

A Comparative Study of the Links between the Secondary and Post-Secondary Education Systems in Six Nations¹

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¹ Switzerland, Thailand, the United States, Hong Kong, Japan, and South Korea

There was a time when a secondary education could provide a ticket to economic success almost anywhere in the world. Yet today, the economic health of developed and developing nations increasingly depends on higher levels of education and more specialized vocational training (OECD, 2006a). Across the globe, countries are reforming their educational systems to better capitalize on their natural, social, and economic resources. Many developing nations are striving to create universal primary education and high quality secondary education, along with major improvements to their postsecondary education systems (OECD, 2006a, 2006b). Though developed countries have offered universal access to primary and secondary schooling along with reasonably accessible postsecondary education for many years, there is much diversity with regard to the level of vocational training embedded in their education systems. In addition, access to some nations' most prestigious institutions, which often boast high success rates in terms of economic and occupational attainment, can be severely limited for underrepresented and underprivileged populations (Alon & Tienda, 2007; Bowen, Kurzweil, & Tobin, 2005).

Considering the rapidly changing faces of primary, secondary, and postsecondary education throughout the world, this report critically examines the education systems of six nations: Hong Kong, Japan, South Korea, Switzerland, Thailand, and the United States. The purpose of this study is to enhance awareness of international approaches to general and vocational education, with a particular focus on secondary to postsecondary transitions. Notably, this type of research is crucial to understanding how different systems operate, but more importantly, how faculty and administrators can ease students' transitions to postsecondary schooling in order to promote more educated citizens who contribute to their nations' economic and social development. Thus, another aim of this research is to provide a cross-national comparison of the distinct education systems, highlighting features that may be applicable to other nations in need of educational reform. Finally, based on our findings from the cross-national comparison, we offer recommendations for educational policy and practice that can benefit the six focal nations as well as other countries.

Context of the Study

The six nations participating in this project are diverse geographically, politically, socially, and economically. For instance, our sample includes one country that is very large geographically and in terms of population – the United States, with a population of about 301 million – and five countries that are small to modest geographically, ranging from 7 million to 127 million inhabitants (CIA World Factbook, 2008; U.S. Census Bureau, 2008)². The countries also display significant political diversity. Switzerland and the United States are democratic nations with substantial fiscal and political autonomy devolving to regional governmental units (“states” in the case of the United States and “cantons” in the case of Switzerland). In contrast, the national governments of the other four nations included in this study have much stronger influence over economic, social, and educational policies.

Perhaps the most notable differences across the six nations in the study relate to their economic health and structure. Switzerland, the United States, and Japan all have very strong

² Japan is the second most populous country represented in the study, with a population of about 127 million in 2008, while Switzerland and Hong Kong are the least populous countries with populations of just over 7 million. Thailand has a population of about 65 million, and South Korea has a population of just over 49 million (CIA World Factbook, 2008).

economies, with gross domestic product per capita income of approximately \$41,000, \$45,000, and \$33,000, respectively (CIA World Factbook, 2008). All three of these countries have a majority of their employment in the service sector (>65%), about 20-30% in industry, and smaller shares in agriculture (5% or less) (CIA World Factbook, 2008). Hong Kong is again in the middle range, with a gross domestic product per capita about 60% that of the U.S., Switzerland, and Japan. Thailand and South Korea have the weakest economies, with per capita incomes of \$7,000 and \$24,000, respectively (CIA World Factbook, 2008; U.S. Department of State, 2008). Thailand is the only one of the six nations whose economy has not generated substantial growth in gross domestic product per capita over the past 30 years. It also is the only one that still has a sizeable agricultural sector; as of 2007, nearly 50% of Thailand's workforce is employed in agriculture (CIA World Factbook, 2008).

Along with their growing economies and shifts from agriculture and manufacturing to the larger service sector, all six countries have experienced increases in the educational attainment of their workforce. The increases in the proportion of individuals completing secondary education are especially notable in Thailand, Hong Kong, and South Korea. In Hong Kong and Korea, the rates of secondary education completion are now comparable to those in Japan, Switzerland and the United States (OECD, 2008).

The driving forces in the expansion of postsecondary education in Japan, Hong Kong, Thailand, and Korea have been the countries' economic resources and development strategies. These nations have limited natural resources, and thus, their economies rely on human resources (CIA World Factbook, 2008). As a result, these nations have prioritized the expansion and improvement of their postsecondary education systems in effort to address the increasing skill requirements of their labor markets. In all four of the Asian countries, admission to more prestigious postsecondary institutions is highly competitive and selective (see for example Shin-Bok Kim, 2005). The United States demonstrates similar competitive pressures (McDonough, 1994).

Consistent with the six nations' diverse geographical, economic, and political cultures, their education systems display similar distinctiveness – however, they also display striking similarities. While some systems are well-developed and sufficiently funded, others are currently undergoing major reforms in order to provide better educational opportunities for students, and in turn, a more skilled workforce for the country. These changes are most noticeable in the secondary to postsecondary transition process, which underscores the importance of studying this aspect of the six nations' education systems. Thus, in using a cross-national comparison technique, it is vital not only to understand each country's educational policies and practices in greater detail, but to highlight the strengths of the systems in hopes that they might be valuable to other countries facing challenges in those areas – particularly in terms of secondary to postsecondary transitions.

Research Questions and Methodology

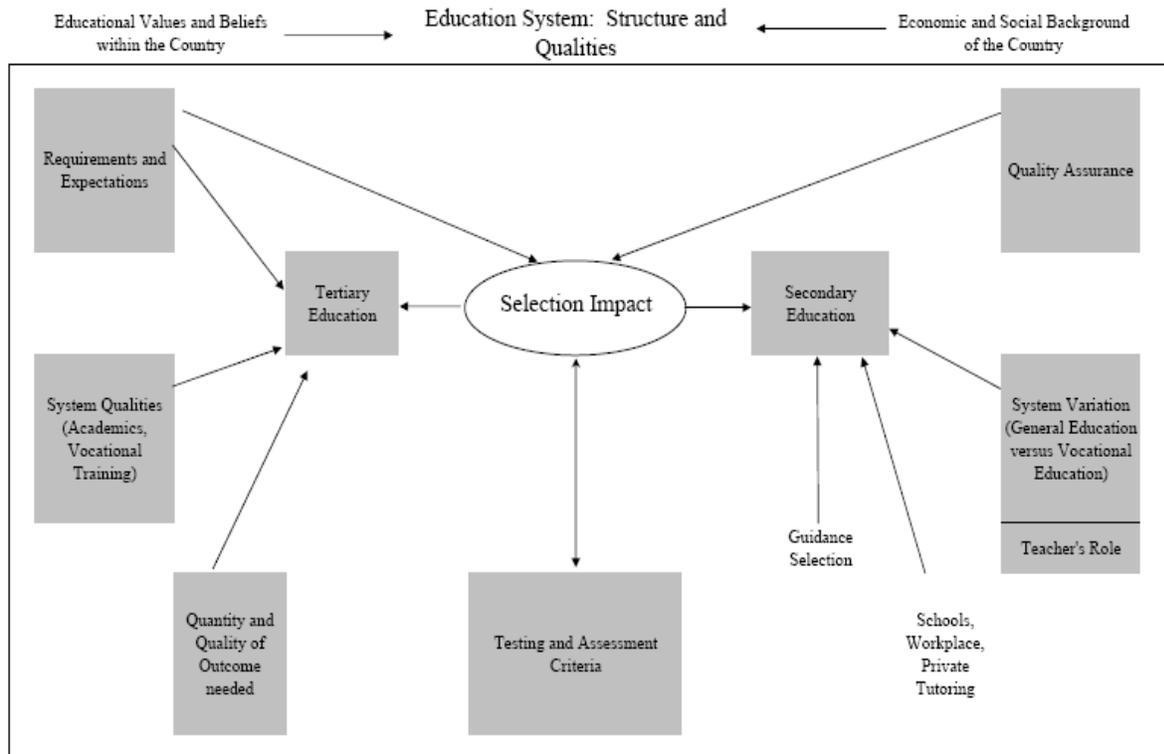
The Six Nations Project was an international endeavor that involved researchers from all six focal countries. At a 2003 steering committee meeting for the Eight Nations Education Research Project (ENERP) in Philadelphia, PA, a cross-national comparison study focusing on transition from secondary to postsecondary education was proposed and accepted by the ENERP committee members. A research team was subsequently formed, including representatives from six of the eight nations: Hong Kong, Japan, South Korea, Switzerland, Thailand, and the United States.

A common interest of the six representatives concerned understanding how youth in different countries transition through the education system and the relevance of those transition patterns to the social and economic needs of the nations. As mentioned, we also wanted to collect data and report findings that might be valuable to other countries (as well as those included) in terms of addressing educational challenges. Thus, our research questions were as follows:

1. What are the characteristics of the six nations' educational systems, and how do they compare to one another?
2. What types of academic and vocational postsecondary options are available to students in these six countries?
3. How do these nations prepare and select students for these options?
4. How can we best meet the needs of youth who do not wish to attend a traditional academic postsecondary education?

To answer the questions above, our collaborative research process consisted of three overlapping phases of data collection and analysis. In *phase one*, we developed a conceptual model of factors affecting secondary to postsecondary transition processes to guide our study (Figure 1). This framework served as a reference for our later analyses, as it stressed the importance of considering all the diverse variables that contribute to each nation's transition system. During this phase, a general outline for the country reports was also developed, and each team member subsequently drafted a report that was presented to the group. A team discussion of the individual country reports led to a first synthesis of data from the six nations, focusing on their similarities, differences and educational challenges. This discussion also bred the questions for our site visits.

Figure 1.1: Conceptual Model of Factors Affecting the Secondary to Postsecondary Transition Process



Phase two of the research project consisted of site visits in three countries: Switzerland, Thailand, and the United States. The objectives of the site visits included gaining an understanding of the countries' secondary and postsecondary education systems, clarifying certain aspects of the systems, and deepening our understanding of the systems' operation beyond the country reports. To conduct the site visits, several members of the research group visited the educational institutions together. In each country, a small but representative sample of institutions and individuals representing different levels of the education system – particularly with respect to the transition issue – was chosen. The data collection process included interviews with faculty, students, administrators, researchers, politicians, and in the case of vocational education in Switzerland, managers and apprentices. A notable advantage of this method was that it explicitly utilized and benefited from the perspectives of both the researchers and the participants, all sharing a background in education related to the focal issue of transition. The interviews were semi-structured, which allowed for flexibility in the questions asked as well as participants' responses (Merriam, 1998; Pring, 2000).

While interviewing is a valuable method of conducting qualitative research because it allows the researchers to extract the meaning behind participants' statements (Merriam, 1998; Pring, 2000), the Six Nations team also collected published documents and observed instructional/classroom settings during each site visit. Besides providing additional information about the sites, these documents and observations helped triangulate the data obtained from the interviews. Triangulation is defined as the use of multiple methods and multiple information

sources to ensure the accuracy and consistency of emergent findings (Merriam, 1998). Thus, the use of several data collection methods provided a useful validation technique in terms of analyzing and reporting our results.

Phase three focused on the cross-national comparisons, for which we used content analysis to identify themes from the data (Gall, Borg, & Gall, 1996; Merriam, 1998). In this phase, the team collectively developed recurrent themes and categories based on an inductive analysis of the country reports and site visit information (Merriam, 1998). Ultimately, these themes became the findings from the study, and directly informed our recommendations for policy and practice. Considering that our team was working across six nations, we relied on multiple modes of communication, including formal meetings and workshops as well as informal exchanges of documents and conversations via e-mail.

Notably, this research strategy represents an interpretative paradigm, emphasizing the qualitative interpretation of data. However, there are some limitations to this approach. Inevitably, the choice of institutions and persons was influenced by the network available to the researchers. Participants were not randomly chosen, but selected according to their availability and interest. Thus, findings from this study may not be statistically generalizable, but they are likely transferable to other nations and educational systems with similar characteristics. As a second limitation, both the questions asked by the researchers and the participants' responses may have been influenced or biased by their respective backgrounds, prior relationships to each other or mutual acquaintances, or the dynamic that developed in each discussion. While it is nearly impossible to eliminate all potential biases, this issue was ameliorated by having the research team exchange impressions and reports following the interviews to check for evidence of impartiality. In addition, the research team developed the conclusions and recommendations for this report collectively, so as to reduce the possibility of one researcher's perspective dominating the others.

The Six Nations and Their Education Systems³

Switzerland⁴

In Switzerland, schooling typically begins at the age of seven, when children move from kindergarten into primary school. Primary and secondary level I are compulsory, together totaling nine years. Secondary level II, including the Gymnasium, Intermediate Schools, and vocational education, provides another three to four years of education. Postsecondary education is comprised of the university system ("academic" universities, universities of applied sciences, and teacher colleges) along with higher vocational education/vocational colleges.

Degree of differentiation. In Switzerland, differentiation begins with the transition from primary to secondary school when students are divided into achievement groups. While less-gifted pupils attend secondary I schools with basic academic requirements, gifted pupils enter schools with intermediate or advanced requirements. Another clear differentiation occurs at the

³ The three countries visited by the research team (Switzerland, Thailand, and the United States) are discussed first, followed by the three countries the team did not visit (Hong Kong, Japan, and Korea).

⁴ This section draws heavily on Bundesamt für Statistik [BFS], 2006 and Metzger, Fujita, Law, Zemsky, Berset, & Iannozzi, 2004.

secondary II level, where students enroll in either full-time academic schools or dual vocational education (school and apprenticeship).

There are two types of full-time schools in Switzerland: the Gymnasium and the Intermediate Schools. After nine years of primary and secondary I schooling, a small number of students (about 20%) proceeds to the Gymnasium after passing an entrance exam or – at some places – having demonstrated the comparable requirements by the school report (Bundesamt für Statistik [BFS], 2008). The Gymnasium is a four-year school that offers a general academic education and the necessary foundation to enroll academic universities. The Gymnasium concludes with a final exam, called the “General Matura”; when passed, the General Matura represents students’ graduation from the school, and allows the student to study at any university in the country except for medical school. Approximately 5% of students enter the Intermediate Schools, which are three-year schools that stress both academic and vocational education (BFS, 2008). The Intermediate Schools also conclude with a final exam, granting students either a Specialized or a Vocational Matura. Finally, the vast majority of students – approximately 65% – begin vocational education after completing compulsory education (BFS, 2008). Vocational education lasts three to four years, culminating with a Federal Vocational Certificate or the Vocational Matura.

Vocational education in Switzerland is best characterized as a twofold duality. First, it is a combination of general/academic education and vocational education, according to a curriculum regulated by the federal government. Second, it results from the cooperation of business enterprises and vocational schools. The business enterprises train apprentices directly at the worksite three to four days every week. During the other one to two days a week, the trainees acquire both occupation-related knowledge and further general education at the vocational school. In some cases, this dual cooperation system is being extended into a tripartite system via the introduction of longer vocational-training courses (often lasting several weeks), particularly at the beginning of students’ apprenticeship.

Notably, Switzerland attaches great importance to vocational education. About one-third of all Swiss enterprises have apprentices. The participation of both private and governmental enterprises in the apprenticeship program reflects a long-tradition of work-study as a core element of Swiss society. Additionally, the apprenticeship system in Switzerland is very elaborate; for instance, at the bank that the research team visited, there is a full-time human resource manager who takes care of the application, training, assessment and well-being of all student apprentices. This bank alone has about 600 apprentices each year.

The fact that vocational education, beginning at secondary level II, is the major pathway for students reflects its great social and political acceptance. In other words, vocational education is not stigmatized in Switzerland. The apprentices that our research team interviewed, for example, reported viewing the apprenticeship as a valuable option after secondary I education. Some common responses about their decision to pursue apprenticeships were, "I wanted to do practical things", "So I feel like a normal worker", "I had enough school", "I felt supported in my decision by parents, brothers, sisters and peers." Other students noted that they expect having good options for both postsecondary education and moving on to other professions. Teachers at both the vocational schools and the University of Applied Sciences shared this view, as did the

management of the bank visited and university students who acquired the general Matura some years after they completed an apprenticeship.

Swiss postsecondary education is divided into two systems: the university system, and higher continuing vocational education. Within the university system, there are traditional “academic” universities; generally, only Gymnasium graduates (i.e. those holding a General Matura) are admitted to this type of university. Over the past ten years, specialized institutions have also become integrated into the university system. The majority of those institutions are Universities of Applied Sciences, which focus on engineering, business administration, social work, and the arts, offering three-year bachelor’s degree programs as well as master’s degree programs. In addition, there are teacher colleges, which educate prospective kindergarten, primary and secondary level I teachers.

In addition to the university system, Switzerland has several forms of higher continuing vocational education. There are numerous vocational colleges, which offer two year full-time or three year part-time programs, as well as many postgraduate programs, with an even greater orientation to professional practice than the Universities of Applied Sciences. These programs typically lead to a higher vocational certificate or diploma. Many of these institutions prepare students for advanced professional or specialized examinations, often awarding a federal diploma or license. The latter types of programs are open to students who hold a Federal Vocational Certificate or any kind of Matura, and exhibit at least a few years of practical experience.

Once a student earns a Matura, s/he may choose to study any subject at any university in the country. However, the dropout rate at the end of the first year is quite high. As we learned during our site visits, about one out of three students at the University of Zurich as well as the University of St. Gallen drop out of the institutions. Interestingly, a high first-year dropout rate at Swiss universities is seen as the mark of a good institution. During their interviews, students at the University of St. Gallen remembered how tough it was to pass the first year requirements.

Considering that an appropriate Matura is the only criterion for university entry in Switzerland, there is no national or standardized university entrance examination, except for those who want to attend medical school or for foreign students. For this reason, hired or private tutoring for secondary II school students is not common. There does not seem to be as much pressure on Swiss students to pass the General Matura examination as there is for students in the other participating nations.

In terms of curriculum, Swiss colleges and universities are essentially autonomous; however, as institutions they have to undergo a federal certification process which includes a curriculum review. Notably, the autonomy of the academic universities is much greater than that of the Universities of Applied Sciences. The latter must undergo a stricter accreditation process because they are regulated and financed much more by the federal government.

Numbers of institutions and how the system is financed. In Switzerland, compulsory education is free of charge. Primary and secondary level I education are financed by each canton and its municipalities. At secondary level II, both the Gymnasium and Intermediate Schools are financed by the canton; therefore, students pay only small fees (if any) to attend. In contrast,

vocational education is financed partly by the canton and by professional associations, which are subsidized by the federal government. Vocational education is also partly financed by the actual companies, which bear the costs for training their apprentices and the apprentices' salaries.

The university system consists of 12 academic universities (BFS, 2008), 10 of which are operated by single cantons and two technical universities that are operated by the federal government. There are seven public and two private Universities of Applied Sciences.

Notably, Switzerland's commitment to providing free or low-cost schooling at all levels reflects how highly Swiss society values education, especially education that may increase individuals' ability to become better professionals. Every child has a chance of receiving as much education as he/she can achieve, and most, if not all, enterprises assume responsibility for educating children and youth about their expertise.

The postsecondary admissions/transition process. As indicated, Swiss secondary II graduates are essentially guaranteed a spot in their university of choice so long as they hold the appropriate Matura. Thus, there is a direct connection between secondary II and postsecondary education. The secondary II exit examination determines whether and what Matura students receive and what university they may attend. Considering that students with the correct Matura are generally accepted to their preferred institution, the admissions process is quite basic; students typically only apply to their institution of choice, and their acceptance is based solely on their Matura. As a result, competition for university admission is rare in Switzerland – and thus, the transition from secondary II to university postsecondary education is less stressful than it is in other countries. However, it is important to mention that there is significant competition during the transition from secondary level I to secondary level II among the most capable 40 to 50% of a students' cohort. Gaining entry to a prestigious secondary II school (such as a Gymnasium) grants students more opportunities to attend a traditional "academic" university, and perhaps a more prestigious university several years later (with the exception of medical schools). Getting into the Vocational Matura track within vocational education increases the chance to move to a University of Applied Sciences later on.

Notably, there are no early application options at the postsecondary level, and final admissions decisions are made by each institution. Even for non-university higher continuing vocational education, students must possess a federal vocational certificate. However, there are bridges integrated to the educational system – for example, after secondary II education, there are opportunities for catching up on missing degrees (i.e., achieving the Vocational Matura for those with a Federal vocational certificate or General Matura for those with a Vocational Matura). However, according to two students we spoke with who had made this crossing, there are relatively few individuals who attempt the shift, as success is challenging.

Main educational reforms. In terms of reforms to the Swiss education system, the degree of stratification for secondary level I education is the central issue under discussion. In some cantons, the possibility of students moving directly from primary school to Gymnasium has been eliminated, and in some cantons the differentiation into three types of secondary schools according to academic ability is in the process of being replaced by a more comprehensive system where the differentiation is only applied to some, but not all, academic subjects. This

change is driven by the attempt to reduce unequal opportunities to move on in the education system.

Secondary level II is in the process of reform as well. First, in order to fit international standards and address financial restrictions, the Gymnasium has been reduced from five to four years. Within its curriculum, the variety of courses has thus increased. Secondly, the Intermediate School curriculum is going to be more harmonized with the dual system of vocational education by demanding the integration of some workplace experience. Finally, the vocational education system, based on recent changes to federal law, is undergoing three main reforms: first, the proportion of vocational school and workplace-training is becoming more flexible and aligned to the needs of professional fields; second, higher standards for instructors and teachers have been set, which will require more intensive teacher training; and lastly, the professional fields of nursing and health care have been fully integrated into vocational education by introducing the apprenticeship system.

The United States

In the United States, schooling usually begins at the age of five, when children enter kindergarten. Primary, secondary I, and secondary II education are compulsory, totaling 12 years of schooling. Primary schooling begins with kindergarten, and ends anywhere from grades four to eight. Some secondary I schools begin at grade five or six and continue through grade eight, while others begin at grade seven and continue through grade nine. Still other school systems combine primary and secondary I education, beginning with kindergarten and ending with grade eight. Secondary II education consists of three- or four-year schools that prepare students to enter postsecondary education.

American postsecondary education includes the university system, community or junior colleges, and vocational-technical schools. The traditional university system offers a wide range of academic disciplines, including natural sciences, business, engineering, and the humanities, all of which typically lead to a bachelor's degree. Community or junior colleges provide general academic education beyond the secondary II level, offering associate's degrees as well as professional certificates in fields such as nursing, business services, and childcare. Lastly, vocational/technical colleges train students for specific occupational trades, including construction, computer technology, and real estate. Students attending these institutions generally work towards an associate's degree or an industry-recognized certificate.

Unlike the more generalized curricula of traditional not-for-profit two-year and four-year colleges and universities, postsecondary vocational/technical institutions train students for specific occupational trades. These trades include construction, medical technology, dental hygiene, electrical contracting, computer technology, real estate sales, and cosmetology. Students attending these institutions may work towards an associate's degree or an industry-recognized certificate in their field. Of note, many vocational schools are private, for-profit institutions (for examples of American vocational schools, see the RMW Vocational Schools Database: <http://www.rwm.org/rwm/>).

Degree of differentiation. In the United States, individual states have varying systems for financing their primary, secondary, and postsecondary institutions. Because K-12 spending is

heavily dependent on state and local funding, expenditure per pupil tends to be strongly correlated with the socioeconomic status of the state and local community. Schools and districts in neighborhoods with greater property values generate more money for schools. Variations in district funding systems are reflections of different state education laws and different local perspectives about the appropriate roles of local and state government in raising revenue for and regulating education. Overall, urban and rural residents tend to have less residential mobility; thus, a differentiated school system is created on geographic lines.

In addition to differentiation based on funding and geography, secondary schools are differentiated in terms of their course of study. The majority of secondary level I and II schools provide general education in four core subjects: math, English, science, and social studies. Foreign language courses are often included in secondary level II curricula as well. Other secondary schools, however, specifically focus on vocational study. In the United States, about 1,000 vocational secondary II schools emphasize courses in occupational preparation for a particular field, though courses in the core academic subjects are also required (U.S. Department of Education, Office of the Under Secretary, Policy and Program Studies Service, 2004). The approximately 9,500 comprehensive secondary II schools in the U.S. focus on traditional academic curricula, but also offer vocational courses to students who wish to take them (U.S. Department of Education, Office of the Under Secretary, Policy and Program Studies Service, 2004).

American secondary schools are also differentiated in terms of stratification within the system, which is reflected by the formal and informal “tracking” or “ability grouping” of students. In the United States, secondary schools most often guide students into curricular tracks based on their academic abilities (Oakes & Guiton, 1995). Included in these tracks are several different academic courses, as well as a vocational or pre-professional track (see further below). In contrast, primary school students generally spend their entire day with one teacher, who is responsible for teaching all four core academic subjects (math, English, science, and social studies). Yet, teachers still often group students by ability, especially for math and reading.

Starting at secondary level I, students usually have between six and eight classes a day, each with a different subject-specific teacher. Secondary I courses include the four core academic subjects, as well as physical education and one to three elective classes. Electives traditionally include foreign languages, the arts, home economics, and shop classes. Today, some schools also offer specialized arts, foreign language, or technology curricula. Academic tracking from primary school continues in math and English and extends to social studies and science in some schools at secondary level I. At secondary level II, academic tracking intensifies, particularly at public secondary II schools. Generally, there are three academic tracks that secondary II students are placed into: college preparatory, general education, and vocational-technical. Some schools and districts may have more than three tracks, often including a higher track with Honors or Advanced Placement (AP) classes. Students are placed into these tracks based on prior academic performance as indicated by their standardized test scores, grades, and teacher recommendations. As will be discussed in the next section, these tracks do not tend to be permeable, although individual students may move between tracks if there are extenuating circumstances.

Interviews with both students and faculty from the secondary II schools and universities visited suggested that students who attend vocational education tend to be negatively stigmatized, at least by those who are or were not tracked into vocational-technical education. Interviewed students in traditional academic high schools made statements like: "Vocational education is for those not expected to go to college," "Vocational education would only be attractive if programs were more challenging and would show more options for further career," and "Vocational education is even, as a term, less attractive than 'technical courses'". One faculty member stated resolutely: "More than 60% of our high school [secondary II level] students move on to high level universities".

In contrast, the vocational secondary II students that we interviewed – though they were a small minority at all institutions visited – reported a somewhat more positive concept of their educational path. They mentioned that they like to learn practical things, are convinced to find good jobs after high school, and have personal plans for postsecondary education. Many also reported greater interest in the vocational learning environment relative to their previous school.

Faculty members that we interviewed in academic and vocational high schools confirmed the stereotypes of the two educational systems articulated by students at the academic high schools. Further, faculty of the traditional schools expressed that the community college system offers a good alternative to high school vocational education for those who are inclined to forego college, thus providing another rationale for preferring the academic high schools to the vocational schools. Interestingly, however, the staff at the vocational schools were much more up-beat and praising of the educational offerings at the vocational schools, emphasizing the fact that these schools are often the “only way to keep some of these kids in school.”

Much like the secondary school system, American postsecondary institutions are highly differentiated in terms of their funding (public versus private, as discussed earlier) as well as their purpose. The majority of traditional four-year postsecondary institutions prepare students to earn a bachelor's degree, whereas the majority of two-year colleges (including community colleges and vocational schools) prepare students to earn an associate's degree or an industry-recognized certificate. Indeed, several of the teacher education students at Temple University with whom we spoke reported that for them, attending a four-year college was important as a way to improve upon their family's economic status.

While not-for-profit two- and four-year postsecondary institutions provide broad curricula that include many elective courses in addition to the student's major area of study, vocational schools are significantly more specialized, offering distinct courses of study in areas such as accounting, medical transcription, automotive repair, and other areas. American professional schools also tend to be quite specialized, preparing students to enter specific occupational fields. Many traditional colleges and universities offer post-baccalaureate degree programs, including professional degrees (such as medical and law degrees), master's degrees, and doctoral degrees (such as the Ph.D. and the Ed.D.).

In addition to differences in funding and degree options, American postsecondary institutions are also differentiated in terms of selectivity. Selective colleges and universities typically admit only a small percentage of highly-qualified applicants who demonstrate academic

and personal excellence. Interviews with admission officers at three universities confirm this notion. For example, one admissions officer noted that: "Based on a broad and elaborate list of criteria we screen down from 25,000 applicants to 2,000 – but on the other hand we have a very high retention and graduation rate". Less-selective institutions typically admit a larger percentage of applicants, and are less stringent in terms of academic requirements. For example, community colleges generally have open-access policies, meaning that all students who meet basic academic competency levels are granted admission. These institutions are particularly important in terms of providing educational access to disadvantaged students, who may not be able to afford formal test preparation or attend outstanding secondary II schools – and thus, may not be able to gain admission to the nation's more competitive institutions. This was clearly confirmed during an interview at a minority-oriented community college, where an administrator conceded that "many will not graduate from community college."

Additionally, there are some universities that are bridging the community college/four-year college divide. For example, we learned through conversations with administrators that Drexel University has developed articulation agreements with several area community colleges to promote higher enrollment rates among minority and disadvantaged youth. In some cases, Drexel will guarantee students who are highly successful in their community college experience automatic admission to the university, with full credit for coursework taken at the community college. Schools like Drexel also promote vocational content in many of their academic programs, including co-op options, wherein students alternate periods of coursework at the university with apprenticeships in the job force. As discussed earlier, there is no curricular tracking at the postsecondary level, although some students are invited to enroll in academically rigorous honors curricula at institutions that support such programs.

Numbers of institutions and how the system is financed. In 2003-2004, there were 130,407 primary and secondary institutions in the U.S. Public institutions, which are more prevalent than private institutions, are funded by federal, state, and local governments. That same year, the total number of American postsecondary institutions – including vocational and for-profit institutions – reached 6,412 (U.S. Department of Education, National Center for Education Statistics, 2008). Notably, private postsecondary institutions are more prevalent than public institutions in the U.S. Tuition is also a significant source of revenue for institutions at all levels.

The postsecondary admissions/transition process. In the United States, admissions processes are conducted independently by each institution. Thus, each college or university is free to decide what criteria to consider, which often include secondary II grades, standardized test scores, extracurricular involvement, and personal background. There is no limit on the number of institutions to which students may apply. Of note, several colleges and universities in the U.S. have an "Early Decision" or "Early Action" process, during which students may apply to one or more institutions ("Early Decision" limits students to applying early to one institution, while "Early Action" does not) and be admitted before the regular application deadline. Though this may alleviate pressure on students later in the year, there is a great deal of competition during these early rounds.

Because the United States does not have mandated exit or entrance examinations, many colleges and universities rely heavily on standardized test scores – such as the SAT Reasoning Test – to assess students’ academic ability. Each year, the SAT is administered seven times in the U.S. and six times overseas (College Board, 2006). Though admission to American universities is not based entirely on standardized examination results, competition to excel on these tests is quite high, as is competition for admission to the most selective institutions in the country (McDonough, 1994). Therefore, the secondary-postsecondary transition process can be quite stressful for American students. However, secondary II students interviewed conceded: "You accept this as a fact", and "you just have to invest in SAT-preparatory courses". Community college students interviewed suggested one method of reducing this stress: "We make a detour through our community college in order to transfer to a four-year college later on."

Main educational reforms. A recent major reform in U.S. education was initiated under the *No Child Left Behind* (NCLB) Act of 2001. NCLB incorporates four principles of school reform: increased accountability for states, schools, and school districts; greater choice of schools for parents and students, particularly those attending low-performing schools; more flexibility for states and local educational agencies in the use of federal education dollars; and a stronger emphasis on reading, especially for the youngest children.

NCLB requires every public school in the nation to make Adequate Yearly Progress (AYP) towards proficiency on standards-based, state-wide, standardized tests. The goal stated in NCLB is that all students will be proficient – meaning that they will score at the 80th percentile or higher on their state standardized exam – by the year 2012. Each state sets the requirements for what constitutes a subgroup, but all states must disaggregate and report standardized exam scores for each of the following subgroups: racial/ethnic groups, economically disadvantaged students, students with disabilities, and students with limited English proficiency. Every subgroup must meet AYP in order for the school as a whole to meet AYP. Graduation rates for secondary II schools and attendance rates for other schools are also factored into AYP determinations. If a school does not make AYP in any year, it faces a series of sanctions. The sanctions range from warnings to complete school takeover⁵.

In terms of postsecondary education, the central proposed reform focuses on institutional accountability. While the federal government has called for greater accountability in the past, the federal government is again turning its attention to accountability of postsecondary institutions. In 2006, the U.S. Department of Education issued a formal call for accountability to all institutions, meaning that each college and university should be transparent about issues of access, affordability, learning outcomes, and student success. Institutions should be willing to share this information with students, families, and policymakers (U.S. Department of Education, 2006). This reform involves innovation on the parts of postsecondary institutions as well as the state and federal government, particularly in terms of financial support.

⁵ See <http://www.ed.gov/policy/elsec/guid/states/index.html> for more information on the No Child Left Behind Act of 2001.

Thailand

The current Thai education system was established in 1977, when Thailand changed from a 4-3-3-2 to a 6-3-3 process (six years of primary education, three years of secondary level I, and three years of secondary level II). Additionally, the 1999 National Education Act extended compulsory education from six years to nine years, covering six years of primary and three years of secondary I schooling.

Thai postsecondary education is divided into two levels: “lower-than degree level” and “degree level.” Lower-than degree level programs are offered by state and private institutions, vocational colleges, and community colleges, as well as colleges of physical education and fine arts. Degree level programs represent the higher level, as they require two years of study after completing the lower-than degree level program.

Degree of differentiation. In Thailand, the first nine years of basic education does not differentiate or track students. The curriculum requires about 30% local or specified knowledge, but 70% of the core curriculum is the same. Thus, the main differentiation occurs at secondary level II, at which students choose to advance to either general education schools or vocational schools.

Most graduates from the general secondary II track seek to enter universities, which are mainly academic. Those in the vocational secondary II tracks can go on to vocational colleges, but many try to get into universities as well. While it is possible for students who complete programs at vocational colleges to go on to universities and earn bachelor’s degrees, not all universities admit graduates from vocational colleges. Consequently, differentiation on the secondary II level limits students’ choices at the postsecondary level.

As discovered during the site visits, Thai students generally demonstrate greater interest in studying in the sciences as opposed to the humanities. This preference appears to be the result of the high value that Thai people place on the science track for its importance to social and economic development. This preference for science education was underscored by a remark from a teacher, who tells students: “Go first to science, even if you want to study law.” This preference was also evidenced by the fact that over 10,000 Thai students apply to the general secondary II science school, which was visited for this study, competing for just 240 seats each year.

It is important to note that there is considerable stigma associated with attending vocational schools in Thailand. Vocational education is associated with low academic requirements, lower social status and less economic opportunity. It also tends to be viewed as the option for students with academic problems and those of socioeconomically disadvantaged backgrounds. As one teacher remarked, “You need a university diploma; technicians have low status.” This quote illustrates the teacher’s attitude toward vocational education, which unfortunately, is shared by many other teachers and families. Overall, this issue is an important one, as Thailand is developing faster and will be in a great need of highly skilled manpower from vocational education.

Recently, there has been a major initiative to recruit more students into the vocational track to promote vocational education. The improvement has been gradual since it involves changing traditional societal values and perceptions. Because it is seen as more prestigious, general secondary II education – which offers the opportunity to attend traditional universities – will likely remain students’ and parents’ top priority for a long while.

Numbers of institutions and how the system is financed. As mentioned, students who complete secondary I education often want to continue on the academic track; thus, secondary II enrollments remain lopsided toward general education. However, the Thai Ministry of Education is currently attempting to shift secondary II enrollment from 40:60 (vocational track:general education track) to about 50:50 (vocational track:general education track) to assure that the Thai industrial sector has sufficient manpower in the future.

Prior to 1960, there were only five universities in Thailand – all in Bangkok. After introducing the first economic development plan in 1960, the government established regional universities to provide equal educational opportunity to individuals throughout the country. As of 2006, there are 93 public and 59 private postsecondary institutions under jurisdiction of the Commission on Higher Education (CHE), and over 50 specialized institutions under jurisdiction of other government agencies. Of the 93 public postsecondary institutions, four are autonomous universities, two are open universities, and 18 are community colleges. 22 are “limited enrollment” institutions that admit a certain proportion of students directly from secondary II schools (known as the direct admissions process) and the other portion through the centralized admissions process. Under the Commission of Vocational Education (CVE), Ministry of Education, there are 411 public vocational colleges and 401 private vocational colleges. All graduates from regular and vocational secondary II schools can gain admission to these colleges mostly in a non-competitive application system.

The postsecondary admissions/transition process. In Thailand, the postsecondary central admissions process is highly influential. Students must submit their applications, along with any accompanying documents required by the individual postsecondary institutions, to the Central University Admissions System (CUAS). Notably, the CUAS is a new application and selection strategy implemented in 2006. In the past, postsecondary admission was based solely on students’ national entrance examination results for a long time, and the decision of which students could attend which universities was decided by the examination scores managed by the current Commission on Higher Education. However, under the new CUAS, consideration is given to students’ grade point averages (GPAs) as the collective indicator of academic records, in addition to the national examination results. Presently, more institutions have a proportion of “direct admissions” prior to the central admission process to admit students by their own criteria. Along these lines, postsecondary institutions have more choices, and institutions are becoming more involved in the admissions process. They are able to recruit talented students who can successfully compete in international circles. In addition, the shift from relying solely on examination scores to considering other selection criteria likely makes the secondary-to-postsecondary transition process less stressful for students and their families, as their admission to selective institutions is not only contingent upon the test results.

Main educational reforms. Most reforms of educational administration and management have been carried out in accordance with the 1999 National Education Act and the 2002 Bureaucratic Reform Bill. The major change has been the merging of three government agencies: the Ministry of Education, the Ministry of University affairs and the Office of the National Education Commission. These agencies have been reorganized into a single Ministry, the Ministry of Education (MOE). The MOE is responsible for promoting and overseeing all levels and types of education; formulating education policies, plans and standards; mobilizing resources for education; promoting and coordinating religious affairs, art, culture and sports in relation to education; and monitoring and evaluating educational provision.

In response to the decentralization of authority for educational administration, educational “service areas” have been established by the Basic Education Commission. As of 2006, the country is divided into 175 educational service areas, with 172 areas in the 76 Thai provinces and the remaining three areas in Bangkok. Each educational service area is responsible for approximately 200 pre-primary, primary and secondary institutions in which there are about 300,000 – 500,000 students.

Following the principle of decentralization of authority of institutions, a school-based management approach was formally implemented. Therefore, Thai institutions at all levels are required to take responsibility in academic matters, budget, personnel, and general affairs. All postsecondary institutions are legal entities and are now allowed to function with freedom. In addition, all private educational institutions can offer education at all levels. Private institutions are also autonomous, and permitted to develop their own system of administration and management as well as academic curricula.

Hong Kong

In Hong Kong, schooling typically begins at age six. There used to be nine years of compulsory education, including six years of primary and three years of secondary I schooling. Based on the British example, secondary II education is divided into two phases: grades four and five, which leads to the Hong Kong Certificate of Education Examination (HKCEE) – the first major standardized examination that weeds out almost 70% of the student population – and grades six and seven, which culminate with the Hong Kong Advanced Level Examination (HKALE) – the primary tool for university selection. It is also important to note that the 3-2-2 secondary education system (three years junior secondary, two years secondary grades four and five, and two years secondary grades six and seven) will be soon combined into a 6-year system, with three years of junior secondary and three years of senior secondary schooling. Despite its selectiveness, secondary II education has been free since 2008.

Universities in Hong Kong offer 3-year programs for most first degrees, though these programs will soon be extended to four years like the American bachelor’s degree. While only a small number of students enjoy university education in Hong Kong, an increasingly large population is enrolling in 2-year sub-degree programs with the hope of attaining a place in the 2nd or 3rd year of a traditional university program. Yet to their disappointment, most students find themselves in the labor market or unemployed when they graduate. Even in the present day, promotion to university degree programs is extremely rare.

Degree of differentiation. The first nine years of basic education in Hong Kong does not differentiate students. However, differentiation does occur at the secondary level. The vast majority of students stay in academic programs during secondary school, with hopes of entering a traditional university upon graduation. Only a small percent of students choose vocational training, despite the fact that many fail their entrance examinations and cannot enroll in university.

At the secondary II level, most schools provide three “streams” (tracks) of study: the arts, science and business. These streams lead to the Hong Kong Certificate of Education Examination (HKCEE), which is the most important examination in secondary education because it dictates students’ progression to secondary level II. Due to its importance, the examination exerts significant pressure on students and their families. In addition, it instigates test-focused secondary II curricula (known as the “examination syllabus”), which is detrimental in encouraging students to memorize facts for the assessment rather than develop critical thinking skills.

Numbers of institutions and how the system is financed. As of 2007, Hong Kong has 668 primary schools and 565 secondary schools, most of which are financed by the government. In addition to this support, the majority of primary and secondary schools are operated by charitable or religious bodies. These are called “aided schools.” More than 80% of the schools in Hong Kong are considered aided schools.

Hong Kong also has 12 degree-awarding postsecondary institutions, eight of which are funded through the University Grants Committee (UGC). Each institution is autonomous, with its own governing body. The four institutions not funded by the UGC include a public performing arts academy, a self-financing open university, and two private colleges. In addition, the Vocational Training Council (VTC) provides vocational education and training for secondary school leavers and adult learners seeking skills for enhanced employability. Though all universities are encouraged to solicit donations and other funding opportunities, public money is still their major source of income.

The postsecondary admissions/transition process. In Hong Kong, the main tool for selection is the Hong Kong Advanced Level Examination (HKALE) results. If candidates believe that they have outstanding extracurricular achievements, they can submit a personal portfolio to the institutions, yet these often have little impact due to the substantial weight placed on HKALE. Thus, competition to excel on the HKALE is extremely high, and can result in a very stressful secondary-to-postsecondary transition period.

Typically, students take the HKALE after secondary II grades six and seven. After taking the test, they can apply to any degree program in the country. However, different programs at each institution have different application requirements. In general, more prestigious universities have more stringent requirements. At the beginning of the application process, students may be interested in 25 or more degree programs. After the release of their HKALE results, however, applicants often re-prioritize or delete some of their choices.

It is also important to mention Hong Kong's "Early Admissions Scheme for Secondary Six Students (EAS)." This system was initiated by the University Grants Committee with the aim of providing an opportunity for grade six students with excellent academic performance to be admitted to universities one year early. Students with a grade of "A" in at least six subjects on the HKCEE are eligible for this process. Once accepted, the students are admitted to university after completing one year of sixth-form study, and do not need to take the HKALE. Final admissions decisions are made by the individual institutions.

Main educational reforms. Since its takeover in 1997, Hong Kong's government has deemed education an area of major concern. Comprehensive reforms have been occurring since 2000 and new measures are constantly being introduced. The objective of these reforms is to "catch up" in the era of globalization and competition by changing educational practice from indoctrination to a more constructive approach of teaching (Education Commission, 2000). At the same time, schools are required to be more transparent and accountable for their actions. Schools are also encouraged to switch to a semi-private mode of operation (the "Direct Subsidy Scheme") for more market orientation.

Secondary II to postsecondary transition is another area that is undergoing major change in Hong Kong. In 2000, the Education Commission proposed that significant reforms will be made to senior secondary and university education. In May 2005, the government announced its decision to change the current system into a "3+3+4" model (Education and Manpower Bureau, 2005). According to the plan, the senior secondary grade 4 students in 2009/2010 will be the first cohort to experience a new three-year senior secondary education, followed by a new four-year first degree program in the universities. The two existing public examinations will be reduced to one, which will also hopefully reduce examination pressure. As a result, students will stay in the same secondary school for a total of six years before they take the new advanced level examination for university entrance.

Japan

The Japanese education system includes five grade levels (Ministry of Education, Sports, Science and Culture [MESSC], 2000). Schooling usually begins between ages three and five, when students enter Kindergarten. Japan's education system follows a 6-3-3 model, with six years of primary, three years of secondary I, and three years of secondary II schooling. Secondary II education is divided into general secondary schools, specialized training colleges (which provide 800 hours of specialized vocational training) and colleges of technology (which admit students directly from secondary I for five-year associate's degree programs).

Japanese postsecondary education includes another two to four years of schooling at traditional universities, vocationally-focused junior colleges, professional training colleges (which provide 800 hours of specialized training, much like the specialized secondary schools), or the colleges of technology. After graduating from university, students may move on to master's or doctoral programs.

Japanese postsecondary education includes another two to four years of schooling at traditional universities, which include vocationally-focused junior colleges, specialized training

colleges, and colleges of technology. After graduating from university, students may move on to master's or doctoral programs.

Degree of differentiation. In Japan, all students are entitled to equitable and adequate primary and secondary I education. Thus, the national government subsidizes all primary and secondary education in Japan, and school curricula are dictated by National Curriculum Standards. Secondary II curricula are based on the Course of Study issued by the Ministry of Education, Science, Sports and Culture (MESSC). The current course of study for secondary II schools was implemented in 1994. The MESSC has developed a new course of study based on the same guidelines as those for primary and secondary I schools, which was implemented in 2003.

There is no academic tracking at the compulsory (primary/secondary I) level. However, tracking does occur during secondary II education. There are three academic tracks at this level: college preparatory, general education, and vocational education. Students are placed into these tracks based on prior academic performance indicated by their grades and entrance examination scores. Core courses are divided into the college preparatory track and the general education track, while more specialized courses are considered to be part of the vocational education track. Typically, the general track is more selective than the vocational track, which includes courses in agriculture, industry, commerce, fishery, home economics, and nursing.

Much like the secondary II schools, Japanese colleges and universities are differentiated in terms of their funding and purpose. The majority of traditional four-year institutions prepare students to earn a bachelor's degree, whereas the majority of two-year colleges (including junior colleges, colleges of technology, specialized training colleges and miscellaneous schools) prepare students to earn an associate's degree or an industry-recognized certificate. Many traditional colleges and universities also offer master's and doctoral degrees.

In addition to differentiation based on funding and purpose, postsecondary institutions in Japan are also differentiated in term of their selectivity. Selective colleges and universities admit only a small percentage of highly-qualified applicants who demonstrate academic excellence through their standardized test scores. Less-selective institutions generally admit a greater percentage of applicants, and are not as strict in terms of academic requirements. For example, junior colleges generally have open-access policies, meaning that all students who display basic academic competency are offered admission.

Numbers of institutions and how the system is financed. Considering the country's value of providing basic education to all citizens, the national government subsidizes all public primary and secondary education (the majority of the schools are "local" (public) schools. In contrast, private primary and secondary schools receive very little support from the government.

The Japanese postsecondary education system has 4,721 institutions, including 726 universities, 488 junior colleges, 3,439 professional training colleges, and 68 colleges of technology. Among the 726 universities, there are 87 national universities (funded by the national government), 86 public universities (funded by the local government) and 553 private universities (funded by private sources with little government support).

The postsecondary admissions/transition process. In Japan, each college and university selects its applicants according to its own admission procedure. Thus, each institution can choose what criteria – such as grades, entrance examination scores, interviews, and essays – to assess during the application process. There is a national entrance examination that most students are required to take, called the National Center for University Entrance Examination (NCUEE), offered every year in January and March. With the exception of junior colleges, all national and local universities – as well as most private universities – use this examination. However, many institutions also have their own entrance examinations. As a result, students take an average of four to five entrance examinations during their senior year.

Notably, secondary II students are permitted to apply to as many private universities as they would like, but they are only permitted to apply to two national or public universities per year. There is no “early admissions” option for secondary II students applying to universities during their senior year. Students who are applying to selective Japanese institutions feel some stress during the application process, whereas students applying to less-selective institutions do not experience such anxiety.

Main educational reforms. Based on the recommendations of *The Final Report of the National Commission on Education Reform*, which resulted from the Japanese Prime Minister’s 2000 meeting of the National Commission on Education Reform, major policy and action reforms include: Improve students’ basic scholastic proficiency in “easy to understand classes;” foster youth development into open and warm-hearted Japanese citizens through participation in community service and various other programs; create learning environments that are enjoyable and free of stress; develop schools that can be trusted by parents and communities; train teachers as real “professionals” of education; promote the establishment of universities that meet international standards; and establish an educational philosophy suitable for the new century.

South Korea

Korea has a single-track 6-3-3-4 education system. Since 2004, preschool (kindergarten) has been included in the public education system. Free preschool education for one year has been offered to low income families since 1997, and is currently being extended to all families. The single-track system includes six years of primary school (typically beginning at age six), three years of secondary I, three years of secondary II, and four years of postsecondary education.

Degree of differentiation. In Korea, primary education is free and compulsory, providing basic education to the general public. Primary school generally begins at age six, and students typically graduate in six years. The enrollment rate at primary schools is as high as 99.9%. Secondary I education (three years) is also compulsory. Since 1969, there has been no limitation on entrance to secondary I schools; therefore, all students who wish to enter secondary I schools are simply assigned to the school nearest to their residence. Free compulsory education at the secondary I level began in 1985 in remote island areas, and has since been expanded across the nation.

Secondary II education is divided into three types of schools: academic schools, vocational schools, and “other” (foreign language, art, and science-talented) schools. In 2002,

97.2% of the total number of secondary II-age students attended secondary II schools.⁶ Although the secondary II application process varies by province, there are generally two rounds: pre-application and post-application. Pre-application is for the vocational and “other” secondary II schools. Secondary I graduates apply to the school that they would like to attend, and the decision is made based on their GPA and/or the entrance examination administered by the provincial education office. Students with low GPAs who do not want to go to college usually apply to the vocational schools, while students with high GPAs tend to choose foreign language or science-talented schools. Once the pre-application period is over, the post-application round is for students who did not participate in pre-application, as well as those who were not chosen during the pre-application round. These students are all assigned to a general (academic) secondary II school in their residential district. In general, the transition from secondary I to secondary II schooling is considered a “first screening,” because the distinction between vocational and general academic schools is largely determined by GPA.

Students who wish to attend vocational secondary II schools must choose their field of study (such as agriculture, industry, commerce, fisheries/maritime studies, and home economics) before the pre-application period. Vocational schools offer academic courses as well as vocational courses, but the academic courses are offered in 10th grade as part of the national common curriculum. General secondary II students learn traditional academic subjects and typically intend to enter college. In grade 11, they choose their major area of study – either human/social science or natural science/engineering – and begin training in that area. Finally, the “specialized schools” are for students who are gifted in language, science, and the arts. Students who attend specialized secondary II schools are screened before entry and encouraged to study the same disciplines during postsecondary education.

As industry has become more scientific and sophisticated, the Korean government is striving to develop and support vocational secondary schools and expand their role in the education system. However, parents and students still prefer general secondary II schools to vocational ones because general secondary school graduates have a greater chance of being accepted to Korean universities. As of 2004, vocational secondary II schools comprised about 34.0% of the total number of secondary II schools in Korea, and about 29.1% of all secondary II students attended vocational schools. These numbers have been dropping since 1997 (Ministry of Education & Human Resources Development and Korean Educational Development Institute, 2003). Considering students’ aspiration to achieve a high level of education, a curriculum has been developed for integrating the different school tracks; for instance, the vocational secondary school-junior college (2+2) track is a combination of two years of vocational secondary II education (11th and 12th grades) and two years of junior college education.

As mentioned, Korean schools administer the nationally common curriculum, which is differently operated by schools and provinces. Since 2002, the 7th National Curriculum has been used at all secondary II schools. The main characteristics of the curriculum are: 1) From grades 1 through 10, students take common required courses based on national standards; 2) For grades 1 through 10, curricula are differentiated on the basis of students’ academic capability; and 3) For grades 11 and 12, the curriculum is differentiated on the basis of the student’s interests and career goals. These final two years typically include elective courses.

⁶ This number is based on the IMD World Competitiveness Yearbook, 2005.

Korean postsecondary institutions are divided into seven categories: colleges and universities; industrial universities; universities of education; junior colleges; air and correspondence universities; technical colleges; and other miscellaneous institutions. The Ministry of Education & Human Resources Development has criteria for the different institutions' foundation, establishment of academic departments, student quota, faculty hiring, and degree conferment.

Colleges and universities, universities of education, and air and correspondence universities all have four to six year curricula, and offer traditional bachelor's degrees. Colleges and universities generally focus on academic development, and universities of education are for primary school teacher education. Industrial universities provide both education and a workforce practicum. Students at these institutions can earn bachelor's degrees, but they do not have a specified number of years to complete them. Junior colleges are typically two to three year programs that focus on practical education and produce mid-level technicians. They offer professional bachelor's degrees, which are non-academic. Technical colleges offer both professional and academic bachelor's degree programs. For the professional bachelor's degree, students must take courses for two years, and for the academic bachelor's degree, students need an additional two years of coursework.

Colleges and universities also offer master's and/or Ph.D. programs, depending on the particular school. For a master's degree, two to three years of study beyond the bachelor's degree are required, and for Ph.D., at least four years of study post-bachelor's degree are needed. In 2004, there were 236,152 graduate students enrolled in master's degree programs, 40,766 graduate students were enrolled in doctoral courses, and 8,399 students received doctoral degrees (Ministry of Education & Human Resources Development and Korean Educational Development Institute, 2003).

Continuing education in Korea can be placed into three categories: para-school education, occupational and technical education, and general education. Para-school education covers civic schools, civic secondary II schools, industry-linked schools, schools that offer evening classes, broadcast and correspondence secondary schools, broadcast and correspondence universities, accredited programs for self-study, distance learning universities, industry-linked universities, and industrial universities. Occupational/ technical education is provided by vocational training centers under the administration of the Ministry of Labor. General education aims to promote public social education, and is provided by museums, public libraries, cultural centers, national theatres, and lifelong education facilities.

Numbers of institutions and how the system is financed. In South Korea, there are 5,757 primary schools and 5,262 secondary schools. Among the primary schools, 5,664 are public and 76 are private. Among the secondary schools, 3,617 are public and 1,617 are private. The country also has 203 postsecondary institutions, though there are significantly more private (158) than public (45) institutions (Ministry of Education & Human Resources Development, 2003). As illustrated by these data, there is a larger proportion of public schools at the primary and secondary level, though private institutions dominate the postsecondary level.

Public sources are responsible for 79.5% of the total costs of primary and secondary education, whereas 20.5% of the total expenditure is funded by private sources. Private sources include tuition and fees (17.8%) and funding from private entities (2.7%) such as individual or organizational donations (OECD, 2007). For postsecondary education, the public sector is responsible for about 21% of the total expenditure, and the private sector (including tuition) accounts for about 79% of the total expenditure (OECD, 2007).

The postsecondary admissions/transition process. The Korean education system allows colleges and universities to develop their own admissions processes. Therefore, each institution can require different application materials, such as College Scholastic Ability Test (CSAT) scores (counting for more than 60% of the application at most institutions); secondary II records, including students' grades, extracurricular activities, and attendance (counting for 40% or less at most institutions); university-administered entrance examinations; and other documents, such as essays and letters of recommendation (each of which plays a small role at only a few institutions). Based on these documents, the admissions staff evaluates applicants' readiness for the university. Final decisions are made by both institutional and government officials.

In terms of applying, Korean students may choose the general or the special application process. Under the general application process, students are admitted to institutions based on their academic ability and their CSAT/university-administered test scores. In contrast, the special application process is used to select students who are talented or disadvantaged as opposed to those with high test scores. Students may submit a maximum of five applications per year. Their first chance to apply comes during the first semester of their senior year, known as the "early round." The other chances come during the second semester. Students who are admitted during the early round must enroll at the institution they were accepted to and may not apply to any other institutions. Because many students believe that gaining admission to a prestigious university generates success upon graduation, the secondary-to-postsecondary transition can create much anxiety for Korean adolescents.

Main educational reforms. Historically, the Korean educational system has been quite centralized and hierarchical. The Korean government acknowledges the criticisms of such a centralized and bureaucratic system, and has tried to move to a more creative, learner-oriented education. In the past, the curriculum was standardized and uniform across schools. However, the national curriculum now offers more choice for 11th and 12th graders. Teachers are encouraged to promote discussion, group study, and presentations rather than traditional teacher-centered instruction. The form of examinations is also changing; in the past, paper and pencil tests were the predominant method, but performance tests – such as portfolios, essays, and experiments – are becoming more popular.

Recently, Korea also instituted a "high school equalization" policy in hopes of reducing competitiveness in secondary I schools, particularly with respect to gaining admission to secondary II institutions with strong university placement records. The high school equalization policy helped reduce tutoring expenditures on secondary I students, which were originally enforced to enhance equity. However, the equalization policy has been criticized for creating heterogeneity in classes and for grouping students of different learning abilities together. This heterogeneity diminished the effectiveness of teaching, and ultimately resulted in *increased*

private tutoring expenditures. It has been also argued that assigning students to secondary II schools by residence may restrict their school choice depending on their talent and aptitude.

As one way of overcoming the weaknesses of the high school equalization policy, independent schools and talented schools for science, language, and arts have been established. However, it is still unclear as to whether the high school equalization policy has helped reduce private tutoring expenditures or if it has deteriorated secondary II school quality.

In addition to the high school equalization policy, the “Comprehensive Plan for Education in the Information Age” was implemented between 1997 and 2000. The plan’s objective was to build the infrastructure for education in the information age. In order to enable teachers to access information communication technology (ICT) and improve their instructional methods, personal computers have been distributed to teachers at primary, secondary I, and secondary II schools. By early 2005, one personal computer was provided for every five students with an Internet connection of at least 2Mbps.

Cross-National Comparison

As illustrated in the previous section, similarities and differences exist among the six nations in terms of their educational structures, values, and admissions/selection processes. While there are several characteristics shared by all of the nations, there are also distinctions that showcase the strengths and weaknesses of each system – particularly in terms of students’ transition from secondary to postsecondary education. Overall, these similarities and differences can be categorized into four themes, discussed in detail below.

Theme 1: Structure of the Systems

The structure of the education system in all six participating countries follows a common scheme, from Kindergarten to primary school, followed by secondary (level I and II) and postsecondary education. With regard to primary and secondary school, there are some variations in terms of the levels’ proportions; for example, the United States has several methods of dividing primary and secondary schooling (6-6, 4-4-4, 6-6, or 8-4), as does Switzerland (6-3-3, 6-3-4, 6-2-4, or 6-6). Contrastingly, Hong Kong has a single-option 6-3-2-2 system, which will soon be reformed into the 6-3-3 system maintained by Thailand and Korea. All six nations have at least nine years of compulsory education.

Comparing the absolute number of institutions in each nation is of limited value because the countries’ size, traditions, and economies dictate attention to – and expenditure on – education. However, one observable trend based on our data is that the number of postsecondary institutions is rapidly increasing in some of the nations. In Thailand, for example, there were only five universities under the jurisdiction of the now Commission on Higher Education before 1960; by 2006, there were 152 higher institutions throughout the country (Office of the Education Council, 2006). The United States also had a significant increase of 58 institutions between 2003 and 2004 (U.S. Department of Education, National Center for Education Statistics, 2008).

In terms of financing, there is some variation among the countries, particularly in terms of public versus private institutions. All six nations have significantly more public primary and secondary institutions than private primary and secondary institutions. This reflects the countries' shared value of free and accessible compulsory education. However, this trend shifts when examining postsecondary education: several of the nations, such as Japan, South Korea, and the United States, have more private colleges and universities than public ones.

Sources of institutional funding also vary across the six nations, particularly on the postsecondary level. In some countries, colleges and universities are completely funded by the national government. For instance, Hong Kong's government fully funds all but one university. In Switzerland, 10 of the 12 academic universities are operated by single cantons and subsidized by the federal government, as are seven of the nine Universities of Applied Sciences. On the other hand, 553 of the 726 Japanese universities are privately-funded, compared to only 173 government-funded universities. In a similar trend, 4,365 of the 6,412 colleges and universities in the United States are private institutions. These funding differences are reflective of the nations' emphasis on education for all citizens, and the notion that developing large numbers of colleges and universities to serve all people may stretch government funding – thus necessitating more privately-supported institutions.

Theme 2: Degree of differentiation

As described earlier, there is significant variation among the countries regarding the degree of educational differentiation. For instance, Switzerland, Thailand, Korea, Japan and the United States have highly differentiated systems that separate secondary school students into general/academic, college preparatory, and vocational tracks. General and college preparatory education generally prepare students to enter traditional academic universities, whereas vocational education generally prepares students to enter vocational colleges or join the workforce. Notably, however, Switzerland is the only nation in which vocational education operate as a dual system, where both academic schooling and workplace-training are emphasized on secondary level II. Along these lines, Switzerland has the strongest emphasis on and appreciation for vocational education out of all six nations.

In the majority of countries studied, tracking begins on secondary level II. For instance, Korean students are separated into academic, vocational, or “other” (e.g., science or art-talented) schools at the secondary II level, as are American students. A similarly differentiated system exists in Switzerland, where secondary II schools are separated into the Gymnasium (academic school), Intermediate Schools (which emphasize both academic and vocational education), and vocational schools (which stress vocational education and apprenticeships but also incorporate academic subjects). Much like Korea and Switzerland, the United States has several different secondary II school options. However, U.S. “tracking” is less formal in that students have some input into tracking decisions—particularly decisions about whether to attend a vocational high school as opposed to an academic high school. Switzerland and Hong Kong are the only other nations examined that track students before secondary level II.

In Switzerland, Japan, and Korea, students' placement into different academic tracks is contingent upon their grades, and in the latter two cases, their standardized or national examination scores. Contrastingly, students in the United States, Hong Kong, and Thailand are

permitted to choose which tracks to follow (in some cases, an examination might still be required; for example, some privately-funded schools or schools for the gifted may require students to pass certain entrance examinations). Unlike the other five nations, tracking is not very prevalent in Hong Kong, as the vast majority of students stay on the general/academic secondary II track in hopes of entering traditional universities.

In terms of postsecondary education, all six countries differentiate academic versus nonacademic or vocational tracks. The academic track is typically hosted by traditional universities, following the structure of a 3-4 year bachelor's degree program, a 1.5-2.5 year master's degree program or a longer professional degree program (such as a law or medical degree), and lastly, a 3-6 year Ph.D. or other doctoral degree program. The non-academic track focuses on vocational education, typically offered by junior colleges and vocational/technical institutions that provide lower-than academic degrees (i.e., associate's degrees in Hong Kong and the U.S., professional bachelor's degrees in Korea, or "lower-than-degree-level" diplomas in Thailand). In the unique case of Switzerland, vocational postsecondary education is a natural progression for many students, since secondary II vocational education is quite popular and strongly supported. The Universities of Applied Sciences, which offer bachelor's and master's degree programs oriented to specific vocational fields but are academic in nature, have become increasingly important.

In addition to tracking variations, colleges and universities in all six nations are also differentiated by their selectivity. In Japan and Thailand, for instance, selective colleges and universities only admit a small percentage of highly-qualified applicants with excellent national/standardized test scores or entrance examination results. Less-selective Japanese and Thai institutions admit a larger percentage of applicants, and are not as stringent in terms of academic requirements (i.e., open-access junior colleges).

The United States makes the same distinctions, although "excellence" in terms of the selective institutions also includes secondary II grades and other personal accomplishments. South Korea shows a similar pattern, wherein the more selective or competitive institutions are generally located in Seoul (the nation's capital), but the less-competitive institutions are generally located in more local areas and do not demonstrate high graduation or employment rates. Although Hong Kong does not distinguish "selective" versus "non-selective" institutions, traditional universities are extremely competitive in terms of their admission; thus, only a small number of students go on to receive a university education. Finally, Switzerland presents a unique case. On the one hand, the nation's postsecondary higher institutions are considered neither selective nor non-selective. This is because all students with a General Matura are typically accepted to the university of their choice and those with a Vocational Matura are generally accepted to the Universities of Applied Sciences. On the other hand, this differentiation in two types of universities is selective in and of itself.

Theme 3: Curriculum

In terms of curriculum, Switzerland, Thailand, Korea, Japan, and Hong Kong all have at least some national requirements for primary and secondary schools (both general and vocational programs). A common feature across these countries is the minimum requirement of basic subjects, including mother language, foreign languages, mathematics, science, social science,

and the arts. Vocational secondary II schools also tend to have nationally applicable requirements with respect to basic subjects and graduation requirements, as seen in Thailand, Korea, and Switzerland. Seemingly, the United States is the least regulated of the six nations with respect to curriculum. For the college-bound population, the SAT - which is widely used in college admissions decisions – certainly affects what is taught in secondary II schools. However, states and local school districts in the United States have autonomy over the curriculum even today. However, national accountability standards imposed under No Child Left Behind (see above) are encouraging greater standardization of the curriculum within, if not across, states.

In all six nations included in this study, there is some district-level influence over the curriculum. However, in the dual vocational education system of Switzerland, there is a national curriculum for both school and work place instruction, aligned with each respective vocational field. In addition, vocational school curricula in the six focal countries tend to include more technical and practicum learning, whereas general education curricula include more specialized and advanced academic courses.

The “core” or basic subjects described above are important for students’ transition to postsecondary education, especially in the four Asian countries, because the national university entrance examinations are based on those subjects. The same is true for students in the United States, although they may also be required to take non-basic subject examinations (which are uncommon in the other five nations). In Switzerland, the Matura – which determines the eligibility of secondary II school students to graduate and apply for university admission – also emphasizes the basic subjects. Based on these data, it can be concluded that secondary II curricula have a significant impact on university admissions processes, especially in the countries where university admission is highly competitive.

As noted earlier, the United States is an outlier nation with no federally mandated curricula at any level of education. The majority of secondary II schools focus instruction on the basic academic subjects, though there are some specialized schools with more specific curricula (for example, science- or mathematics-specialized schools). Similar to the Asian countries, and to some degree, Switzerland, postsecondary institutions in the United States considerably influence secondary II curricula, as many colleges and universities require students to complete a certain number of courses in the basic subjects. Thus, secondary level II schools must ensure that they offer these courses in order to prepare students for the transition to postsecondary education.

Regarding postsecondary education, colleges and universities in all six nations appear to exercise a high degree of autonomy in their curricular development. In Thailand, postsecondary institutions are able to design their own curricula so long as they comply with minimum standards set forth by the national government. Institutions in the United States, Switzerland, Hong Kong, Japan, and Korea are even more autonomous in terms of curriculum. In these countries, the national government does not dictate postsecondary curricular development, though it must be reported in the nations’ federal or external accreditation processes. Overall, curricular autonomy prevailed at colleges and universities in each of the studied countries.

Theme 4: Commonly Held Educational Values and Beliefs

According to our site visits and the country reports, individuals in all three visited nations seemed to believe that education should be accessible for all, and citizens should receive as much education as they desire. Our colleagues from the other three countries reported similar values and beliefs as well.

Education is associated with long histories and cultures of all six nations. In Korea, Japan and China, for instance, education was historically tied to upward social mobility. Thus, teachers were not only persons who shared knowledge, but persons to be respected and revered. In modern times, education is still perceived as a prerequisite for gainful employment, which often leads to increased social and economic mobility.

Postsecondary education is also considered public service in all six countries, as evidenced by the governments' provision of lower-cost public institutions. With the exception of Switzerland, private primary/secondary schools, colleges and universities play an important role in educating children in the six nations. In some cases (such as the United States), private schools are even more prestigious than the public ones, though they are usually associated with greater cost.

Our major finding with respect to vocational education is that only one of the six nations – Switzerland – places significant value on vocational education, beginning as early as secondary II schooling but including the transition from secondary I. As discussed earlier, differentiation by tracking begins early in several of the six nations, and permeability after the differentiation is rare. Secondary education typically separates students into two or three “tracks” of study, which determine students' postsecondary education as well as their employment options. Much unlike students in the other nations, the majority of Swiss students choose the vocational track. This reflects the significant value of vocational education in Switzerland. Students on this track can pursue higher vocational education if they desire; they also earn as much or even more money than those on the academic track. Swiss vocational education has been grandfathered through numerous generations of Swiss professionals, and the elaborate tradition of apprenticeship still continues today.

In contrast, vocational education has substantially lower value in the Asian countries and, to some extent, the United States. The majority of students in these countries aspire to earn degrees from prestigious universities in their home countries and throughout the world. As confirmed by the site visits in Thailand and the U.S., vocational education is associated with low academic requirements, lower social status and less economic opportunity. In several of the six nations, vocational education is viewed as the option for students with academic difficulties and those from socioeconomically disadvantaged backgrounds. Thus, the status of universities – especially the top ranking ones – is far higher than vocational institutions. There are several reasons responsible for this stigmatization of vocational education: The culturally and socioeconomically driven notion of education, the lack of a “master tradition”, and the fact that the business world is not involved in vocational education as a partner of vocational schools and takes over responsibility for educating young people. Again, this can enforce the image that school-oriented vocational education is less real-world oriented and market driven.

In all countries except Switzerland, traditional postsecondary education (via university) is becoming the educational path of choice. This trend, which our research team deemed “college mania,” is related to escalating social ambitions on the part of students and their families as well as the rising expectations of employers. The value of general education at the postsecondary level is also regarded as necessary given the demands of economic and social development. Thus, the “college mania” via traditional universities trend will likely continue until governments, institutions, and educational organizations develop more high-quality vocational options, as shown in the Swiss case. Even in a dual vocational education system like Switzerland’s, the importance of pursuing of postsecondary education at specialized universities or other forms of higher continuing vocational education after completing vocational secondary education is seen as both an advance in status and an economic need.

Theme 5: Main Educational Reforms

Numerous challenges and reforms were described in the six country reports. Due to the distinctive nature of each nation’s changes, there were not many palpable overarching trends; however, several reforms overlap and are noteworthy with regard to secondary-postsecondary transition. For instance, Thailand is currently undergoing a decentralization of the country’s educational administration and management. Thailand is also moving towards a more student-centered approach to teaching and learning, as well as altering the primary/secondary school curricula to emphasize a better balance of knowledge, critical thinking, and social responsibility that might change future prerequisites for university admission. This is similar to the reforms taking place in Korea, where the “high school equalization” policy has been enforced to reduce competitiveness on the secondary I level in terms of gaining admission to secondary II schools that prepare students for college. Switzerland is also instituting these types of reforms; mainly, the nation is attempting to standardize the requirements for the Gymnasium Matura in effort to increase students’ academic ability and ultimately strengthen postsecondary institutions. Along these lines, Hong Kong is emphasizing more market-driven schools and moving from two public examinations to one upon completion of secondary school in order to reduce the stress associated with these tests. While the availability of standardized entrance examinations is not an issue in the United States, the country is currently facing a call for more accountability in both secondary and postsecondary education. Finally, unlike the majority of nations examined in this research, Japan is stressing a *more* competitive environment for students and implementing stricter grading systems in response to increasing educational standards.

Theme 6: Postsecondary Application/Transition Processes

While there are similarities among the six nations in terms of their educational structure and value systems, their postsecondary admissions processes are much more distinct. For instance, a fundamental difference among these countries is the number of institutions that students may apply to. In Thailand, students can submit up to four applications per academic year through the central admissions process, but through the direct admissions process, there is no limit to the number of schools students may apply to. Similarly, Japanese students may submit unlimited applications to private universities, but they are only permitted to apply to two national or public universities per year. In Switzerland, most students only apply to only one university due to the general open-access policy. In contrast, students in the United States and South Korea may submit as many applications as they choose; there is no limit on the number of colleges or universities to which they can apply. This basic dissimilarity highlights the unique

nature of each nation's postsecondary admissions process, though there are several shared characteristics among them as well.

As discussed in the previous section, postsecondary institutions in each nation stress different aspects of students' applications during their admissions process. Swiss universities place substantial weight on the Matura, which is the sole document required for transition from secondary to postsecondary higher education, with the exception of medical schools. The general Matura, earned after the completion of courses and examinations at the Gymnasium, allows students to enter any academic university. The vocational Matura, earned after the completion of courses and examinations at secondary II vocational schools, allows students to enter universities of applied sciences. Thus, the Swiss postsecondary admissions process is very straightforward: students are automatically admitted to the institution of their choice so long as they hold the appropriate Matura.

In contrast to the Swiss focus on secondary II credentials, the Thai postsecondary admissions process stresses national entrance examination results. As aforementioned, the Thai Commission on Higher Education (CHE) is responsible for making admissions decisions in the central system, which are largely based on students' examination scores. Since the year 2000, however, more weight has been given to academic records as additional criteria. Illustrating this point, the weight given to secondary school academic records increased from 10% in 2000-2005 to 30% in 2006. Therefore, while the national examinations are still used as a primary selection criterion, the new central admissions system incorporates a much broader range of requirements from which decisions can be made. However, due to concerns that secondary II records offer inconsistent measures of student preparedness, national examination results will likely remain important selection factors for many years.

Contrary to the single-criterion focus of Switzerland and Thailand's admissions systems, postsecondary selection processes in Korea, Japan, and the United States are more holistic in nature. Instead of emphasizing a secondary school credential or examination results, these three nations stress multiple aspects of students' applications, including academic records, essays, letters of recommendation, extracurricular involvement, national/standardized test scores, institutional test scores, and personal interviews. Although some criteria may receive more weight than others, all are considered important elements when making admissions decisions. Aside from this shared characteristic, however, the three countries vary considerably in terms of their application processes. For example, Korean students are permitted to choose either the "general" or the "special" process when applying to postsecondary institutions. Under the general process, students are selected based on demonstrated academic ability and standardized test scores. The special application process is used to select talented students from certain geographic areas or from disadvantaged backgrounds. Notably, these processes are similar to the central and direct admissions systems used in Thailand.

Unlike Thailand and Korea, Japan does not have a divided admissions system; while the exact application requirements differ by institution, students are not able to select which aspects of their applications are evaluated. This is also true in the United States, although students are often given a choice of when to apply for admission. Many American institutions offer an "early admissions" program in which students submit their application materials before the regular

application deadline and are notified of their acceptance before the general notification date. For example, many colleges and universities have a regular application deadline of January 1 and a notification date of April 1, while the early admission deadline may be November 15 with a December 15 notification date. Due to their high level of autonomy, each institution is free to decide whether to offer the early admissions program. Institutions that adopt the early admission process are also free to determine whether the decision will be binding (meaning that students must commit to enrolling at that institution if admitted early) or non-binding (meaning that students are not committed to enrolling if admitted early). Interestingly, Korea has a similar early admissions approach: students are given five application opportunities per academic year with two “early rounds” during their first semester. Much like the binding early admissions programs of American universities, Korean students admitted during the early rounds are required to matriculate at the institution to which they are accepted and may not apply to other schools during the regular round. Hong Kong’s “Early Admissions Scheme for Secondary Six Students” (EAS) provides a similar opportunity for academically talented secondary II students to be admitted to universities one year early.

The role of entrance and exit examinations. In each of the six nations, transition from secondary to postsecondary education requires the completion of at least one exit or entrance examination. The value placed on these examinations, however, varies significantly among the focal countries. In keeping with its distinctive admissions process, Switzerland is the only one of the studied nations that emphasizes the secondary II exit examination. With few exceptions, entrance examinations are not required by Swiss postsecondary institutions; the only students who may be required to take a national entrance examination are those applying to Swiss medical schools, those applying to academic universities without a General Matura, or foreign students who do not hold the equivalent of a Swiss Matura. In all other cases, the secondary II exit examination – which is planned, administered and graded by each individual school based on a national framework – is the only assessment that influences which institutions students can attend.

In contrast to Switzerland, all of the other participating countries stress national or standardized *entrance* examinations in the secondary-to-postsecondary transition process. As described earlier, results from the nationally-administered examinations in Thailand serve as the primary criteria for admissions decisions, with less emphasis on secondary school performance. Administered once a year since 2006, the Thai national examinations include the compulsory O-NET (Ordinary National Educational Tests), the optional A-NET (Advanced National Educational Tests) of multiple academic subjects and the specialized/professional aptitude tests from which students can choose. Typically, students select subjects that are encouraged or required by the institutions to which they are applying. The centralized system will be adjusted again in the year 2010. Thus, Thailand is in the state of transition from a system that relied solely on entrance examination results to a multiple criteria system that can assure the public of its transparency and fairness. Due to its significance in the admissions process and the fact that the national examinations are offered only once a year, they are extremely stressful for Thai students.

Similar to Thailand’s national entrance examination, the Korean College Scholastic Ability Test (CSAT) includes multiple academic subjects that students may choose from when

taking the assessment. Unlike the Thai examination, however, the CSAT is only offered once per year, which likely results in even stronger feelings of stress among Korean students. Notably, results from the CSAT are reported as standardized scores for each individual subject, and most Korean institutions rely heavily on these results when making admissions decisions. Much like the CSAT, the Japanese National Center for University Entrance Examination (NCUEE) is a nationally-administered, standardized entrance examination required by all public as well as some private institutions (excluding junior colleges). The NCUEE is also administered once per year, and includes six academic subject areas. As with Thailand's entrance examination and the Korean CSAT, Japanese students may choose which of the six subjects they would like to sit for, depending on what is required by the institutions they wish to enter. However, a unique aspect of the Japanese system is that many universities that use NCUEE also require a second examination administered by the institutions themselves, in hopes of measuring students' ability with greater accuracy.

Considering that there are no nationally-mandated entrance or exit examinations in the United States, most postsecondary institutions require students to complete at least one standardized assessment before they apply. The SAT Reasoning test, which measures students' abilities in Critical Reading, Mathematics, and Writing, is the most popular standardized test taken by students preparing for the transition into postsecondary education. Each year, the SAT is administered seven times in U.S. territories and six times overseas (College Board, 2006). The second most popular standardized test is the ACT, which measures students' academic development in English, Mathematics, Reading, and Science, along with an optional Writing section. The ACT is offered five times a year, but only within the United States (ACT Inc., 2006). Notably, standardized entrance examinations are offered much more frequently in the U.S. than in the other nations, which may contribute to lower levels of stress for students who take them (compared to Japan and Korea, where test anxiety is a major problem). The SAT and ACT are also unique in that students are not permitted to choose among the subjects, much like the Swiss exit examination. In addition to these two assessments, many American colleges and universities require additional examinations (such as the Test of English as a Foreign Language) or institution-specific assessments similar to those required by Japanese universities.

Since there is much variety and selectivity of postsecondary institutions, it seems logical that two aspects take over an important function in the transition process: On the one hand counseling services at secondary and partly even primary schools regarding the students further career (school selection etc.) are needed and also offered at many places. On the other hand a variety of private tutoring as a mean to prepare students for the respective exams are prevalent and made use of by many students, partly because they objectively need this support, partly because of social pressure by teachers, peers and parents.

Access to postsecondary education. Based on our country reports and site visits, promoting access to postsecondary education is a shared value among the six nations. This commitment to social equity is illustrated by each country's enforcement of open-access or open-enrollment admissions policies at a significant number of institutions. For example, students possessing a Swiss General Matura are guaranteed admission to any academic university they wish to attend, while those possessing a Vocational Matura are granted admission to any university of applied sciences. In other words, Swiss universities essentially operate under an

open-access policy, admitting all students who hold an appropriate Matura. As a result, students of all racial, ethnic, and socioeconomic backgrounds have the opportunity to participate in postsecondary education.

Although the other five nations do not have guaranteed admissions systems and Switzerland requires a respective Matura, all six nations' commitment to promoting educational access is evidenced by the existence of numerous junior and vocational colleges. For example, Thailand has many highly selective universities, yet there are also two open-enrollment public institutions and myriad vocational colleges whose mission is to provide nationwide access to postsecondary education. The Korean system displays similar characteristics, wherein there are several highly selective universities but also many junior and technical colleges that are much less selective. This is the same for Japan and the United States, in which junior and technical colleges tend to be open-access institutions that admit all applicants who meet basic criteria. By incorporating these institutions into the postsecondary education system, it is clear that Thailand, Korea, Japan, and the United States are committed to providing access for students of all backgrounds. In addition, these open-enrollment institutions serve the dual purpose of easing students' transition into postsecondary education by exposing them to a less competitive or less rigorous academic environment. This is common in the United States, for example, as many students enroll at community (junior) colleges for one or two years before transferring to a four-year bachelor's degree program at a more selective institution (U.S. Department of Education, National Center for Education Statistics, 2003). Along these lines, junior and community colleges afford increased access to students of low socioeconomic backgrounds, as the tuition and enrollment fees at these institutions are typically lower than those of traditional four-year universities.

Conclusions and Recommendations

Each of the six nations included in this study has many commendable features of its educational system, particularly as they relate to moving youth successfully through the secondary education system and into post-secondary educational and employment activities. However, each also faces challenges. Through comparisons of the successful and challenging features of the various systems, we arrived at several conclusions and recommendations that could help countries build on their strengths and shore up their weakness. However, readers should be reminded of the following two points: (1) our conclusions are based on examinations of the policies and practices of six countries that differ from one another in their social, economic and political contexts; and (2) we examined the educational systems of three nations—Switzerland, Thailand, and the United States—much more thoroughly than those of the other three nations—Japan, Hong Kong, and South Korea. In formulating our recommendations, we gave more weight to observations from the three focal nations, where we were able to observe first hand the influence of educational values and beliefs on policies, practices and outcomes (e.g. notion of equality of educational opportunities versus socioeconomic and educational selectivity, notion of education and the respective tension between general and vocational education, educational traditions, trust in educational institutions and teachers, accountability for education). In these countries, we also had greater ability to observe the role of social context and economic needs in shaping national decisions that shape the quantity and quality of educational output, including investments in educational resources (availability of institutions and teachers, quality of institutions and

teachers, cooperation between business world and public education, and strategies for promoting quality assurance in education) and policies regarding access and supports.

Based on our cross-national analysis, we offer the following observations and recommendations for improving the secondary education, post secondary education and employment options for youth, and the efficiency of the secondary to post secondary transition process.

1. It is desirable to have well-articulated systems of secondary and post secondary education and job training and policies and practices for supporting students (with the help of their parents and school counselors) to make informed decisions regarding the pathways they follow. Nations need workforces that includes vocationally prepared workers, some with high levels of academic skills (particularly language, math, and science skills) at levels typical for graduates of four-year colleges and universities and others of with job-specific vocational skills and more basic academic skills. To efficiently channel students into the appropriate educational and training programs in numbers that meet national interests, nations need to establish clearly articulated sectors of the secondary and post secondary education and training systems such that students moving from one level of education to another (whether an academic track at one level to the next or from an academic track to a vocational track) will have the skills necessary to succeed in the next level of education and that the student and his/her parents understand the implications for future education and employment options of particular transition choices.

Switzerland, for example, has reasonably well-articulated curricula between the secondary and post-secondary levels of education, such that there is relatively little need for remedial education at the post-secondary level. On the other hand, the Swiss education system does not offer much permeability between the academic and vocational tracks. In Switzerland (and, for that matter, in most of the Asian countries in our study), once a student enters either the vocational or the academic track in secondary school, the options for moving to the other track are quite limited. The exception in Switzerland is that vocational high school students who earn the vocational Matura may enter a university of applied sciences. By contrast, the United States has a highly permeable system of post secondary education options, allowing virtually any young adult access to vocational or academic post secondary education programs (two or four year). However, there is not strong articulation between the secondary and post secondary education tracks in the United States. This has two consequences: (1) drop-out rates in post secondary education and training is high; and (2) many students entering higher education (particularly academic programs) require remedial education—consequences that are costly for the individuals and for the American economy.

We suggest that nations review and modify, as appropriate their systems to ensure they meet the following criteria:

- The systems offer at least three quality education tracks at the secondary level—one that is geared toward preparing students for skilled vocational positions immediately following high school; one that prepares students to move seamlessly from secondary school to post secondary vocational school; and a third that prepares students to move seamlessly to quality 4-year colleges and universities.

- Systems have clear standards for completion of secondary education programs and for progressing to various types of post secondary education and training. These standards, along with information about criteria, processes, and procedures for gaining admission to post secondary education, should be communicated to students and their parents at the outset of secondary school.
- Systems should provide multiple options for taking any high stakes test—either for admission to secondary school options that potentially limit post secondary education options (for example, the high school placement tests used in Thailand and Switzerland) or for admission to colleges and universities. Such a policy recognizes the normal error in tests. It also would relieve some of the immense pressure on students that derives from the unambiguous consequences of a single testing. Lowering the stakes associated with any single test results likely would lower the importance of test preparation programs and pressure on adolescents; it also improves the permeability of the system—the possibility that students may move between the academic and vocational tracks by meeting well-established criteria.

2. *Develop more high-quality vocational education programs.* While the majority of the six nations in the study offer vocational training at both the secondary and postsecondary levels, only Switzerland exhibits strong national pride and commitment to vocational education. Interestingly, the Swiss system of vocational education produces graduates who are equally if not more successful economically than students who choose the traditional academic track. This system clearly is supported by Switzerland’s social and economic systems. However, we also noted that all of the other five nations in the study seem appeared to be seeking ways to improve employment skills of its lower-wage workers in ways that are quite compatible with strong vocational education training. Indeed, there are model vocational education programs in particularly the United States and Thailand that could show promise for closing the skills gap. But, in both cases, these model programs are not yet well integrated into the overall secondary and post secondary education systems. It seems highly promising for nations to quite deliberately create quality vocational education programs at both the secondary and post secondary levels that are closely aligned with the national and local economic needs for workforce skills; that engage employers in the design of training programs and the creation of apprenticeship opportunities; and that are articulated with the academic programs to ensure that students enter vocational training with the requisite academic skills and that vocationally relevant academic skills are integrated into the curriculum.

3. *It seems desirable for there to be multi-dimensional admissions criteria for various secondary and post-secondary education tracks and for there to means for ensuring that the quality of educational programs is maintained.* In our study, three countries (South Korea, Japan, and the United States) had admissions policies for its prestigious post secondary education options (four year colleges and universities) that are multi-dimensional and two countries (Thailand and Hong Kong) rely exclusively on national entrance exams. Switzerland is more of a hybrid model, relying on examinations to determine tracking at the secondary level, but school-level assessments thereafter. The high stakes testing (generally, a “one-shot” option for access to the most prestigious institutions) not only induces stress for the students, but it also limits the postsecondary options for economically disadvantaged students who may not be able to afford formal tutoring or test preparation services.

If in fact countries succeeded in instituting well-articulated curricula tracks and provided clear information about the entrance criteria, it would seem practical for there to be more shared responsibility between the secondary and post secondary education and training programs regarding signaling the preparedness of students to succeed at the higher levels of education. One might imagine a system of exit exams administered by the secondary schools that offered post secondary institutions and employers reliable information about the skills of students; and there could be a system of exams and other criteria used by the post-secondary education and training programs to supplement secondary exit exams with information specific to the particular program demands. Indeed, the degree to which the secondary level exit exams and supporting information meets the information needs of post secondary institutions may vary depending on the nature and diversity of a country's education system, its economic diversity (and, thus, the range of vocational training options), and the manner in which the secondary and post secondary curricula are laid out and articulated between the two levels.

Without question, some of these recommendations may take substantial time and resources to implement. However, the lessons learned from studying these six nations provide valuable suggestions for educational policy and practice worldwide. As stated in the opening section, this study was conducted in order to understand how diverse educational systems operate, but also how we can ease students' transitions to postsecondary schooling in order to promote more educated citizens who contribute to countries' economic and social development. Thus, while these recommendations may not be suitable for every nation, our hope is that governing bodies and institutional leaders will be able to glean useful information from this research that helps improve their educational system as well as students' transitions within it.

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