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Improving the Correspondence between the Academic Potential of University Students and Their Subsequent Academic Performance

David W. Rackham and Andrew Domondon

INTRODUCTION

One of the most difficult challenges facing universities in Japan and around the world is to identify academically superior students who will fulfill their academic potential once admitted to a university. As Sternberg and Williams (1997, p. 630) argue, "... the best students to admit are those who will excel and enrich..." their chosen fields of study and the world at large as involved and responsible citizens. In a number of countries a standard way of pursuing this admissions ideal is to have applicants submit their scores on such standardized instruments as the Scholastic Aptitude Test (SAT), the College Board Achievement Tests (Math 1/Math 2, Physics, Chemistry, Biology, American History, European History/World Cultures, French, Spanish, Latin, Japanese), Test of English as a Foreign Language (TOEFL), etc. in support of their application. Some of these tests are designed to assess overall academic aptitude while others seek to quantify the achievement of students in specialized fields.

The SAT, for example, is designed to test for the kind of abilities thought to be essential to success in university. Beaver (1996) estimates that approximately

1,600 American colleges and universities use the SAT as one of their basic criteria in admissions screening. Universities may also request a variety of other documentation to assist in their assessment of applicants including high school transcripts, letters of reference and applicants' statements of intent. The SAT is rarely, if ever, the only criterion used by admissions officers. Confronted with the need to submit a variety of documentation to university admissions offices, students frequently seek advice from experts on how to navigate the complex maze of university admissions protocols with the goal of presenting the most compelling image to admissions decision officials (e.g., Hernández, 1997; Mayher, 1998).

The International Christian University (ICU) in Tokyo faces a particular challenge in admissions in that it draws students from a wide variety of backgrounds from within and beyond Japan, all of whom are expected to exhibit excellent academic potential and performance consistent with the unique mandate of this institution. The great majority of ICU students come from the mainstream Japanese educational system and write a standardized series of ICU-developed tests as part of the application process for admission. The university also admits some students through recommendation from selected high schools and others through a process of documentary screening which includes the submission of standardized test scores, letters of recommendation, and statements of intent by the applicants. Some students undergo an interview process as part of their application procedure. For institutions such as ICU, the admissions screening challenge is compounded by the difficulty of determining the equivalence of credentials presented by applicants from a wide variety of educational, cultural and linguistic backgrounds.

On its Internet WWW site (www.icu.ac.jp), ICU states that "The College of Liberal Arts aims to educate men and women who will possess basic knowledge which is international in scope and the judgment necessary to live as responsible citizens in a democratic society. In other words, it aims to cultivate a sense of independence which will allow students to pursue truth, accepting nothing not of

absolute value as though it were absolute, but examining freely and objectively any theory or way of thinking. At the same time, it aims to educate men and women who are open in their attitudes to other areas of study and other cultures. They should demonstrate broad powers of judgment and creativity and act in such a way as to promote human rights and to realize social justice." The university, by virtue of its unique heritage and mandate, seeks students whose background and motivation is consistent with these educational ideals.

Given this mandate, the challenges ICU faces in its admissions procedures include: (1) selecting academically superior students who will perform to their academic potential during their subsequent academic career; (2) ensuring as much as possible that the academic quality of students remains more or less the same across the various admission routes by which students come to the university; and (3) ensuring to the greatest extent possible that the various divisions of the university have students of more or less equal academic ability and potential..

Selecting academically superior students is the first stage of a process which ultimately aims at encouraging such students to translate their potential into a superior academic performance. Ideally, data provided by prospective students should allow the university not only to identify the most academically gifted students but those academically gifted students who will fulfill their potential in their subsequent university careers. Identifying students of superior academic ability seems to be a somewhat less daunting, although still formidable, task then predicting which of these students will actualize their potential to the fullest in the university environment. To illustrate the problems associated with identifying academically superior students who will translate their potential into performance, data derived from a 1990s era graduating class at ICU are considered below.

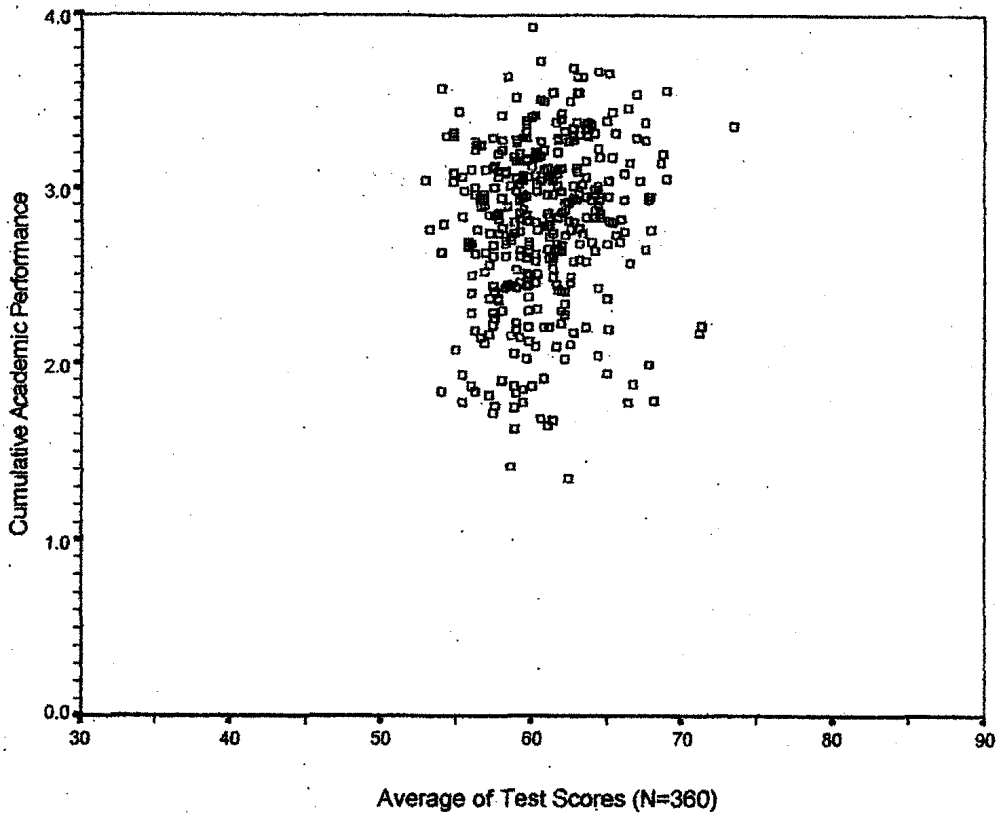
Admissions Credentials and Subsequent Academic Performance of a 1990s Era Class at the International Christian University (ICU)

The following analyses and discussion are based on the admissions credentials and subsequent academic performance data of a class of students which graduated in the 1990s. The database was derived from 537 students, all of whom graduated from the university within the prescribed four year period. Data from students who failed to graduate on schedule or who withdrew from the university were excluded from these analyses. Due to confidentiality concerns, it is not possible to identify the particular class or most sub-populations within this class. These students entered the university through a variety of routes including standardized ICU-developed admissions tests, recommendation by selected high schools, and documentary screening. Some students underwent an interview process as part of their documentary screening, but most did not. Presuming for the moment that the selection process did indeed identify academically superior students, the question arises whether these students were all superior in their subsequent academic performance once they entered the university.

Figure 1 is a scatterplot showing the relationship between cumulative academic performance over four years as indexed by Grade Point Average (GPA) and the average of test scores on various ICU-developed admissions tests.

The scatterplot suggests little or no relationship between these two variables and this is confirmed by the Pearson Product-Moment Correlation Coefficient (r) of 0.151. While statistically significant ($p=.004$), a variance interpretation of the correlation coefficient ($r^2 \times 100\%$) indicates that only 2.28% of the variability in one variable can be explained by variability in the other. In other words, only 2.28% of the variability in cumulative academic performance can be explained by variability

Figure 1. Admissions tests scores against cumulative academic performance.



in average admissions tests scores. The remaining 97.72% of the variability in cumulative academic performance is presumably attributable to factors other than average admissions tests scores. In practice, this means that it is not possible to predict with any reasonable degree of accuracy or reliability how students will subsequently perform once they begin their academic programme.

Figures 2 through 5 consist of a series of scatterplots of cumulative academic performance against selected admissions tests identified as Tests "A" through "D".

These scatterplots all suggest that little can be said about future academic performance on the basis of individual test scores. For Test "A", a statistically significant relationship exists ($r=0.266$, $p\leq.001$) but Test A only accounts for 7.08% of the variability in cumulative academic performance, leaving 92.92% of the variability unexplained. Test B has a negative, weak relationship with cumulative academic performance ($r=-0.117$, $p=.026$). Variability in Test B can

Figure 2. Admissions Test "A" against cumulative academic performance.

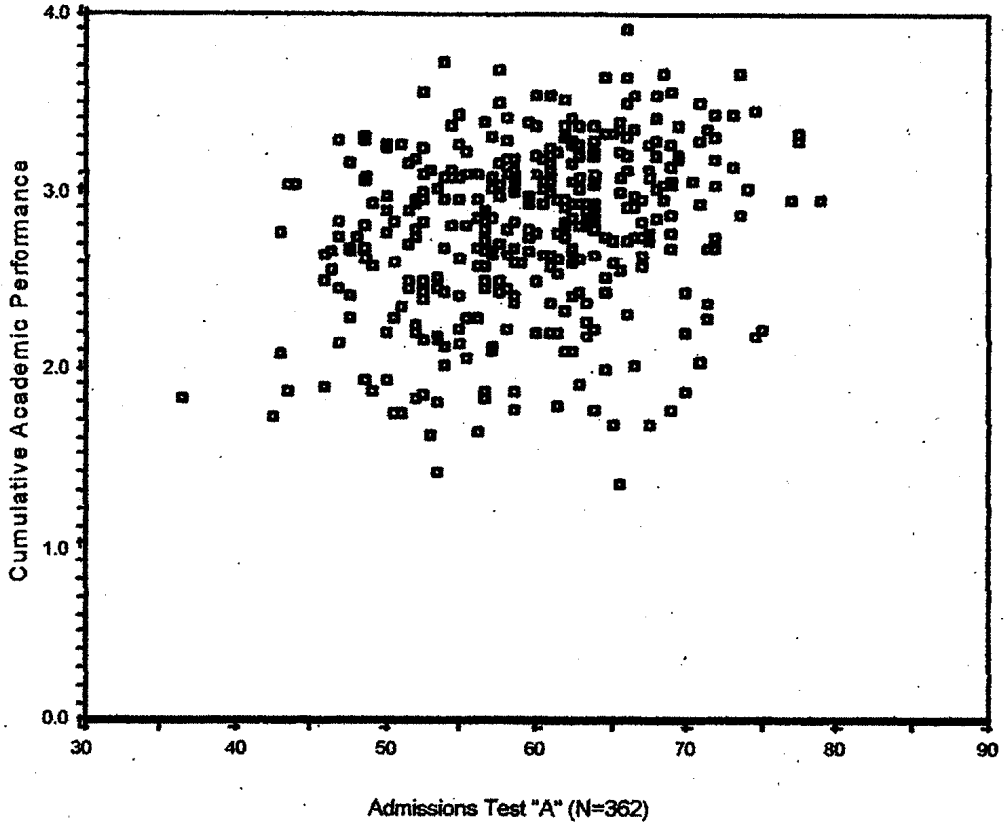


Figure 3. Admissions Test "B" against cumulative academic performance.

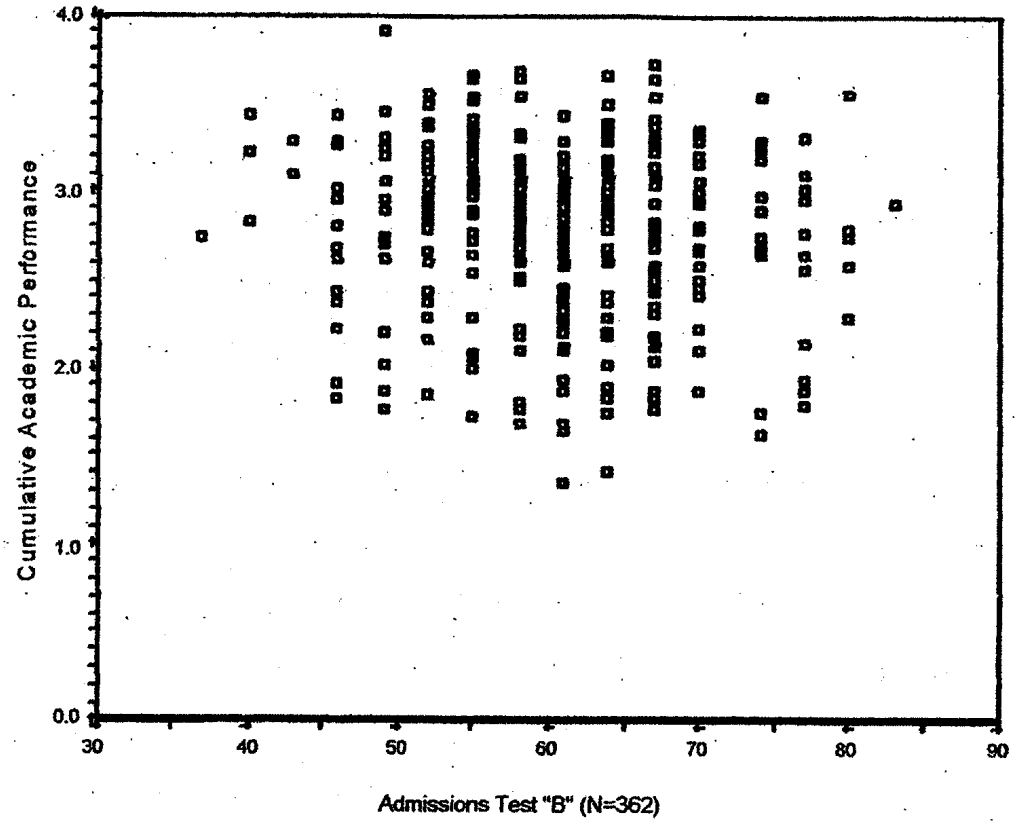


Figure 4. Admissions Test "C" against subsequent academic performance.

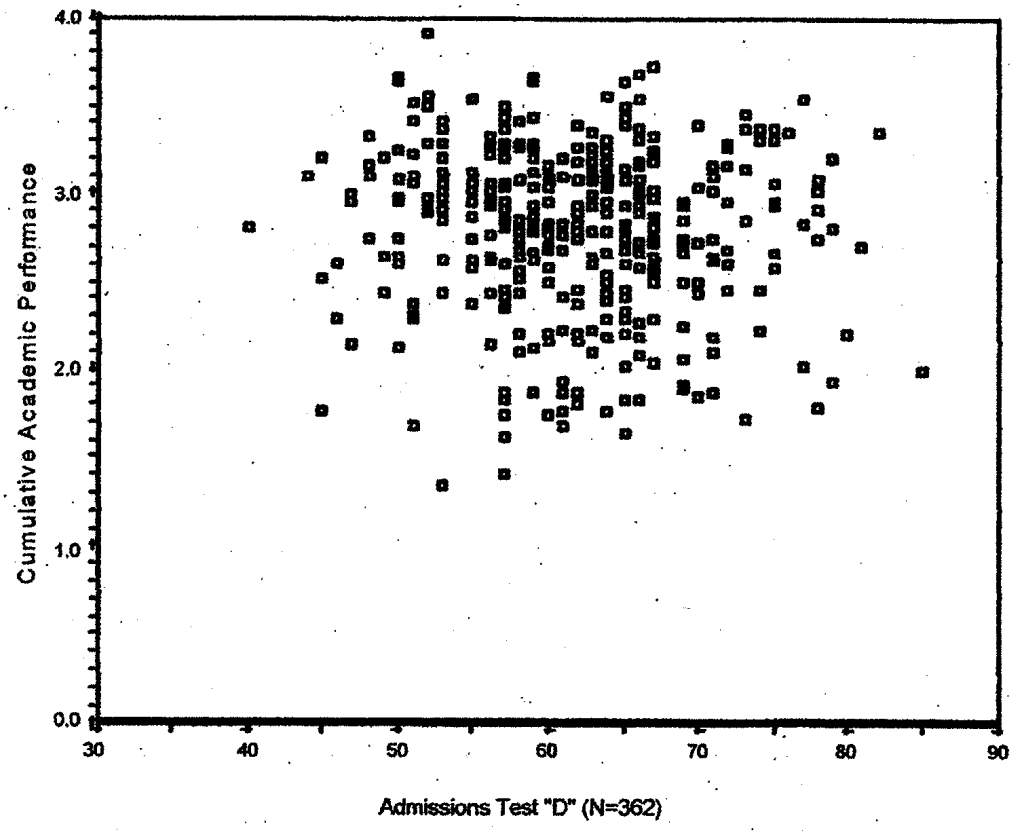
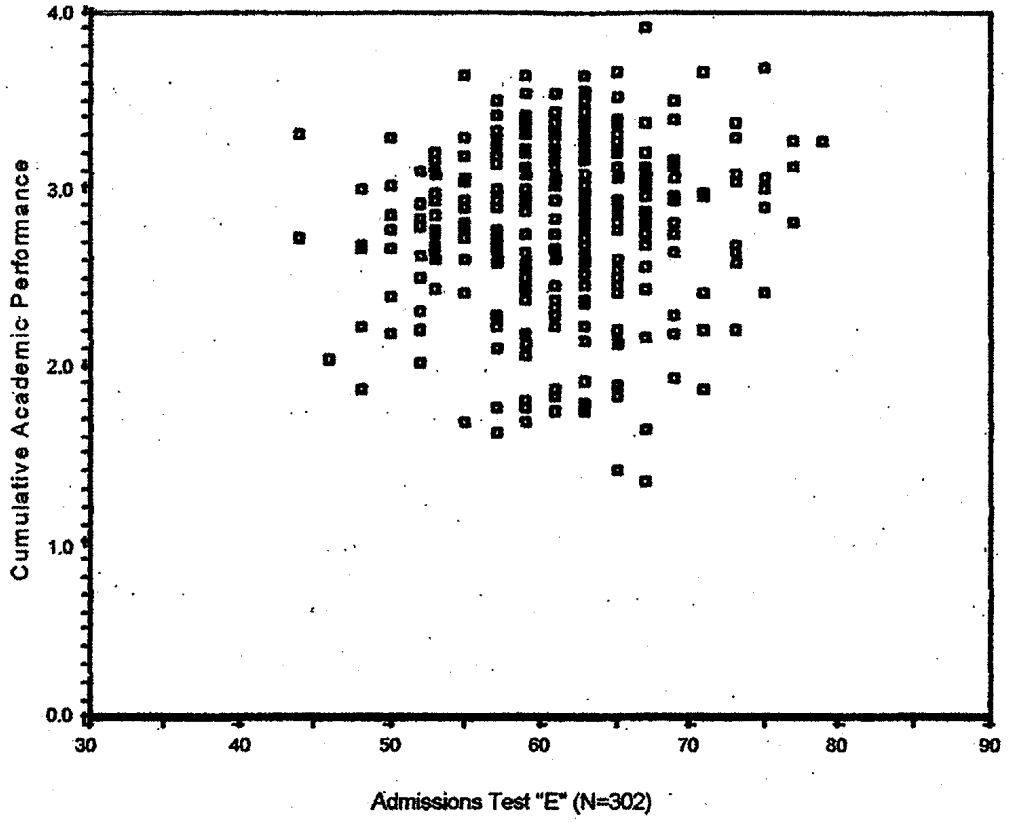


Figure 5. Admissions Test "D" against subsequent academic performance.



account for only 1.37% of the variability in cumulative academic performance, leaving 98.63% attributable to unknown factors. Tests C (r=-0.077) and D (r= 0.074) have no statistically significant relationship with cumulative academic performance.

In short, it is not possible to predict subsequent academic performance on the basis of admissions tests results for those who have actually been admitted to the university and subsequently graduated. A number of reasons may be offered by way of explanation.

In the first instance, although there is variability in the predictor variables (admissions tests), it may not be of sufficient magnitude to account for the variability in subsequent cumulative academic performance. In other words, students selected on the basis of their performance on admissions tests are those who scored at the upper end of the distribution of admissions test scores. If it can be assumed that these are all students with excellent academic potential, then other reasons must be identified for the subsequent variability in actual academic performance.

Another point concerns the reliability of admissions tests. No test is perfectly reliable in the sense that individuals will generate exactly the same score upon subsequent administrations of the test. Errors of measurement are inevitable. Such measurement error could possibly give rise to the impression of significant differences between students in the top range of test results, especially if the variability in such scores is limited. In other words, a student who scored somewhat lower on one occasion might, if he/she rewrote the test, score somewhat higher on the second occasion, and vice versa. In short, students at the upper end may not differ appreciably in their academic potential. If this is true, it is necessary to consider other possibilities in trying to explain subsequent differences in academic performance among students with superior academic potential. This assumes that the test instruments in question possess the property of validity.

There is reason to believe that the ICU admissions tests are valid in the sense that they actually measure what they are intended to measure (academic capability). For example, a recent study by Kuriyama (1998) confirmed the validity of the ICU-developed scholastic aptitude test (SAT) by demonstrating a significant relationship between academic advisors' evaluations of the academic qualities of their students and the performance of these students on the ICU-developed SAT at the time of their application for admission to the university.

Several additional observations are worth presenting suggesting diversity in subsequent academic performance among sub-populations of students admitted to the university. Figure 6 compares the cumulative academic performance of male and female graduates of this class. It is clear that females perform at a significantly higher level than their male counterparts (Mann Whitney U-Test: $U=25667.5$, Wilcoxon $W=49538.5$, $z=-8.353$, $p\leq.001$). Assuming that there is no great difference in the academic potential of male and female students, other factors must

Figure 6. Cumulative academic performance by sex of graduates.

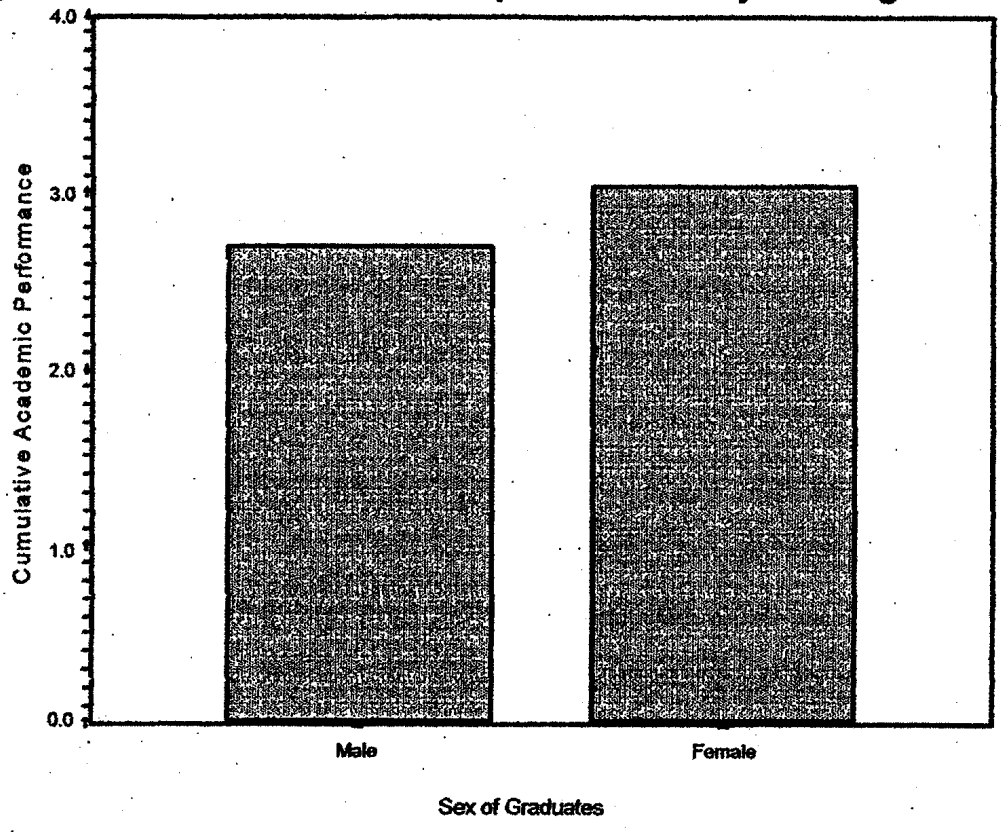
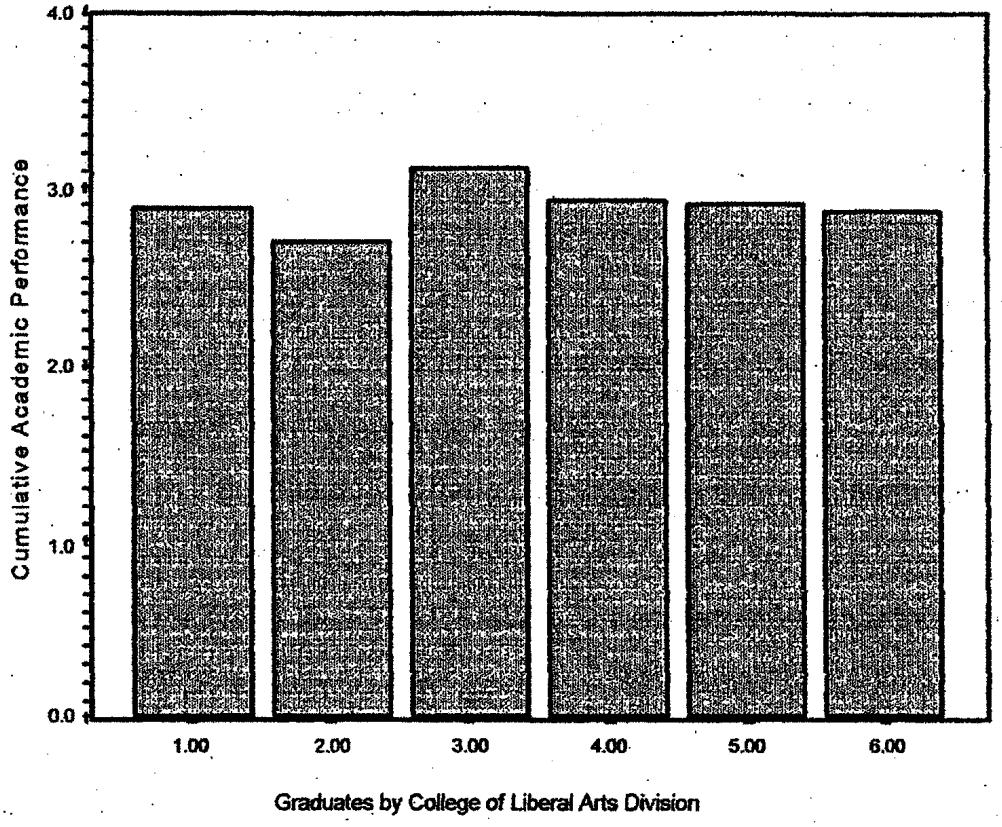


Figure 7. Cumulative academic performance by CLA division.



be identified which produce this discrepancy in subsequent academic performance.

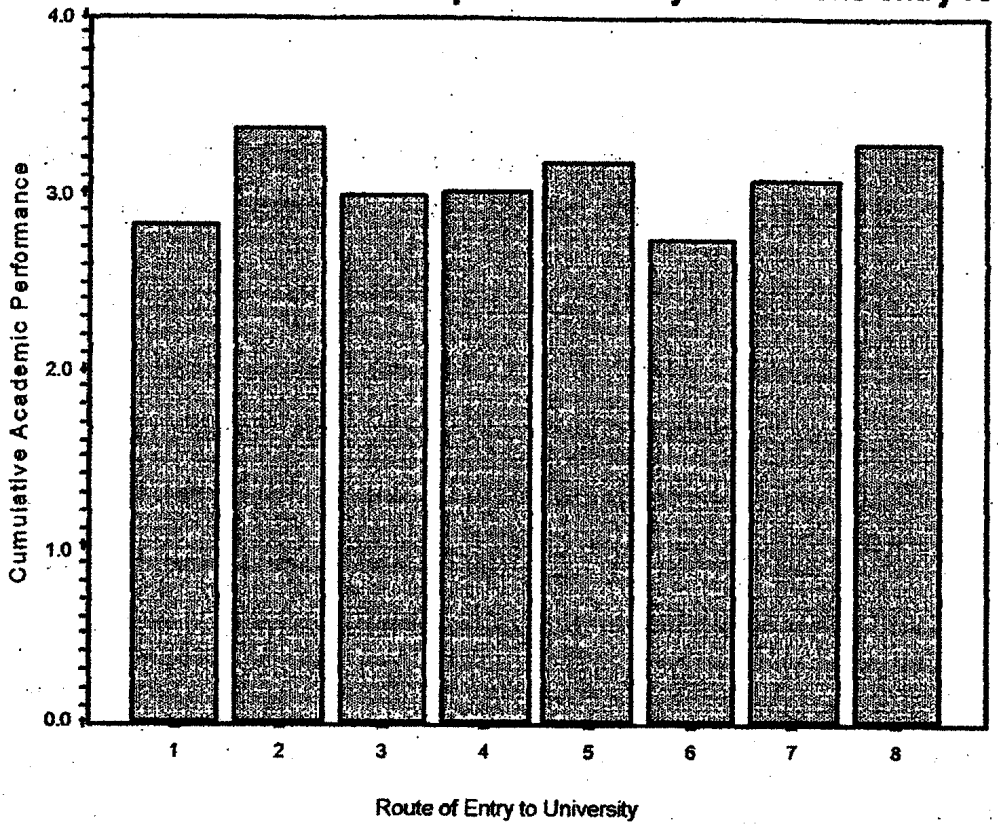
Figure 7 compares cumulative academic performance of students graduating from the six divisions of the College of Liberal Arts (CLA) identified randomly as Divisions 1 through 6.

A Kruskal-Wallis test for "k" independent means revealed that subsequent cumulative academic performance varied across the divisions ($X^2=43.992$, df=5, $p\leq.001$). This diversity could be due to slight, but significant, differences in the overall academic quality of students across divisions. Another and perhaps more likely possibility might focus on differences across divisions in curricula, expectations of instructors, and grading standards.

Figure 8 is a comparison of cumulative academic performance as a function of the different routes by which graduates originally gained entry to the university.

The various routes of admission are identified randomly as Routes 1 through 8. A Kruskal-Wallis test for "k" independent means revealed that subsequent

Figure 8. Cumulative academic performance by admissions entry route.



cumulative academic performance varied across the various routes of entry to the university ($X^2=84.135$, df=7, $p\leq.001$). In other words, some admissions protocols apparently select applicants who are more likely to translate their academic potential into a concrete performance reality once they enter university.

Overall, the data above suggest that subsequent academic performance of academically gifted students cannot be reliably predicted by formal entrance examination scores. Diversity in subsequent academic performance exists among sub-populations which may not differ significantly in terms of academic potential or capability. Students entering via certain admissions protocols tend to perform better academically than those admitted via other protocols. On the basis of research conducted in the United States and other countries, it may be suggested that supplementing knowledge of an applicant's academic potential with information about their life experience, including past accomplishments and motivation for university study, will help to decrease the discrepancy between academic promise

and subsequent academic performance in the university.

Increasing the Correspondence Between Academic Capability and Academic Performance

Standardized admissions tests as vehicles for university admission have been carefully scrutinized in the United States and other countries. For example, the SAT has been criticized on a number of grounds including the charge of being racially or gender biased. It has also been criticized as being "coachable", meaning that students who learn specific test-taking strategies can often enhance their score. With changes in the SAT in recent years, such criticisms have been muted to some extent.

A more serious problem is the question of the SAT's predictive validity. If the SAT is designed to predict students' academic performance once admitted to the university, it is not particularly successful in doing so. A large proportion of the variance in subsequent academic performance seems to be attributable to factors other than variance in SAT scores. For example, when the SAT was made optional at Bowdoin College in the United States, the subsequent overall academic records of applicants who submitted SAT scores as part of their application credentials package and those who did not were practically identical (Beaver, 1996). Essentially the same sort of problems are associated with various other tests of academic aptitude and achievement used by universities in their screening processes.

Pope (1990) notes that "What an applicant says about himself or herself in the personal statements and essays can be and often is more important than the SATs. A look at the freshman profile of any very selective college will reveal that a quarter to a third of the very highest scorers don't get accepted" (p. 14). In fact, most highly selective colleges attach great importance to the high school record and letters of reference (de Oliveira and Cohen, 1985). A former dean of Oberlin College notes, "It was always tempting to take kids with sixteen hundreds [out of

eighteen hundred] on the College Boards [SAT] and B averages. But they always were disappointments" (Pope, 1990, p. 14). As de Oliveira and Cohen note, "SATs can't measure your drive, discipline, creativity, imagination, persistence, conceptualization, character, or dreams and goals. And these have a lot to do with success in college" (p. 20).

A study by Chiba and Kojima (1997) sought to identify the credentials applicants were requested to submit for admission to universities in various countries around the world. The purpose of this study in part was to allow admissions personnel at ICU to have a better understanding of the academic backgrounds of applicants with diverse overseas educational experiences. In part of his study, Chiba and Kojima examined the priorities different universities give to various admissions credentials. Universities such as Harvard, Princeton, and Cornell were noted to give highest priority to the high school transcript (p. 101). Others such as Yale, MIT, and Stanford give highest priority to extracurricular activities (p. 101). Among the 26 institutions examined in the Chiba and Kojima study, none stated that standardized admissions tests were the single most important criterion in admissions decision-making.

This situation differs markedly from university admissions procedures still widely used in Japan by most universities and colleges. The Chiba and Kojima study revealed that most of the overseas universities they examined require information to supplement that provided by standardized admissions tests such as the SAT. More importantly, the weight such documentation carries in the admissions process itself varies widely among educational systems. This suggests that no single system of admissions protocols is best for all situations and institutions.

Evolving University Admissions Procedure in Japan

In Japan, applicants to a university are typically required to take some type of entrance examination which is considered to be an appropriate vehicle for selecting students who will possess the academic abilities deemed necessary to succeed at that institution. Although there has been some consolidation among certain universities in recent years, the number of examinations a student will write generally depends on how many institutions to which he/she is applying. The more prestigious an institution is perceived to be, the more difficult it is to enter. As demand for places exceeds supply in prestigious institutions, competition becomes more fierce, and entrance examinations tend, in practice, to become tests of exclusion rather than tests of admission. A significant number of applicants fail to gain admission to such institutions despite the fact that they probably possess the skills to be successful had they been admitted. Circumstances have fostered the development of a system where critical thinking skills tend to take second place to a mastery of the facts deemed necessary to have at one's disposal for success on the entrance examinations. Kyushu University President Yoichi Sugioka was recently quoted in the Daily Yomiuri newspaper (Monday September 23, 1998) as saying of the current generation of students that, "They are good at passing entrance examinations but short of wisdom". In the same issue, a high school teacher is quoted as saying, "Entrance examination scores are going up but real academic skills are on the decline".

The ICU Contribution to Evolving University Admissions Protocols in Japan

ICU was founded in the late 1940s to offer to offer a liberal arts education with an international dimension founded on fundamental Christian values of

tolerance and respect for diversity, ICU was a pioneer in Japan in the development of alternative admissions procedures because it wanted and needed students who would go into the world following graduation equipped with the critical thinking skills necessary to solve the pressing problems of society at large. To select such "extraordinary" students, admissions procedures were developed for which students could not prepare by classical rote memorization techniques. These procedures have been described above.

Existing admissions procedures are not perfect. A discrepancy still exists between academic potential and subsequent academic performance once qualified applicants admitted to the university. University officials recognize this discrepancy and admissions procedures are constantly being analyzed and revised to increase the probability that academically qualified students will actually demonstrate their potential in their course work.

In addition to ongoing attempts to improve the admissions procedures proper, a "low grader" system is in effect at ICU in which students in difficulty are advised of their dilemma and warned of the consequences should they fail to improve their performance. The "faculty advisor" system is designed to provide support for students in their academic endeavours as well as serving as a point of referral should students with psychological or medical difficulties require assistance of a professional nature above and beyond what the average faculty member can provide.

The ICU experience demonstrates that admissions procedures must take into account more than the applicants' academic potential. Students with excellent potential do not always give expression to it in their university experience. Admissions procedures that solicit information regarding applicants' motivation for university study can enhance the probability that students will perform well once admitted to the university. Ongoing support for students as they pursue their university careers will further enhance the probability that students will more

closely approximate their potential in actual performance. For those relatively few students who continue to do poorly despite the best efforts of university personnel to support them, the best service the university might offer may take the form of advice to consider whether alternatives outside the university ought to be pursued.

Changing University Admissions Procedures in the Larger Japanese Context

The ICU experience with admissions procedures is beginning to be acknowledged, at least in an implicit way, by other universities in Japan. There is some reason to believe that there is a growing recognition that interviews, previous academic records, and letters of reference should be given more weight in admissions decisions. For example, a June 1998 article in the Asahi Shinbun newspaper stated that by the year 2000 the University of Tokyo Medical School hopes to changes its admissions process so that 85% of its entering class will have undergone at least one interview before being accepted to the medical school. Another example is that of Gunma University which now allows university graduates to transfer into the third year of medical school. The admission process gives considerable weight to the university transcript and an interview. It is worth noting that both of these university reformed their systems in response to the criticism that their former admissions processes gave little importance to many qualities that are essential for success in the medical profession such as character, compassion, and integrity.

An article in The Daily Yomiuri Newspaper entitled "Admissions Office System Smarter than Entrance Exams" (Monday, September 21, 1998) suggests that serious consideration is now being given by many universities and colleges in Japan to developing admissions systems that actually select students with the qualities deemed essential to success in university. Tohoku, Tsukuba, and Kyushu

Universities have recently taken the decision to introduce a system that will rely more on interviews and reports to assess the suitability of applicants for university study.

New or revised admissions systems will obviously need to continue to assess applicants' academic potential using standardized tests. However, such tests can be designed in such a way, as the ICU experience shows, that rote memorization will not be a guarantee of success. Rather, tests which assess applicants' potential for critical, imaginative and creative thinking will be more likely to produce the kind of students universities claim they are really seeking.

In addition to skills of critical and creative thinking and problem solving, some means of assessing applicants' motivation for university study is very important. Interviews, letters of reference, and statements of intent, while burdensome to admissions office personnel, can provide the kind of information which will increase the probability that motivated, academically qualified applicants will be the ones ultimately admitted to the university.

Such changes in university admissions procedures are only now beginning to be addressed in a serious way in Japan. Properly implemented, they should lead to the selection of students who are not only academically qualified but who also take their studies seriously. Continuing support within the university will help to ensure that students falling short of their potential stand a good chance of overcoming their difficulties. Finally, well qualified and motivated students challenge the faculty to provide a high quality educational experience which students will reflect in the various vocations and avocations they pursue upon graduation from the university

Perhaps the solution to the admissions dilemma is best described by psychologists Sternberg and Williams (1997). Their comments focus on the Graduate Record Examination (GRE), which is often required as part of the documentation for applicants to American graduate schools, but are relevant to university admissions procedures at large. "All considered, our message, then, is not

that the use of tests be abandoned: we believe that tests can potentially perform a useful sorting function in helping to choose who will best profit from and contribute to a graduate program in psychology. But we believe that the field will benefit if the tests of the future will be considerably broader than the tests that are currently used. In this way, psychologists may discover a talent pool of promising young psychologists that they are currently missing." (p. 640). Sternberg *et al* (1995) have also suggested that testing for common sense might be a useful idea. Although their focus was primarily on predicting how successful individuals might be in their post university careers, common sense intelligence can also be of considerable significance in a university context where students are encouraged to take the initiative in identifying issues and developing viable strategies to deal with these issues.

While a discrepancy will no doubt continue to exist between the academic potential of university applicants and their subsequent academic performance once admitted to the university, it seems possible to reduce this discrepancy to a significant degree by using admissions protocols such as those advocated above. By improving academic and personal support for students once they are enrolled in the university, the prospects for success may be enhanced to an even greater degree. Improved admissions protocols will ultimately enhance the university system as a whole for it will bring students who will challenge their institutions to offer them the best possible educational experience. Should such transformations occur in Japan, the ultimate beneficiary will be society at large, for universities will produce a higher proportion of graduates with the kinds of skills necessary to address and resolve the many difficult issues confronting humankind.

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