An Introduction of Flora F. Tien's Research Work

My research interests focus on Higher Education and Survey Methodology. Titles and abstracts of published and accepted papers are listed as follows.

A. Higher Education

1. ＜＜ The impact of digital divide on college student learning＞＞

This paper has been accepted by *Computers and Education* (SSCI-listed journal).

By focusing on two dimensions of the digital divide-computer use and computer knowledge, this study explores four research questions: (1)What are the undergraduate doing with the computers they use at colleges? (2)How do undergraduate perform in regard to computer knowledge and skills? (3)With what is the digital divide among college students correlated? (4)What consequences does the digital divide have for student academic performance? In order to answer these research questions in Taiwan. A total of 2719 of them completed the questionnaires resulting in a response rate of 88.2%. In this study, the digital divide is measured in terms of computer use, which includes a variety of purposes for using computers and academic-related work as a proportion of total computer hours, and computer knowledge. Multiple regressions and a generalized ordered logit, i.e. a partial proportional odds model, are employed. The main findings include the following: (1) Undergraduates use computers not only for fulfilling their academic requirements and searching for information, but also for entertainment. On average, undergraduates spend about 19 hr per week using computers, of which 5hr are academic–related. (2) Most undergraduates perform at the middle average level in terms of computer knowledge. (3) No significant differences among correlates in relating to demographic and socioeconomic family background were found in predicting the various purposes in using computers. (4) Students who are female, whose fathers and/or whose mothers are from minorities, whose fathers are blue-collar workers or unemployed, who study in the fields of the humanities and social sciences, and who enter private universities are at a disadvantage in terms of computer skills and knowledge. However, female students, students whose mothers were less educated and students who enroll in private universities are more focused computer users in terms of allocating time to academic-related work. (5) Computer knowledge and devotion to using computers for academic-related work have a moderate effect on college student learning, while the various other uses of computers do not. Of the different kinds of computer knowledge, it is the knowledge of software that helps students to learn the most.

2. ＜＜What kind of faculty are motivated to perform research by the desire for promotion?＞＞

This paper has been published on *Higher Education* (SSCI-listed journal).

A policy of adding a new rank to the faculty career ladder was implemented in Taiwan in 1994. It was believed that structural changes of the incentive system would change faculty research behavior. This paper explores the question: Who are motivated to perform research by the desire for promotion? A mail survey investigating Taiwanese faculty members was conducted. The results show that the answer varies by different performance measures. Those who publish for the promotion reward tend also to be motivated by other external and internal rewards. Among all rewards, the most important to many faculties is an increase in personal income. Holding one's valence score on promotion constant, faculty with better research performance tends to be those who possess doctoral degrees. The results show that faculty in public institutions perform better than their private –institution counterparts, regardless of promotion valence. Finally, alternative policies to improve faculty research performance are recommended.

3. ＜＜To what degree does the promotion system reward faculty research productivity? ＞＞

This paper has been published on *British Journal of Sociology of Education* (SSCI-listed journal).

This study explores the research question: Does the promotion system in Taiwan reward faculty research productivity? By conducting event history analyses, I have demonstrated that the simple answer to the question is "yes." After controlling for the effects of demography, education, institutions and seniority, the discrete-time logit models indicate that the number of research publications predicts the odds of promotion well. Although the promotion system is unquestionably effective in rewarding research productivity for at least some faculty, whether the system is truly universalistic or equitable remains an open question. Female and younger faculty members are clearly disadvantaged in seeking promotion. Future research is recommended to study how particularism operates in the Taiwanese academic community.

4. ＜＜Faculty research behavior and career incentives: The case of Taiwan＞＞

This paper has been published on *International Journal of Educational Development* (SSCI-listed journal).

This paper aims at exploring how faculty research behavior changes before, during, and after promotion. Testing research hypotheses generated from behavioral reinforcement theory and an alternative claim on the learning effect of familiarity with publishing norms, the study collects career history data and longitudinal records on faculty research

performance to fill literature gaps. The main findings include: (1) behavioral reinforcement theory receives support; (2) among different field groups, the research behavior change curve of the natural sciences and engineering faculty best fits the theory; (3) different levels of anticipated promotion rewards have different effects for motivating subjects to publish.

5. ＜＜Factors influencing access to academic resources in Taiwan- Testing the attribution theory of faculty perception＞＞

This paper has been published on *Journal of Education & Psychology*. (TSSCI-listed journal in Chinese).

The purpose of this study is to explore faculty perceptions on the major factors of winning academic resources in Taiwan. Four different types of academic resources investigated in this articles are: (1) The NSC (National Science Council) Study and Sabbatical Grant; (2) The NSC Research Proposal Grant; (3) The NSC Research Outcome Grant; and (4) grants from other Non-NSC institutions. Seven major factors are explored. They are: researcher performance of the applicant, the importance of a research proposal, the applicant's personal network in the academic community, the applicant's personal network in the granting institution, the prestige of the applicant's institution, luck and other factors.

The results indicate that the relative importance of factors varies with different types of research grants. Among different factors, research performance and the importance of a research proposal are rated as the most influential ones for winning academic resources. Compared to the grants distributed by the NSC, the importance of a personal network in the granting institution was ranked higher in winning the Non-NSC research grants. The results also show that the attribution theory is supported by the data. Faculty who won academic resources expressed different ranking patterns from faculty who did not. The former tend to rank research performance higher than the latter, and the latter tend to rate the importance of a personal network and institutional prestige higher than those who won resources.

6. ＜＜To what degree does the desire for promotion motivate faculty to perform research: Testing the expectancy theory＞＞

This paper has been published on *Research in Higher Education* (SSCI-listed journal).

Based on the rationale of expectancy theory, this article examines to what degree the desire for promotion motivates faculty to do research. Using Taiwanese faculty survey data, it is found that faculty members who show higher motivation for promotion display better research performance than their colleagues who show lower motivation for

promotion. This article also indicates that different kinds of rewards have different motivating effects on various types of faculty research performance. After controlling for the effects of demographic, educational, and institutional variables, the results of logistic regressions show that faculty who think promotion and the satisfaction of curiosity are important tend to publish articles; faculty who want to demonstrate their mastery of their disciplines tend to publish books; and faculty who care about personal income are more likely to seek and receive the National Science Council Research Outcome Grant.

7.<<Faculty rank system, research motivation, and faculty research productivity: Measure refinement and theory testing>>

This paper has been published on *Journal of Higher Education* (SSCI-listed journal).

Whether or not, to what extent, and how promotion motivates faculty research behavior are the questions we investigate. In this paper, we utilize the Carnegie national survey data and employ behavioral reinforcement theory and selection function in order to study the relationship between a system of faculty ranks and faculty research productivity. The study improves correlate measures by using years since rank as the appropriate variable instead of rank perse. The data do not fully support either the reinforcement schedule hypothesis or the selection hypothesis. Among the three rank groups, the productivity curve of the associate professorship best fits the behavioral reinforcement theory. Although full professors publish more research than assistant professors and associate professors do, associate professors do not produce more than assistant professors. Also, contrary to what the selection function predicts, the rank group with the smallest variance in productivity is the assistant professor, not the full professor group. The study's research limitations and suggestions for future research are offered at the end of the paper.

8.＜＜An inquiry of partnership between private universities and their local communities ＞＞

This paper has been published on *Journal of Educational Research and Development,* National Academy of Educational Research, preparatory office.

This article explored how members of private universities and residents nearby campuses perceive relationships between each other. Survey and intensive interview were used to investigate the perceptions and expectations of faculty, students and local residents about their life quality and service provided by four private universities. Results showed that: (1) University faculty and students tended to believe that local community service should be integrated into college education. (2) These universities did improve the life quality of residents lived around campus. They helped local economy as well. (3) All four

communities had similar problems, including traffic jam, garbage disposal difficulty, and noise due to the existence of these universities. (4) Residents around campuses did not know how to communicate with university authorities when problems between them occurred. (5) Demands of university service by local residents varied in different communities. Most local residents demanded access to university sport facilities and library. Residents near Feng Chia University hoped to attend seminars and art performance. Residents of Tunghai University campus indicated wish to participate in training workshops. (6) The majority of faculty and students believed that service provided by universities should have varied with different customers. Faculty and students at Feng Chia University and Tunghai University welcome the idea of providing access of university libraries to country residents. Faculty and students of both Chung Yuan Christian University and Fu Jen Catholic University wanted such facilities open to local residents only. With regard to the religious service, Fu Jen Catholic University chose to reserve service to citizens in the Taipei County. The results of the study have not only enhanced our understanding on the relationship between private university and their local residents, but can serve reference to universities promoting positive relationship with local communities.

9.＜＜Incorporation of national universities in Taiwan＞＞

This paper has been published in Research Institute for Higher Education, Hiroshima University (Ed.) *Changing governance in higher education incorporation, marketization, and other reforms – A comparative study*.

The Council of Education Reform of the Executive Yuan in Taiwan raised the issue of incorporating national universities in 1996. After that initial effort, the Ministry of Education in 2000 revealed its proposal to incorporate national universities in a White Paper on Higher Education Policy. During the last four years, the government has tried at least twice to sell the policy to legislators in Taiwan's Parliament (the Legislative Yuan). The first attempt was made in 2003 when the government submitted its bill to revise the University Act. In the bill, a whole chapter was devoted to regulations concerned with the incorporation of universities. The proposal promised university corporations autonomy, and, in particular, more flexible personnel and accounting systems. The bill, however, failed to pass the Committee of Education and Culture in the Legislative Yuan. In October 2005, the Ministry of Education tried again by including only one article related to the incorporation of universities in the bill. That article was to provide universities with a legal foundation for incorporation, but the Legislative Yuan passed the bill without including that particular article. It thus failed again. The Ministry of Education has no, however, given up on its policy of incorporating universities. In a special NT$50 billion dollar aid package to universities, the government required that all recipients include a plan for

incorporation. In order to receive the special assistance, most universities have chosen not to resist. The incorporation of national universities in Taiwan is an issue that needs to be closely watched in the future.

10.<<How Education Drove Taiwan's Economic Development>>

This paper has been published on *Economic Reform Today,* which commands global circulation. Besides English version, Spanish version is also available.

Taiwan has received international recognition for its economic success. To many policymakers and scholars studying the Taiwanese economic miracle, the major concern is why Taiwan has prospered. Land reform, US aid, the establishment of export processing zones, governmental industrial policies, and cultural values such as a strong work ethnic are often cited as factors contributing to Taiwan's economic growth. Among these factors, education has been widely viewed as one of the keys to Taiwan's modernization. Few discussions, however, has analyzed how the Taiwanese government has utilized education as a tool for economic development, not to mention the problems it has faced in adopting this strategy. This article underscores the role education has played in enhancing Taiwan's economic growth. First, it outlines education policies carried out in conjunction with the economic plans Taiwan has implemented in the past forty years. The article then reviews the problems that occurred in the implementation process. Finally, a report on education reform delivered by the Council for Education Reform and Review is presented.

11.<<Higher education reform in Taiwan: History, development and the University Act>>

This paper has been published on *American Asian Review.*

The aim of this article is to introduce readers to significant changes in Taiwan's higher education system over the past few decades. In this paper, the history of higher education in Taiwan is first described. The history is divided into three periods: the colonial period, the transformation period, and the expansion period. The University Act, which is the key law governing university development, is then introduced. The importance of the Act, the context of rewriting the act, and major changes in the new version such as the appointments of university presidents, the decreased influence of military training courses and instructors, the increased responsibilities of sharing expenditure in public universities, and a change of faculty rank system are discussed. Finally, a comparison of research context between Taiwan and the United States is provided.

12.＜＜Digital divide and college student learning- The correlates of the digital divide and their impact on college student learning＞＞

This paper has been published in *New Challenges to College Education in the 21ˢᵗ Century* (Taipei: National Taiwan University Press)

This paper is a rudimentary inquiry for the correlates of digital divide, which employs indicators of personal computer possession and computer knowledge. I use regressions to examine if digital divide influences college student's learning. This paper concluded that （1）Among different independent variables, the allocation of time for study best predicts academic performance. （2）Scores for English and Mathematics in the General Scholastic Ability Test are significant variables to predict college student's academic performance. （3）Students who have searched for journals and books in the libraries academically outperform those who haven't. （4）Computer knowledge is a significant predictor for college student's academic performance, but the possession of personal computer is not. Among various dimensions of computer proficiency, the more familiarity with computer software, the better student's academic performance.

13.<<The impact of research productivity on promotion of college faculty in Taiwan-An application of event history analysis>>

An English version of this paper has been published on *British Journal of Sociology of Education.*

This study explores the research question: Does the promotion system in Taiwan reward faculty research productivity? By conducting event history analyses, this paper demonstrates that the simple answer to the question is "yes." The results of life-table analysis show that the more research one produces, the sooner one gets promotion. Furthermore, even after controlling for the effects of demographic, educational, and institutional variables, discrete-time logit models indicate that the number of research publications predicts the odds of promotion well. Although the promotion system is unquestionably effective in rewarding research productivity for at least some faculty, whether the system is truly universalistic remains an open question. Most significantly, female and younger faculty members are clearly disadvantaged when seeking promotion. Future research on exploring how particularism operates in the Taiwanese academic community is thus recommended.

B. Survey Research Methodology

14.＜＜On procedure of survey research and the utilization of data archive in Taiwan＞＞

This paper has been published on *City and Planning.*（TSSCI-listed journal）

This article contains two parts (1) review of literature of survey research procedure and the current survey practice in Taiwan, and (2) discussion on the quality of survey data

in Taiwan. In the first part, survey research procedure is divided into several different stages, including research design, data collection, data management and checking, data analysis, report writing, and the application of survey results. Each stage connects with each other. Error introduced at any stage would cause the damage to the quality of a survey research. The author then reviews survey methodology literatures according to the above analysis of different stages of the survey procedure. The developmental trend of survey practice in Taiwan is also analyzed. The second part is an introduction to the Survey Research Data Archive of the Academia Sinica in Taiwan. The author submits some indexes of measuring g the quality of survey data. The characteristics of and the problems of survey data contained from projects sponsored by the National Science Council are reviewed. How to strengthen skill of data management and data checking for the Principle Investigators and the research assistants, how to motivate researchers donating survey data to the data archive, and how to increase researchers' willingness responding to the data archives' data checking reports are the future efforts we can contribute to improving the quality of survey data in Taiwan.

15.<< The response effect of different survey modes--Focus on interviewee self-fulfilling survey and interviewer-fulfilling survey.>>

This paper has been awarded 1996 A-level Research Award by National Science Council.

Under different survey modes of investigation, interviewees are required different comprehension capacity to speak, listen and read survey questions. This paper focuses on comparisons of response effect of interviewee self-fulfilling survey and interviewer-fulfilling survey for sensitive and social desirable questions. In general, interviewees who fulfill questionnaires themselves tend to be unmarried and receive education level at or beyond the junior colleges. The interviewees in the interviewer-fulfilling survey tend to be influenced by the recency effect of questionnaires. They also show higher rates on refusing interviews. On one hand, this paper fills up the intellectual gap by making comparisons between two survey modes, namely interviewee self-fulfilling survey and interviewer-fulfilling survey. On the other hand, this paper provides feasible suggestion to improve the implementation of *Taiwan Social Change Survey.*

16.<< Autobiographical memory and event: Implication and application for life-history survey >>

Life-history survey asks retrospective questions. Its main goal is to collect the information interviewee's personal life experiences. This paper explores the role of autobiographical memory in interviewee's response to life-history survey. By deciphering

all the key elements in events, four types of autobiographical memory are illustrated. Through literature review, I introduce questionnaire design techniques to reduce errors in interviewee's memory and to promote response accuracy. Those techniques include life-history calendar, landmark event, decomposition, clues and bounded recall. This paper proposes a new orientation for future survey research, such as application of oral manuscripts to determine whether Brewer's categorization for autobiographical memory is better than Belli's, continuous research on the categorization of questions for life-history research survey, inquiry for the inter-relationship between basic question type and autobiographical memory.

17.<< The application of cognitive interview on survey research: An example of contingent valuation method>>

This paper has been awarded 1998 A-level Research Award by National Science Council.

The cooperation between survey methodologists and cognitive psychologists in the late 1980's has brought survey research into a new era. Cognitive interview, a technique employed by psychologists in cognitive laboratory, has been adopted by survey researchers to improve questionnaire design. The integration between these two disciplines has promoted survey methodology by exploring respondents, cognitive process of answering survey questions. The results lead major American professional survey institutes such as the Bureau of Labor Statistics, the Census Bureau, and the National Center for Health Statistics, establishing cognitive laboratories to develop high quality of survey questionnaires. Although cognitive interview has been recognized as a powerful technique for improving questionnaire design in the United States, few survey research in Taiwan employed this technique.

In this article, I first introduce the origin, the techniques, the practice, the advantages, as well as the limitations of cognitive interview to the Taiwanese academic community. I then use contingent valuation method, one type of survey questions developed by economists in exploring environmental resource issues, as an example to show how cognitive interview works for achieving the following goals: (1) to understand how respondents explain survey questions; (2) to detect the difficulties respondents experienced in answering questions; and (3) to analyze the cognitive process of respondents answering the double-bounded dichotomous choice of willingness to pay questions. The results show that respondents need more information than the questionnaire provided in order to make a payment decision. Furthermore, what researchers intend to measure differs from what respondents think in answering questions. Future efforts on comparing different types of pretest survey techniques are suggested.

18. << Landmark event and time effect: An exploratory of response accuracy >>
   This paper has been awarded 2000 A-level Research Award by National Science
   Council.

   Landmark event refers to events significant to individuals or the society such as one's birthday, wedding day, or the first presidential election day, etc. These events are often used as reference points when asking survey questions related to time. The survey methodology literature, however, rarely discussed the nature of landmark events. This paper aims at analyzing the relationships among demographic variables, time effect, term usage referring to time, and response accuracy by choosing the implementation of the National Health Insurance (NHI) as a landmark event. The subject s of the study are residents in the Taipei area. Data are collected from a two-year cross-sectional telephone survey. Three different indices of time accuracy are employed: (a) day-month-year accuracy, (b) month-year accuracy, and (c) year accuracy only. There are several major findings: (1) Although almost all respondents know the NHI, only three-quarter of them claim that they remember the beginning date of the NHI. The proportion of respondents who can correctly report the date is even lower. (2) There are more forward telescoping than backward telescoping among respondents who made recall errors. (3) Response accuracy decreases as the difficulty of time recall increase. For example, compared to reporting the day-month-year of NHI occurring, higher rates of accuracy are found in indicating the month-year reporting. (4) Larger interval since the landmark event leads to the lower response accuracy. Such a time effect appears no matter what kind of time accuracy measure is used. (5) More young respondents correctly report the recall date since the event occurring, the more likely the respondents use specific numbers to refer the event-happening time. (7) Female and younger respondents tend to use exact numbers when locating event time. (8) Respondents who use exact numbers to indicate time show higher rate of response accuracy than those who use at least one general term to indicate time.

   Except for the journal articles listed above, to promote understanding about survey research methodology, I co-translated Floyd J. Fowler, Jr.'s *Improving Survey Questions* in Chinese. The Chinese version of the book has been published by National Institute for Compilation and Translation.