: National Council for Teachers of Mathematics, Inc. (ERIC Document Reproduction Service No. ED 378 045).
Pehkonen, E. (2001). A hidden regulating factor in mathematics classrooms: Mathematics-related belief. In: Ahtee, M., Bjorkqvist, O., Pehkonen, E. & Vatanen, V. (Eds.). *Research on mathematics and science education: From beliefs to cognition, from problem solving to understanding*. Jyvaskyla, Finland: Institute for Educational Research, University of Jyvaskyla. (ERIC Document Reproduction Service No. ED 460 858).
Perkins, D. N. & Tishman, S. (1998). *Dispositional aspects of intelligence*. Retrieved April 1, 2009, from http://learnweb. harvard.edu/alps/thinking/docs/Plymouth.pdf.
Raths, J. (2001). *Early childhood research & practice*. Retrieved March 15, 2009, from http//ecrp.uicu.edc/ven1/raths.html.
Steele, D. (1994). *Helping perspective teachers confront their conceptions about mathematics and mathematics teaching and learning*. (ERIC Document Reproduction Service No. ED 390 848).
Thompson, A G. (1992). Teachers' beliefs and conceptions: A synthesis of the research. In: Grouws, D. A. (Ed.). *Handbook of research on mathematics teaching and learning.* New York: Macmillan Publishing Company, 127-146.
Thompson, A. G. (1984). The relationship between teachers' conceptions of mathematics and mathematics teaching to instructional practices. *Educational Studies in Mathematics, 12*, 105-127.
Van Oers, B. (2001). Educational forms of initiation in mathematical culture. *Educational Studies in Mathematics, 46*, 59-85.

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