

EXPLORING MULTIPLE INTELLIGENCES IN AVIATION BUSINESS PROGRAMS: A COMPARATIVE STUDY OF THAI AND INTERNATIONAL STUDENTS' MULTIPLE INTELLIGENCES

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Abstract—The research is aimed to study the multiple intelligences of the students from aviation business majors, both Thai students from Thai program and international students from international program in order to know the common multiple intelligences of the students in the Bachelor of Aviation Business Programs at Aviation Personnel Development Institute, Kasem Bundit University. The result of the study would benefit to the learning and instructional management in the class for the talent students' program. The research methodology was done by using purposive sampling and distributed questionnaire to 63 Thai and 19 international fourth year students from the aviation business majors who obtained excellent academic results, as the G.P.A. of 3.0 or more (equal to 75% or more). The questionnaire was proven the content validity from the 3 experts of the aviation institute and reliability was 0.941. To analyze the result, the researcher used mean, S.D. (descriptive statistics) to explain the results and compare the results between two groups of students. The results showed that the students from different gender, religions, nationalities and programs have same ranks of the top three highest levels of multiple intelligences as intrapersonal intelligence,

interpersonal intelligence, and visual and spatial intelligence, respectively. In addition, independent sample t-test was used to test the research hypothesis. The result showed that there is no significant difference between multiple intelligence of Thai and international students on the aviation business program. According to the results, the research would help to develop the instructional management for the academic excellent students such as increasing more efficient learning activities in classes to encourage the students' multiple intelligences in the majors, such as putting more self-studies, group activities and multi-dimensional instruments in classes such as models, graphics and digital media. Furthermore, the researchers purposively interviewed the students' learning activities they would like to have in classes. The students confirmed that they prefer the activities using their multiple intelligences, such as researching, brainstorming, and learning with IT.

Keywords— Multiple Intelligences, Aviation Business, Aviation Education

Introduction

Multiple intelligences (MI) are one of the great concepts currently in numbers of countries. It is the concept of how to put the children to the right education field based on their nature (Gardner, 2011).

Each child may have different nature that makes them different in approaching to knowledge, learning and working (Zadina, 2014). Based on the study, Howard Gardner (1983) found that 7 multiple intelligence were with children. Parents, teachers and students should realize their multiple intelligences in order that they can know themselves and also to apply multiple intelligences to increase learning effectiveness. It is also good for teachers since they can develop better learning activities that encourage and promote potential of the students that fit the multiple intelligences. Seven multiple intelligences are verbal-linguistic, visual-spatial, musical, bodily-kinesthetic, interpersonal, intrapersonal and logical-mathematic intelligence (Lunenburg and Lunenburg, 2014). Multiple intelligences are not only for children but it also works for adult education (Tai, 2014)

Aviation Business major is one of the popular majors in bachelor degrees in Thailand nowadays due to growth of the aviation industry in the country. Aviation Personnel Development Institute (APDI), Kasem Bundit University, aim to produce qualified and effective personnel to serve careers in aviation industry, such as flight attendants, ground service officer and related career in the aviation industry. (www.apdi.kbu.ac.th, 2016) The institute has provided the bachelor degree of aviation business programs in both Thai and international program for Thai and international students

To study in both programs, the students must apply multiple intelligences in classes since the subjects are varying from lecture-based, group-activities and operation in mockup. The students are required to utilize multiple intelligences in the study, such as the students have to attend the ground service mockup for ground service subject (fig. 1), in-flight service mockup for in-flight service subject (fig. 2), and

aviation training center for aviation safety and security subject (fig. 3).



Fig. 1 Ground Service Mockup at APDI, Kasem Bundit University

Source: <http://apdi.kbu.ac.th>, Retrieved on December, 12, 2016.



Fig. 2 In-Flight Service Mockup at APDI, Kasem Bundit University

Source: <http://apdi.kbu.ac.th>, Retrieved on December, 12, 2016.



Fig. 3 Aviation Training Center at APDI, Kasem Bundit University

Source: <http://apdi.kbu.ac.th>, Retrieved on December, 12, 2016

Research Objectives

1. To find multiple intelligences of Thai and international aviation business students whose have academic excellence (academic excellence means G.P.A. of 3.0 or more).
2. To compare the result of multiple intelligences of Thai and international students in aviation business (ranking).
3. To test the hypothesis whether there is a significant difference of multiple intelligences between Thai students from aviation business (Thai program) and international students from aviation business (international program).
4. To find the learning activities encouraging the academic excellent students.

Research Questions

1. What are multiple intelligences of Thai and international aviation business students whose have academic excellence (academic excellence means G.P.A. of 3.0 or more)?
2. What are the differences between the result of multiple intelligences of Thai and international students in aviation business (ranking)?
3. Is there any significant difference of multiple intelligences between Thai students from aviation business (Thai program) and international students from aviation business (international program)?
4. What are the learning activities encouraging the academic excellent students in aviation business?

Research Hypothesis

Ho: There is no significant different between multiple intelligences of Thai and international students from aviation business majors.

Ha: There is a significant different between multiple intelligences of Thai and international students from aviation business majors.

Scopes of the Study

Time: Distributing and collecting questionnaires and interview on November, 2016.

Place: Aviation Personnel Development Institute, Kasem Bundit University, Romklao Campus.

multiple intelligences

Howard Gardner (2006) introduced Multiple Intelligence (MI) theory as internal asset in each individual and it drives to success in learning of each individual, particular children. In education psychology, MI theory is considered as 'cognitive or development school' since it is more natured rather nurtured. Numbers of study aims to explore MI in different education field, particularly on the children of primary school but neglecting the higher education level.

Multiple Intelligence (MI) theories explain 7 intelligences as 1) verbal-linguistic intelligence, 2) visual-spatial, 3) musical, 4) bodily-kinesthetic, 5) interpersonal, 6) intrapersonal and 7) logical-mathematic intelligences. They are explained as:

1) Verbal-linguistic intelligence is an ability to use language and words. It also means the ability to interpret the meaning and decoding. This ability is important for communicating.

2) Visual-spatial intelligence is an ability to understand multi-dimensions. The ability is used for art and design. This ability also helps for direction and going distance. It guides the way to go.

3) Musical intelligence is an ability to discern pitch, rhyme and tone. It enables the connection of emotion. The ability of singing, listening and dancing.

4) Bodily-kinesthetic intelligence is an ability to use physical strength and power. The ability is good for operational work and outdoor activities, such as sports, working in the garden.

5) Interpersonal intelligence is an ability to understand and interact with people effectively. The person who owns this ability can work well with group since they understand the needs of people and can deal with people. They are good at making friends.

6) Intrapersonal intelligence is an ability to reflect and understand oneself. The ability allows person to analyze and realize his/her potential. The person with the ability will know how to behave and use their knowledge with particular circumstance appropriately from self-assessment. They are calm and peaceful.

7) Logical-mathematic Intelligence is an ability to analyze and think. The persons who have the abilities are reasonable and good at analyzing. They know accurate answers and good at calculation.

MULIPLE INTELLIGENCES AND LEARNING

People who have different Multiple Intelligence (MI) will learn best when they use their own intelligences. Examples are visual (learning through seeing), auditory (learning through listening), and kinesthetic (learning by doing). Multiples Intelligence demonstrated intellectual ability by different ways (Gardner, 2006 and Tyler and Loventhal, 2011). Learners will learn best when having multiple intelligences as:

1. Verbal-linguistic intelligence learners will learn best when they use words and vocabularies as the association to memory. The learners will use language as the way to connect things.

2. Visual-spatial intelligence learners will learn best when they use their eyes or visual. They enjoy seeing forms and dimensions to understand things such as graphs, charts, models, etc.

3. Musical intelligence learners will learn best when they use music and melody as the ways to study in the content or the subject. The melody and tone will help them memorize and link to the content.

4. Bodily-kinesthetic intelligence learners will learn best when they use their physical movement or do some activities. The learners can learn best when practicing and operating physically, such as playing, moving.

5. Interpersonal intelligence learners will learn best when they study with group and discussing. Some team project or group work may help them to increase understanding of knowledge.

6. Intrapersonal intelligence learners will learn best when they concentrate on themselves and absorb the knowledge on their own. Their source of knowledge comes from their awareness of themselves and accumulated knowledge and experience. They prefer reflection, research and self-study.

7. Logical-mathematic intelligence learners will learn best when they analyze the cases and calculate numbers. The subjects related to the intelligences are Mathematics, Computer, and Accounting etc.

Media and techniques for learning in each intelligence is shown in table I. One activity can include many techniques.

TABLE I
MULIPLE INTELLIGENCES AND MEDIA AND TECHNIQUES FOR LEARNING

Multiple Intelligences	Media and Techniques for Learning
Verbal-Linguistic	stories, essays, vocabulary, poems
Visual-Spatial	digram, graphs, model, table, timelines
Musical	lyrics, melodies, songs, plays, musical
Bodily-Kinesthetic	role-playing, acting, moving, making
Interpersonal	group work, brainstorming, discussion
Intrapersonal	reflection, self-studies, research
Logical-Mathematic	computer, calculation, games, jigsaws

Sources: Adapted from Gilman, 2012 and Hoerr, 2016



Fig. 4 Students served food (Left) and gave newspaper to passengers (Right) as the activities in In-Flight service subject. Source: <http://apdi.kbu.ac.th>, Retrieved on December, 12, 2016.



Fig. 5 Instructor provided lecture in Airline English subject.

Source: <http://apdi.kbu.ac.th>, Retrieved on December, 12, 2016

conceptual framework

The conceptual framework was a combination of the demographic backgrounds of the students and multiple intelligences. The conceptual framework consists of independent variables which are demographic profiles as gender, G.P.A., religion and nationalities and dependent variables which are 7 multiple intelligences. The conceptual framework was shown in fig. 6 (researcher, 2016)

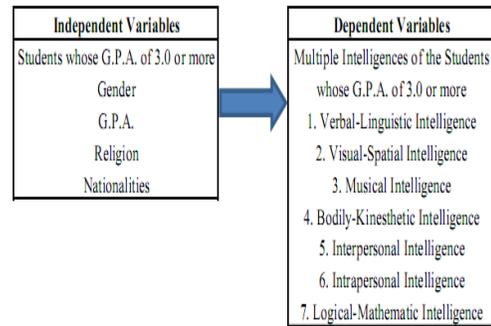


Fig. 6 Conceptual Framework

Source: Researcher, 2016

research methodology

The research aims to explore and compare the multiple intelligences of Thai and international students from aviation business majors in bachelor degree at Aviation Personnel Development Institute and also find the learning activities which promote and encourage the students whose are academic excellent (having G.P.A. of 3.0 or more) in the study. To do so, the researcher developed the research methodology by using a questionnaire (quantitative technique). Purposive sampling was used to pick sample based on the results of students' academic excellences from the Thai and international students whose G.P.A. of 3.0 or more (equal to 75% or more). The students who were sampled must be the graduating students in the fourth year since they have almost completed the course requirement of the programs. Totally, the purposive samples in the study were 63 Thai students (from the total 320 4th Year Thai students of the Thai programs) and 19 international students (from the total of 30 4th year international students of the international program) in the aviation business majors, Aviation Personnel Development Institute, Kasem Bundit University based on the results in November, 2016.

The questionnaire was developed from the conceptual framework. It segmented into 2 parts as part I: demographic profiles and part II: multiple intelligences. There are 4 questions for demographic

profiles and 35 multiple intelligence questions. The researcher used Likert's Scale ranging from 5-1 (strongly agree to strongly disagree). The ranges of score were shown as:

4.20	-	5.00	Strongly Agree
3.40	-	4.19	Agree
2.60	-	3.39	Moderate
1.80	-	2.59	Disagree
1.00 - 1.79 Strongly Disagree			

In order to ensure content validity, the researcher asked 3 experts from education and aviation business field to check the content of the questionnaires. Item-Objective-Congruence (IOC) was used to decide the valid questions. Then, he has tryout questionnaires to 40 students from other business major to check the reliability. The result was reliable ($\alpha > 0.941$). After that the questionnaires were distributed to the students. To analyze the data, the researcher used descriptive statistics as mean and standard deviation (S.D.) to explain and rank the multiple intelligences found in Thai and international students from aviation business programs for both Thai and international programs. He also applied independent sample t-test to test the research hypothesis whether there is a significant different between Thai and international students from Thai and international aviation business programs or not.

data analysis and results

Based on the constructed questionnaire, the results were shown in table II-VI. Each table explained:

Table II: Demographic Profiles

Table III: Thai Students' Multiple Intelligences

Table IV: International Students' Multiple Intelligences

Table V: Comparison of Thai and International Students' Multiple Intelligences

Table VI: Hypothesis testing (independent sample t-test)

Results of the Questionnaire

The results of the questionnaires can answer the research questions 1-4 as. Demographic profile (Table II) showed both Thai and international students' information based on gender, G.P.A., religion and nationalities. The table also compared and identified percentage of nationalities as 63 Thai students and 19 international students (Bruneian, Cambodian, Filipino, Chinese, Nepalese, Cameroonien, Nigerien and Congolese nationalities).

TABLE II

DEMOGRAPHIC PROFILES

Demographic Variables	Thai Programs (63) Thai 4th Students	(%)	International Programs (19) International 4th Students	(%)
Gender				
Male	13	20.63	14	73.68
Female	50	79.36	5	26.31
G.P.A.				
3.00 - 3.49	44	69.84	10	52.63
3.50 - 4.00	19	30.15	9	47.36
Religion				
Buddhism	54	85.71	9	47.36
Islam	7	11.11	2	10.52
Christianity	2	3.175	6	31.57
Others	0	0	2	10.52
Nationalities				
Thai	63	100	0	0
Bruneian	0	0	2	10.52
Cambodian	0	0	2	10.52
Filipino	0	0	2	10.52
Chinese	0	0	6	31.57
Nepalese	0	0	2	10.52
Cameroonien	0	0	1	5.26
Nigerien	0	0	2	10.52
Congolese	0	0	2	5.26

Source: Researcher, 2016

In addition, the researcher provided descriptive statistics results of mean and standard deviation (S.D.) of sampled 63 Thai students and 19 international students from the similar programs in different languages (Thai and English). The results of multiple intelligences of both groups from different population were ranked top three highest same as intrapersonal, interpersonal, and visual-spatial intelligences, respectively. The remaining multiple intelligences of both groups were not very different as the result shown individually in table III and IV and multiple intelligences' comparison of both groups in table V.

TABLE III

THAI STUDENTS' MULTIPLE INTELLIGENCES

Intelligence	Mean	S.D.	Rank
Intrapersonal	4.21	0.3626	1
Interpersonal	4.186	0.1353	2
Visual-Spatial	3.684	0.3837	3
Verbal-Linguistic	3.548	0.4409	4
Logical-Mathematic	3.478	0.3296	5
Musical	3.376	0.8039	6
Bodily-Kinesthetic	3.236	0.2565	7

Source: Researcher, 2016

TABLE IV
INTERNATIONAL STUDENTS' MULTIPLE INTELLIGENCES

Intelligence	Mean	S.D.	Rank
Intrapersonal	4.128	0.1134	1
Interpersonal	3.79	0.2002	2
Visual-Spatial	3.748	0.1921	3
Logical-Mathematic	3.622	0.2543	4
Musical	3.62	0.5885	5
Verbal-Linguistic	3.592	0.41	6
Bodily-Kinesthetic	3.466	0.2495	7

Source: Researcher, 2016

TABLE V
COMPARISON OF THAI AND INTERNATIONAL STUDENTS' MULTIPLE INTELLIGENCES

Rank	Thai Students Multiple Intelligences	International Students Multiple Intelligences
1	Intrapersonal	Intrapersonal
2	Interpersonal	Interpersonal
3	Visual-Spatial	Visual-Spatial
4	Verbal-Linguistic	Logical-Mathematic
5	Logical-Mathematic	Musical
6	Musical	Verbal-Linguistic
7	Bodily-Kinesthetic	Bodily-Kinesthetic

Source: Researcher, 2016

To order to test hypothesis that there is any significant different of multiple intelligences between Thai students from aviation business (Thai program) and international students from aviation business (international program), the researcher applied independent sample t-test ($\alpha = 0.05$). The result showed that there is no significant difference between Thai students from Thai program and international students from international programs. Since the significant value was more than 0.05.

TABLE VI
HYPOTHESIS TESTING (INDEPENDENT SAMPLE T-TEST)

At $\alpha = 0.05$	N	n	Mean	S.D.	t-value	Sig.(2-tailed)
Thai Students	320	63	3.674	0.3839	-0.214	0.835
International Students	30	19	3.7094	0.2129		

Source: Researcher, 2016

TO CREATE INSTRUCTION AND LEARNING ACTIVITIES, INSTRUCTORS SHOULD PUT MORE LEARNING ACTIVITIES THAT FIT THE STUDENTS' INTELLIGENCES IN BOTH PROGRAMS TO ADVANCE THE TALENT AND ABILITIES OF ACADEMIC EXCELLENT STUDENTS AS:

1. Learning activities for intrapersonal intelligence

The students should be allowed to work on their own ways and create their own works, for example, doing individual projects or reports. The students should have the activities that reflect their own needs and use themselves as a center for the study. The work should benefit them and could be from their origin, rather than the instructors order. An independent study is recommended to these students. Some activities recommended to the aviation business students in bachelor degrees for both programs are individual reports, independent studies and individual research.

2. Learning activities for interpersonal intelligence

The students should be able to work collaboratively, for example, they could be assigned to work in group or brainstorming. The students whose have high interpersonal intelligence can increase their abilities when they work in group and share. Therefore, the instructor should create democratic atmosphere that the students can work and manage in team. Some activities recommended to the aviation business students in bachelor degrees for both programs are group works, group reports and discussion, etc.

3. Learning activities for visual-spatial intelligence

The students should be able to study by using diagrams, model, computer and multi-dimensional objects. The students should attend the computer and drawing. Some activities recommended to the aviation

business students in bachelor degrees for both programs are drawing, modeling and digital games.

conclusion

Based on the study, it concluded that there is no significant difference between Thai students and international students (whose are academic excellent or have G.P.A. of 3.0 or more) in the bachelor of aviation business in both Thai and international programs. The highest scores of multiple intelligences of Thai and international students from the programs were intrapersonal, interpersonal and visual-spatial intelligence, respectively. The remaining four multiple intelligences of the two programs were also not much different.

Therefore, the academic excellent students from the aviation business majors in both Thai and international programs, regardless of nationalities, have similar multiple intelligences. In order to create the programs for these academic excellent students, the instructional management persons and curriculum developers must consider learning activities and environment that encourage and promote the students' multiple intelligences. Some learning activities should be put to encourage the students such as individual research, group work, brainstorming, role plays and computer & digital games.

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