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Sustaining Quality in Higher Education in Southeast Asia through Understanding Generational Changes

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Abstract: This study presents results of research into generational characteristics of university students in Southeast Asia. The purpose of this investigation is to help academics particularly in Southeast Asian universities make their teaching and thus their students' learning more effective. Literature shows that an extensive amount of work on this has been done in North America and the results of these works are treated as a benchmark that Southeast Asian universities in their attempts to achieve the purpose above could use. Data about Southeast Asian students were collected through a survey instrument developed following the extensive literature review of North American investigation of their so called Network Generation or Net Gen. Surveys were carried out at two universities in Malaysia, two universities in Indonesia and one university in The Philippines. High correlations in the results of the survey between the three countries were obtained. Results of this research show that Southeast Asian university students matched only five out of the twelve characteristics identified in North American students. This study explores this finding further. While recognizing the characteristics of the students is pivotal to effective learning style, that knowledge will also be important to international agencies that provide funding and expertise to developing countries. This work and the resulting specific follow-ups are novel for Southeast Asia and will change a whole host of higher education practices in the region.

Key words: Southeast Asia, higher education, network generation, Gen Y, pedagogy, effective learning

INTRODUCTION

Sometime in the 1980s, it was found that a new generation had emerged from young individuals born after the time when digital technologies started to be entrenched in social life (Jones *et al.*, 2010; Palfrey and Gasser, 2008; Tapscott, 2008). Having grown up with computers and the Internet, these individuals, known as the Network Generation (Net Gen), are said to be more proficient and competent in using the latest technologies and are a step ahead of their seniors from the earlier generation (Jones *et al.*, 2010).

According to Jones *et al.* (2010), this generational shift has consequences on the techniques of teaching and learning since the Net Gens not only desire faster access and immediate rewards, but are also impatient with linear thinking. Like their computers, they themselves display a novel capacity for multi-tasking in different activities. With the motivation of studying the impacts of this generational shift in higher education, researchers have provided both supportive and critical responses from various theoretical (Bayne and Ross, 2007;

Bennett *et al.*, 2008) and empirical (Jones *et al.*, 2010; Kennedy *et al.*, 2008; Valtonen *et al.*, 2010) viewpoints.

A lot of research has been done particularly in North America on the Net Gens. An e-Journal on the Net Gen (www.innovateonline.info) research had collected and analyzed substantial amount of data on North American Net Gen students showing that some major changes in higher education may be in the offing. However, there appears to be little to no related studies done on the Net Gen in Malaysia and/or in Southeast Asia.

It also appears that there are limited studies which focus on the impacts of generational characteristics on engineering education in particular. Since the main differential element for entrepreneurial competitiveness in industries is the human factor, it is necessary for educators to redirect their focus in the flexibility of the curriculum in engineering education (Sunthonkanokpong, 2011). Enhancing the quality in engineering education is also one of the ways to satisfy the post-industrial society needs since engineering students are often groomed towards becoming effective problem solvers and solution providers (Combs, 1981; Rau *et al.*, 2004). Through

this method, engineering firms can see potential improvements in the quality of fresh graduates, especially in their commitment in leadership, quality and product development performance (Ng *et al.*, 2010).

This study aims to provide a preliminary comparative study into the potential impacts of generational characteristics on higher education quality. Harvey and Williams (2010) reported that using the definition 'fitness for purpose' for quality allows the transplanting of quality models and practices to achieve similar if not most appropriate results. It is the intention of this study to potentially provide continuous improvements in higher education quality and in higher education in Southeast Asia in particular. This study supports the motivation that perhaps an effective approach is required for Southeast Asian countries to enhance the level of quality in higher education by adopting good practices from developed countries. To this end this study contends that a study of the Net Gens is pivotal.

For this study, a survey instrument of 30 questions was developed covering the characteristics derived from literature on the North American Net Gen. A total of five institutions in Southeast Asia were surveyed. The data collected were analysed using descriptive analyses, correlations and F-Tests.

NET GEN

The generations who were born after 1980 are frequently known as Net Gens (Tapscott, 1998, 2008), Digital Natives (Prensky, 2001a, b, 2009) or Millennials (Oblinger and Oblinger, 2005). A lot of research has been done particularly in North America on the so called Net Gens. Tapscott (2008) posits that the Net Gens are part of a succession of generational types in the post-World War II era.

In andragogical studies that predate and support the range of strategies advocated for the Net Gens, it was found that educators sometimes have issues balancing practical and theoretical disciplines for the successful academic achievement of Net Gens (Seo, 2010). Some researchers believe that the basic andragogy principles offer more to Net Gens than the usual pedagogical approach (Feiertag and Berge, 2008). It is plausible that the Net Gens possess certain key traits that perhaps should not be dismissed out of support for conventional learning, but rather explored more vigorously for any possible improvements in the quality and standard of the Net Gens' learning.

Clearly these are the generations who were born during the computer age. As such they have

characteristics and expectations very much influenced by computers. For example, they expect instant answers, prefer distributed sources of knowledge and information, are much more open, are multi-skilled, are able to do up to four tasks simultaneously, prefer the use of technology in learning, have a lack of patience with bureaucracy and have a passion for service, amongst many. The proficiency of the Net Gens in managing knowledge-based systems gave birth to new careers such as knowledge engineers, knowledge managers and chief knowledge officers (Ng and Jee, 2012a, b).

According to Hartman *et al.* (2007), the Net Gens are believed to prefer learning methods that engage them in more active roles and are capable of using various online applications, especially for social networking. Their peers who are involved in facilitating (and perhaps to some extent profiting from such characteristics) have of course come out with such things as Facebook, Buzz (in Gmail), blogs, Tweepers etc., all of which provide the media for the Net Gens to interact. That they are much more open than previous generations could be easily observed in their communication on Facebook, for example.

The Net Gens have basically lived their whole lives surrounded by various technologies and socialised into a world where technology is available all the time, causing them to think, act and learn things differently from previous generations (Prensky, 2001a; Valtonen *et al.*, 2010). The ability to do a lot more using mobile equipment had further facilitated the Net Gens' ability to fulfil more of their expectations.

The Net Gens are also assumed to prefer learning through discovery and by creating something on their own rather than being submissive listeners of lectures (Hartman *et al.*, 2007; Oblinger and Oblinger, 2005; Frand, 2000; Oblinger, 2003; Philip, 2007). They also prefer learning in groups by interacting with peers either face-to-face or online (Hartman *et al.*, 2007; Tapscott, 2008).

Furthermore, they have the capacity to multi-task and use several tools or sources simultaneously (Frand, 2000; Oblinger, 2003). Their characteristics have serious implications on education generally and higher education in particular. As an example, if these Net Gens are able to learn four things simultaneously, then author's current "serial" learning philosophy, i.e., learn A first before B, B first before C and so on, is already outmoded, as they can learn A, B, C and D all at the same time.

Incipient changes in learning practices are already happening even in some Asian universities. Project-based Learning and Problem-based Learning, for example, are manifestations of such moves in which students may need to seek information not already covered by the course on their own. Also, assumptions on the learning

preferences of Net Gens have opened opportunities for researchers to develop teaching and learning methods such as computer supported collaborative learning (Koschmann, 1996; Stahl *et al.*, 2006).

STUDY

As far as it could be ascertained from the literature and other sources, there appears to be no work done in Malaysia and/or in Southeast Asia on the Net Gen. In the endeavour to find out, if Southeast Asian student Net Gens have characteristics which are similar to those of the North American Net Gens, an investigation was conducted by surveying students and analyzing the results to establish any correlations between Southeast Asian students and North American students. For if that is so then Southeast Asian universities, will need to modify their teaching-learning practices appropriately in order to continue attracting patronage.

A literature survey was carried out followed by the development of the survey instrument (Appendix A). The survey instrument comprised 30 questions covering those characteristics derived from the literature on the North American Net Gen.

The methodology adopted was initially to survey students at a private university in Kuala Lumpur using the survey instrument developed. The average responses were then compared to those of the North Americans' deduced from the literature. Average variations, correlations and F-tests were calculated and a conclusion was then made.

Surveying only students at one university was obviously inadequate to make any valid conclusions while involving other Malaysian private universities is normally difficult due to keen competitiveness. Two universities however participated in the survey. One located in the capital city of Kuala Lumpur and the other a branch campus of another private university located in the state capital of Melaka.

An option then was to conduct the surveys in universities in several other Southeast Asian countries. Intra Southeast Asian comparisons could be made as well as Southeast Asian vs. North Americans. Contacts were then made with a number of private universities in Indonesia, Thailand and The Philippines.

In Indonesia, two well-known private universities participated in this study. One of them is an established multi-campus university. The students from one of its campuses in Jakarta were surveyed. The other university was formed in 2006. These provided a contrasting group of students that would be useful for the research.

Table 1: Details of university identifiers

Identifier	University location	No. of respondents
MA1	Malaysia	558
MA2	Malaysia	79
IND1	Indonesia	100
IND2	Indonesia	184
PHI	Philippines	55

Also, another university from Legazpi in The Philippines offered its students to participate in this survey. For future data collection and analyses, a university from Thailand will also be participating, while several other universities in The Philippines have also been approached.

The idea is simply that if a statistically supportable evidence of similarities between student Net Gens in these Southeast Asian countries can be derived, then a Southeast Asian group of student Net Gens may be compared with their North American counterparts.

Respondents: An extensive survey at a university in Malaysia was conducted earlier in 2010. A total of 558 students from four faculties and 23 courses were surveyed. At one Indonesian university, some 100 respondents participated, whereas at another Indonesian university 184 respondents participated. In the Philippines, 55 respondents from a university participated. A very small number of invalid responses were found and these were excluded from the above numbers. At the second Malaysian university, a total of 82 responses were obtained but only 79 were valid and therefore analysed. The main error found was the failure to respond to one or two questions in the questionnaire.

To ensure the anonymity of the universities involved and to facilitate data analysis, each university was assigned an identifier. Details of the university identifiers are outlined in Table 1.

RESULTS

Reponses to the questionnaire were quantified by assigning 1 for strongly agree, 2 for agree, 3 for do not agree and 4 for strongly do not agree. Using a spreadsheet, the averages across the respondents and down the questions are conveniently obtained. The quantified score for each question of a respondent was compared with the ideal and variations or correlations were calculated. The results were obtained using simple statistical tools of Cronbach's Alpha, correlations and F-test.

A practical explanation on Cronbach's Alpha by researchers from UCLA (University of California, Los Angeles) is that Cronbach's Alpha measures the internal consistency of a set of items, in this case the questions in a survey questionnaire (UCLA, 2012).

Table 2: Variations, correlations and F-test results

Variations from the ideal	MA1	MA2	IND1	IND2	PHI
Overall average (30 questions)	15	10	15	16	14
Average for group					
1 (%)	-22	-16	-21	-22	-28
2 (%)	3	5	4	4	4
3 (%)	45	27	36	49	44
4 (%)	33	14	30	31	36
5 (%)	90	64	71	83	79
6 (%)	-16	-8	-12	-14	-20
7 (%)	98	68	98	101	103
8 (%)	96	81	111	98	100
9 (%)	98	64	55	97	84
Correlation of 30 questions ideal/students	0.31	0.39	0.35	0.43	0.27
F test results of 30 questions	0.19	0.24	0.20	0.12	0.16

Group 1: Respondent’s introduction to technology, Group 2: Extent of the use of technology by respondent, Group 3: Networking using technology, Group 4: Commitment to technology measured by ownership of the technology, Group 5: Evidence of multi-skills of the respondent, Group 6: Preference of learning delivery, Group 7: Technology preference in learning, Group 8: Preference to interact, Group 9: Preference for continuous assessment

It is normally accepted that a Cronbach’s Alpha of greater than 0.7 indicates internal consistency of the items and further statistical analysis may be carried out with confidence that the results of the statistical analysis are valid (UCLA, 2012). In this study, the Cronbach’s alpha for all the items tested in the questionnaire were adequately above 0.7, signifying that the reliability and internal consistency of the data resulting from the survey instruments is high enough for further analyses (Cronbach and Shavelson, 2004; Nunnally and Bernstein, 1994).

Correlation measures the extent of linear dependence or similarity of one set of items with another (CRS, 2012). In this study, correlation was used to measure how similar the responses to the questionnaire are between the North Americans’ and the Southeast Asians’. Although, 12 North Americans Net Gen characteristics were identified earlier, the 30 questions in the Questionnaire were divided into 9 groups to cover the characteristics identified. These are: (1) Respondent’s introduction to technology, (2) Extent of the use of technology by respondent, (3) Networking using technology, (4) Commitment to technology, (5) Evidence of multi-skills in respondent, (6) Preference of learning delivery, (7) Technology preference in learning, (8) Preference to interact and (9) Preference for continuous assessment. In this case, the responses of the North American Net Gens based on the literature were used as the ideal responses. The responses of the Southeast Asian Net Gens obtained from the surveys were then compared to the Ideal Responses and correlation calculated between them.

The F-test was used to confirm the correlations. F-test measures the probability that variances in two sets of data not being significantly different, interpreted in this study as measures of the sameness of the two sets of data. That is when the value of F-test is high the

probability of sameness is high while if the value of F-test is low then two sets of data cannot be claimed to be the same or similar.

Results of the surveys of Southeast Asian Net Gens in the study: Table 2 shows the variations, correlations and F-test results between the North American Net Gens (Ideal) and the Southeast Asian Net Gens. Groups and Sub-groups refer to the questions in the Questionnaire.

The first row measured the variations for averages of the 30 questions.

The subsequent nine rows of the Table 2 measured the variations of averages by individual groups as stated earlier, followed by a row of correlations and then a row of F-tests by total number of questions.

From Table 2 it is seen for example, that there is a 15% variation between the North American Net Gens and MA1 students on average across all the 30 questions. However, when variations were taken by groups, it is observed that the variations could be extensive. For example, on Group 5 which compared evidence of multi-skill between the Net Gens, there was a 90% variation with MA1 Net Gens indicating that MA1 Net Gens are not multi-skilled compared to the North American Net Gens, or looking at Groups 7, 8 and 9 that MA1 Net Gens did not express technology preference in learning did not express preference to interact in class and did not support continuous assessment in their courses.

When correlations were calculated the correlation coefficient between North American Net Gens and MA1 Net Gens was 0.31 over the total 30 questions. This indicates that there were few similarities between the two Net Gens. It is important to note that reading across the Table 2, one would see similar figures for the other four Net Gens in Southeast Asia, indicating similarities between the Southeast Asian Net Gens at least in those three countries investigated.

The F-test results also showed very little similarities between the North American Net Gens and the Southeast Asian Net Gens.

Correlations between MA1, MA2, IND1, IND2 and PHI:

Part of the important steps is naturally to prove that the rather limited survey in the three South East Asian countries do represent the region as a whole. The results are presented in Table 3. For the 9 subgroups, Table 3 presents the correlations between the different universities.

Table 3 shows that the respondents from the five universities have extremely similar characteristics being considered in this investigation. Therefore, the comparisons made between respondents of any of these universities with their North American counterparts are valid in comparing Southeast Asian and North American

Table 3: Correlations of results between five different universities

Universities	MA1	IND1	IND2	PHI	MA2
MA1	1	0.944	0.998	0.992	0.985
IND1		1	0.951	0.973	0.968
IND2			1	0.994	0.986
PHI				1	0.982
MA2					1

Table 4: Averages of the Southeast Asian results

Variations from the ideal	Southeast Asia (%)
Average by subgroups	22
Overall average (30 questions)	14
Average for group	
1	-22
2	4
3	40
4	29
5	77
6	-14
7	94
8	97
9	80

Negative variations would indicate a more positive response from the Southeast Asian students in several of the 30 questions in the questionnaire compared to the North American students

student Net Gens. It appears that there are three almost distinct correlation strata observed, namely:

- $r > 0.99$ between MA1, IND2 and PHI
- $0.98 > r > 0.99$ between MA2, MA1, IND2 and PHI
- $r < 0.98$ between IND1 and the other four universities

where, r is the correlation coefficient.

The findings indicate that IND1 is the most different amongst the five considered here although given the correlation coefficients in Table 3 this difference is not significant.

Analysis: From the respondents were Malays, Chinese and Indians. By using Indonesia and Malaysian culture results, there appeared to be similarities among the Southeast Asian university students in their characteristics despite coming from a reasonably varied cultural and regional background. In Malaysia, for example, terminology the respondents were Malays and Chinese while in The Philippines it is likely that they were Filipinos/Malays and Chinese, where, the Filipinos themselves are most probably multi-cultural given The Philippines' history.

Table 4 shows the averages of variations of the Southeast Asian survey results from the North Americans in the 9 subgroups showing that the variation if the total survey questions were considered is only 14% but rises to 22% when the questions were stratified into the nine subgroups. Indeed, this is proven by the

Table 5: Overall derived result

Net Gen characteristics	NTH AMER	M/I/P
They have a great facility for technology and an eagerness for change	✓	✓
They assume that information is to be shared, not hoarded	✓	✓
They have a lack of patience with bureaucracy	✓	?
They have a passion for service and a desire to make a (big) difference	✓	?
They are multi-skilled and able to do up to four different things at the same time	✓	×
They tend to teamwork, prefer experiential activities and use technology	✓	✓
They prefer to be involved in creating rather than being passive recipients	✓	×
Students coming to college expect a 'transformative education'	✓	×
They are ready for multimedia learning to be delivered on a flexible learning schedule, one that is not tied to a set time and place	✓	×
They would want faculty members to use information technology to communicate knowledge better	✓	?
They preferred instructors to make moderate use of information technology	✓	✓
Social networking is the basis of Net Gens characteristics. Facebook is used by students extensively and is beginning to be used by faculty members	✓	✓

NTH AMER: North American, M/I/P: Malaysian, Indonesian, Philippines

variations percentages of the subgroups when considered separately.

When analysing the technology introduction level among the respondents, it is observed that Southeast Asian students are equally exposed as the North Americans, if not slightly more so. One may speculate on the latter, but the globalization of products especially electronic products and the relatively lower costs in obtaining them may indeed mean that the Southeast Asian students are either exposed to the new products earlier than or able to purchase them earlier than the case with North American students.

Also, results on the use of technology by respondents show almost no difference between Southeast Asian and North American students. This is manifested in the rapid if not simultaneous availability of the technology around the world.

However, Southeast Asian students appear to be lagging behind North Americans when it comes to networking technology. This is interesting as the impacts on education delivery are quite telling. Other subgroups results will substantiate this finding.

The results on ownership of the technology indicate variations from the North Americans although not to the same extent as the lack of networking. One could speculate here as in some Southeast countries students'

sponsorships by governments would bring in students from family backgrounds that would not allow purchasing such technological products as iPhone.

Analysing the multi-skill factor among the respondents yields some surprising results. It is found that Southeast Asian respondents appear to be adamant in saying that they are not multi-skilled unlike the case in North America and observations in other developed countries. This is perhaps due to the lack of awareness about multi-skilling and multi-tasking.

With reference to the results on the respondents' preference of learning delivery, it is found that there is a major contrast between the Southeast Asian students and the North American students. It appears that Southeast Asian students prefer to be passive listeners of lectures instead of discovering or creating something. This suggestion can somehow be reflected by how they seem to not expect a 'transformative education' in their learning compared to North American students. Perhaps the reason for this phenomenon boils down to the fact that many Southeast Asian students set out to earn their qualifications merely for the sake of it or under the influence of their family, friends and government. This mindset may impair their goals and expectations when they step foot into the universities and start attending classes.

In addition, Southeast Asian students are in total opposition to the North Americans when it comes to preference for the use of technology in learning. This may be a reflection of an earlier observation on the lack of networking and the lack of preference to interact with other students and with their lecturers. This is also evidence in personal experience when students asked to form their own groups to do specific tasks come back to the lecturer with a plea to find them their group members.

When interactions are concerned, the Southeast Asian students are once again in total opposition to the case of North American students in respect of their studies. They do interact on things other than studies. In addition to the comment in the above bullet point, this also has grave implications on the possible progress in education as a whole. For example, with the increasing globalization of education and professions such as Engineering or Medicine, the lack of this characteristic in Southeast Asian graduates will inhibit their partaking in the global scene.

Finally, results on continuous assessment preference show that Southeast Asian students prefer a final exam type assessment to less formal ones. Hence, the high percentage variation seen. Again it would seem that Southeast Asian students may prefer something that is

rapidly getting obsolete in the rest of the world. This has of course serious and critical implications for the country and the region.

Overall results: This research investigation identified twelve characteristics arising from the nine groups as shown in Table 5. It is suggested here that out of the twelve characteristics, Southeast Asian Net Gens appear to show similarities with their North American peers only in five, no similarities at all in four and uncertain in three.

These results clearly point to the need for further research which will touch upon other aspects outside the pure educational, e.g., cultural aspects, university management aspects, government philosophy on the education model and the like.

Implications from the results of the survey: In a preliminary study such as this which needs a lot more exploration into other areas that may touch on cultures, pedagogy and management the implications of this survey may require a lot more substantiation. However, the importance of this study lies in the uncovering of a number of potentially debilitating trends in educating the newer generation of Southeast Asian countries.

Firstly, it would appear that with the lack of research in this important area, little attention is being paid in Southeast Asia to the incipient gap between students and their teachers/lecturers in their respective expectations even if the Southeast Asian Net Gens are still only 5/12th that of their North American peers in respect of their characteristics shown in Table 5.

Secondly, it can be observed that the prospective future of the Southeast Asian graduates is somewhat dimmed especially in the already globalized world. In Malaysia for example, daily papers carry reports of recruitment agencies refusing to proffer local graduates to their clients and preferring overseas qualified Malaysians instead (Aruna, 2012; The Star, 2012). Exhortations abound from the Prime Minister down for students and the community to improve their reading and their English while persuading teachers and lecturers to improve their teaching and learning delivery. If Malaysian local graduates are not wanted by companies in the country, what hope have they got on working overseas? This is particularly of concern in the engineering profession since Malaysia is a signatory to the Washington Accord and given the situation may not be able to extract much benefit from it.

Thirdly, the perpetuation of the system that is not in line with the current trends in pedagogy elsewhere may not be arrested when only five out of twelve Net Gen characteristics appear to be held by Southeast Asian

Net Gens. It is also observed that the 5 characteristics shared by Southeast Asian Net Gens are basically hardware-based that depends solely on the availability of hardware. Equally if not more important of course are the teaching and learning delivery that create the other seven Net Gens characteristics observed in North America.

Fourthly, the apparent detachment of Malaysian lecturers and professors from various reforms and transformations in teaching and learning that are happening around the globe exacerbates the situation. Everyone of course notices that technology is moving very rapidly forward and everyday life is directly affected one way or another. However, when it comes to education, higher education in particular, little infusion of technology into the pedagogy of this area is happening.

The most revealing implication and finding of this study are that current academicians will need to transform and reform themselves to take into account in particular the changing nature of their students in order to make the teaching and learning effective.

Idrus (2011) proposed that a three-pronged approach has to be attempted by institutions of higher education, namely technology, contents and generations. This approach should be preferably attempted simultaneously.

Limitations of this study: As has been stated earlier, this study is very much an early exploration into this area. Consequently there are several limitations.

In trying to understand the differences in characteristics of Net Gens in North America and in Southeast Asia and given that the five matching characteristics are basically hardware-related, one is led to speculate that the mismatch may be attributed to differences in cultures. Informal observations and conversations with students in several Malaysian universities clearly indicate the strong influence of culture even in students' areas to enrol. Shaw (1999) gave a very powerful argument why Asians need to recognize that success in the globalized world can be achieved by Asians only after they shed some aspects of their culture. Any study into cultures will necessarily involve experts in cultures, anthropology and even in psychology. This was not attempted in this study, although some literature have discussed some aspects of cultures as they relate to education (Pangulungan, 2005; Idrus, 2003, 2004, 2011, 2012).

While the response rates to author's questionnaire were high, the sample sizes were extremely small considering the millions of students who exist in Southeast Asia. The data and statistical analyses carried out however, provided correlations of the Southeast Asian responses, thus, bestowing legitimacy to the observation.

CONCLUSION

This study has revealed that although there are cultural differences among the Southeast Asian universities, there were high similarities in characteristics among the students from these different countries. This contrasts with the collective comparison against their North American peers, where only 5 characteristics were found to be common between the two groups. While the 5 matching characteristics are a function of hardware availability, the 7 that do not match leads to a lot of speculation including cultural differences, environmental differences and teaching methodology and delivery differences.

It appears that there is much work to be done in improving the education system in Southeast Asia if the students are to come at par with their North American counterparts. Academicians and government policy makers need to self-assess their weaknesses and make the necessary changes accordingly.

At the same time, this study may be of profound interest to policy makers in developed countries particularly in respect of education and higher education aid and grant to developing countries. This in turn will have commercial and financial implications for the donor countries themselves while helping the donor recipient countries in their most needs.

FUTURE WORK

Further surveys are going to be done in Thailand. It is expected that the results of these surveys will show similarities with the results from Malaysia, Indonesia and The Philippines. The research questions arising from the results shown are:

- What are the causes for the variations between Southeast Asian Net Gens and the North American Net Gens
- How much of the differences are due to computer technology penetration or lack of in Southeast Asia and due to prevailing culture despite the technology penetration
- How much of the differences are due to the belated changes in teaching-learning philosophy in Southeast Asia compared to the situation in North America or developed countries. For example, learning in many Southeast Asian countries is still by rote; the philosophy of education in Southeast Asia is still seen to be less empowering and the management of higher education institutions is still lagging that of developed countries
- How much of the differences are due to the differences in governance of the countries

Appendix A: Survey instrument of current students for the Net Gen characteristics

Question	Strongly agree	Agree	Do not agree	Strongly do not agree
I first used the computer about ten years ago				
I first used the computer about five years ago				
I first used the computer when I entered this university				
I can use the Microsoft Office software such as MS Word, Excel and Access				
I normally use MS Word everyday				
I normally use MS Excel two or three times a week				
I normally use MS Excel only once or twice a month				
I never used MS Excel				
I never used MS Access				
I use the internet everyday				
I use email everyday				
I use the internet to find information for personal interests				
I use the internet to find information for study purposes				
I use internet to play online real-time games				
I use the internet for networking with friends using sites such as Facebook, MySpace, YahooGroups, IMs or Google Plus				
I have my own computer (either laptop, netbook or PC)				
I have used handphones for more than ten years now				
I have only been using handphones over the last five years,				
I have and use a smart phone				
I can do more than one or two things at the same time, e.g. listening to MP3 while doing an email or writing my assignment plus perhaps watching a video or TV and instant messaging/chatting with a friend on line				
I like lecture type learning				
I like to be given a problem to solve and being left alone on how to do that				
I like to be given a group problem and the group being left alone to solve the problem				
I prefer the lecturer to be telling me what to do and to show me how a problem is solved so that I could repeat the process for other problems given to me				
I learn better from illustrations which are moving or animated				
I normally find it hard to learn from text books or course-notes				
I can understand better when the lecturer uses PowerPoint presentations				
I can understand better when the lecturer uses animated PowerPoint presentations that also import videos and downloads from say Youtube				
I can learn better when the lecturer invites or even forces us to interact with him/her during the lecture period				
I prefer continuous assessment during the semester rather than one final exam at the end of the semester				

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