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The role of universities in attaining regional competitiveness under adversity – a research proposal

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Abstract

This study examines the role of the university in attaining regional competitiveness in technology in periods of extreme adversity such as has been the case in the post-Hurricane Katrina situation in New Orleans and the Gulf Coast. In such situations, much can be learned from the experiences of developing nations which have successfully attained technological leadership in specific niches. University leadership will be important in several arenas. Teaching and research will need to be targeted to regionally-important areas. The research findings must be transferred to organizations which can exploit opportunities and develop needed technologies. Universities can serve as both disseminators of information and as collaborators in the process. Universities can both spark new businesses and support existing businesses. To determine what is needed and where the niches are, we highlight the importance of text mining of publication and patent databases. Text mining can identify regional strengths upon which competitive advantages can be built. In this paper, we propose research using text mining to identify regional strengths and opportunities.

Keywords: text mining, competitive advantage, Hurricane Katrina, technology, universities

Introduction

In our knowledge-based economy, economic growth is related to technological competitiveness. What is required to achieve technological competitiveness? The I-10 Corridor, which extends along the Gulf Coast of Louisiana, Mississippi, and Alabama, has traditionally lagged in technological development. The recent impact of Hurricane Katrina on the region's infrastructure, environment, and economic conditions has led to significant further decay. Is it even reasonable for such an area to expect to attain technological competitiveness? The focus of this article is upon the potential role of the university in promoting technological competitiveness and regional economic development in the I-10 Corridor.

Technological competitiveness appears to be fueled by science and scientific development. Does scientific growth consistently translate into economic growth? From the perspective of public policy, a key set of issues centers on finding avenues for transferring breakthroughs in science to organizations which could potentially put the knowledge to use. The

university can play an important role in the dissemination of knowledge and thus act as a driver of innovation. Our proposed research provides a model to guide this process.

The I-10 Corridor can be thought of as a region which, post-Katrina, is encountering economic conditions which, in many ways, make it resemble a less-developed country more closely than a thriving industrialized locale. We can look at insights offered by the body of research which has examined the relations among economic, scientific and technological development in less-developed nations to see what may be applicable. In general, issues in this literature center upon whether developing nations should simply try to "catch up" by imitating the technology and methodologies of developed countries or whether they should engage in technology development in specific niches where they have the capability to lead. Are there lessons that the I-10 Corridor can learn from the successes of developing countries and what are the implications for universities?

Nelson (2004) has noted that, in the past, successful growth in developing economies has been characterized by a considerable "cross-border flow of people," where citizens go elsewhere to learn new technologies and then return to implement them or where experts come into the area to serve as mentors/advisors. Something similar to this phenomenon could occur along the I-10 Corridor if residents displaced by Katrina can be induced to return and if they return with new ideas. Moreover, since we are addressing regional innovation within an already innovative nation, there is the ability for the parties with the potential to lead development to move freely to the region, as can be seen with the hiring of Dr. Ed Blakely as New Orleans' recovery czar. Dr. Blakely is known for having orchestrated the recovery of the Bay Area after the 1989 earthquake.

Individuals in the I-10 Corridor can collaborate easily with technology leaders from more innovative regions. The challenge may be to find ways for the I-10 Corridor to both attract and keep talented individuals. The region's universities will play an important role in attracting talent and in collaborating with outside entities. For example, Blakely was also hired as a Visiting Professor at the University of New Orleans.

Lazonick (2004) cited the development of "indigenous innovation" in an analysis of China's success in "leaping" into the information age. Lazonick noted that a key factor permitting China to move rapidly into the information age was that foreign computer companies had not yet mastered the problem of Chinese-language word processing. When Chinese companies were able to achieve mastery in this area, they controlled a dimension of computing which enabled them to become world leaders. The lesson here rests in China's ability to turn uniqueness into competitive advantage. In the same vein, the I-10 Corridor must identify its own unique areas that can result in a regional advantage. Potential areas may rest in the unique cultural and political dynamics of the area, and/or in a unique understanding of living in vulnerable coastal areas, and/or in unique experiences from Hurricane Katrina. China used its uniqueness to provide an opportunity to engage in more far reaching innovative research (Lazonick, 2004). Are there potential niches where research along the I-10 Corridor can result in leadership? Is the area already a research leader in technologies that are not being harnessed for economic advantage?

Universities can play two major roles in the development process. They can produce research which is aligned with the needs of the region and is relevant to the local economy. In locations such as the I-10 Corridor, universities need to focus upon innovative research activities which improve the quality of the regional environment. In the I-10 Corridor, this includes research that impacts the traditional areas such as tourism, or more broadly, the service sector,

biomedical research, coastal/environmental issues, and oil and gas. It may also include new areas that have taken on increased relevance post-Katrina - areas such as construction, any type of infrastructure, public service, economic building/rebuilding, disaster logistics, and business continuity/flexibility.

The university can also utilize its heritage as a collaborator to transfer regional study results and innovative research from the university to the community. The transfer may take one of three forms: teaching students, sparking business ventures, and conducting policy-relevant research. Universities must ensure that their curricula and programs are such that they are training students in innovative techniques relevant to the region. Universities should become active in the development of business ventures, either sparking new ventures or working with existing small businesses to support their innovation needs and to transfer technologies out of the academic realm and into the commercial realm. Universities can work with existing small businesses to implement, develop, or market new technologies. Initiatives such as the University of New Orleans' College of Business Administration's Center for Innovation (www.CFI.uno.edu), an initiative that links faculty expertise to the needs of returning entrepreneurs, are mechanisms that can be utilized to transfer faculty knowledge into to the community. Other similar university-industry linkages can have major impacts on the economic development of a region.

Research Proposal

Key elements in the university's impact are its success in collaboration and its success in disseminating information on what is being done in the region. Needed regional analyses involve consideration of the innovation infrastructure of the region, essentially, what is being done, who is providing the leadership in research, what the relationships are among the various academic institutions, government agencies, start-ups, business organizations, research and development organizations, and a host of similar actors, as well as analyses of the potential areas of developmental strength which are not receiving adequate research or economic development focus. Assessment of the regional competitiveness of the I-10 Corridor requires analysis of current regional innovativeness and of the post-Katrina condition of the Gulf Coast. Doing this involves looking at regional competitiveness indicators, broad factors such as research intensity, innovative capacity, and the like. This research can begin with the development of a *knowledge assets profile* of the region, to determine universities, institutions, and researchers which are active in the region and existing institutional relationships. Needed, as well, is an *area position analysis* which would examine researcher accomplishments in the context of work which is underway nationally and/or internationally, to determine what work being done in the region is at the forefront of ongoing research. Once such analyses are in place, the information can be used to highlight the areas of potential strength which are not receiving adequate economic development attention.

In conducting an analysis of the region, technology mining, or text mining of publication and patent databases, offers a new application of an approach that has been primarily used for national policy decisions and corporate decision-making. This important meta-analytical technique provides a needed macro-level perspective. Shapira and Youtie (2006) found that publication and patent counts were useful both for characterizing innovation clusters at the regional level and for providing leading indicators of technology employment. What we suggest for the I-10 Corridor is a text mining analysis of the intellectual assets (i.e. publications and

patents) produced in the region. Text mining provides quantitative indicators of regional strengths. It is the kind of tool that university researchers need to process the huge amounts of information that must be organized to generate a framework for achieving competitiveness in the I-10 Corridor. Specifically, we propose research in which universities download abstract records from sources including Compendex and the USPTO patent data base from affiliations and innovators located in the Gulf Coast region and apply a text mining tool to create a Knowledge Assets profile for the region. This profile will, in turn, provide lists and maps which cluster entities within the region. Our hypothesis is that these maps will identify clusters which will indicate regional strengths. We believe that areas in which regional organizations are among the top ten nationally or globally can be identified from the clusters.

The research procedure involves the following steps:

1. Download abstracts and patents from the Gulf Coast Region.
2. Develop lists of the leading research areas and researchers in the region.
3. Map the publications and patents to identify core regional topics.
4. Compare the regional profile of a core topic to the topic's national profile.

Information on regional strengths can be used to influence organizations that are considering business opportunities along the Gulf Coast and to influence economic development investment decision makers. The challenge involves translating the findings into policy recommendations and "getting out" the findings to governmental and organizational decision makers to have them acted upon. The results of such analyses must be communicated clearly to all of the relevant stakeholders, there must be support from the appropriate governmental agencies to enable appropriate action, and the appropriate organizations must be willing to act upon them.

Conclusion

The I-10 Corridor, the focus of discussion in this article, although not alone in its regional need to "catch up" to reach a position competitiveness in the knowledge-based economy, faces unique challenges after the devastation caused by Hurricane Katrina. However, the devastation also provides a unique opportunity for the region to assess its assets and apply knowledge gained from the efforts of newly-industrialized countries to embrace their lack of infrastructure and technologically "leapfrog" more advanced regions. The crucial role of the university in this transformation process has been discussed. The university can play a key role, not only in producing innovative research that can contribute to the rebuilding of the infrastructure, but also in conducting the type of research that can inform policy decision makers. Universities must focus their research on regionally relevant areas, adjust programs and curricula to support these regional interests, and work with government and business entities to transfer relevant research into the commercial realm.

Moving beyond this perspective, what may emerge as the most daunting task may not be the difficulty of determining the appropriate niches or even getting the cutting-edge research done. The key issues may involve disseminating the information to all of the parties at interest – scientists, politicians, organizational leaders and potential entrepreneurs especially, along with getting that information acted upon in a coordinated way.

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Student attributions and performance: problems with unfounded optimism?

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Abstract

The present studies aim to assess whether academic performance and attrition of first year university students may be due to the attributional styles of optimism and pessimism as described by Seligman (1991). Since Seligman argues that attributional styles can be learned, the fiscal and developmental implications of the present research could be considerable. However, contrary to the expectations suggested by Seligman's research, a preliminary pilot study involving a sample of 38 undergraduate students failed to indicate any positive relationships between optimistic explanatory styles and student performance. Indeed, there was some evidence to suggest that poor performance might in fact be associated with overly optimistic attributions based on past successes. The second study, involving a sample of 209 students enrolled in a first year business course, also failed to indicate any correlations between raw marks and any of the eleven attributional style combinations. However, there again was some support for the notion that students who fail might be overly optimistic about their ability to perform academically, and hence of greater interest in this research endeavour than those who pass. To that end it is suggested that future research should aim to validate these results by replicating the methodology employed in the present study using much larger sample frames.

Keywords: optimism, pessimism, attributions, student, performance

Introduction

One of the most important considerations from an academic management perspective is the nature of individual differences which may play a part in protecting students from the impact of negative experiences during their introduction to university study. There is a considerable psychological literature relevant to this issue, but the present study focuses on what is termed 'learned optimism' (Seligman, 1991).

The concept of optimism derives from research designed to determine the role which individual attributions of causality play in the ontogeny of depression. Attributions refer to the way in which individuals explain the causes of positive and negative events in their lives (Ickes & Laydon, 1976). Seligman (1975) proposed that exposure to uncontrollable aversive events may produce a state which he described as 'helplessness', and that this state was a precursor to the development of depressive illnesses in humans. However, it became clear that individuals differ considerably in their response to uncontrollable aversive events, leading to Abramson, Seligman and Teasdale (1978) to contend that there are three fundamental dimensions relevant to

individuals' causal attributions and that these are likely to strongly influence their adaptation to aversive events. If individuals' attributional styles lead them to believe that the underlying causes of uncontrollable events are likely to persist (a *stable* attribution), influence many other aspects of their lives (a *global* attribution), or are due to themselves rather than some aspect of the situation (an *internal* attribution), then they are more likely to suffer from chronic and pervasive adaptational deficits and loss of self-esteem respectively. Hence, such individuals are more likely to experience depressive illnesses than if they had made a different set of attributions.

Seligman (1991) has extended the notion of learned helplessness to incorporate an attributional style which might be described as an 'optimistic' outlook. This could result from an explanatory style which interprets an aversive event as a *temporary* issue, arising from a *specific* problem, which was due to *external* circumstances and not their own fault. Seligman claims that learned optimism contributes strongly to an individual's persistence in the face of adversity, and that there is evidence from a number of private and public sector organisations indicating that employees with an optimistic style perform better and survive longer in challenging situations than do those with a pessimistic style. Hence, it is proposed that the effects of an individuals' attributional style extend beyond depression and self esteem style and include achievement motivation. For example, optimistic sales agents reportedly sell substantially more life insurance than their pessimistic counterparts, while optimistic tertiary students in the USA score better in their studies than predicted by SATs, while pessimists perform worse.

Study 1

The present research aims to evaluate the utility of Seligman's ideas in a first-year tertiary educational context. The central question is to determine whether students' attributional style, as measured by Seligman's (1984) 'Attributional Style Questionnaire', is a predictor of academic survival and, in terms of the following pilot study, overall subject performance. Since Seligman argues that optimism can be learned, the implications of these data for the design of first year university programs would be considerable. Perhaps the most obvious outcome of such a program would be the evaluation and design of the feedback mechanisms incorporated in academic studies. In the context of Seligman's work, it is not only the content of feedback which might be of importance, but the manner and style in which it is delivered.

Method

Participants

38 first year undergraduate students (11 female, 27 male; range 18-33yrs; mean 19.4yrs) enrolled in an introductory computer course at a mid-sized Australian university situated on the east coast.

Instrument

Attributional Style Questionnaire (ASQ: Seligman, 1984): comprises twelve hypothetical situations consisting of six positive and six negative events. Each situation is followed by four questions, to which respondents are firstly required to provide a major cause of the situation. The following three questions evaluate the three fundamental attribution dimensions and hence

measure the degree to which the subject's response is *internal* or *external (i.e., locus)*, *stable* or *unstable*, and *global* or *specific*. These latter three questions always appear in the same order and use a seven-point Likert scale response format with a polar opposite description at each end. For eg, the second question after each scenario always measures the *internal – external* dimension and is labelled "Totally due to other people or circumstances" at one end of the Likert scale, and "Totally due to me" at the other. Positive and negative events are reverse scored and thus a score of seven is the highest for a good event, but the lowest for a bad event. There are eleven possible score combinations: responses can be summed to provide positive and negative total scores for each individual dimension, or combined to provide *Hopelessness* (i.e., *stable* negative plus *global* negative), *Hopefulness* (stable positive plus global positive) as well as a *Composite Negative Attributional Style* (sum of all bad event scores) *Composite Positive Attributional Style* (sum of all good event scores) and finally a *Compositive Positive minus Negative* score.

Procedure

The ASQ was completed by participants during class time as part of a course experience questionnaire.

Results

Correlations were calculated between each of the 11 possible ASQ score combinations and age, gender, and final marks achieved in the subject. While gender was not significantly correlated with any of the ASQ dimensions, age was correlated with 'Global Positive', and 'Stable Positive' was significantly correlated with Marks: $\underline{r} = -.33$; $p < .05$. This relationship is plotted in fig. 1 below:

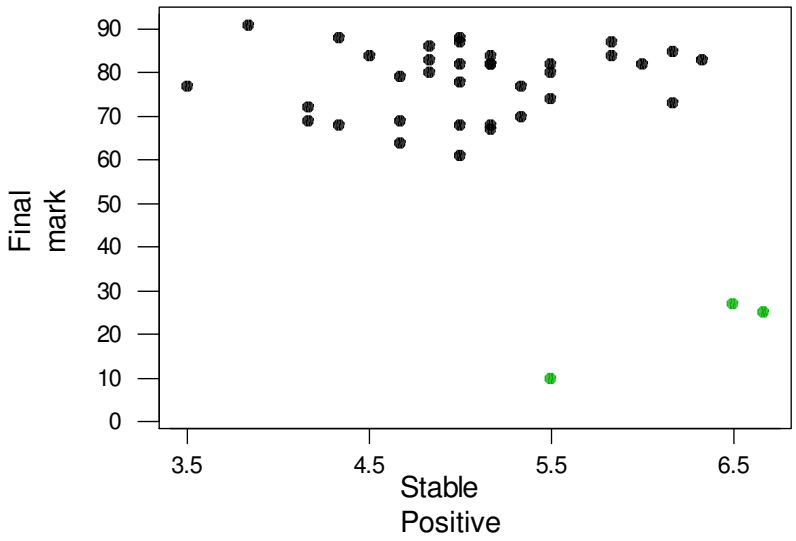

Figure 1. 'Final Mark' versus the 'Stable Positive' ASQ dimension.

In Fig. 1, it would appear that the correlation between the two variables might be influenced by the effect of outliers (due to Cook's distance), and this was confirmed by a simple linear regression analysis. Once these outliers in the bottom right corner (shaded green) are removed, the correlation between these variables is no longer significant.

Further, a cluster analysis of the variables plotted above (using standardized variables, and a Euclidean Distance, Single Linkage approach) suggested that the three shaded variables identified above as outliers might represent a discrete cluster of observations wherein students who scored relatively highly on Stable Positive also scored quite low on final marks. Further examination of these participants' course results revealed that they did not complete all set assessments in the subject. One of the three scores in this cluster resulting from the student only completing the first two of the five set assessments (and passing each), another student completed four of the five assessments, but only passed two of them (including the exam, which was passed), with the third only attempting – and passing – the final exam. Hence, all three passed at least one assessment.

Discussion

Contrary to the expectations suggested by Seligman's research, the present results failed to indicate any positive relationships between optimistic explanatory styles and student performance. Indeed there was some evidence to suggest that poor performance might in fact be associated with overly optimistic attributions based on past successes. Further, while none of the three students in the identified cluster completed all of the five set assessments, each of these students passed at least one of the assessments they completed, which provides some evidence (over and above university enrolment requirements) to suggest that although these students might well have possessed the *ability* required by the course, for some reason they chose not to attempt all the required assessments. However, in view of the limited numbers in this pilot research, more data needs to be collected from a wider variety of courses in order to make better sense of this phenomena and perhaps discern a common attributional pattern, if indeed one does exist amongst such students.

Seligman (1991) asserts that optimists explain positive events in the opposite way to negative events, and hence view the former as being a *permanent* state of affairs, effecting other parts of their lives (i.e., *global*), and being due to their own efforts (*internal*). However, for some students, it appeared that adopting a belief that previous determinants of success will always be present might be overly optimistic and unrealistic, given that they failed to perform adequately – or complete all the set assessments - in the first year course on which the present study was based.

Study 2

By sampling from a considerably larger sample frame, the second study aimed to overcome the major shortcoming of the original pilot study discussed above. The central question remains the same: can students' attributional styles, as measured by Seligman's (1984) 'Attributional Style Questionnaire', predict academic performance as measured by final raw marks in a first year business course? Note that whilst the course chosen differs from the original (dictated by the quest for a larger sample), the study was undertaken at the same campus of the

same university as visited in the pilot study. The reason for this is simple: as Seligman argues that attributional styles can be learned, then one must also consider the possibility that the overall or average attributional styles actually manifested may differ between student (and other) populations due to social and cultural differences. Hence, even if the following study does find relationships between attributional styles and performance, it could be reasonably argued that similar studies would need to be undertaken in order to diagnose or map the overall attributional styles reported by student populations at different learning institutions and at different geographic locations.

Method

Participants

209 first year undergraduate students (111 male, 98 female) enrolled in an introductory business course at a mid-sized Australian university situated on the east coast. (Due to a change in administrative policy, no specific information was available regarding age distribution.)

Instrument

Attributional Style Questionnaire (ASQ: Seligman, 1984): as described above.

Procedure

The ASQ was completed by participants during class time as part of a student evaluation of course questionnaire.

Results

Correlations were calculated between each of the 11 possible ASQ score combinations and final (raw) marks achieved in the subject. None of these correlations, however, even approached significance. Gender was also not significantly correlated with any of the ASQ dimensions.

Out the 209 participants, ten failed to achieve a pass (50%) in the course, and, with the results from the first study in mind, correlations between the 11 possible ASQ score combinations and final marks were also calculated for this small sub-sample. Although there were no significant correlations (due to the small size of the sample), there were positive midrange correlations between Marks and 'Internal Positive' (IP: $\underline{r} = .530$),'Stable Positive' (SP: $\underline{r} = .542$), 'Global Positive' (GP: $\underline{r} = .517$), 'Composite Positive' (CoPos: $\underline{r} = .609$; $p = 0.062$), 'Composite Positive minus Composite Negative' (CPCN: $\underline{r} = .560$) and 'Hopefulness' ($\underline{r} = 576$), and a negative mid-range correlation with 'Hopelessness' ($\underline{r} = -.452$). None of the students in this sub-sample completed all of the set assignments. However, all completed and passed at least one assignment (including the first, a multiple-choice quiz).

While the difference in sample sizes precluded any parametric comparisons between 'pass' and 'fail' sub-samples on mean scores on each of the ASQ score combinations, a cursory examination failed to reveal any obvious differences in such.

Discussion

Once again, the present results failed to indicate any positive relationships between optimistic explanatory styles and student performance, and once again there were no significant correlations between gender and any of the ASQ dimensions. In the 'Attributional Style Questionnaire Scoring Key' Seligman recommends that 'Composite Positive minus Composite Negative' (CPCN), 'Composite Negative' (CoNeg) and, to a lesser degree, 'Composite Positive' (CoPos) scores are those which should be the most reliable when depicting depression and other outcomes. However, when the sample was considered as a whole, there were no correlations between raw marks and any of the eleven attributional style combinations. While Seligman (1991) reports that optimistic tertiary students in the USA score better in their studies than pessimists, the current results, considered as a whole, do not support that.

However, in the first study, there was some (very) limited evidence to suggest that failure in a course might in fact be associated with overly optimistic attributions based on past successes. With this in mind, the present sample was subdivided and correlations between final raw marks and the eleven attributional score combinations were conducted for the ten students who failed in the course (i.e., scored less than 50% overall). For these students, there were midrange correlations between Marks and the positive attribution scores 'Internal Positive' ($\underline{r}$ = .530), 'Stable Positive' ($\underline{r}$ = .542), 'Global Positive' ($\underline{r}$ = .517), 'Composite Positive' ($\underline{r}$ = .609; p = 0.062), 'Composite Positive minus Composite Negative' ($\underline{r}$ = .560) and 'Hopefulness' ($\underline{r}$ = 576), and a negative mid-range correlation with the negative attribution score 'Hopelessness' ($\underline{r}$ = -.452). Thus, the more positive these students were in their attributions, the higher they scored. In short, these were the type of results expected of the entire sample, not the 'fails' when considered in isolation. Unfortunately for the students in this sub-sample, however, none completed all of the set assignments in the course, although given that all passed at least one assessment (the first scheduled: a multiple-choice quiz conducted under exam conditions), there is evidence that they possessed the required cognitive and analytical ability to do so and pass the course. The requirements for passing this particular course included gaining an overall mark of 50%, but students were not required to attempt each assessment. However, in view of the above discussion and the potential detrimental effects that might result from some students' 'excessive optimism', in future it may be wise to require students to attempt every assessment. It also raises the general question of what might be the most beneficial approach to conducting pre-semester student inductions and information sessions, with the present results possibly suggesting that more emphasis be given to the standards required and the academic rigours a student can expect from their studies. Further, the present results also suggest that assessment feedback might be more beneficial if it is more tightly focussed on constructively addressing how students can improve on their efforts in future assignments, rather than singly praising positive elements in the current one under scrutiny.

Clearly, the above raises the question of why might different relationships exist between the measures employed in the present study for those students who pass and those who fail. Although there were no obvious differences between students who passed and those who failed in mean scores on each of the ASQ score combinations, the above results could again be interpreted as suggesting that, in some instances, students adopting a belief that previous determinants of success will always be present, have positive effects on other life outcomes, and be entirely due to their own efforts might be overly optimistic and unrealistic if those same students do not complete all the set assessments in the courses they are enrolled in. (Indeed, of

the ten fails, eight attempted – and failed - the final exam after not submitting earlier assignments. To do so with an expectation of passing the course can be described as optimistic in the least). Whilst this is all predicated upon an extremely small sample size, it does at least serve to suggest that the links between students' attributions, motivations and performance outcomes might be more complicated than at first imagined. Indeed, should such results be further supported in similar studies conducted on even larger samples of 'passes' and 'fails', one might reasonably draw the conclusion that the relationships between optimism and pessimism and performance might not be simple linear ones. Instead, too much optimism might not always be helpful, and a little pessimism might be a useful guard against overconfidence.

Conclusions and Recommendations

In summation, we are left with the following possibilities: either the number of fails was too small for any meaningful analysis (which is a distinct possibility); the underlying theoretical basis for optimism and pessimism is more complicated than expected and might not readily and easily translate into individuals' motivations and real-world outcomes as originally posited; the 'Attributional Style Questionnaire' does not accurately reflect the theory it is based upon; or the present authors have misinterpreted the theoretical underpinnings. There is also one other possibility: that those students who failed did so for reasons clearly independent of and despite their attributions. However, if this was so, there is still the question of why the subset of fails should be distinguished by an apparent relationship between performance and attributions as discussed above.

In view of the above points, and acknowledging the substantial body of research behind the ASQ, it is proposed that future research aim to validate these results by replicating the methodology employed in the present study using even larger sample frames based on individuals' performance averaged across a number of academic subjects, instead of just one. Ironically, the above results tend to suggest that it is those students who fail who might be of greater interest than those who pass. Ideally, such research should be longitudinal in nature, and consider including a grade point average inclusive of an entire curriculum.

Further, the present research did not attempt to control for past measures of future academic performance. Hence, future research might also more strive to more closely replicate Seligman's (1991) reports of university students in the USA (reported above) by controlling for the Australian equivalents of SATs, such as TERs.

On another note, future versions of the ASQ might benefit from the inclusion of scenarios which have greater universal relevance. For example, scenario eleven, "You go out on a date and it goes badly" would obviously be either less irrelevant or grossly inappropriate to some classes of respondents.

General Discussion

Although specific links between performance and attributional style were not clearly delineated in the present studies, one must also consider the pastoral care of students from a different perspective: in *emotional* terms, what becomes of those students who fail to achieve their academic expectations? Such a line of reasoning deviates from the more obvious achievement motivation implications which have been associated with optimism and pessimism in the present study and returns to the original link between attributional style and depression.

For example, Metalsky, Abramson, Seligman, Semmel, and Peterson (1982) found that the locus and globality attributional dimensions for negative events were predictors of increased depression for students whose midterm exam grades were lower than they had expected, but not for those who achievements were at least as good as hoped for. Hence, the ethical implications and possible benefits of clinical/counselling interventions which might arise from findings from the current research project must also be given their due consideration. Further, pastoral intervention at the conclusion of study (the need for which might be guided by a post-result, course 'reflection' questionnaire) might also help researchers to better understand the attributions which might be associated with students who for some reason do not complete all set assessments, such as those identified in the first study.

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Key performance indicators in Portuguese public universities

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Abstract

The Principle mission of the Portuguese State Universities is to organise Higher Education and Research. A quicker response and a more efficient operation is required. New strategies are essential. The Management indicators can be used by state universities in exercising economic efficient and efficacious management control.

New types of management that will improve motivation, productivity and obtain results that are real benefits for society, have to be introduced. This paper shows a group of management indicators, to support the university management process.

Keywords: performance indicator, Portuguese university, higher education, education management

Introduction

The Portuguese state universities are legal entities, with assets, with autonomy: statute, scientific, pedagogical, disciplinary, administrative and financial. Their principal mission is the organisation of higher education and research. They are centres of creativity, transmission and propagation of culture, science and technology, who, through study, teaching and research, become part of the life of the society (Torgal, L. Reis, 2002).

The University performs a set of activities to reach the strategic goals. It is essential for these institutions to respond quickly and perform more efficiently. This makes the implementation of new strategies necessary.

Reduction in public expenditure requires finding other sources of financing and a better management of these. The management tools used must be more dynamic and suited to the situation.

The state universities must become more customer orientated, more competitive and making its leaders more accountable (Clark, 1998). Management indicators are tools used by state universities to exercise control of the management, based on economic, efficient, and efficacious criterion.

The process of strategic management should be shared, to assure a better quality of the decisions taken. The planning process in universities on a strategic level should involve the decision about the goals of the organisation as a whole and their strategy regarding the products and the markets; which are the necessary resources to achieve such goals and the allocation to the different areas.

Universities should develop a strategic view, continually assessing the context, taking advantage of the opportunities and protecting themselves against the threats, by choosing a strategy that becomes a competitive advantage over the competitors.

State universities require an adequate information system and a management control. Their challenge is to show the existing differences between public and private management (Prieto Jano, 2001:84).

Education, training and research as qualitative experiences, cannot be changed totally or even partially into a business, functioning as a unique standard of reference for the management practices of education organisations.

Universities put special emphasis in the identification, analysis and working procedures, to improve the performance and provide a service of excellence. Very often the faculties or departments and those in charge of these are worlds apart from other managers, both regards the management as well as their duties. As a result of this departmentalization, departmental leaders are only concerned with their Faculty/Department, steering away from the goals of the institution.

New forms of management are essential, leading to greater motivation, productivity and getting the results, which can change into real benefits for the society.

In such a process, it is important to explain the goals, how to and who should measure the efficiency of the function. A systematic study will show which steps can be reduced or eliminated, procedures that can be suspended, additional training required to improve the efficiency of staff and the technology required to speed the procedures, etc. (Prieto Jano, 2001:86).

Finding an analysis generally results in an improvement of the processes – The procedures are more efficient, and effective closer to the needs of the organisation and the parties involved. The procedure analysis and the general improvement of the organisation, is especially important in higher education (Clark, 1998; Ginés Mora, 2000).

1. Characteristics of the management indicators

Indicators are necessary for improvement. What cannot be measured cannot be controlled, and what cannot be controlled cannot be managed. Universities are required to provide a faster response and function more efficiently. This is only possible if strategies and mechanisms, such as the use of indicators, are implemented (Ariza e López, 2000).

Improving university management requires trustworthy information, to base decisions on. The lack of it is a very serious problem. A clear definition is needed for far too many of the basic elements of the productive system of the institutions. Basic concepts such as the “student”, the "professor”, “whole time”, are not unequivocally defined (Lausin, 2004).

Aiming to get information on some of the relevant variables of the productive system of the universities, such as for example, the average time of permanence or drop out rates, is analysed but these are not available. The output measures, with the exception of the number of graduates, are either partial or do not exist, including economic values, although easier to measure, also have definition problems. Some universities may have their internal situation resolved, but there is no standard for all the universities. A possible comparison is impossible and this makes decision making difficult.

Political leaders want information available to assess the universities on their competence, if the expected goals were met, and at what cost. In the same way, the governing bodies of the universities need to know the performance of their institution in relation to others, and the potential students have a right to know which institutions have a better record in passing knowledge and in the placement record of their graduates in the professional market.

The university system must respond to the needs of the productive sector and of society in general, be less dependant on government funding, guarantee accessibility to a wider range of

the population, and be more efficient. This last demand requires careful monitoring and evaluation of the performance of the universities, and the definition of income indicators.

Considering the significance given to the concepts of economy, efficiency and efficacy, it is important to point out that the attribution of amounts to each of the three indicators, requires the availability of measurable data. In the case of the efficacy, this is expressed in the goals expected and met; efficiency, is measured by the results achieved and the costs incurred; and lastly the quantity, quality, price and moment in time when the acquisition of goods and services were effected, for the effects of quantification of the indicators of the economy.

According to Galera *et al* (2000:36), the state universities must have a typology of indicators available, whose main objective is the collection and measuring information necessary for the attribution of numerical values to the corresponding indicators of efficacy, efficiency and economy.

The same authors (2000:36) suggest a typification of the indicators used in the referred collection of information by the university institutions, whose details are shown below:

ENTRY INDICATORS	Indicators of acquisition prices Indicators of physical quantity acquired Indicators of the technical quality of the investments Temporal Indicators of the investments
PROCESS INDICATORS	Consumption indicators Output indicators
IMPACT INDICATORS	Impact indicators Search Indicators
OTHER INDICATORS	Quality Indicators Usefulness Indicators Surroundings Indicators

Source: Navarro Galera *et al* (2000: 36).

Entry Indicators are those that provide the necessary information about the investments, both the current factors as well as the capital factors, carried out by the university, the control object, during a set period of time.

Procedure Indicators are those that show two fronts of action clearly restricted to: a) measuring the productive consumption factors that were applied in the production procedure of the university; b) measurement of quantity of goods and services that, being generated by the mentioned productive process, were handed to the users of the university output.

Impact Indicators, their scope of measurement has to do with certain phenomenon happening outside the assessed university. They aim to inform the degree of coverage of the social needs covered by their action. Therefore, measuring the oscillation in the quality of life and of the social benefits experienced by the members of the society in general and the university community in particular, as a result of the activities performed by the university, make up the basic goal.

The total of all the *other indicators,* are included in the group of management indicators that although not susceptible, fit in the framework of the previous typologies, and can also be useful in the control of efficacy, efficiency and economy.

According to Pereira and Tavares (2002:84), the budget restrictions and the demand for a more rational management and efficiency of the higher education, favour the search for new performance indicators that can be used as a tool for decision making regarding funding and distribution of resources. In the 80's an intensive study of the performance indicators was done. In 1985, the Education and Innovation Research Centre carried out a research, on the use of performance indicators in higher education in 15 member states of the OCDE.

According to (Hüfner, 1991), quoted by Pereira and Tavares (2002:84) the OCDE study identified four categories of indicators:

- *Internal performance indicators* – are indicators based on the internal information produced by the institution, such as the pass rate, the graduate rate, the number of dissertations accepted, the average duration of the course, and the assessment of the professors by the students, amongst others.
- *Indicators of operational performance* – are those that refer to the internal activities of the departments and are related with the internal activity of the university. Quoting for example, student/professor ratio, student/staff ratio, and the unit costs, size of the classes, ratio of employees, and student/computer ratio.
- *External performance Indicators* – referring to information external to the university, such as, employability of the graduates and reputation of the university in the work market.
- *Research Performance Indicators* – aims at assessing the research activities of the university. They are for example, the number of publications, percentages in the research contracts, the number of dissertations accepted, consultations provided, inventions and/or patents, invitations to relevant scientific conferences, awards and distinctions.

A work group advised that the performance indicators in higher education should have the following characteristics (Hüfner, 1991), quoted by Pereira and Tavares (2002:84): complying with the mission of the university, that is, they should reflect the main activities of the universities, which are education and research; b) specific, quantifiable and standardized, in order to be able to compare the different universities or even make internal comparisons between departments; c) simple and consistent with the activities for which they will be a reference for a decision; d) acceptable and true, for all those involved in the assessment; e) bring information about the activities and operation of the universities, information that should result in more questions.

The work group proposed a set of twenty four indicators, sixteen of which should be adopted immediately (Hüfner 1991), quoted by Pereira and Tavares (2002:85).

The construction of these indicators have a set of practical and methodological problems, which have to be resolved. Firstly, its construction depends on the available information. Secondly, these indicators are made for the whole organisation and very often it may be necessary to apply indicators to the "cost Centres". In the *third place,* the institutions should not limit themselves to the use of a single approach to measure the performance, because it maybe useful to compare the results produced by the different approaches. *Fourth*, the research on performance indicators should not be merely centred in one activity of the organisation, because the existence of indicators for all activities could facilitate decisions. *Fifth* and last Johnes and

Taylor (1990), referred by Pereira and Tavares (2002:86), are in favour that it is necessary to have credible information on the careers of the teaching and non teaching staff. This has been an area where the performance indicators have had great difficulty in the collection of data.

Pereira and Tavares (2002:86) refer that the performance indicators are a valuable work tool when properly constructed and well founded, but may never substitute the decision maker.

2. Preparation Techniques and implementation methodology

The implementation of a battery of management indicators in the university, requires that two fundamental conditions are checked beforehand: a) *institutionalization*: high degree of acceptance and generalized consensus, by those involved in the process of management control, regarding the competence of the indicators previously chosen; b) *standardization*: permanence in time of the same panel of indicators, as well as the use by different universities, which will be subject to a comparative analysis.

Regarding these requirements, the previous experiences should be considered in the various scopes of other public entities, of the institutional leaders, employees and other workers, on the implementation of a new management or control systems. Thus, the methodology to be used in the implementation of systems of management indicators in the university, should have the direct participation of the managers, considering two basic commitments:

- The managers should assess the improvements resulting from the use of the indicators in their activities. When implementing the indicators, their users must see in them a useful tool.
- The reality of the universities may show important limitations, regarding the available information media. It is only considering the limitations, so as not to run the risk of designing a series indicators that cannot be measured due to the difficulty or cost of collecting the necessary data.

Navarro Galera *et al* (2000: 37), suggest the following stages should be followed in the implementation of management indicators in the universities. It will therefore be necessary to follow the following stages:

Stage I – Approximation

At this stage, the goals of the project of implementation, are explained to the various managers, so that they can voice their opinion and make suggestions, including them right from the start. At the same time, a real management situation, action methods and available information can be observed.

Stage II – Open proposal of the indicators

Based on the data and observation acquired, a set of management indicators are proposed. The proposal should be open so that the managers can make their suggestions, corrections, expansions and the estimates that they find necessary. At this stage the university managers must participate actively to make use of their professional experience.

At this stage the managers will assess each proposed indicator, its representativeness, its relevance, calculation viability, by awarding points, that will oscillate between 0 (zero) and 10 (ten), with the possibility that they will propose new indicators.

Stage III – Selection of the proposals with the highest degree of acceptance.

The selection continues, for each kind of service, those indicators that, according to the points awarded in the previous stage, had the highest value. The development of this stage allows us to work out the percentage of the whole, that the managers consider as a necessary minimum for an indicator to reach the level of "general consensus", as well as the minimum value required for an indicator to be considered acceptable.

Stage IV – Drawing the standardized indicator Panel

At this stage the key issue is in the selection of the optimal number of indicators which should be used. This decision should be adopted from the data collected considering the economic workability of each indicator and in any case, without loosing site of the requirements of all the economic information, particularly the clearness, relevance reasonability. In any case, the possibility of exploring the university systems of indicators, is subject to the joint usage of the same batteries by the greatest possible number of universities.

Once the frameworks of the management indicators are established, according to the procedures previously described, the allocation of the quantitative data to the selected indicators should proceed. The mentioned authors propose the use of three techniques: documental techniques, techniques based on empirical observations and live techniques.

The *documental techniques* consists in taking the information previously obtained by the university. The person that will be in charge of awarding values to the indicators should examine and inspect all the registers and documents, of an accounting nature or extra accounting from which the relevant data is obtained, to prove and contrast their veracity before making the validation for the use.

The *techniques based on the empirical observations,* are used especially in the collection of data connected with the facts or phenomenon that can hardly be assessed without the physical presence of the person in charge and his measurements, on site. In any case, the personal observation in loco can perform in certain cases a precious function in supporting the documental techniques, mainly because they contribute to verification of the value of the data.

Regarding the *live techniques,* based in opinion surveys and interviews carried out on the public receptor of the services provided and to be provided. Its use in measuring the needs of the university community is unquestionable. Obtaining information about changes experienced by them, and the consequent action taken by the university. To get the results of the use of these techniques to represent very closely the university reality, certain precautions in their use should be taken, these are: adequate professional training of the interviewers, ensure the objectivity of questionnaires to be answered by the public, and the selection of the best size of the population sample. Even though this technique has certain inconveniences, difficult to surpass, in certain occasions is doubtful if it is possible to prove that the answers given by the enquired, do not include factors that have nothing to do with the aim of the measurements.

3. Examples of indicators

To produce this information aimed at satisfying all these demands, some claim the need of an indicator system that clearly reflects the situation of the universities, to make the analysis of the functioning of each institution viable, assess their performance, establish comparisons between them and support the decision taking (Ginés Mora, 1999:19).

However, the indicators can appear to be a limited tool (Ginés Mora, 1999:19; Aibar Guzmán, 2003b:15). When included in procedures of quality, as those that a great part of the universities are implementing, can become a valuable tool for improvement, besides supplying information to society and, as already referred support the decision making process.

Ginés Mora (1999:25) argues that the universities should establish the indicators aimed at making easier the relationship between society and the public administration, and at the same time, make an internal analysis and implement the improvement programmes.

Indicators for decisions about procedures of institutional improvement.

In the procedures of internal improvements, true statistical information is essential, to help understand the functioning of the institutions. It is essential to develop two types of indicators. On the one hand the ones that are essential to take management decisions in the institutions. They are especially important due to their economic superiority the indicators of costs and staff. Besides these input indicators should be developed, academic procedures and results of teaching and research, assisting in the assessment of the efficacy of university production.

It is of great use to establish common criterions between the institutions for the definition of the indicators, so that the comparison between them is possible.

Indicators for administration decision making

The high volume of resources of the universities, requires them to report on their utilization, using transparent systems of information. The statement of accounts is compulsory for public institutions, and cannot be seen merely as a statement of accounting data. It is important to inform how the resources were used and the results of their use. The indicators are a valuable tool for this end. Here the main function of the indicators is to support the new mechanisms of allocating resources that are being applied in the majority of the countries around us. From amongst those formulas, there are the contracts programme, the funding by turnover that requires true countable information about the reality of the institutions.

Besides this, it is necessary that the institutions reach an agreement about the definition and utilization of the indictors, so that they are used to share resources under homogeneous criterions. The input and the results indicators are the most relevant for decision making by the administrations. Ginés Mora (1999:26) suggests the use of socioeconomic impact indicators of the university products, such as indicators concerning the employability of the university graduates, graduate satisfaction or of the employees who received training, or the scientific or socioeconomic impact of the research production.

Indicators of student decision making

When the students have to choose their university studies, they need basic information about the institutions and about the field of study to choose. The information available in Portugal, is an entrance mark. Those courses of limited offer and great demand are synonym of quality, individual and social usefulness of the study field for the majority of the young people. This situation can generate distorted effects that are not sustainable for much longer.

In a system of university quality, where the competition between the institutions has increased in response to the social demand, the students should have information available that is trustworthy and that will put them in a position to make decisions based on reasonable criteria. The students have the right to know basic characteristics of the courses, such as for example the average duration of the course, the employment prospects, or the degree of satisfaction of older graduates.

Indicators of decision making by the enterprises

The decisions of the enterprises about the universities, can cover two aspects: the employment of graduates and the co-operation in scientific and technological projects. Both aspects need much more detailed information than is available presently. The employers need the best information about the qualifications of the university graduates, so that they can select those that appear more competent for their needs. On the other hand, more detailed information about what the universities are doing, or their research groups, is essential to create a climate of trust in the possibilities of the universities to co-operate in the technological development of their businesses.

All these aspects require the immediate definition and implementation of a system of indicators that is commonly acceptable, that is an internal and external information tool, favouring improvement, and may be used to take strategic decisions about the individual institutions and about the system as a whole.

According to Ginés Mora (1999: 27), in order to reach a consensus about the indicators of the universities, the process can be planned in two successive stages. In the first place, the preparation of a proposal of statistical indicators, where a group of specialists (managers and academics) should propose definitions and test them in experiments. Then, they should prepare a global proposal for the whole university system. In the next stage, the previous process could be repeated methodologically, to define a system of turnover indicators for the universities.

Once the consensus agreement on this system is established, this process becomes a duty and a necessity which must to be implemented in Portuguese universities.

Vidal (1999:13), following Bottrill (1994), shows some examples of indicators used by the universities including the following.

The *percentage of students admitted for their first option,* also the so called *vocational rate*, to show the degree of motivation of the students in the course they are in. The higher this rate, the higher the number of motivated and happy students for being in the study field they chose.

The *percentage of students, who complete their degree in the set period,* is considered an indicator of the efficiency of the institution. If the students complete their degree in the period set, the institution is meeting its goals for the established programme. There are however, students that for the most varied reasons, do not complete their degrees in the period set. This

type of student can vary in the different institutions, therefore it is necessary to complete this indicator with others.

The *Scientific publications* are the main results of the research activity, but its use as the indicator of the activity or quality is very controversial (Maltrás, 1998), as referred by Vidal (1999: 13). The main issue lies in the fact that there are only homogenous and consensual criteria about the quality of the publications or the media where they are published (magazines and articles) in a few areas of knowledge (experimental sciences, health.....). In areas such as Chemistry, Physics, etc., followed by the impact factor published in the *Journal Citation Report* of the *Institute for Scientific Information,* being of little use in other areas

The *funding allocated to the academic activity per student,* is an indicator that gives an idea of the resources available for the activity of each Tutor. The bigger funding allocated, the greater resources available for the education of the student and, therefore the higher the quality of the education. It is however necessary to have an accounting management system available to make specific allocations according to the activities.

Wallace (2000:2) also suggests some examples of indicators of the performance of the university, such as, the number of degrees awarded, the average time the degrees were completed in, the performance of the graduates in authorised external exams, the success of the faculty in attracting funding for competitive research, and the reputation of the faculty amongst other identical ones. Additionally the indicators of performance also include measures such as employability of the graduates, the index of the omission of student loans, the student and society satisfaction measured by surveys, cost per student or programme, and the creation of income through licence or patents.

Navarro Galera *et al* (2000:41), show examples of the management indicators in specific university areas:

Table - Examples of management indicators in specific areas of the universities

○ Number of doctors' theses with a favourable award / total number of doctorate candidates (per academic course or degree) ○ Number of students enrolled in doctorate courses / Number of graduates (per academic course and degrees) ○ Number of articles in magazines such as *referee* / Total number of researchers (per knowledge area). ○ Number of books published / total number of researchers (per knowledge area). ○ Number of papers presented at seminars and scientific meetings / Total number of researchers (by areas of knowledge). ○ Number of projects and research contracts sponsored / Total number of researchers (by areas of knowledge). ○ Number of registered patents / Number research projects (by areas of knowledge). ○ Number of research groups subsidized / Total number of researchers (by areas of knowledge). ○ Budget resources used in research activities / Total number of researchers (by areas of knowledge).

- Number of students enrolled / Total number of teaching staff (per graduate and academic courses).
- Number of students enrolled / Square metres for the teaching activity and their complementary services (per degree).
- Number students enrolled / Total number of administrative staff and services (per degree).
- Number of hours for practical training in enterprises and institutions / Total number of students enrolled (per degree)
- Number of students who failed / Total number of students enrolled (per degree).
- Number of students that complete their courses in the period set / Total number of students enrolled (per degree)
- Number of Masters and Post-graduate courses / Number of graduates (per academic course and degrees).
- Average time spent in the acquisition of investments:
- Number of hours spent in enrolments / Total number of students enrolled (per degree).
- Number of complaints made by the students.
- Average time spent in the management of an expense process.
- Number of expense processes handled / Total number of staff in administration and services in administration management services.
- Number of hours for professional training of staff / Total number of staff in administration and services
- Number of seminars carried out, outside of the university scope / Total number of teach and research staff.

It should however be noted that there are technical difficulties in the use of indicators in universities, that can increase, if the selection and analysis is done in a manner without considering the needs. (Vidal, 1999:13).

Grao and Winter (1999: 84) formulated the following questions: do the indicators measure what they should? Are they comprehensive? Do they measure the mission, the vision or merely part of the organisation? Are the results used? And refers: the answer is clearly no. He continues by saying that in order to guarantee the quality of the university a more comprehensive tool should be used. The European Model (EFQM – European Foundation for Quality Management) which can be adopted by the university system.

Conclusions

The state universities should have tools available that allow them to manage their activities to give client satisfaction, search for competence in the market, encourage and motivate for improvement and encourage an increased responsibility on the part of its directors.

The management indicators are useful tools for the state universities, since their application will permit the exercise of control of university management with economic, efficient and efficacy criteria. Its use makes understanding the university system as a whole and each institution and their relationship with each other easier. It is also a tool for strategic information.

The state universities need to have a typology of indicators, whose main goal is the capturing and measuring of the necessary information to allocate numerical values corresponding to the indicators of efficacy, efficiency and economy.

The high volume of resources allocated to the universities, requires information of how these are used by using transparent systems of information. For this effect they need powerful tools capable of providing that information. The management indictors have in this scope a very relevant role.

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Credibility factors and content management for commercial web sites

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Abstract

The Web presence of a company has become a necessity for its information dissemination, public relation, promotion, and transaction processing. While a lot of research deal with issues of Web site building, not many explore the issues of Web site maintenance. Content management systems refer to systems that can manage and maintain the content of Web sites. There are off-the-shelf software packages for content management tasks. Companies can also build their own customized content management systems. This research investigates the relationship among Web site credibility factors, company size, Web site complexity, and content management adoption. We first hypothesize that the bigger a company and the more complex a Web site, the more likely that a content management system will be adopted. Second, we speculate that different emphases on Web site credibility factors may affect the adoption of content management system. Third, there may be a correlation between Web site credibility factors and company size as well as Web site complexity. Our survey results indicate that only the first hypothesis is partially supported. The two significant variables which are positively correlated to content management system adoption are (1) the number of Web pages and (2) the existence of database connection and customer relationship management systems. Interestingly, company size has no effect on Web content management system adoption. In addition, survey results show that when a company has a content management system, if its net income is high and its Web site has many pages, it tends not to update its Web site manually. On the other hand, if its Web site has many visitors and many Web servers, it tends to update its Web site manually.

Keywords: Web Site Credibility, Web Site Content Management, Company Size, Web Site Complexity, Web Site Maintenance

Introduction

As more businesses are launching their Web sites, simply having the existence of a Web site is no longer a novelty. It takes more to attract the attention of a business's target market than just having the presence of a Web site. To attract visitors and potential customers of the company's products and services, the information content on the company's Web sites must be current. Terterian from the Internet Operations Center puts it this way: "Nothing will make a user close a window faster than something that's way out of date." (Sandlin, 2001) Therefore, Web site content management is an important topic in Web site maintenance. This research focuses on three sets of factors for Web site maintenance: (1) Web site credibility factors, (2) content management systems, and (3) company size and Web site complexity. We carried out a survey to explore the interrelationship among the variables in the three sets of factors. The

research results shed light on the importance of some company size and Web site complexity variables on the utilization of content management systems.

Literature Review

In order to understand the important factors for maintaining a successful Web site, one must ask the question "what impact does the Web site have on its customers or the company's image if it is well maintained or poorly maintained?" It is a Web site's positive or negative impact that determines what a business should consider as the important factors in managing its Web site. The literature has suggested the following factors as requiring significant consideration when maintaining a successful commercial Web site. These factors include maintaining the credibility of the site, managing the site's structure and contents, managing security, and the allocation of resources to maintain the Web site, both in terms of personnel and budget. In this research, we focus on the issue of maintaining credibility.

Web Site Credibility

Credibility on the Web ranges from highly reliable to highly deceptive. For example, stock investors use the Web to get up-to-the-minute stock information to make transactions that are worth thousands or even millions of dollars. Since it is much easier for people to publish information on the Web than in print, it becomes more difficult for Web users to decipher which pages on the Web to believe and which to disregard. This leads Web users to become skeptical of the information posted on the Web. This skepticism creates a bigger challenge for businesses to increasingly enhance and maintain the credibility of their Web sites (Fogg et al, 2002).

According to a 2002 study by the Stanford Persuasive Technology Lab and Makovsky & Company, there are a number of factors that diminish the credibility of a business's Web site. The study lists the increasingly significant factors as follows (Fogg et al, 2002):

- The Web site makes it difficult for users to distinguish advertisements from Web site content.
- The Web site's content is rarely updated.
- The site has advertisements that automatically pop-up.
- The pages have broken links or have links to sites which are not credible and/or the site is difficult to navigate.
- The site has typographical mistakes and/or the site is occasionally unexpectedly unavailable.
- The site's domain name does not match the company's name and/or the company is having financial or legal problems.
- Web pages take long time to load.
- Others: the site requires a paid subscription for access, has one or more advertisements per page, provides comprehensive information without giving the source of the information, is hosted by a third party (such as AOL), has a commercial purpose, and requires a registration before being able to log in.

The most enlightening point we note from the list above is the fact that sites with a commercial purpose have credibility problems. So, being a business in itself creates a credibility challenge on the Web. The top three items that enhance a Web site's credibility are (Fogg et al, 2002):

- The user found the site useful before and/or the site represents an organization that is well respected.

- The site provides fast response to customer inquires.
- The site posts the organization's physical address and/or was updated since the user's last visit.

Web Content Management

As the popularity of e-commerce Web sites grows, the size and complexity of Web sites also grow and more resources are needed to maintain them. Some researchers in the industry estimate that the number of Web pages on large Web sites double each year (Reynolds and Kaur, 2000). We usually need the following supports for growing Web sites. Web sites have to encompass other areas such as business-to-business relationships, multilingual sites, and intranets that integrate with suppliers and business partners. The number of different content contributors increases. These content contributors may have different authoring and delivery methods. There is a demand for personalized content and increased functionality on Web sites. Finally, different media types need to be managed besides text and images (Friedlein, 2003). Therefore, managing the content of a Web site becomes a mandatory priority.

However, with the increasing complexity of e-commerce Web sites, it becomes more difficult to manage Web content effectively. Inconsistent or inefficient management processes drive the company's maintenance costs up. The inefficiency may be due to poor coordination efforts, lack of repeatable processes, and the use of incompatible tools. Furthermore, the publishing of inaccurate or untimely information leads to customer dissatisfaction and ultimately may cause loss of customer confidence, leading to poor public relations. There have also the legal ramifications when misleading information is published. Web content management encompasses a broad scope, yielding a variety of definitions. Currently, there is no industry accepted definition of content management (Friedlein, 2003; Reynolds and Kaur, 2000). The main reason is that the definition of content depends on its context. Generally speaking, contents in a Web site include the following (Reynolds and Kaur, 2000):

- Everything that is shown on a Web page, including text, graphics, controls, multimedia, banner advertisements, and scripts. The above is the simplest type and is sometimes referred to as creative content.
- Application components, which interact with the Web pages, are another item that needs to be maintained on a Web site. Since the industry is moving towards application architectures that become more reliant on a middle-tier to perform business rule validations and enforcements, it is becoming essential to effectively manage these components.
- Another type of content, known as transactional content, also requires regular maintenance. Transactional content is used to enable dynamic generation of Web pages, to provide information such as products, orders, shipments, and promotional offers. This information is often stored in databases.
- Other applications, batch processes, and company "support Web pages" could also be considered as content. Support Web pages are those pages that a company uses to support the e-commerce operation, such as customer relationship management (CRM) systems. These Web pages usually retrieve information as live data that customers see on the company's Web site when ordering products.
- Also, downloadable files that are available on a business's Web site are also considered content. This may include Microsoft Word documents, PDF files, image files, and other file types.

We adopt the definition of Web content management by Ashley Friedlein (2003, p. 80) as follows:

> "Content management as a discipline is the set of processes, technologies, concepts, and practices having to do with developing, collecting, managing, and publishing content."

Using a Web content management system does not always solve the challenges of managing and maintaining Web content. Successful content management starts at a more fundamental level, change management. Often, companies may rush into adopting a Web content management system without evaluating their change management processes and find that the system doesn't deliver a return on investment. A Web content management system is a technology that helps enable the efficient management of content, but it alone cannot solve the problem of managing the content. Solid change management processes, procedures, and documentation should first be addressed before deploying a Web content management system (Friedlein, 2003).

Research Methodology

Figure 1 shows the research model used in this study. We design a survey to investigate the interrelationship among the three sets of factors including Web site credibility, company size and Web site complexity, and content management system adoption. The partial question list of the survey is presented in Appendix A. **Company size** is represented by number of employees, revenue, and net income in questions 1 – 3. In questions 4 – 8, **Web site complexity** is represented by number of Web pages, number of visitors to the Web site per day, number of Web servers dedicated to the Web site operation, and Web components (graphics, scripts, controls, application modules, multimedia, transactional content, banner advertisements, downloadable files, database connection, customer relationship management system, etc.) used in the Web site. **Content management system** adoption is a simply yes or no question. A response of yes can be a customized content management system developed in-house or a piece of third-party off-the-shelf software bought for Web content management. In question 9, **Web credibility** is measured by the difficulty distinguishing advertisements from bona fide Web site content, update frequency, advertisement pop-up, broken links, navigation difficulty, typographical mistakes, and site unavailability. Question 10 asks how frequently content management system adopters manually update the Web site content. The answer to question 10 will give us some insight on how useful content management systems are. We have the following three hypotheses for this research study:

H1: The bigger a company and the more complex its Web site, the more likely that it will adopt a content management system.

We expect that the bigger a company, the more resource it can devote to maintaining a Web site. The complexity of a Web site also demands a full time and professional maintenance system. However, there can also be the reverse argument that small companies may rely solely on their Web sites to operate their business, which in turn demands a sophisticate Web maintenance system.

H2: There is a correlation between Web site credibility factors and company size as well as Web site complexity.

Large companies with complex Web sites may perceive Web site credibility factors differently from smaller companies with less complex Web sites. We speculate that the selection of important factors can vary substantially among companies with different resources and Web requirements.

H3: There is a correlation between Web site credibility factors and content management system adoption

Different perception of Web site credibility factors can determine whether a company adopts a content management system. We speculate that there may be some critical credibility issues that prompt a company to adopt a content management system.

Questionnaire Design

To start the process of designing the questionnaire, we did a phone interview with a Web site manager who is familiar with various issues of Web site maintenance. During the phone interview, our contact spoke about his opinion of the critical factors that cause credibility problems for Web sites. He believes that the most important thing about a commercial Web site is the presentation and navigation of the Web site. If it is not organized and presented in an appropriate format, then it would lose its viewers fast. He also mentioned that the factors that cause credibility problems were different for different Web sites, depending on the purpose of the Web site. For example, having advertisements that intermingle with a Web site's content will be much worse if the Web site is a news or magazine publication site versus a Web site for selling tangible products. The former will be worse because it makes the publication content more difficult to distinguish from advertisement content. He believes that the most important cause for credibility problem is the impression that the content was put together carelessly. One example he gave was spelling mistakes. He said he has seen "nasty" emails to others from customers for careless mistakes on a Web site. Combining our contact's input and information from the literature, we drafted a preliminary questionnaire which was given to several colleagues for improvement purposes.

Sampling Procedure

The initial desired population was companies with a physical presence in the United States and have a commercial Web site. However, we expanded the population to include companies anywhere in the world that have a commercial Web site. We expanded the population because there were only a limited number of replies received from the original population. The survey subjects are the employees of companies in the population who have expertise in Web management and maintenance, and are taking part or have recently taken part in managing their Web content change control process. Since our research hypotheses have to do with usage of a content management system, at least some companies surveyed would need to have implemented a Web content management system in order to evaluate the hypotheses.

Different methods were employed for soliciting prospective survey respondents. First, we tried to contact co-workers and other acquaintances we knew who might have networking connections to potential qualified survey respondents. A total of 45 acquaintances were contacted through email, instant messages, and in-person. This method of contact produced a total of four actual surveys returned (including the interview response), and it consumed much more time than expected. After experiencing this time consuming effort without a promising survey return rate, we used online chat rooms and other such methods to find email addresses of IT professionals in the Web site management field. The resulting response rate was much more than we had hoped for. Using the Google search engine, we searched for Webmaster forums and chat places where email addresses of Webmasters and other Web management professionals were available. We did several checks to filter out contacting people who did not match our respondent criteria. First, we checked the person's profile to make sure he or she has a physical location. This automatically eliminated the task of contacting the majority of the people in each forum because most users left their profile locations blank. Second, we checked that the person's occupation/specialty, if available, was "Webmaster" or something related. This also automatically eliminated most people who didn't have occupations listed in their profiles. And third, we checked that the person's Web site link, if available, linked to some kind of commercial Web site. So, care was taken to eliminate managers of non-profit or non-commercial Web sites, such as churches, universities, government agencies. If a user's email address wasn't available through the forum, but he/she passed the above three checks, we tried to obtain the appropriate contact email address through his/her Web page link.

After it became difficult to find further contacts using the filter methods discussed above, we later went back and relaxed our contact criteria. People who did not have location fields filled out and also people from other countries were included. Additionally, people with no occupations listed in their profiles were also included in our list of people to contact. Another way of trying to obtain additional legitimate contacts from these forums came from reading through the Introductions sections of the forums. This gave us some idea about people's backgrounds, and sometimes contact information or links to their Web sites were given in their introductions.

The following forums/sites provided the majority of the email addresses we contacted, in the order from most to least; however, it does not include all actual forum Web sites used:

- http://www.internet-marketing-research.net/forums
- http://www.ozzu.com
- http://www.techsupportdude.com
- http://www.hostcompanies.com/forums
- http://www.Web-mastery.net

The rest of the email addresses that were contacted came from random searches on various commercial Web sites. On those Web sites, we tried to search for the email addresses of the Webmasters or of other appropriate contacts.

An additional six attempted solicitations were made through filling out online forms to try to contact the companies. These were attempts made to contact large companies, such as NEC, Wal-Mart, and Samsung. It was worth the try; however, no real personal replies were received back from these attempted solicitations.

In summary, we contacted 45 personal acquaintances, sent emails to a total of 618 addresses found on the Internet, and submitted six contact request forms through the Web. In addition, we contacted two additional people whose email addresses were referred to us by some

of the people found on the Internet who replied to our emails. This brings the total number of contacts to 671.

Questionnaire Administration

Once we got the email address of a prospective respondent, we sent an email informing them how we found his/her email address, briefly describing our research, asking whether they fit the profile of our prospective respondents, then asking for his/her help in answering a questionnaire and whether we may send him/her the questionnaire form. If a recipient replied to our email and agreed to complete the questionnaire, we would immediately reply back, attaching the questionnaire form and expressing our appreciation for their reply.

To track the status of the prospective respondents, we created a spreadsheet with name, company, email address, the location where their email addresses were found, response status (such as whether the email bounced, whether a reply was received, whether they stated that they did not meet the respondent criteria, and whether we actually received a survey return from them), among other notes. Care was also taken not to send a solicitation email to the same email address more than once by using the "Find" command (Ctrl-F) to search that the new email address was not part of the existing list.

Once a respondent returned the completed survey form, we replied back immediately thanking them for their time and effort taken to complete the questionnaire. When a non-qualified respondent replied, we would immediately send a reply back thanking them for their response in letting us know.

For those respondents who had agreed to help fill out a questionnaire, but who had not actually returned a completed questionnaire, a follow-up email was sent to them approximately one week after their initial response. If no response was received after this follow-up email, we did not try to contact them again.

There were three respondents who stated that they would try to further help us by contacting some colleagues they knew that fit our survey respondent criteria and seeing whether those colleagues would be willing to complete a questionnaire. Since no email addresses were given to us, we thanked them sincerely for their willingness to further assist us and left the rest to them. However, we did not hear back from them or from any of their colleagues about this. And therefore, these additional potential respondents (the colleagues) were not included as part of our total persons contacted count or total surveys received count.

Of the total 671 persons contacted, 128 replied, including 39 of the 45 personal contacts we initially contacted. Of all those who replied, 57 of them were not qualified to take the survey, including 30 of the personal contacts, leaving 71 qualified persons. The number of emails that bounced and remained undeliverable because either the email address did not exist on the destination system or the mailbox was full totaled 59 emails. Therefore, the non-contact rate was 8.79%. Of the 71 qualified people who responded, there were 44 people who actually sent their completed surveys back. However, three of these surveys received were invalid, leaving 41 survey responses that were usable.

Research Results

This section presents and discusses the survey results. We adopted logistic regression and linear regression models as the statistical tools for data analyses. For hypothesis 1, whether

a company has a content management system, either build or buy, is the dependent variable. The company size and the Web site complexity are the independent variables. We fitted the data to a logistic regression model and the results are given in Figure 2. The model significance is 0.124, and the two significant independent variables are **number of Web pages** (significance of 0.077) and **database connection/customer relationship management system** (significance of 0.065). Both variables are from the Web site complexity factor and both have a positive effect on content management system adoption. In other words, the more Web pages and more complex a Web site is in terms of database connection and customer relationship management system, the more likely that the company will adopt a content management system. None of the variables for company size has any significant effect on content management system adoption. The above findings partially support hypothesis 1.

For hypothesis 2 and 3, we computed an index for company size and Web site complexity respectively. The company size index was computed by averaging the responses from questions 1 - 3. As for Web sit complexity, we first converted the responses from questions 7 – 8 into the range we have for questions 4 – 6. Then we averaged the responses for questions 4 – 8 to arrive at the Web site complexity index. The company size index and the Web site complexity index were used as the dependent variables in linear regression models. The choices for question 9 regarding Web credibility issues are used as the independent variables in the models. None of the regression models involving Web credibility variables is significant.

Finally, we did a linear regression analysis using a subset of the data to determine whether company size and Web site complexity have significant effect on the frequency of manually updating Web content for those companies with content management systems. The data set has 9 cases which have adopted content management systems. The above regression results are given in Figure 3. The model is highly significant at 0.01. The significant variables include **net income** (significance 0.015), **number of Web pages** (0.002), **number of visitors** to the Web site (0.048), and **number of Web servers** dedicated to the Web site operation (0.051). The net income and number of Web pages have a negative effect, but the visitors and Web servers have a positive effect. The negative effect between manual updating Web sites and net income as well as number of Web pages means the higher the net income (i.e., bigger companies) and the more Web pages a Web site has, the less frequently there will be manual updating for Web maintenance. This phenomenon can be attributed to the effective functioning of automatic content management systems, which eliminates most of the manual updating. On the other hand, the more visitors and Web servers a Web site has, the more frequently there will be manual updating for Web maintenance. We guess that the frequent manual update may be due to visitors' posting of inquiries or feedback. Answering visitors' questions more or less requires a real person's responses. The situation of more Web servers leading to more frequent manual update may be due to the nature of Web servers. When there are more Web servers, they can be dedicated to some specific functions such as database, customer relationship modules, emails, or logging functions. It can happen that those special functions require the monitoring of real persons. The above regression results indicate that content management systems have their limitations. There are some tasks which just are not delegable to automated processes.

Conclusion

This research study carried out a survey to investigate the interrelationship among Web site credibility, Web content management system adoption, company size, and Web site

complexity. Our survey results show that only the number of Web pages in a Web site and the presence of database connection/customer relationship management systems have significant relationship to the adoption of content management systems. Company size has no effect on the adoption decision of content management systems. This finding reflects the innovative role of Web sites in the business world. Small companies can use their Web site presence to compete with large companies. When small companies identify a niche in the markets that can fully utilize the Web as the delivery and communication channel, Web sites become the most important resource small companies have to manage and maintain. Then, using the best available tool to maintain a company's most important resource seems to be a logical decision. Following this logic, it may not be surprising to find out that the expense/revenue ratio spending on maintaining Web sites in Web-driven small companies is much higher than large companies. Then, there may be the need to develop different Web maintenance models for companies with different Web objectives. Our second finding is for the usage of content management systems. Even when a company has a content management system, there is still the need to perform manual update. The frequency of manual update is significantly driven by net income, number of Web pages, visitors, and Web servers. Net income, as an indicator for company size, is associated with a low frequency of manual update for Web sites. This can imply that small companies take care of individual visitors' needs more than large companies by investing person-to-person communication in their Web sites. This possibility points back to the Web-driven business models for small companies. Overall, this research study has revealed some interesting relationship among the three sets of factors in our proposed research model. Though the small sample size in this research cannot warrant much generalization, the results give insight to follow-up research regarding the usage and utility of content management systems for Web site maintenance.

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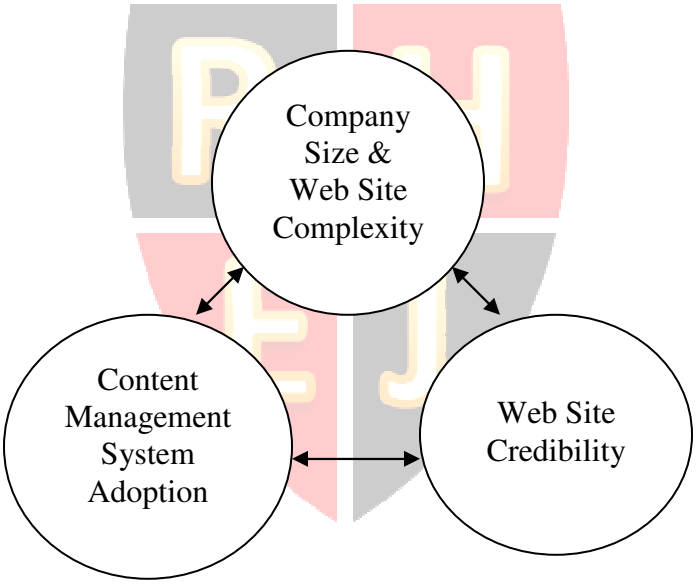

Figure 1: Research Model

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
	Model	12.673	8	.124

Classification Table

			Predicted		
			CMS		Percentage Correct
	Observed		0	1	
Step 1	CMS (no)	0	30	2	93.8
	CMS (yes)	1	5	4	44.4
	Overall Percentage				82.9

Note: The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1	Employees	.783	1.781	.193	1	.660	2.189
	Revenue	-1.184	2.313	.262	1	.609	.306
	Net Income	1.481	2.759	.288	1	.591	4.399
	Web Pages	**1.095**	.620	3.121	1	**.077**	2.990
	Visitors	-.627	.733	.733	1	.392	.534
	Web Servers	.229	.514	.198	1	.656	1.257
	Components	.170	.332	.263	1	.608	1.185
	DBCRM	**1.743**	.944	3.406	1	**.065**	5.712
	Constant	-6.895	3.107	4.923	1	.026	.001

Figure 2: Logistic Regression Results for Company Size and Web Site Complexity Affecting Content Management Adoption

Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
.989	.979	.944	.25000

ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Regression	8.701	5	1.740	27.844	.010
Residual	.187	3	.062		

Coefficients

	Standardized Coefficients	t	Sig.
(Constant)		6.530	.007
Employees	.376	1.906	.153
Net Income	**-.928**	-5.059	**.015**
Web Pages	**-1.260**	-10.304	**.002**
Visitors	**.420**	3.248	**.048**
Web Servers	**.461**	3.162	**.051**

Figure 3: Regression Results for Company Size and Web Site Complexity Affecting Frequency of Manually Updating Web Sites for Companies with Content Management Systems

Appendix A: A Partial List of Questions in the Survey
Section 1: About your company:

1) How many employees work for your company?
   ( ) 1 to 25
   ( ) 26 to 100
   ( ) 101 to 1000
   ( ) 1001 to 5000
   ( ) More than 5000

2) How much revenue did your company generate last year?
   ( ) Less than $1,000,000
   ( ) $1,000,001 to $50,000,000
   ( ) $50,000,001 to $500,000,000
   ( ) More than $500,000,000

3) What was your company's net income last year?
   ( ) Less than $500,000
   ( ) $500,001 to $25,000,000
   ( ) $25,000,001 to $250,000,000
   ( ) More than $250,000,000

Section 2: About your Web site:

4) How many Web pages (how many physical files) does your Web site have?
   ( ) Less than 50
   ( ) 51 to 200
   ( ) 201 to 500
   ( ) 501 to 1000
   ( ) More than 1000

5) How many visitors visit your Web site per day?
   ( ) Less than 500
   ( ) 501 to 1000
   ( ) 1001 to 10,000
   ( ) 10,001 to 100,000
   ( ) More than 100,000

6) How many Web servers are there actively supporting the Web site (including servers for redundancy, but excluding backup servers that are not accessed by Web site users)?
   Enter number of servers: _____

7) What types of components are included in the Web site? Check all that apply:
   ( ) Graphics
   ( ) Scripts
   ( ) Controls
   ( ) Application components (such as ones to validate business rules)
   ( ) Multimedia
   ( ) Transactional content or other content retrieved from databases to generate dynamic Web content
   ( ) Banner advertisements
   ( ) Downloadable files
   Others (please list):
   _____
   _____

8) What kinds of components does the Web site integrate with? Check all that apply:
   ( ) Database
   ( ) Customer relationship management (CRM) system
   Others (please list):
   _____
   _____

9) From your experience and knowledge, rate the factors and add any additional factors that you believe should be among the top factors that contribute to the loss of Web site credibility. Use integers for rating, starting with one (1) as being the biggest factor.

__ The Web site makes it difficult for users to distinguish advertisements from Web site content.

__ The Web site's content is rarely updated.

__ The site has advertisements that automatically pop up.

__ The pages have broken links or have links to sites which are not credible and/or the site is difficult to navigate.

__ The site has typographical mistakes and/or the site is sometimes unavailable unexpectedly

__ Other: _____

__ Other: _____

__ Other: _____

__ Other: _____

10) Do you currently have workarounds to fill the functions/features that your current Web content management solution does not provide?

( ) Yes. What missing functions/features do these workarounds provide?

_____

_____

_____

( ) No.

"Lordy miss, that's a *man*": John Eldred Swearingen and the Office of State Superintendent of Education in South Carolina

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Abstract

John Eldred Swearingen is a man whose name is not found in history books. However, his impact on South Carolina cannot be overstated. While Swearingen brought the state into the twentieth century in terms of education, his most significant legacy was bringing about awareness regarding the state of African-American schools. At the least, Swearingen represented a more enlightened attitude regarding race and education; at the most, he presented a voice of resistance against discriminatory practices.

Swearingen managed to excel in the worlds of academia, teaching, and politics. As a student at the South Carolina College in the late nineteenth century, his records of academic excellence remained unbroken for more than fifty years. As a teacher in the early twentieth century, he tremendously influenced the lives of hundreds of students. As State Superintendent, he kept office almost uncontested for fourteen years, only to be undone by his opponent's unethical campaigning. Notably, Swearingen achieved all these things in spite of the fact that he was completely blind.

The question of why Swearingen chose to enter politics and advocate for African-Americans is one that is raised whenever an exploration of Swearingen's life and career is presented. This piece will present one potential theory—that even though Swearingen worked against societal notions of the role of the disabled, he was influenced by societal definitions of masculinity in both his personal and professional lives. This work will utilize a variety of primary (i.e. Swearingen's papers, interviews with his son) and secondary (i.e. contemporary research on masculinity) sources in both its presentation of Swearingen's life and argument about the potential roots of his behaviors.

Keywords: education, biography, disability, masculinity, race, politics

Introduction

In her memoirs of her husband, John Eldred Swearingen, Mary Hough Swearingen recalls a story about her husband that occurred during their 1918 honeymoon. They were on board a train from Greenville, South Carolina, to New York City when, as she recalls,

> On the train I asked the porter to see whether Mr. Swearingen needed any help in the dressing room. He unhesitatingly consented to do so, but in a few moments he came up the aisle chuckling. 'Lady,' he said, 'that man don't need nothing! He's in yonder shavin' himself with a long straight razor, and everybody is a gaping at him. They can hardly use their own little safety razors—but not him. Lordy, miss, that's a *man*!'1

This story is both summative and metaphoric of Swearingen's life; societal notions of masculinity, of what it meant "to be a man," had a direct influence on his career. This is further

complicated, and the story made more remarkable, with the mention of one additional fact: Swearingen was blind. While notions of masculinity shaped Swearingen, much more so did societal notions of disability. While not explicitly shaping Swearingen's acts personal or professional—that is, Swearingen was not out to prove his manhood or his ability —societal notions of disability and masculinity did shape Swearingen's actions, both proactive and reactive, and were one means of providing the groundwork of his career.2

John Eldred Swearingen was elected South Carolina State Superintendent of Education for the first time in 1907. Throughout the fourteen years he held this office, Swearingen made great strides in improving the state's education. James Garraty presents a three-tiered paradigm regarding biographical subjects, sorted based on the writer's "over-all view of the importance of individual intelligence and character in determining the course of events." There are three types of significance: subjects who are "significant only because of the times in which they live make them so;" subjects who are "forceful individuals" that have "change[d] the trend of events;" and subjects who are not controlled by themselves or their times, but rather an outside force such as luck, chance, or destiny.3

Within this paradigm, Swearingen is most definitely a forceful figure who worked to change the society in which he lived. Swearingen was unafraid to take on any and all challengers to his vision. During his term, he came in conflict with textbook vendors, state legislators, the governor, the General Education Board, and even the Ku Klux Klan. However, nothing deterred Swearingen from doing his utmost to improve his beloved state's schools for all students, regardless of race, ethnicity, or income.4

He was willing to battle local, state, and national officials in his drive to increase state funding on schools, pass a compulsory education bill, implement the Smith-Hughes Act, and resist the Cardinal Principles report. However, arguably his most notable legacy is what he did for the hitherto undereducated populations in South Carolina—children of the mills and African-American students--more so than any previous State Superintendent. As noted by James Dreyfuss in his monograph,

> Swearingen ultimately believed, in the broadest sense, that education should be equitably provided, funded, and available to all citizens, regardless of class, race, or gender. Even though guided by the precepts of *Plessy vs. Ferguson* (1896), Swearingen's writings proves his commitment and dedication, time and again, to the provision of educational opportunity for both races."5

Swearingen is not merely a product of his historical context—but rather an advocate of issues years ahead of his time. While there are many reasons for his actions, for the sake of this work, only the effects of societal notions of masculinity and disability on his actions will serve as analysis. For purposes of this work, Gail Bederman's paradigm of masculinity—as a "historical, ideological process…the cultural process whereby concrete individuals are constituted as members of a preexisting social category—as men" is used. In short, Swearingen was acting to prove his masculinity in the aftermath of a period during which "Northerners and Southerners also argued about what kind of men they were…the political and physical conflict over slavery's extension also spawned a rhetorical battle over the meanings of manhood."6

As biographer Robert Gittings explains, a category of biographical analysis is the physical being of the subject. Indeed, as noted by the author, the "physical states of the subject of biography" definitely have "far-reaching historical consequences."7

Swearingen's life proves an excellent example of this: he was acting to reject what he had been taught he was capable. Swearingen knew via his disability what it was like to be seen as "different" and have society immediately categorize him based on physical appearance. In this light, Swearingen's actions to benefit underrepresented voices in the schools are fully understandable.

Swearingen's Life and Times

In the midst of the political and educational turmoil that was the Reconstruction South in the United States was born the man who would have the most lasting impact on public education and the public high schools of South Carolina than any other. John Eldred Swearingen was born January 9, 1875 near the town of Trenton located in Edgefield County. He was the son of John Cloud Swearingen, a confederate veteran and Red Shirt Rider, and Anna Tillman Swearingen, sister of U.S. Senator Benjamin "Pitchfork Ben" Tillman.8

Swearingen's father had a distinguished career in the Confederacy. He was among the first troops to leave Edgefield County, fighting as an officer in the CSA. In spite of sustaining injuries at both Gettysburg and Lookout Mountain, John Cloud remained on active duty until war's end. Anna Tillman was a woman widely recognized for her exceptional intellect. She hosted a private day school for her children and those of her neighbors. An avid reader, Anna loved poetry and literary classics. In addition, she was a skilled musician, needlewoman, homemaker, and planter's wife. The love of reading and the desire for learning would be passed down to their son.9

Like many male children of planter families, Swearingen was taught to hunt at an early age. He received his first shotgun, against his mother's wishes, for his thirteenth birthday. Also like many children with a new toy, Swearingen took it with him on most of his outings. Less than a week after receiving his gift, Swearingen went out on a firewood hauling expedition with some of the field hands from the farm. Swearingen saw a dove and shot it. In his excitement to capture his kill, he ran to pick up the fallen bird. A nearby bush tripped the trigger of the second barrel of his gun, discharging the entire load of bird shot through Swearingen's right hand. The shot entered at the little finger and exited at the base of the thumb, shattering every bone in the hand before settling into his forehead, face and eyes, blinding him.10

Initially, Swearingen's family hoped that his eyesight would return. His mother, ever the educator, would not stand to see her son go on helplessly. She began a strict program of re-education for him. She began by having him re-learn to perform simple household chores such as lighting stove fires and bringing in firewood. Tending an extensive garden, she soon had Swearingen fetching water for the garden. She advanced his training to include proper table manners, the techniques of which Swearingen would later use as a teacher of the blind. Next she had him re-learn activities such as basic exercises, acrobatics, wrestling, and horseback riding.11

As Swearingen was re-mastering household duties and activities, his mother continued his education by reading to him. If there exists a "boy culture," as argued by E. Anthony Rotundo, that prepares boys to become masculinized, the lack of engagement in this culture cannot be neglected.If the culture formed by boys "helped to prepare them in may ways for life in the adultspheres they would inhabit," then Swearingen was not provided this opportunity.

Further, if boy culture is what taught boys to reject the notions of feminized domesticity, then it is likely that Swearingen' extended term in the household prepared him for what was determined by society of the time to be a feminized career—that in education.12

Rotundo continues the argument that this break with domesticity and emergence of boy culture is what taught them "differences of ethnicity and social status." While Swearingen was most definitely exposed to a huge variety of other social structures that would reinforce social norms regarding the treatment of people who are "other", such as the disabled or of another race, Swearingen would not have these patterns set in him via his teenage play. This might help explain the progressive social attitudes held by Swearingen throughout his career.13

Swearingen attended the School for the Blind and Deaf at Cedar Springs, South Carolina, from 1889 to 1894. Upon his graduation from Cedar Springs, Swearingen was determined to continue his education. He applied to the South Carolina College, only to be rejected. It was his first taste of the discrimination society heaped upon the disabled of the time. In an effort to overcome the college's perception that he was intellectually incapable, Swearingen made a formal appeal to the president and board of trustees of the college, who granted him provisional admission. In contemporary society, universities provide a wide array of provisions for people who are differently abled; such was not the case at the turn of the century. Swearingen had to provide his own guide and readers for his textbooks, and any sign that he could not keep up with the other students would result in his being asked to withdraw from the college. Much to the surprise of everyone involved (except Swearingen), he excelled in all of his coursework. Swearingen doublestarred in all but three courses.14 Within two years, Swearingen had earned a reputation as being the most intelligent student on campus. As recalled by Swearingen's son, John Jr., college friends of his father's visited their house years after Swearingen had retired from public life. "As I was growing up, I observed many of them come by and shake hands with him, and say that 'I learned more from you than I ever learned from any one of our professors.'"15

By the time Swearingen graduated from the college, he was amazing his fellow students with his feats. He could walk unassisted anywhere on campus with no difficulty and could identify all 200 students on campus by voice. Returning to Rotundo's argument regarding boy culture, Swearingen likely was exposed to enough of it to foster his competitive spirit. Since boys were taught via their culture to "seek each other's defeat and thus prove individual mastery," Swearingen likely strongly desired to prove his worth in the academic arena—the only one perceived to be open to a blind student of the time.16 When he graduated June 17, 1899, Swearingen was the top graduate in the college. 17

Swearingen's Teaching Career

Upon graduation, Swearingen returned to the Cedar Springs Institute as a teacher, one of the only careers open to a blind man of the time. During the first few years of his teaching career, Swearingen intended to pursue a career in law, political science, or economics. Since he did not have the money for graduate school, he applied for a Rhodes Scholarship to pursue a degree at Columbia University, New York. To this end, he secured effusive letters of recommendation from almost every professor he had at the college, as well as the political clout of his uncle Ben Tillman. In spite of these efforts,

he was refused the scholarship due to his blindness. 18

He quickly became principal of the blind department, earning a reputation as a tough, compassionate instructor. Eventually, Swearingen would rise to become superintendent of Cedar Springs. However, Swearingen quickly grew tired of the frustrations facing teachers of the time generally, teachers of students with disabilities specifically. For a variety of reasons, Swearingen opted out of teaching and into a career that would combine his loves: politics, service, South Carolina, and education: he decided to run for State Superintendent of Education. 19

Proving masculinity likely helped Swearingen decide on this course of action as well. As described by Friend and Glover, "[a]s manifested through honor, civic identity shaped southern masculinity." While this masculine honor was most frequently expressed in military service—something Swearingen clearly desired to do, but could not—serving the state in support of its schools is arguably an extension of this notion. If he couldn't carry a musket and bayonet to serve his state on the battlefield, he would carry his beliefs and efforts to serve his state in its capitol.20

Political campaigning during this period was difficult. Reflecting on following her husband on later campaign trails, Mary Swearingen writes that the process was "a grueling practice which may not be peculiar to South Carolina, but which is certainly peculiar."21 Candidates had to speak in public debates held in the seat of every county in South Carolina creating the need for much travel. To make the traveling uncomfortable, the campaigns were held in the intense heat of late summer. In addition, all traveling was done by coal-burning train, with its associated discomforts of coal smoke and hot cinders in the cars.

During the campaign, Swearingen closely listened to his two competitors, two men who did not take the blind candidate seriously. Whether attempting to prove himself as a man or as capable, the campaign brought out Swearingen's competitive nature. After listening to one of his competition deliver the same speech at every whistle stop, Swearingen used his remarkable memory for humorous use. At the next stop, when Swearingen was slated to deliver his address before this particular gentleman's, Swearingen rose and recited his competitor's speech verbatim—leaving the poor man, quite literally, speechless. 22

Swearingen's platform had multiple facets, most of which were highlighted in the broadside pamphlet printed for his campaign, which he mailed to business owners in the larger towns across South Carolina. In it, Swearingen didn't try and hide his blindness; rather, he announced it in headline type. On the broadside, a photograph fills the center of the page, taking up almost one-third of the document, with highlights of his life printed in banner type alongside. To the right states his educational experiences: "Student at South Carolina College 1895-1899" and "Teacher in Cedar Springs Institute 1899-1908". To the left are two more biographical statements: "Born January 9, 1875" and "Made Blind by the Accidental Discharge of his Gun while out Hunting January 13, 1888." 23

This public declaration of his disability is arguably an extension of Swearingen's desire to prove his masculinity. Beneke explains that physical manifestation of suffering—such as tattoos, muscles, and scars—become symbols of masculinity: "[s]uch symbols convey a willingness and capacity to suffer for a masculine identity, an achieved and visible toughness." As such, Swearingen's blindness can be perceived as an ongoing symbol of suffering and, as such, a solid expression of his masculinity. Considering that

many Civil War veterans hosted a variety of disabilities from the war, such a belief in the link between suffering and masculine worth is not a large leap.24

Society dictated that the blind could only receive a limited education; Swearingen excelled through his tenure in Cedar Springs. Society dictated that the blind could not succeed at higher education; Swearingen excelled in his academic career at the South Carolina College. Society dictated that the blind would not make successful political campaigns; Swearingen led a very successful whistle-stop round of county seats in South Carolina. To further confound societal opinion of the capabilities of the blind, on that rainy election day in 1908, Swearingen was elected. Three months later, he assumed the duties of the office. 25

Handling the Office

Once elected, Swearingen knew he had to establish a routine that would allow him to work efficiently and keep his staff at ease. For starters, Swearingen applied his gifted memory to learn the route from his home on Blanding Street to his office so he could make the trip unaccompanied. As explained by his son John:

> In his early days as state superintendent of education, his office was in one of those tall buildings…he used to walk from the house to his office by himself. He knew around, and in those days there weren't that many cars on the street. And he was able to manage those things for himself. He did it without any problem at all.26

Organization governed Swearingen's professional life. His staff quickly grew used to his daily routine: enter, have mail dictated to him, type responses, make calls, handle other bits of official business. Assuming that the argument put forth by Timothy Beneke is correct—that success at work is a visible demonstration of masculinity—it only Makes sense that Swearingen was not just out to prove his worth as a disabled man, but as a masculine man.27

Swearingen did not just attend to straightforward office duties, however; as an elected official, there was much more to the job. Swearingen would hardly ever refuse an invitation to a barbecue, picnic, family gathering, political campaign meeting, graduation ceremony, or school dedication. Whether it was loyalty to the state, a real sense of duty in his position, a means to prove his masculinity, or more attempts at confounding social opinion, Swearingen would travel the state frequently.

One typical duty that took Swearingen out of the office regularly was the inspection of new school buildings. At the outset, builders and superintendents alike would doubt Swearingen's abilities in this capacity; however, he took great pleasure in performing highly detailed inspections that frequently caught construction errors missed by his sighted colleagues. An inspection by Swearingen was amazingly thorough. Wife Mary recalls a county superintendent telling her once that Swearingen could "find out more about a building with one trip than [he could] by watching them build it." He was methodical in his work, as described by Mary:

> With his cane he checked the height of the ceiling and quickly stepped off the width of the room. With his sensitive perception to light, he could face the windows and remark, 'I see you have your windows where you get good light.' Some spectators were ready to swear he had a magic sense

> of some sort. He tested floor strength by his shiver-the-timber method. He would find a strategic point and suddenly bounce up and down energetically. If from two or three vantage points he could hear no rattles, he was happy. If, however, a carpenter had not braced his sills well enough, Mr. Swearingen was quick to suggest with some asperity that 'these sills should be strengthened and steadied…' He would ask about the desks, the blackboards, and the heating facilities of the school building.28

Clearly, Swearingen was able to not only compensate for his blindness while in office, but perform all of the duties in a much more direct fashion than many of his predecessors. This quality characterized not only the routine tasks of the office, but also of entire view Swearingen took of his professional responsibility. Not only was it good enough to maintain the public schools while he was in office, he wanted to affect significant change. To do so, he would alternately cooperate and battle political and philanthropic forces on the state and national levels. Two such battles embody the struggles Swearingen faced while in office: with the General Education Board and with Governor Coleman Blease. 29

Struggles in Office

While Swearingen was an advocate of vocational education, he was not a supporter of one of the nation's most significant philanthropic agencies that supported this work. One of the primary sources of private funding for African-American schools in South Carolina was the General Education Board (GEB), a group of private philanthropists operating out of New York City. As described by Charles Biebel, this organization sought to assist education in the South by "infiltrating Southern universities and government agencies with its own paid evangelists" in order "to promote a reorganization of 'general education' through a coordinated national effort.'"30 The GEB clearly favored schools operating on a vocational/industrial track. Biebel, a critic of the GEB asks "whether the Board's contribution to the survival and success of particular organizations…and to the demise of others was in the long run in the best interests of the country." Biebel also describes the Board using the same tactics "disparagingly ascribed to the entrepreneurs whose fortunes had created and sustained these large foundations," in order to get their educational program approved across the South. After describing the Board members as wealthy, white, and Protestant, Biebel presents a harsh, but not unfounded critique of the GEB.

> It is hard to escape the conviction that the officers and trustees, representing a foundation which by its nature was private, elitist, and paternalistic, could not transcend their collective vested interest in sustaining a social and economic order largely created by their class—all in the name of democracy and the public interest.31

Swearingen opposed GEB intervention in South Carolina's schools for a variety of reasons. In his article on GEB funding, James Anderson describes Southern resistance to the GEB's efforts as a "series of isolated incidents" in which GEB funded positions were seen as "unwanted agents of Northern philanthropy." However, the only specific example of this resistance Anderson presents is that of Swearingen.32 If Swearingen was acting in a masculine, paternalistic fashion towards African-American schools, he might

have viewed the transparent machinations of the GEB as a violation of his efforts, much like a father would resist parenting advice from a stranger.

Whatever the motivations, Swearingen frequently expressed his resentment of his role in GEB funding in South Carolina directly to the Board. Directors of the Board itself, as well as its representatives, were subjected to Swearingen's frustrated invectives. For example, Swearingen was asked to present an accounting of all GEB funds spent in South Carolina, additional to his annual reports. In a letter of response to Wallace Buttrick, a director with the Board, Swearingen wrote, in part, "[y]ou have the absolute right to do as you choose with your own funds. I decline, however, to play the part of the fish dangling at the end of your line."33 Swearingen continued his rant to another director, Abraham Flexner. He wrote, "I have received three letters from your office that I do not relish and it is high time for a clear understanding between all parties. The use of your contributions means nothing to me individually and I cannot afford to be harassed and bedeviled by meddlesome dictation and afterthoughts."34

Swearingen had given the Board reason to voice their frustrations. Starting in 1921, Swearingen began openly opposing the GEB. In correspondence with the Board, Swearingen revealed that he was growing frustrated and mistrusting of the Board's efforts. In June of that year, Swearingen wrote again to Flexner, clearly voicing his frustrations. "If you do not wish to support the work, simply keep the money," Swearingen wrote of the Board-funded positions within the State Department of Education. "I am tired of being deviled with variations and uncertainties that will not allow me to plan definitely for the activities."35

The tensions between Swearingen and the GEB were truly manifest when, due to medical reasons, GEB and State Department agent J.H. Brannon had to retire. However high the Board's opinion of Brannon, though, this esteem was not shared with Swearingen. In correspondence regarding Brannon's replacement, the negative opinion of the Board towards Swearingen was obvious—or at least how the Board perceived the State's opinion of Swearingen. Writing to Board Director Abraham Flexner, field agent Davis explained the difficulty with which the pursuit of Brannon's replacement might meet. "You know Mr. Swearingen," Davis reminded Flexner, "and realize that some of the best men in the state do not care to come into his office as it would be difficult for them to get along smoothly with him."36

Just as Swearingen was an outspoken critic of the efforts of the GEB, he also was critical of Governor Coleman Blease. The governor was a near-perfect example of someone working to maintain alpha-male status. He would physically threaten opponents, promising sound thrashings to anyone who questioned or opposed him. His messages to the state legislature frequently had to be censored due to the abusive and profane language they contained. However, on one level, this uber-masculinity appealed to South Carolina's voters: campaigns with Blease as candidate had the highest voter turnout in the 20th century. As summarized by Walter Edgar: "'Coley' might upset 'respectable folks,' but he surely had a lot of friends. Bleaseism was a last hurrah of a dying world, a world in which all whites were equal and blacks were the mudsills of society."37

Blease, a racist populist, and Swearingen, a tolerant progressive, were almost ordained to clash from the start. On one level, Blease was opposed to reform, setting him in philosophical opposition to Swearingen. On another level, Blease had cast himself as a

populist in opposition to Tillman; by extension, he would oppose Swearingen. On a deeper level, though, it appears Blease was unable to view Swearingen as anything other than a disabled person. While Swearingen continually proved himself by conflating and confounding notions of disability and masculinity, Blease would never accept Swearingen as an equal. 38

When it came to proving masculinity, Blease and Swearingen would be in direct competition for alpha status. Blease wrapped much of his rhetoric in notions of southern manhood, claiming that reform efforts were merely thinly veiled attempts at demasculinizing South Carolinians. Swearingen had a much more complex view of his masculinity and clearly viewed reform and service as extensions of his masculinity. The two views would collide frequently. 39

One such example of this collision occurred when Blease tried to expand his patronage system into the field of education, attempting to appoint friends to positions in the State Board of Education. Worse, Blease and his friendly appointees had exhausted the expense accounts of the State Department of Education—conditions that Swearingen had tried to counteract twice that year. When the funding was finally spent and members of the Board began to complain to Blease, the governor in turn railed against Swearingen. Swearingen's reply was characteristically direct:

> I have twice reported these conditions and requested the Board to take action to correct them…My report was passed over in silence on both occasions. The appropriation for the State Board of Education has now been exhausted….The men who brought them about cannot expect me to assume to take up the matter a third time at this late date.40

Blease would continue his openly racist practices in regards to the state's schools, even taking matters before the state legislature. In 1914, Blease urged the state legislature to pass a bill "forbidding white teachers in colored schools." This proposal ran counter to much that had been taking place in South Carolina's schools. Blease's proposal was something "that Charleston did not want" as white teachers serving African-American schools were common in the lowcountry. Fortunately, when the state legislature met, they "killed his two cent rate bill" and the teachers were allowed to remain in their schools.41

It was against the backdrop of the contentious 1914 campaign during which Swearingen's uncle, Ben Tillman, attacked Blease publicly that the most bitter exchange of words between Blease and Swearingen took place. Writing to Blease, Swearingen asked the governor to explain his view on rural graded schools. He wrote, "[a]t the 1913 session of the Legislature, you opposed State aid to two-teacher and three-teacher schools in the country. I understand that your position…is still unchanged. If you care to express your views on this policy, and your attitude toward rural graded schools, I shall be glad to learn your position."42

Blease's response was furious, full of invective, and typical of his attitudes in regardsto politics in South Carolina. "I want to state to you, sir, that that statement is absolutely and unqualifiedly false," Blease's defense began. Rather than address what his policy toward state support of schools actually was, though, Blease instead attacked in heated rhetoric. "I do not care to speak of your infirmity—but unless you have been imposed upon by reasons of your infirmity, I cannot understand this statement." Then, in spite of Swearingen's efforts to keep politics out of the office, Blease begins a political attack. "I can understand why your uncle, Senator Tillman,

has endeavored to injure me politically, and I presume his influence over you, being afflicted as you are, caused you to write the willful [sic] and malicious falsehood."43

The 1914 election was a turning point in South Carolina politics. Not only was Blease not re-elected (and wouldn't be again until 1924), every candidate who had aligned himself with Blease was defeated. Richard Manning, a progressive, prepared to move into the governor's office. Blease was in fact so anti-progressive that when South Carolina voters elected the progressive governor, Blease resigned five days before his term ended rather than have to meet his successor.44

1922 was a year of great turmoil in Swearingen's life. Throughout his term, Swearingen was notably apolitical and honest in his office. Swearingen prided himself on never receiving any sort of questionable income while in office. When a book salesman threatened to campaign against Swearingen, the State Superintendent's reply was direct: "neither your bribe nor your threat makes any impression on me. When I have to sell my soul for political support, I shall gladly step out."45

This resistance to politics was not more true than in the most tragic but interesting event in Swearingen's life, that of his final campaign in 1922. After fourteen years in office, Swearingen decided to run for governor. His opponent in the governor's race was his nemesis, Cole Blease. For a variety of reasons, Swearingen would eventually withdraw from the race. Swearingen's son, John E. Swearingen, Jr., explains that Swearingen was told the Ku Klux Klan would oppose him in his bid.46 While his son did not remember the Klan ever threatening the family or making an appearance at the family's home, two pieces of information appear to corroborate the story. First, the best man at Swearingen's wedding was congressman J.J. McSwain, who historian Walter Edgar notes spoke frequently at Klan rallies. It easily could have been McSwain who was a participant in a story recounted by Mary Swearingen in her husband's memoir. She tells the following story, adding more credence to the Klan opposition theory: "I remember the night before his withdrawal, a group of men visited him. He had always considered them friends. They urged that he withdraw from the governor's race because the 'cards have been stacked against you.'"47

Just two pages earlier, Mary also recounts Klan opposition to her husband in terms of his refusal to play politics with his position. "He never considered the political effects of his decisions," she recalled. "When the KKK accused him of giving teacher certificates to Catholics, Jews, and Negroes, he said frankly, 'Of course I do. What do you expect me to do? Break the law to suit prejudice?'"48

Whatever the reason, Swearingen withdrew from the gubernatorial campaign. With this decision, he decided to mount a bid for re-election to the State Superintendent's office that same year. Blease and the State Superintendent candidate he supported, Jasper Hope, campaigned actively against Swearingen. Blease, and the candidates he supported, still got the millworkers' vote. As explained by Bryant Simon, millworker politics was a blend of race and gender: male millworkers "interpreted Blease's rhetoric and actions as a defense of their manhood against the forces of industrialization and the reform agenda of the progressives." To these millworkers, the state's political system was broken into two parties: Bleasites and Anti-Bleasites. "Casting their vote for Cole Blease," explains Simon, "textile workers pressed their claims of patriarchal privilege and equality with all white men and asserted in the strongest language available to them that the economic and socially mighty did not control everything."49 Swearingen, clearly, was an Anti-Bleasite.

The millworkers knew the Superintendent's political bent and voted accordingly. Describing the election loss to Sophie Rasor, Swearingen explained that "[t]he cotton mill vote went against me about three to one. This was the strongest element in the opposition, so far as any one class of schools or voters was concerned."50

Contributions/Legacy

Swearingen acted based on his desires to prove his masculinity and disprove notions of disability. These actions led him to becoming one of the most visionary superintendents in South Carolina's history. No more apt description of Swearingen's legacies exists than that provided by his wife, Mary:

> The layman of today, or even the students of educational progress in our state, can scarcely believe the school system of South Carolina was as inadequate as it was when Mr. Swearingen became State Superintendent of Education fifty years ago. But I must admit that it gives me a feeling of infinite pride to see how he grappled with the situation, determined to correct abuses, to extend opportunities, and to create a worthwhile public school program.51

It would be easy for a contemporary reader to maintain that Swearingen's policies did not do enough for African American education. Such an argument, however, does not take into consideration either the political nature of Swearingen's office or the historical context of South Carolina in the early twentieth century, nor does it adequately credit a man who challenged the boundaries of accepted society at the time.

In fact, Swearingen's contemporaries in the African-American community viewed his time in office with high praise. No greater testament to Swearingen's efforts to assist the African-American population can be used than that of John Burgess, a young African-American man who was on the road to earning teacher certification upon Swearingen's election loss. On September 16, 1922, he wrote:

> This letter, together with others and expressions made to you and about you will in a measure express my gratitude to you for the interest you have manifested in the education of the colored people of South Carolina in general and Marion County in particular. I want you to feel that in me you have a friend that will ever cherish your good work. It is with regret that I noted your defeat, but you have begun a great work. The man that will follow you will not have as hard a road to travel as you had for you have made the way easier. To have been a teacher in South Carolina under you for fifteen years has been a pleasure that I shall never forget.
>
> I had looked forward to the day when I would hold a High School Certificate signed by you. Mr. Dominick told me that in the last examination I was low in two subjects. I am going to pass the next one in October so that I will have the honor of holding a certificate to teach in the high schools of South Carolina signed by the State Superintendent of South Carolina under whom the educational movement of the state was really and truly vitalized. I pray that whatever you may do after you leave your present office that God's richest blessings will be upon you and that will continue to guide you as I believe he had done in the past.52

Swearingen accepted the dual educational system as the framework for education in South Carolina, nevertheless, he worked within that structure to pursue greater equality of educational opportunities for African American children. Although his accomplishments were financially rather meager during his tenure, he established a climate in which more equitable funding and the improvement of African American schools, as well as identical standards for all of the state's schools were at least a part of the discussion surrounding South Carolina's educational system. In his final *Annual Report*, Swearingen explained that he had tried to do what he could for African-American students, but reminded all that the work was just beginning: "Our white folk and black folk must work together if the State is to be health [sic], educated, intelligent, God fearing, self-supporting and self-respecting." He admitted that he had been "criticized severely" for these efforts, but concluded nonetheless that there was still much work to be done: "[t]he negroes have much to learn and much to undertake".53

Lamentably, Swearingen's successors had little inclination to carry on the work he had begun. South Carolina's segregated black schools would remain appallingly underfunded for the next thirty years and the gross inequities of the state's segregated school system grew increasingly stark. While virtually all of South Carolina's public officials in the first half of the twentieth century were content to neglect the African American schools and avoid a serious appraisal of separate but equal schools, John Swearingen was not among them. Despite his blindness, Swearingen saw with greater clarity the inequality of the segregated system and endorsed some of the steps necessary in order to improve the educational opportunities of African American students. Nevertheless, his recommendations gained little traction. Three decades later, the black schools of Clarendon County were classic examples of the inequity of segregation, and *Briggs v. Eliott* was one of the five cases heard collectively as *Brown v. Board of Education* that would destroy the façade of separate but equal education.

In today's divisive political climate when populism seems to be making a comeback, it is particularly interesting to reflect upon Swearingen's tenure as a politician as well as an educator. Would that those elected to public office today—particularly those who hold positions overseeing education committees—would take a lesson from Swearingen in doing what is right and good instead of what is most politically expedient. 54 It is a question best left rhetorical to wonder what significant acts of educational legislation such as No Child Left Behind resemble had Congress more politicians cut of the same cloth as Swearingen.

Endnotes

1) Swearingen, M.H. A gallant journey: Mr. Swearingen and his family. P. 98.
2) For a more contemporary take on the intersection of masculinity and a lifelong disability such as Swearingen's blindness, see Charmaz, K. (May 1994). Identity dilemmas of chronically ill men. The sociological quarterly, 35, 2. Pp. 269-288; and Gershick, T.J. & Miller, A.S. (1997). Gender identities at the crossroads of masculinity and physical disability. In Gergen, M.M. & Davis, S.N. (Eds.) Toward a new psychology of gender. New York: Routledge Press.
3) Garraty, J.A. The nature of biography. Pp. 4- 6.
4) Janak, E. (2003). Conclusion: Swearingen's legacy in South Carolina schools. John Eldred Swearingen and the development of the public high schools of South Carolina. Pp. 235-255.
5) Dreyfuss, J.V. John Eldred Swearingen: Superintendent of education in South Carolina 1909-1922. P. 2.
6) In order, Bederman, G. Manliness and civilization: A cultural history of gender and race in the United States 1880 – 1917. P. 7; and Oertel, K.T. (Autumn 2002). 'The free sons of the north' versus 'the myrmidons of border-ruffianism': What makes a man in bleeding Kansas? Kansas History: A Journal of the Central Plains, 25. P. 176.
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Preservice teachers' mathematical knowledge of fractions

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Abstract

The main purpose of this study was to assess Taiwanese preservice teachers' mathematics knowledge of fractions. 47 pre-service teachers enrolled in a 4-year teacher education program participated in the Fraction Knowledge Test (FKT) and the Mathematics Problem Solving Ability Scale (MPSAS). Results showed that preservice teachers displayed better fraction knowledge on procedure than on conception. Their fraction procedural knowledge moderately correlated with their problem solving ability. Findings indicated the preservice teachers need more stimuli to construct their conceptual knowledge.

Keywords: preservice teachers, mathematical knowledge, fraction

Introduction

Several researches have revealed that preservice teachers' understanding of fraction content knowledge is very weak (Davis & Thipkong, 1991; Simon, 1993; Behr, Khoury, Harel, Post, & Lesh, 1997; Cramer, Post, & del Mas, 2002). Evidence has shown that preservice teachers have difficulties with the concept of fractions and the meaning of division of fractions (Ball, 1990), cannot understand the operator construct of rational number (Behr et al., 1997), have difficulty in explaining fractions to children and why algorithms work (Selden, & Selden, 1997, Chinnappan, 2000), and can not carry out fractional computation procedures correctly, even when they have correct answers (Becker & Lin, 2005).

Preservice teachers' poor performance in fractions can cause serious problems. Preservice teachers will be teaching mathematics in elementary schools or special education programs. It is substantively important issue and should be addressed.

Why are fractional numbers difficult for many students and preservice teachers? Vergnaud (1983) argued fractional number skill development is heavily dependent on others' essential elements. Fractional numbers are quite different from the whole numbers. Under different contexts, fractional numbers have different personalities. Fractional numbers have different constructs, i.e. part-whole, quotients, measures, ratio, rate, and operators (Behr, Lesh, Post, & Silver, 1983). A part-whole relationship is the description of how much a quantity is relative to a specified unit of that quantity. A quotient is seeing a fraction number as a result of division. A measure is seeing a fraction as a point on a number line. The fraction as ratio is seeing a fraction as a multiplicative comparison between two quantities. A rate is seeing a fraction as a new quantity as a relationship between two other quantities. Finally, an operator is

seeing a fraction as a transformation or as a function for another numbers (Ohlsson, 1988; Lamon, 1999; Steefland, 1987).

Another reason for preservice teachers' difficulty with fractions might be due to their poor problem solving ability. Problem solving ability referred to students' ability to solve non-routine mathematics problem (Liu, 1993). As Niemi (1996) indicated, there was a closer association between students' level of problem solving ability and their fraction knowledge. Thus, research focusing on the relationship between preservice teachers' problem solving ability and their fraction knowledge would appear to be necessary.

Recently, teaching students to understand what they are learning has been the major current in mathematics (National Council of Teachers of Mathematics, NCTM, 2000). A similar trend is also emphasized in Taiwan. Due to the Ministry of Education's curriculum standards in 1994, the foci of elementary mathematics learning have been moved from practicing computation skills to encouraging students to develop their own mathematical understandings (Liu, 2000; Tan, 1996; Tsai, 1997). The shift from computation to understanding is expected to balance the weights of procedure and content knowledge in elementary mathematics teaching. In fact, both computational fluency and mathematical understanding are expected to play important roles in the Taiwanese national curriculum standards (Cheng & Lin, 2004).

As Eisenhart et al., (1993) indicated, procedural knowledge refers to the mastery of computational skills and knowledge of procedures in identifying mathematical components, algorithms, and definitions; however, conceptual knowledge refers to the underlying structural relationships of mathematics and the interconnections of ideas that explain and give meaning to mathematical procedures. Many researchers indicted that procedural and conceptual knowledge are both important components of mathematical understanding (Wearne & Hiebert, 1988; Desimone, Smith, Hayes & Frisvold, 2005; Hiebert et al., 2005; Hu & Lee, 2005; Wu & Huang, 2003; Lin & Tsai, 2006). Therefore, both types of knowledge need to be balanced and emphasized when teachers teaching mathematical understandings in fraction.

Purpose

The purpose of this study was to assess Taiwanese preservice teachers' mathematics knowledge in fractions, including their understanding and computational abilities. Three questions were posted (1) How do preservice teachers perform in fractional mathematics knowledge (PK & CK) and problem solving (PS)? And how they correlated with each other? (2) Do the preservice teachers perform equally in fractional procedural and conceptual knowledge? (3) How do they perform in the eight components of fraction in procedural and conceptual knowledge, respectively?

Method

Participants

Participants consisted of 47 pre-service teachers enrolled in a 4-year teacher education program at National Chiayi University in central Taiwan. Although these pre-service teachers had already passed the college entrance examination held in Taiwan, they need to apply for admission before being enrolled in the teacher education program. They are also required to take 5 credit hours in mathematics education, 35 professional education courses, and six months

internship before entering elementary school to teach mathematics. Among these 47 participants, there were about 94% of the participants younger than age 25, and approximately 87% were female.

Instrument

Two instruments were used in this study. The first, Fraction Knowledge Test (FKT), was a test of fraction concepts adapted from Cramer, Post, and del Mas's study (2002). It was modified to provide more emphasis on both procedural and conceptual knowledge. An item exemplified as 'Solve the problem $\frac{3}{4}\times\frac{2}{3}$ = ?" is

deemed as a procedural knowledge item; another item exemplified as 'Explain how you determined your answer by giving an illustration or representation for $\frac{3}{4}\times\frac{2}{3}$ =?"

is deemed as a conceptual knowledge item. The test consisted of 32 items and was specifically designed to measure fraction knowledge in areas related to: (1) CON: concept, (2) EQU: equivalence, (3) ORD: order, (4) ADD: addition, (5) SUB: subtraction, (6) MUL: multiplication, (7) DIV: division, and (8) TRN: transfer. The survey instruments were piloted with 25 pre-service teachers who were enrolled in mathematics methods courses in U.S.A. The instrument was translated into Chinese by one U.S. and one Taiwanese professor, both fluent in Chinese and English. The Chinese version was administered to pre-service teachers in Taiwan during the first week of class in September. The internal reliability (Cronbach's alpha) of the test was found to be .86 in this study.

The second test used was the Mathematics Problem Solving Ability Scale (MPSAS) developed by Liu (1989). There were 16 items (64 sub-questions totally) used in this study. With great reliability (KR20 = .85; equivalent coefficient = .86) and validity (correlation coefficients between MPSAS scores and criterion-related mathematics subjects score, IQ test scores, mathematics diagnostic tests were equal to .77, .72, and .81, respectively), the MPSAS was used to assess these preservice teachers' problem solving ability.

Results and Discussions

Q1: Correlation

As can be seen in Table 1, preservice teachers performed a moderate correlation between PK and CK ($r = .36$, $p < .05$), between PS and PK ($r = .43$, $p < .01$), but had no significant correlation between PS and CK ($r = .002$, n.s.).

As Niemi (1996) indicated, students' problem solving ability correlated with their fraction knowledge, but now we know in advance that the association was with fractional procedural knowledge. This is surprise because problem solving ability referres to a general ability for solving non-routine problems, it might be deemed as a general mathematics potential and should be associated with fractional knowledge. But why now it just related to fractional procedural knowledge, rather to fractional conceptual knowledge?

Table 1
Mean, Standard Deviation, and Correlation for PK, CK, and PS.

	N	M	SD	1	2	3
1PK	47	27.28	3.72	1.0		
2CK	47	19.64	8.77	.36*	1.0	
3PS	44	56.55	4.02	.43**	.002	1.0

*$p < .05$, two tailed.
** $p < .01$, two tailed.

One of reasons might be that our preservice teachers possessed high quality of mathematics knowledge (56.55 out of 64). But this superiority was based on their computation skills (27.28 out of 32), not based on their understandings on underlying structural relationships of mathematics (19.64 out of 32). As a further exploration, we also found PS significantly correlated with the procedural fraction ORD scale ($r = .32$, $p < .01$) and the procedural fraction ADD scale ($r = .36$, $p < .01$), respectively.

Another reason might be due to the formations of MPSAS and FKT. The FKT asked participants to explain why their answer was in a very open question from. But the MPSAS used closed multiple-choice questions to ask participants to explain their understandings. This indicates that preservice teachers in Taiwan know how to compute with fractions but did not understand the rationale behind fractional computation.

Q2: Difference between PK and CK

After a repeated-measure analysis was conducted, the authors found that preservice teachers demonstrated superiority on PK over CK ($F (1, 46) = 40.84$, $p < .001$). This difference can be explained half ($\eta^2 = .47$) from the contribution of mean difference between PK ($M = 27.28$) and CK ($M = 19.64$). Although a balanced emphasis between procedural knowledge and conceptual knowledge had been initiated from 1994, preservice teachers still demonstrated greater procedural than conceptual thinking. This might be due to their early education and training. This also reinforces the lack of conceptual knowledge in fractions for these preservice teachers.

Q3:Performances on components

As can be seen in Table 2, preservice teachers performed differently in the eight components of procedural fraction knowledge ($F (7, 322) = 15.89$, $p < .001$). This difference can be attributed small to the mean differences of the eight fraction components ($\eta^2 = .26$). After conducting least-significant difference (LSD) comparisons, two categories of components were found in fraction procedural knowledge, i.e., Category 1 (ADD, SUB, MUL, DIV) and Category 2 (CON, EQU, ORD, TRN). In Category 1, the components of fractional addition, fractional

subtraction, fractional multiplication, and fractional division referred to an algorithmic operation. Category 2, including fractional concept, equivalence, order,
and transfer, referred to general attributes of fraction. The preservice teachers performed better in Category 1 than in Category 2 (all ps < .05). This implicated that our preservice teachers were more familiar with conventional computation skills than with informal operation skills in fractional procedural knowledge.

Table 2 - Mean and Standard Deviation for eight components in fraction

	CON	EQU	ORD	ADD	SUB	MUL	DIV	TRN
PK: F (7, 322) = 15.89, p < .001, η^2 = .26)								
M	3.32	2.49	2.85	3.79	3.91	3.64	3.87	3.40
SD	.96	1.27	1.23	.86	.58	.76	.49	1.10
CK: F (7, 322) = 7.86, p < .001, η^2 = .15)								
M	3.09	2.34	2.34	2.79	2.47	2.19	1.55	2.87
SD	1.16	1.46	1.52	1.61	1.61	1.71	1.74	1.47

On the other hand, the preservice teachers also performed differently in the components of conceptual fraction knowledge (F (7, 322) = 7.86, p < .001), with a small contribution from the real differences of component means (η^2 = .15). Three categories of components were found in fraction conceptual knowledge, i.e., Category 1 (CON, TRN), Category 2 (EQU, ORD, ADD, SUB), and Category 3 (MUL, DIV). Category 1, the components of concept and transfer, referred to a general understanding of fraction. Category 2, the components of equivalence, order, addition, and subtraction, referred to a basic understanding of fractional computation. Category 3, the components of multiplication and division, referred to a complicated understanding of fraction. In our analysis, the preservice teachers performed significantly best in Category 1, then Category 2, and then Category 3 (all ps < .05). It was the same as Ball (1990) indicated that division of fractions were the most difficult understandings for preservice teachers.

Recommendations

In this study, preservice teachers' problem solving ability correlated with their fraction procedural knowledge. We also found the preservice teachers performed better fraction knowledge on procedure than on conception, and performed differentially in different fraction components, regarding to respectively procedural and conceptual knowledge. From the findings, it implicated a necessity for enriching preservice teachers' fraction knowledge, especially their fraction conceptual knowledge. Most preservice teachers in Taiwan received fraction knowledge through computational or procedural operations. The superiority of performances on fraction procedural knowledge might become their obstruction of understanding fraction. They need more stimuli to construct their conceptual knowledge, especially when they will be teaching mathematics in elementary schools in two or three years later.

In addition, there still are some limitations to this study. First is the small sample size. The authors only analyzed the participants enrolled in education program at one university.

A repeated study with a larger sample size could enhance the validity of the results if the second study results were similar. Second, the authors instructed a mathematics course for these preservice teachers by using an open approach (Hashimoto & Becker, 1999). This might influence preservice teachers' performances on fractional understanding. But it is also a good source for investigating the effect of open-approach instruction in future.

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Influences of strategies, knowledge sharing and knowledge transfer on the success of university-school collaboration in research and development

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Abstract

This research aimed at 1) studying the situation of the university-school collaboration in research and development 2) developing and validating the success model of the university-school collaboration in research and development and 3) studying the influences of strategies factor, knowledge sharing and knowledge transfer on the success of the university-school collaboration in research and development. The research conceptual framework was the success of collaboration causal model which was developed based on Dyer and Powell's causal model of knowledge sharing, integrated with Wu and other's concept on collaboration strategies, Daniel, Hempel and Srinivasan's knowledge transfer concept, and Brookhart and Loadman's concept on different in working culture. The sample group consisted of 569 teachers and 38 school administrators from 18 basic education schools participated in the pilot project for accelerating the cultivation of desirable characteristics of Thai children and youths and 25 university researchers. The total 632 samples were drawn by multi-stage sampling. The research instruments were 3 set of questionnaires for teachers, school administrators, and university researchers, each of which had reliability of 0.985, 0.978 and 0.965 respectively. Data were analysed by descriptive statistics, analysis of variance using SPSS program, confirmatory factor analysis and the analysis of structural equation model using LISREL program. The analysis of qualitative data used the content analysis.

The major research findings were 1) the university-school collaboration for each school was a financial supported collaboration between 1 - 2 mentor researchers from the university and 5 – 20 school core teacher, having different work culture aiming to achieve the mutual goal. The significant activities were knowledge sharing and transfer through continuous, formal and informal meeting for the whole semester. 2) The causal model of success in collaboration was fit to the empirical data with chi-square = 268.493, df=24, p=0.166, GFI=0.969, AGFI=0.942, RMR=0.044. 3) Strategies, knowledge sharing and knowledge transfer has indirect effects of -0.002, 0.147, 0.099 respectively on success of research collaboration via satisfaction, trust and commitment. Commitment had the strongest direct effect of 0.256 on success of collaboration.

Keywords: University-school collaboration in research and development, collaborating strategies, knowledge sharing, knowledge transfer,

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Introduction

Collaboration is a significant attribute conducive to the success of the teamwork. There are many models of Collaboration as provided in the National Education Act 1999, Section 29, which stipulated that schools, in collaboration with community, community organizations, local administrative organizations, private sector, private organizations, and other social institutions, shall provide learning process in community (Office of the National Education Commission, 2002). Therefore, collaboration could be done in various models such as collaboration between community and educational institutions, private sector and educational institutions, professional organizations and educational institutions, university and educational institutions. Therefore, the author was interested in studying the collaboration between university and schools. If university researchers work with school teachers, the latter would be equipped with more knowledge and wider vision. Such a collaboration is a mechanism that can develop the quality of teachers more quickly than other means.

There are many types of collaboration between university researchers and school teachers. The most important one is the university-school collaboration which sends students to practice teaching in schools. At present there is a new type of collaboration, the university-school collaboration in conducting research in schools because teachers have to conduct research to develop the learning suitable for learners at each level of education as provided in the National Education Act.

Since the Collaboration in research and development is a new thing, there is not yet a clear definition and a process measurement. According to the review of several research (Dragoon, 2004; Imperial, 2004; Gardner, 2004; Schultheiss, 2005; Katz & Martin, 1997), there were various definitions of "Collaboration". In summary, the word "Collaboration" means the cooperation within group or teamwork both in organizational and individual levels with an objective to create a useful and valuable innovation to achieve the common goal set collectively. By working together as a team everyone must get involved in every step, from setting the goal to planning, working, problem solving, investing, sharing information and responsibility, and sharing knowledge and experience all the time. Every participant must be ready to develop, realize the significance of the collaboration, recognize and trust each other, have good relationship, and be able to plan and manage the conflict and work as a team. However, not much has been mentioned about "collaboration in research and development". Therefore, the author was interested in studying the definition and the measurement of collaboration in research and development, including the factors that have influences on the success of the collaboration in research and development between university and schools. The research questions are three folds. First, what was the situation of the collaboration in research and development between university and schools? Second, what was the causal relationship of the causal model of the success of the university-school collaboration in research and development? Third, what were the factors affecting the success of the collaboration in research and development between university and schools?

Objectives of the Research

This study was aimed at answering the three research questions mentioned above, firstly, to study the situation of the university-school collaboration in research and development, secondly, to develop and examine the validity of the causal model of the success of the university-school collaboration in research and development, and thirdly, to study the influences of factors concerning strategies, knowledge sharing, and knowledge transfer on the success of university-school collaboration in research and development.

Scope of the Research

This research is a study of the collaboration between personnel of different institutions with a limited scope on the collaboration between university researchers and teachers from primary and secondary schools participating in "An Accelerated Project for Building Good Character of Thai Children and Youths" or "ABC Project" in abbreviation, which was specially supported by school principals and was in line with the needs of teachers who wanted to conduct research according to the provision by the National Education Act. Most of all, the project was characterized as a real collaboration since it met school needs, both parties took part in establishing the goals, holding a meeting regularly both within and between groups to share their knowledge, and the project received a definite financial support for its operation.

The Conceptual Framework of the Research

The conceptual framework used in this research was developed from the integration of three concepts about the factors affecting the success of the collaboration. They were the concept of strategies for the collaboration by Wu and others (2004), the concept of knowledge sharing by Dyer and Powell (2001) and the concept of knowledge transfer by Daniel, Hempel and Srinivasan (2002). The three concepts were integrated with the concept of causal factors affecting the success or promoting the collaboration derived from the research work of Brookhart and Loadman (1990). The details of each concept were as follows:

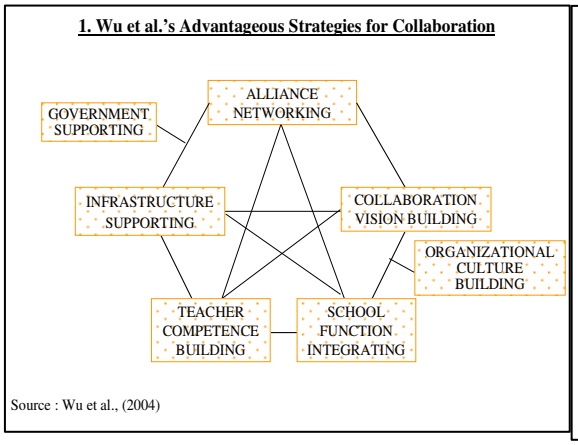

Figure 1
The Concept by Wu and others (2004)

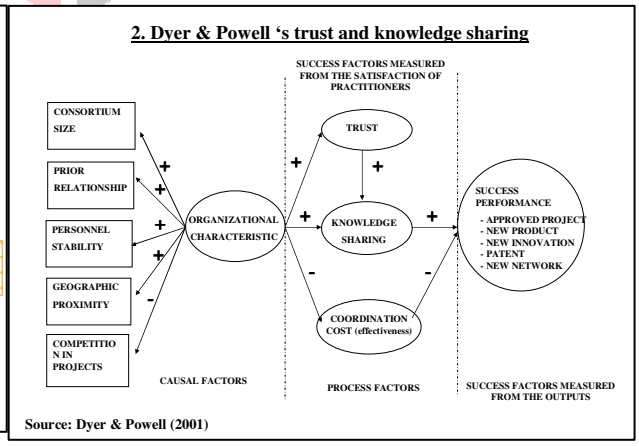

Figure 2
The Concept by Dyer And Powell (2001)

The first concept was Wu et al.'s Advantageous Strategies for Collaboration (2004). Wu and his colleague believed that successful collaboration needed effective strategies. They, therefore, used Michael E. Porter's Diamond Theory in the study of the success of the collaboration between Taiwan's Technical and Vocational college and SME's and found that Porter's Seven Strategies could be used as strategies for the collaboration. They called it "Wu et al.'s Advantageous Strategies for Collaboration", which consisted the strategy of infrastructure supporting, school competence building, school function integrating, collaboration vision building, organizational culture building, alliance networking, government supporting as shown in Figure 1.

Secondly, the concept of trust and knowledge sharing was developed from the research finding of Dyer and Powell (2001), who found that the resource sharing would be successful if the organizations had the same number of personnel, had a stability, had some prior relationships, had been located in a nearby area, had sufficient trust to regularly and continuously share knowledge and technology, and spent economically in the coordination so as to be successful in inventing new products, new technology, and new network as shown in Figure 2. Besides, the author synthesized several documents concerned (Cumming, 2003; Davenport & Prusak, 2000; Hutchings & Michailova, 2003; Law & Ngai, 2007; Du, Ai & Ren, 2007, Renzl, 2008). It was concluded that the knowledge sharing means the process of transferring and sharing information, skills which could be measured by the volume of knowledge sharing (frequency and time spent) and the form of knowledge sharing (form and potential of knowledge sharing). Trust means belief, faith, and expectation of recipients toward source, which could be measured from reliability, willingness to protect, and warmth (McAllister, 1995; Mayer, Davis & Schoorman, 1995; Robbins & Coulter, 1999; Cunningham & MacGregor, 2000). The output of the collaboration was measured from the number of projects, innovations, academic work, and networks.

Thirdly, the concept of knowledge transfer was developed by Daniel, Hempel and Srinivasan (2002), who found that the organizations which could enhance research capacity would increase knowledge for their organization. This would result in the transfer of knowledge among individuals within the organization and among network organizations. Finally, there would be satisfaction of the collaborators, which would lead to the job commitment of all concerned for further implementation as shown in Figure 3. In addition, the author synthesized the research materials written by several researchers (Argote & Ingram, 2000; Gouza, 2006; Yakhlef, 2007; Cumming, 2003) and concluded that the meaning of knowledge transfer used in this research was the process of transmitting information, skills, and experiences or best practice from source to recipients who had potential to learn, absorb, and integrate new information with old knowledge and manage to construct new knowledge to enhance the efficiency of the organizations.

As for Satisfaction, Somwang Pitiyanuwat and Nonglak Wiratchai (1996) concluded that it was the mental attribute which indicated the feeling of happiness toward conducting research and working together, which could be measured from the condition and atmosphere of working, the benefit from work, the worthiness of time spent, career path opportunity, and equality of right. Regarding to the Commitment, from the review of materials written by several researchers (Lodahl & Kejner, 1965; Weissenberg & Gruenfeld, 1968; Schuler, 1977; Kanungo, 1982; Brown, 1996; Steers & Black, 1999; Ivancervich & Matterson, 1999) it could be defined as the belief in value of work, responsibility and devotion to work and the joy of work as demonstrated in figure 3.

The fourth concept was the four dimensions of differences in schools and university cultures developed by Brookhart and Loadman (1990, 1992). They believed that when two groups of people with different cultural background collaborated, it was impossible to unite their ideas as one. There would be a gap of thinking which affected the collaboration. The 4 dimensions included the work tempo, professional focus, career reward structure and sense of personal power and efficacy as shown in Figure 4.

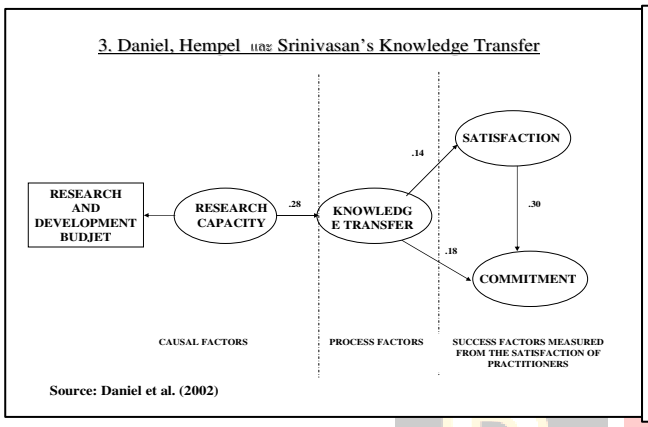

Figure 3
The Concept of Daniel, Hempel and Srinivasan (2002)

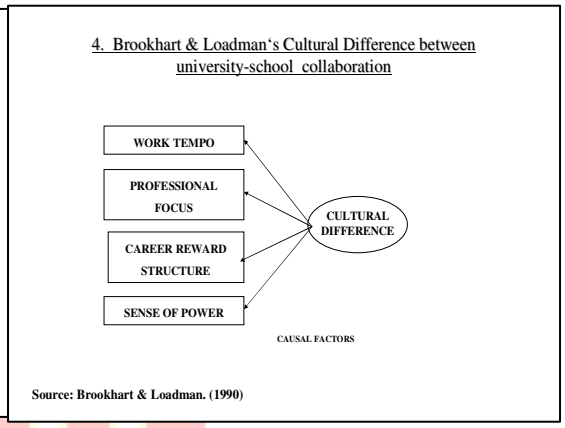

Figure 4
The Concept of Brookhart and Loadman (1990)

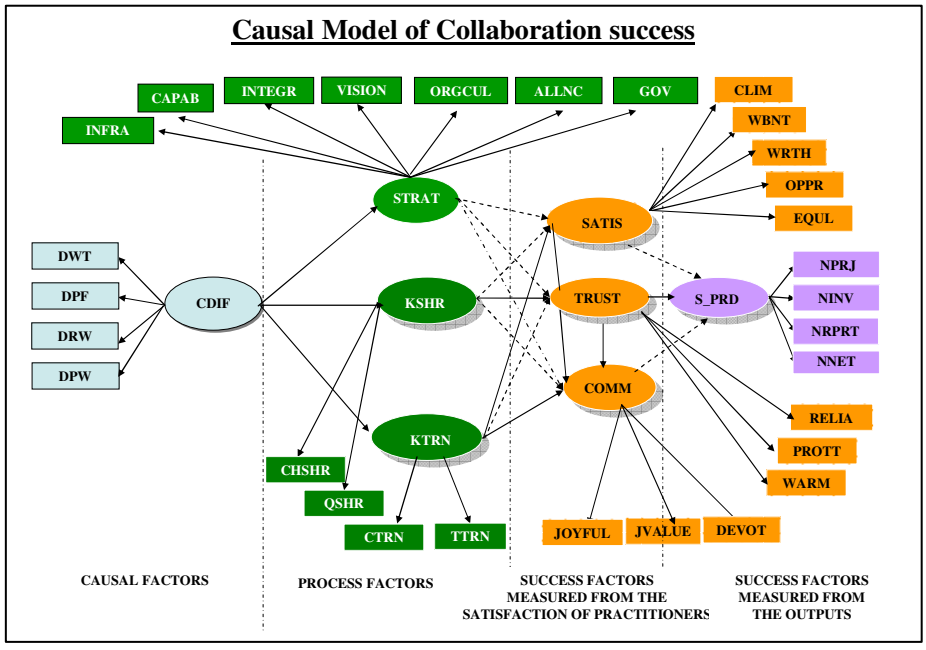

Figure 5
The Causal Model of the University-School Collaboration Success

In order that the study of the influences of strategies, knowledge sharing and knowledge transfer on the success of university-school collaboration in R&D is theoretically correct, the authors decided to study the Project of Accelerated Project for Building Good Character of Thai Children and Youth (Suwimon Wongwanich, 2005), which was the collaboration on R&D between Chulalongkorn University and 18 schools in Bangkok. This project had three special characteristics. First, it was the collaboration between university and schools in which coordinating researchers were doctoral candidates in research methodology who had high level of knowledge and experience in R&D. These researchers had already completed their coursework and had enough time to visit schools, give advice, and collaborated with schools to their fullest potential. Secondly, the collaboration was officially approved by school administrators, and financially supported by the university. Lastly, the collaboration was in accordance with teachers' needs. Because of the three special characteristics the Project, some variables such as school administrators had no variation among school. Moreover, the scope of study was limited to the collaboration between individuals, therefore, the authors deleted variables not involved. Eventually, the conceptual framework of this study was developed as shown in Figure 5. (See abbreviations of the technical terms used in the model in appendix)

In Figure 5 the dotted lines represent the factors which the researchers added in the model, as deemed suitable with the context in Thailand. The proposed model was originally scrutinized by a group of researchers through a focus group discussion.

Research Hypothesis

The causal model developed in this study was based on the hypothesis that the factor concerning cultural difference (CDIF) was an external latent variable which had a direct influence on the factors such as the collaboration strategy (STRAT), knowledge sharing (KSHR) and knowledge transfer (KTRN) and that the factors concerning the collaboration strategy (STRAT), knowledge sharing (KSHR) and knowledge transfer (KTRN) had an indirect influence on the factors concerning the success of the collaboration measured by the product (S_PRD) through the factors concerning satisfaction (SATIS), trust (TRUST) and commitment (COMM)

Research Methodology

This research was designed to be a correlation research with the components as follows:

Population covered all teachers and school administrators in schools providing basic education which participated in the collaboration project in research and development with researchers from the Faculty of Education, Chulalongkorn University and other universities including assistant researchers who were doctoral program students. The total number of the population was 1,257.

Sample was drawn from teachers participating in the Pilot Project for Accelerating the Cultivation of Desirable Characteristics of Thai Children and Youths by multi-stage sampling technique. The total 746 samples consisted of 675 teachers, 45 school administrators, and 26 university researchers.

Research Instruments Regarding the quantitative data, the author used 3 sets of questionnaires for teachers, school administrators, and university researchers or those participating in the Pilot Project for Accelerating the Cultivation of Desirable Characteristics of Thai Children and Youths. The three sets of instruments were tested for the reliability of each

component by Cronbach's alpha coefficient, and the result turned to be high between 0.792 – 0.965. The author then analyzed the components to confirm the 8 latent variables which included the cultural difference (CDIF), collaboration strategy (STRAT), knowledge sharing (KSHR), knowledge transfer (KTRN), satisfaction (SATIS), trust, commitment, and the collaboration success measured by product (S_PRD). It was found that every latent variable had construct validity and could be truly measured by tangible variables or indicators in each model, as shown in Table 1.

Table 1 Reliability and Construct Validity

Components	Reliability (teachers)	Reliability (Administrators)	Reliability (University Faculty)	Construct validity	Construct reliability
1. CDIF	0.901	0.848	0.896	χ^2=18.109, df=15, p=0.257	0.162 – 0.936
2. STRAT	0.919	0.947	0.842	χ^2=6.322, df=7, p=0.503	0.615 – 0.842
3. KSHR	0.965	0.918	0.837	χ^2=0.009, df=1, p=0.922	0.149 – 0.535
4. KTRN	0.954	0.928	0.902	χ^2= 0.464, df=12, p= 0.496	0.027 - 0.866
5. SATIS	0.973	0.959	0.933	χ^2=1.837, df=2, p=0.399	0.616 – 0.880
6. TRUST	0.971	0.952	0.911	χ^2= 0.826, df= 1, p= 0.363	0.788 - 0.909
7. COMM	0.877	0.825	0.792	χ^2= 1.478, df= 1, p= 0.224	0.025 – 0.946

As for the qualitative data the author used a semi-structured interview composed of the questions concerning the features and forms of the collaboration in research and development, and the factors which had influences on the success of the collaboration in research and development in 6 issues 1) The condition and features of the collaboration with an emphasis on the beginning of the collaboration, the development, and changes in the features of the collaboration including the opinions and feelings about the features of the collaboration, 2) The frequency of the collaboration, placing an emphasis on the opinion of how the collaboration in research and development put a burden on teachers and the way teachers used for solving the problems of hard work load, 3) The factors which had influences on the collaboration in research and development as perceived by teachers, including their roles in making the collaboration successful, 4) The opinions about the collaboration after the completion of the ABC Project, with an emphasis on the continuity, intensity, and teachers' attention on it, 5) The opinions about the needs for supporting and empowering the collaboration, and 6) The opinions about the future of the collaboration in research and development of schools.

Data Collection For the 26 university researchers the questionnaires were sent and returned by mail and/or electronic mail. The return rate was 96.15 %. For the 675 school teachers and 45 administrators, the author collected data oneself in order to explain the details and how to fill out the questionnaires. The respondent rates were 84.30 % and 84.44 % respectively.

Data Analysis There were three steps in analyzing the data. In the first step the author analyzed the data to examine the quality of the data in terms of reliability and construct validity by using Cronbach's alpha coefficient and confirmatory factor analysis. The second step was the analysis of the data to measure the frequency of the background factors of the sample and study the feature of the distribution and measure the tangible variables used in this research by using an analysis of variance (ANOVA) to compare the mean of the key factors in this study such as sex, age, educational background, work experience and school size by using the SPSS for windows. The third step were an analysis of the data to meet the research objectives by using a content analysis from a qualitative data to analyze the condition of the university - school collaboration in research and development, an analysis to examine the reliability of the causal model of the success of the university-school collaboration in research and development, and an analysis of the influences of strategy, knowledge sharing, and knowledge transfer on the success of the university-school collaboration in research and development by using the LISREL program.

Research Findings

1. The Condition of the University-School Collaboration in Research and Development

The university-school collaboration in the ABC Project was a collaboration between those who had prior relationship because the sample was obtained by a snow ball technique, as said by one school administrator, "*Chulalongkorn University researcher called me to invite to participate in the program and nominate the secondary schools which might be interested, I then proposed 2-3 schools including Matayom Prachanivate School, Pong Ploy Anusorn School, and Pianpin Anusorn School…"* Furthermore, it was the research collaboration between 1-2 university researchers and 5-20 teachers per school. Both groups had differences in the working culture and the recognition of the strategy to support each other for better collaboration.

According to the comparison of the difference in working culture, it was found that university researchers evaluated themselves higher than teachers in every aspect. For example, university researchers could provide time for conducting research at all time while teachers could not because they had to teach in the classrooms almost all day long and had a lot of other work to do. It could be said that university researchers realized that they had good knowledge in research, received both intrinsic and extrinsic rewards, and were successful in their work. Besides, they might have a sense of high academic power while teachers evaluated themselves as having little knowledge about research, as shown in figure 6.

In the mean time it was found that university researchers and teachers acknowledged, though in different meaning, that strategies were used to enhance the collaboration. That is, most teachers acknowledged that about 2 measures per strategy were used ($\bar{x}$ was between 1-909-2.030) while university researchers acknowledged that 2-4 measures per strategy were used ($\bar{x}$ was between 2.320 -4.200), as shown in figure 7.

As for Knowledge Sharing, the finding yielded similar results. University researchers and teachers acknowledged the amount and features of knowledge sharing differently. The former

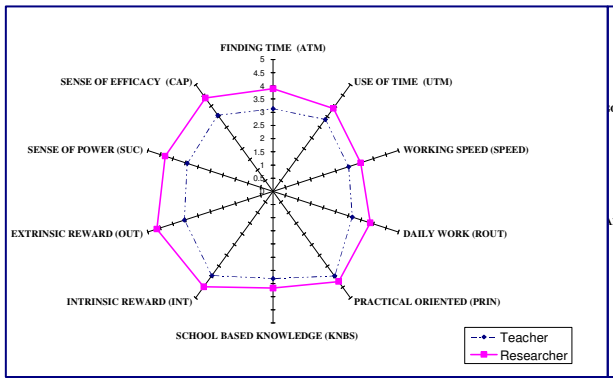

Figure 6
Comparison of Cultural Difference between Teachers and University Researchers

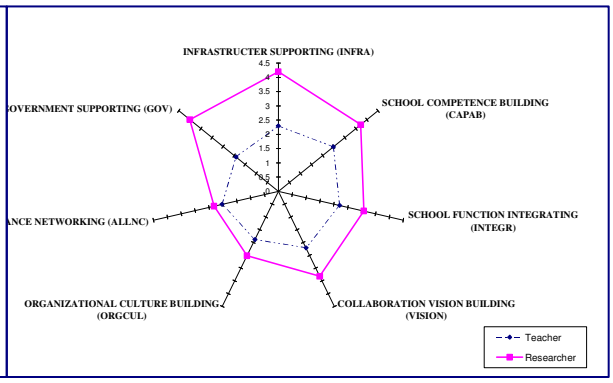

Figure 7
Number of Measures per Strategy whichwere acknowledged by Teachers and University Researchers

acknowledged in higher level than the latter in every aspect. For example, teachers revealed that they spent 1.30 – 2 hours sharing knowledge with university researchers each time, but the latter said they spent as long as 2-6 hours because they included traveling hours in it. Moreover, university researchers indicated that most of the time the knowledge sharing was informally conducted ($\bar{x}$ =3.832 and 3.070 respectively). University researchers demonstrated their higher potential in the preparation and the process of transferring knowledge ($\bar{x}$ for university researchers was between 3.728 – 4.216 and $\bar{x}$ for teachers was between 3.379 – 3.453), as shown in figure 8

As for Knowledge Transfer, it was found from the analysis that there were 18 teachers in average participating in the process and 1-2 university researchers acting as mentors in transferring knowledge to teachers for the implementation of the development of learners. And yet, teachers admitted that they could absorb the knowledge less than what university researchers tried to transfer and they could implement the knowledge lower than university faculty's expectation, as shown in figure 9.

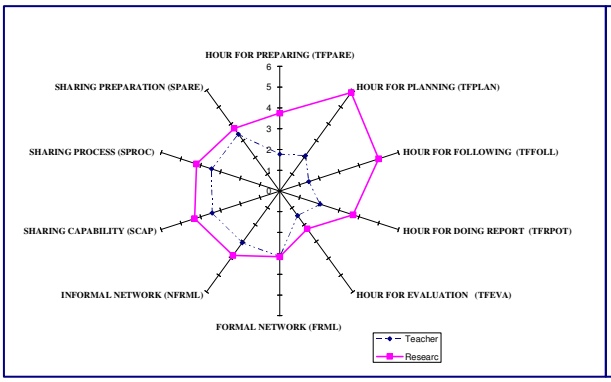

Figure 8
Amount and Features of Knowledge Sharing which were acknowledged by Teachers and University Researchers

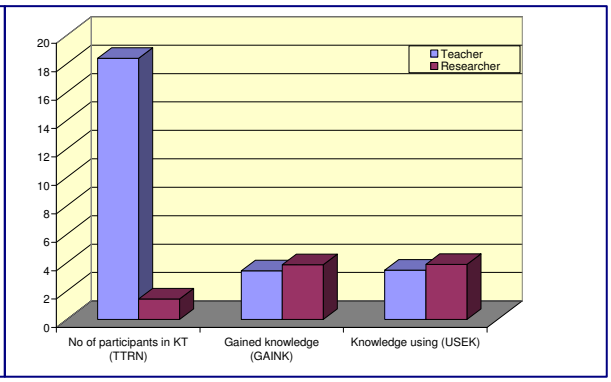

Figure 9
Comparison of Features of Knowledge Transfer between Teachers and University Researchers

Moreover, in response to the question of how the university-school collaboration in the future should be, most of them gave many interesting suggestions as follows: 1) Both sides should work together closely, continuously, and regularly, and teachers should be allowed to ask questions concerning the research in a friendly atmosphere as "think together, construct together, develop together, disseminate together (friends helping friends)" because teachers had a heavy teaching load and it was too difficult for them to conduct research alone. 2) The collaboration should be designed as a complete circle of work in order to enhance the efficiency. By this meaning university researchers should act as facilitators, who transfer knowledge, suggest, guide, and coach friendly. Teachers as practitioners should pay attention, sincerely implement the knowledge received and be well supported by school administrators. Finally university researchers should monitor and guide teachers individually. They should visit schools beforehand to collect data, understand the real situation of the school context and teachers. 3) A proper amount of time should be allocated and the work of both sides should be integrated so as to ease the management.

2. **The validity test of the causal model of success of university-school collaboration in research and development**

The validity test of the causal model of success of university-school collaboration in research and development yielded the result that the model was fit to the empirical data (χ^2 =268.49; df = 247; p = 0.166; GFI = 0.969; AGFI = 0.942; RMR = 0.045). The causal factors and process factors in the model could explain SATIS at 89%, TRUST at 87%, COMM at 90%, and S_PRD at 7% as shown in Figure 10 and 11.

The factor loading value of every external latent variable turned out to be positive and significantly different from zero. DRW yielded the highest value (0.88), followed by DPF, DPW, and DWT which were 0.85, 0.66 and 0.56 respectively as shown in Figure 10. Those four factors loading value could explain 43%, 72%, 31% and 78% of CDIF respectively as demonstrated in Figure 11.

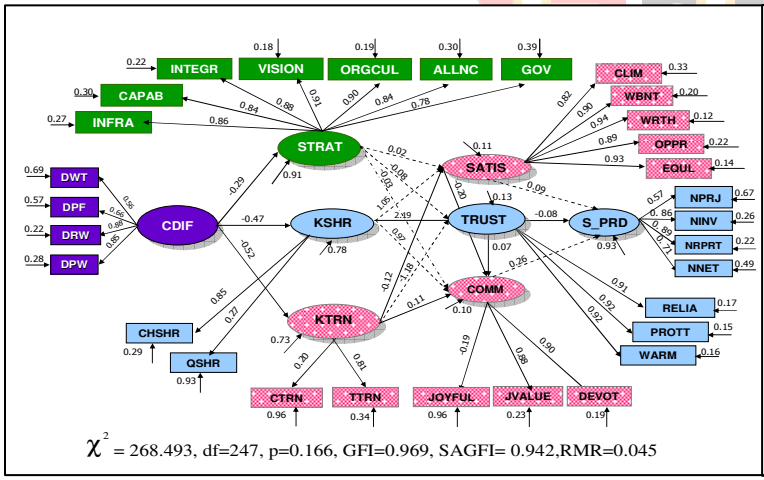

Figure 10 Causal Model of Collaboration Success

Squared Multiple Correlations for Structural Equation

Struacural Equation	STRAT	KSHR	KTRN	SATIS	TRUST	COMM	S_PRD
Rsquare	0.09	0.22	0.27	0.89	0.87	0.90	0.07

Squared Multiple Correlations for X-Variables

Variable	DWT	DPF	DRW	DPW
Rsquare	0.31	0.43	0.78	0.72

Squared Multiple Correlations for Y-Variables

Variable	INFRA	CAPAB	INTEGR	VISION	ORGCUL	ALLNC	GOV
Rsquare	0.74	0.71	0.78	0.82	0.81	0.70	0.61
Variable	CHSHR	QSHR	CTRN	TTRN	CLIM	WBNT	WRTH
Rsquare	0.72	0.07	0.04	0.66	0.67	0.80	0.88
Variable	OPPR	EQUL	RELIA	PROTT	WARM	DEVOT	JVALUE
Rsquare	0.79	0.86	0.83	0.85	0.84	0.81	0.78
Variable	JOYFUL	NPRJ	NINV	NRPRT	NNET		
Rsquare	0.04	0.33	0.74	0.78	0.51		

Figure 11 Construct Reliability

Regarding the values of every internal latent variable, it was found that JOYFUL had a negative value at -0.19. The rest of them were positive, significantly different from zero and had similar values between 0.71-0.92 except QSHR (0.27), CTRN (0.20) and NPRJ (0.57). As for STRAT factor, VISION yielded the highest value (0.91) followed by ORGCUL, INTEGR, INFRA, CAPAB and ALLNC, and GOV which were 0.90, 0.89, 0.86, 0.84 and 0.78 respectively as shown in Figure 10. Those factors loading value could explain 82%, 81%, 78%, 74%, 71%, 70% and 61% of STRAT respectively as shown in Figure11. Similarly, the five factor loading value of CLIM, WBNT, WRTH, OPPR and EQUL could explain 67%, 80%, 88%, 79% and 86% of SATIS as shown in Figure11, etc.

As for the coefficient value of direct influences from one internal latent variable to another or coefficient value in matrix parameter BETA shown in Figure 10, it was found that only 2 out of 14 paths were significantly different from zero at 0.05. They were the path from KSHR to TRUST and that from COMM to S_PRD. Meanwhile, each of the 4 paths of coefficient values in matrix parameter GAMMA was significantly different from zero at 0.01. The analysis showed particularly direct influences of causal factors of success in collaboration which should be studied along with indirect influences and will be presented in the following item 3.

3. The Study of Influences of Strategies, Knowledge Sharing, and Knowledge Transfer on the Success of University-School Collaboration in Research and Development

The Study of Influences of Strategies, Knowledge Sharing, and Knowledge Transfer on the Success of University-School Collaboration in Research and Development shown in Table 2 yielded the following analysis results

1) STRAT, KSHR, and KTRN had different influences on S_PRD. KTRN had direct influences on COMM, which had direct influences on S_PRD significantly enabling the KTRN to have indirect influences through COMM to S_PRD with an indirect influence at 0.099. However, KSHR had direct influences on TRUST, which had direct influences on COMM and direct influences on S_PRD, resulting in the KSHR having indirect influences through TRUST and COMM to S_PRD with an influence at 0.147. As for the STRAT which according to the research conceptual framework would have indirect influences through SATIS, TRUST, and COMM to S_PRD. It was found that the indirect influence was at -0.002, which was not significant.

Considering CDIF as an external latent variable, it was found that CDIF had direct influences on STRAT, KSHR, KTRN significantly with the influence values at -0.293, 0.472, -0.519 respectively. When interpreting the meaning and influences of the three variables on S_PRD, it was found that CDIF had an indirect influence through STRAT, KSHR, and KTRN to S_PRD with the value of indirect influence at -0.120, which was different from zero significantly. In other words, CDIF had indirect influences on S_PRD through KSHR and KTRN, which had direct influences on TRUST and COMM, which had an influence on S_PRD in the final step.

When considering from the size of influences which were significant, it could be said that the CDIF had indirect influences through KSHR, KTRN, TRUST, and COMM to S_PRD.

When considering the mediator in the causal model of success of the collaboration, the data analysis indicated that KSHR, KTRN, TRUST and COMM were the variables influenced by CDIF on the success of S_PRD while SATIS was the variable influenced by CDIF to TRUST of which the size of indirect influences was not significant.

In conclusion, the analysis of influences, both direct and indirect, of the variables in the causal model of success of the collaboration indicated that although the causal model of success of the collaboration had a validity and was fit to the empirical data, many paths of the direct

influences had the size of influences which were different from zero insignificantly. That was because SATIS and TRUST were the variables which had a rather low standard deviation at 0.330 and 0.362. It may be because the amount of time in the ABC project was too short to build trust between teachers in participating schools and university researchers.

However, the result of an analysis of the values of direct and indirect influences of the variables which were causes in the causal model of success of the collaboration demonstrated clearly the type of influences of each variable. This should be useful for researchers to use as a guideline for conducting research in order to get clearer forms of relations.

Discussion

1) The fact that teachers and university researchers had different opinions toward collaboration in research indicated that teachers and researchers had different views, belief, and working culture, especially in the case the researchers evaluated that they could allocate much time for collaborating with teachers in conducting research while teachers perceived that they had no time really had effects on the collaboration in research, which was in accordance with the findings by Brookhart and Loadman. Both found that the more cultural difference there was the less collaboration there would be. On the contrary, if there was no difference, or just a little, the collaboration would be better. According to the analysis, participants in the collaboration had cultural difference to a certain extent.

2) The collaboration concept was that participants in the collaboration should have equal knowledge and ability, join voluntarily, equal right in discussion, patience in long time research activities, dedication to work. This research found that teachers and university researchers had different working culture in every aspect. Teachers spent time for teaching than conducting research while university researchers conducted research along with teaching. Moreover, teachers played more roles as listeners than discussers. Teachers might think that they were inferior to university researchers because they had only a Bachelor's Degree and little experience in research, or not at all, though the 18 schools participating in the pilot project were selected with teachers' readiness to take part throughout the program. Such a difference had effects on the success of the collaboration. However, the problems mentioned above could be solved if university researchers and teachers in basic education institutions spent time together in working and consulting. In the ABC Project, university researchers spent time with teachers and students in average 1.30 – 2.00 hours. Therefore, in general schools university researchers should give more time to schools. Moreover, the collaboration had another important idea, "joint investment". The ABC Project was aware of this matter, therefore, a sum of money was provided for schools to facilitate their project operation.

3) According to Dyer and Powell's concept (2001), to make the joint investment successful, the partners must have prior relationship, be stable, located not too far, personnel was knowledgeable and adequate. Most of all, those organizations must be willing to share knowledge, trust each other and it must be an economical joint investment so that the output, or their collaboration, would be satisfactory, yielded new product and technology that could register for a patent, and gained new allied network for joint investment. In comparison with the operation of the ABC Project, it was found to be in line with each other. That is, schools in the Pilot Project had known each other before because they were selected from the school network that used to join in research project with the Faculty of Education, Chulalongkorn University. Their personnel were well prepared to make the collaboration efficiently successful. They are

located in Bangkok metropolitan area and not too far from the university. Nevertheless, the pilot project tried to select schools from every education area in Bangkok and they were schools under the jurisdiction of every organization. The purposive sampling applied to schools with prior experiences, however, had an impact on this research because most of the samples rated themselves moderately and highly in almost every item. Thus, the scores were gathered with fairly little distribution and had effects on the data analysis to some extent.

4) Concerning the analysis of the direct and indirect influences of such variables as the collaboration strategy, knowledge sharing and knowledge transfer in the causal model of the collaboration success, although the causal model of the collaboration success had validity in terms of fitting to the empirical data, several direct influence lines had statistical significantly. That might be because such variables as SATIS and TRUST had standard deviation as low as 0.330 and 0.362, or because the period of the ABC Project was too short to build trust among teachers from schools participating in the project and university researchers.

5) And yet, the analysis of direct influences and indirect influences of the causal factors in the causal model of the collaboration success demonstrated the format of the influence of each variable rather clearly. This might be useful for university researchers to use as a guideline for the operation of the research project to gain the clearer form of relationship.

Recommendations

1) Policy Recommendations

1.1 The high ranking officials of the Ministry of Education and Bangkok Metropolitan Administration should accelerate to promote and encourage the capacity building in research and academics for teachers and school administrators by joining universities in organizing a workshop training so that both sides get acquainted with each other and get accustomed to conducting research, and school personnel perceive research as not a difficult task. There should also be a motivation for teachers and school administrators so that teachers could apply what they learned to conduct research in real practice and perform research-based teaching activities and school administrators perform research-based school management efficiently.

1.2 The causal model of the collaboration success should be publicized to school administrators, Education Service Areas administrators, and the Ministry of Education's high ranking administrators so that they know and promote the use of this model in measuring the level of success of school-community collaboration projects.

1.3 The Education Service Areas where there are faculty of education of higher education institutions should formulate a policy of promoting the project for university-school collaboration in research and development by selecting schools situated in the nearby areas so that they have more opportunities to work together.

2) Recommendations for Future Research

2.1 Research should be done with the university-school collaboration projects using the whole school approach in order that every teacher, not only leading teachers, had an opportunity to directly share with university researchers.

2.2 Research should be done with the university-school collaboration projects which last longer than 1-2 semesters in order that both sides could have enough time to build mutual trust.

2.3 Research should be done with the university-school collaboration projects in process or at the beginning. Pre-project collecting data to survey the expectations and post-project one to study the outputs are recommended.

2.4 There should be an application of the causal model of the collaboration success with the university-school collaboration projects which last longer than 1-2 semesters in order that both sides could have enough time to build mutual trust.

2.5 For the rightfulness and clarity of the analysis, there should always be an examination of the assumption about multicolinearity and update the data appropriately before undertaking the project operation.

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Appendix:

Abbreviations of the Technical Terms used in the Model

CDIF	Cultural difference	SATIS	Satisfaction toward work
DWT	Work tempo	CLIM	Work Climate
DPF	Professional focus	WBNT	Work Benefit
DRW	Career reward structure	WRTH	Worthiness of Time
DPW	Sense of power	OPPR	Work Opportunity
STRAT	Collaboration strategy	EQUL	Equality of Right
INFRA	Infrastructure supporting	TRUST	Trust
CAPAB	School competence building	RELIA	Reliability
INTEGR	School function integrating	PROTT	Protection
VISION	Collaboration vision building	WARM	Warmth
ORGCUL	Organizational culture building	COMM	Commitment
ALLNC	Alliance networking	DEVOT	Devotion
GOV	Government supporting	JVALUE	Job Value
KSHR	Knowledge sharing	JOYFUL	Joyful Research Working
CHSHR	Sharing characteristic	S_PRD	Success measured from the product
QSHR	Sharing frequency	NPRJ	The Number of Projects
KTRAN	Knowledge transfer	NINV	The Number of Innovations
TTRN	Proportion of Participants in the Knowledge Transfer	NRPRT	The Number of Research Reports
CTRN	Constructed Knowledge	NNET	The Number of Network

Designing a professional development school program for non-traditional students

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Abstract

The Collaborative Learning And School Success Professional Development School (CLASS PDS) program is a teacher preparation program at the Lewiston-Auburn College of the University of Southern Maine. The program prepares students in teaching at the K-8 grade levels while they matriculate in a degree program. The four and one-half year program provides content and pedagogical opportunities to the pre-service students and upon completing the program and their college degree, the students receive a Bachelors Degree in a content area, K-8 teacher certification, and 36 graduate credits toward a Masters in Teaching and Learning.

In recent years, an increase in the number of non-traditional students expressed interest in the program but found the structure prohibitive for various reasons. Some of these include the length of the program, the non-acceptance of previous academic credits, the scope and sequence of the program, and the difficulty in transferring an associate degree to the university from the local community college.

This paper examines the adaptations the CLASS PDS (also known as CLASS) program implemented to respond to the increasing interest in pursuing a teaching certificate by students who transfer credits to the university or students wishing to complete the program in a faster period.

Keywords: Professional Development Schools, Non-Traditional Students, Teacher Preparation

Introduction: What is the CLASS PDS?

Based on the Holmes Group Report (1986) and John Goodlad's (1990) model of teacher preparation, the Collaborative Learning And School Success Professional Development School (CLASS PDS also known as CLASS) is a nine-semester site-based pre-service education program. Its fundamental beliefs and processes reflect the quantitative and qualitative research findings that support improved teacher quality (Neapolitan, J.E., 2004); (Hooks, L. M. & Randolph, L., 2004); (Ventimiglia, L. & Reed, T., 2004); (Leonard, J., Lovelace-Taylor, K., Sandord-Deschields, J., & Spearman, P., 2004); (McDonald, L. & Randolph, L., 2004); (Ridley, D. S., Hurwitz, S., Hackett, M. R. D., 2005); (Graham, B., 2006); (Trachtman, B., 2007); (Yendol-Hoppey, D., Jacobs, J., Gregory, A., League, M., 2008); (Doolittle, G., Sudeck, M., Rattigan, P., 2008). The basic tenets of effective Professional Development School programs:

- Provide a context for continuous, embedded learning by interns, in-service teachers and higher education faculty
- Support the process for change, data driven decision-making, and collaborative planning and professional development
- Upgrade the content mastery of all educators.

The students work with mentor teachers, site coordinators, and university faculty while concentrating on a major field of study. Upon completion, the graduate receives a Bachelor of Science Degree, is a fully certified Kindergarten-8 grade teacher, and receives 36 credits toward a Masters Degree in teaching and learning.

Since its creation in the fall semester of 1998, the CLASS admission and retention process differed from traditional teacher preparation programs due to the educational background of the students at the University of Southern Maine, Lewiston-Auburn College. Eleven years ago, most were non-traditional students matriculating for the first time in a college program. Many were parents of school-aged children seeking a program that would allow them to complete the requirements over an extended period. Although the regular full-time schedule of CLASS is four and one-half years, many students chose to study part-time and complete their studies over five to seven years.

Recently, more traditional-aged students entered the university and desired to complete the program in the normal amount of time. Along with these students, transfer students came to the university and wanted to join the CLASS program. Nevertheless, the strict admission standards and schedule proved to be prohibitive thus preventing many worthwhile candidates from becoming teachers. These situations challenged the administration and faculty of the CLASS program to re-examine the admission and retention requirements.

The Original Scope and Sequence

Below, in Table 1, is the Scope and Sequence schedule for full-time students majoring in Social Behavioral Sciences, one of the academic majors at Lewiston-Auburn College. This shows the schedule the students need to complete the university core courses, the major course of study, and the CLASS program. Designed mainly for students entering college for the first time, the Scope and Sequence requires students to take as many as eighteen credits per semester. The program recommends that students take at least one or two courses during the summer term. Those students entering college with transfer credits applied toward their major or core courses, must still fulfill the CLASS requirements in four and a half years. Because CLASS is a developmental program, students could not combine education courses, but rather, complete them sequentially. Thus, those students with several incoming credits or an associate degree were required to continue their studies for another four and a half years.

Table 1 - Overview of CLASS PDS Program Curriculum: Scope & Sequence for the Social and Behavioral Sciences Major

Term	Academic Major Credits	Core Requirements (LCC)	Education Courses and Field Experiences	Total Credits
1	(3)	LCC 100 Language and Literacy (3) LCC 250 Thinking About Art (3)	CPI[1] 110 Individual Learning and Development (2) CPI 111 Seminar (1)	(15)

[1] Center of Pedagogy and Inquiry.

			HRD 200J Human Growth and Development (3)	
2	(0)	LCC 130 Biology of Human Health (4) LCC 200 Creative Critical Thinking (4)	EDU 120 Language and Literacy Development (3) EDU 200 Education in the U.S. (3) MAT 108 College Algebra (4)	(18)
	(0-6)	Summer Academic major coursework recommended		

3	(6)	LCC 150 Statistics (3) LCC 200 U.S. Democracy (3)	CPI 211I Middle School Experience (3) EDU 220 Middle School Seminar	(18)
4	(0)	LC 310 Science and Technology (3) LCC 320 Sustaining Democracy (3) LCC 350 Global Past and Present (3)	LCC 000A Middle School Seminar (0) EDU 320 Applied Skills Teaching (3) SCI 250K Applied Physics (4)	(16)
	Elective (3)	Summer Academic major coursework recommended		(3)

5	(9)	LCC 370 Toward a Global Ethics (4)	LAC 340 Literacy Acquisition (3)	(16)
6	(0)	LCC 430 Place & Community	EDU 562 Teaching Science (3)	(15)

		(3) LCC 410 Aesthetic and Political Dimensions (3)	EDU 565 Reading Development & Instruction (3) LAC 410 Science and Reading Seminar (3)	
	(3)	Summer Academic major coursework recommended		(3)
7	(0)		EDU 551 Teaching Social Studies (3) EDU 505 Teaching Mathematics (3) LAC 000B Mathematics and Social Studies Seminar (0) SED 540 Exceptionality (3)	(15)
8		Electives (6)	EDU 541 Seminar Teaching, Learning & Assessment I (3) EDU 544 Internship (3) EDU 566 Writing Process (3)	(15)
		Academic and Core Coursework must be completed at this time.		
9	(0)		EDU 542 Seminar Teaching, Learning & Assessment II (3) EDU 644 Internship (9)	(12)

It is evident from Table 1 that the CLASS program is intensive because of the combination of common core courses (LCC), the major requirements, and the education requirements. The total number of credits is 146 including 35 at the undergraduate level and 36 at the graduate level. Due to the nature of the graduate level courses in the program, students must complete these courses at a high level of proficiency and knowledge beyond many traditional undergraduate educational programs.

Matriculation and Retaining of Students

In terms of admission to the CLASS program, several university students expressed their frustration on having to take another four and a half years of classes even when they previously completed several credits. In addition, those students wanting to accelerate their progress in the program could not do so because of the developmental nature and philosophy of the program. This led to small numbers of students entering the program each year.

The rigorous nature and extensive time commitment led to a high attrition rate as well. Administrators and faculty of the CLASS PDS were initially comfortable with this rate as the program provided students opportunities to see for themselves the true nature of the teaching profession. Many applicants made the decision to enter teaching based on mistaken perceptions or other motivations. These students, when faced with the reality, dropped out of the program. However, the number of students who demonstrated their potential as excellent teachers and still dropped out increased as well. Many non-traditional students who showed much promise found the program too demanding while trying to maintain their personal and family responsibilities. Other students transferred from CLASS to alternative teacher preparation programs offering the same outcomes as CLASS but in a shorter timeframe.

The time commitment cited as the primary reason for leaving CLASS also presented fiscal concerns to the students. Financial aid offered support for four years. Students desiring to complete the program in a longer period could not do so at the risk of putting their families in financial straits. Since CLASS is a four-and-a-half year program, it affected all students who struggled to finance their education.

The high number of students leaving the program put the CLASS program at risk in terms of its sustainability. This trend of losing students raised concerns about the efficacy and stability of the CLASS program.

Table 2 shows the number of students who completed the program since its inception. A cohort represents a group of students entering CLASS for a specific year.

Table 2 - CLASS PDS RETENTION RATES 1998-2009

Cohort 1 - 13 students (Entered CLASS in 1998)
15% (2) completed CLASS program (2002)
Cohort 2 - 17 students (Entered CLASS in 1999)
12% (2) completed CLASS program (2003)

Cohort 3 - 16 students (Entered CLASS in 2000)
18.75 % (3) completed CLASS program.
Cohort 4 - 10 students (Entered CLASS in 2001)
40% (4) completed the CLASS Program
Cohort 5 - 16 students (Entered CLASS in (2002)
19% (3) completed the CLASS Program
Cohort 6 - 14 students (Entered CLASS in 2003)
36% (5) Completed the CLASS Program
Cohort 7 – 15 students (Entered CLASS in 2004)
20% (3) Completed the CLASS Program
Cohort 8 – 10 students (Entered CLASS in 2005)
30% (3) Will complete the program in 2009
Cohort 9 -9 Students (Entered CLASS in 2006)
67% (6) Remain in the program
Cohort 10-10 Students (Entered CLASS in 2007)
30% (3) Remain in the program

Table 2 shows a small number of students from Cohorts 1 through 7 completed the program (21.8%). Compared to the state of Maine percentage of all students receiving their degrees (28.9%) and nationally (27.8%) (National Council for Higher Education Management Center, 2009), the percentage is below the norm. Assuming that those students in the remaining cohorts (8, 9, and 10) complete the program, the percentage rises to 26.2% making it more comparable to the state and national statistics.

Of the 22 students who completed the program, only three were traditional students entering the university immediately from high school. The remaining non-traditional students included parents, grandparents, military veterans, people looking for a change in their careers, mothers returning to college after their children have grown, and those who decided to enter college several years after graduating from high school.

Administrators of the CLASS program saw a need to assist the majority of its students in achieving their educational and career goals by developing alternative paths to success while maintaining the integrity of the program. With exit surveys and faculty and advisor questionnaires, it was decided that the program could grow and remain viable if it allowed students with transfer or previous credits to enter the program and complete it in a shorter period. Data also showed that students wanted more flexibility in completing the required course work.

Changes in the CLASS PDS program

With this information, the CLASS PDS personnel developed two plans to improve the admission and retention of students. The first is the Modified Program for those wishing to enter CLASS with a significant number of college credits. The second is the JETT (Joint Education and Teacher Training)/CLASS program based on an articulation agreement between the Central Maine Community College (CMCC) and the CLASS PDS. Implementation of this curriculum began in the fall semester of 2005.

The Modified Program is primarily a change in the standard Scope and Sequence whereby a full-time transfer student can complete the program in less than four and one half years. The Program allows each individual to prepare and complete a specific plan of action to meet his or her academic and teaching goals.

The process includes the basic application procedures for all students and with the recommendation of the university advisor, the CLASS PDS meets with the student to create a comprehensive individualized educational plan. Some students may be able to combine the CLASS preparation courses, currently offered over a two-year sequence, into one year, thus possibly completing the program in three and a half years. Other students may have enough education credits to forego the first year of the CLASS course of studies and essentially enter the program in the second year of the sequence. These alternatives depend on the number and type of transfer credits. Those with specific education credits can benefit the most from the plan. For all cases, there is no guarantee that the student will complete the program in the time desired, especially without the full cooperation of the student. He or she must stay within the modified scope and sequence or risk extending the period of study.

The JETT/CLASS program is for students matriculating in an Associates Degree program at the local community college, Central Maine Community College, to take CLASS courses during their two years of study. Upon completion of their degree requirements, they transfer to the University of Southern Maine and enter the CLASS program in the third year focusing on pedagogy and practicum. The requirements and stipulations of the agreement between the college and the university are as follows:

1. Students must be jointly accepted into both CMCC's education program and USM/LAC's CLASS program as full-time students.
2. Students will be assigned to an academic advisor at each institution.
3. Students accepted into the JETT/CLASS program are considered to have dual matriculation status. That is, they are enrolled at both CMCC in the JETT program and LAC in the CLASS program.
4. CMCC and LAC agree to institute an informal consortium agreement establishing financial aid reciprocity with CMCC acting as the "home" institution.

5. Students must achieve a grade of "C" or better in all their coursework. Students failing to maintain "C" or better in each class will be withdrawn from the JETT / CLASS program immediately.
6. JETT students are required to take two laboratory science courses while attending CMCC.
7. Students who have fulfilled CMCC's JETT program requirements, graduate with an associate degree in education and remain in good academic standing, will be recognized as juniors in LAC's CLASS program.

Table 3 shows the scope and sequence for this program in the first two years of matriculation at CMCC.

Table 3

Scope and Sequence of JETT/CLASS Program

SEMESTER I

CMCC ED Program	CLASS PDS Program
ENG 101 College Writing (3)	CPI 110 and CPI 111 Individual Learning and Development(3)
EDU 101 Introduction to Education (3)	
PSY 111 Developmental Psychology (3)	
MAT 122 College Algebra (3)	

SEMESTER II

CMCC ED Program	CLASS PDS Program
PSY 101 Introduction to Psychology (3)	EDU 120 of Language and Literacy Development (3)
EDU 185 Fundamentals of Educating Students with Special Needs (3)	
SPE 101Speech & Oral Communication (3)	
BCA 120 Intro to Computer Applications (3)	
Humanities Elective: ENG Ill; PHI 101 PHI 151; HIS 110; HIS 131; HIS 132 (3)	

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CLASS PDS Interview Process Occurs

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SEMESTER III

CMCC ED/CLASS Courses	CLASS PDS Program
MAT 135 Statistics (3)	CPI 211 Culture & Community and Seminar (3)
EDU 261 Fundamentals of Literacy Education (fulfills LAC 340 CLASS requirement) (3)	
Lab Science Elective: BIO 101/1102; BIO 115/116; CHY 101/102 (4)	
Humanities Elective: ENG Ill; PHI 101 PHI 151; HIS 110; HIS 131; HIS 132 (3)	

SEMESTER IV

CMCC ED/CLASS Courses	CLASS PDS Program
SOC 200 Issues in Diversity (3)	LCC000A Middle School Field Experience(0)
SOC 220 Sociology of the Family (3)	EDU 200 Education in the U.S. (3)
Lab Science Elective: BIO 101/102; BIO *1151116;* CHY 101/102, or SCI250K, Applied Physics/Lab at LAC)	
Humanities Elective: ENG 111; PHI 101; PHI 151; HIS110; HIS 131; HIS 132 (3)	

Students can replace several CLASS courses with their CMCC courses while studying for their Associates Degree. The JETT/CLASS program prepares the student to begin the third year of study as a full-time CLASS student working toward a Bachelors Degree and a K-8 teaching certificate.

Challenges to the CLASS belief system and early results

The CLASS PDS philosophy supports the developmental process of instruction and cooperative learning. From the inception of the program, students were required to follow the developmental nature of the CLASS courses and work together as a cohort. These are tenets of a true Professional Development School (Iceman Sands, D. & Goodwin, L. D., 2005); (Harris, M. M. & van Tassell, F., 2005); (Marlow, M. P., Kyed, S., Connors, S., 2005); (Snow-Gerono, J. L., 2005); (Shroyer, G., Yahnke, S., Bennett, A., 2007); (Brindley, R., Lessen, E., Field, B. E., 2008); (Teitel, L., 2008). Allowing students to complete the teacher preparation program through the Modified Program and the JETT/CLASS Program potentially compromises the character of the cohort system and puts to question the developmental nature of the scope and sequence.

Compared to the early cohorts, Cohorts 8 through 10 predict a completion rate of 41.3%, nearly twice the rate for the first seven cohorts. This small sample shows a change in the program in terms of selecting appropriate students and keeping them in the program. With intensive advising and matching students' needs to appropriate paths in the CLASS program, we predict that this percentage will remain the same.

The future of the CLASS PDS program

Although the early results of the Modified and JETT/CLASS programs show promising numbers of achievement, the University of Southern Maine recently decided to end the program due to budget cuts. A similar PDS program is offered at another campus of the university for those students wishing to enter the education field. The current students in CLASS will continue in the current program until they complete their studies.

Data from Table 1 show 30% of the incoming students in Cohort 10 remain in the program. Before the announcement of the termination of the program, there were twenty applicants to the program potentially increasing the number of students in that cohort to the highest level of any cohort in the history of the program. This is an indication that the alternative paths to the CLASS program appealed to a greater number of students. The added flexibility helped in achieving the intended goal of preparing more future teachers in a Professional Development School environment.

The end of the CLASS PDS program comes at a time when data show that the number of matriculating students increased while the dropout rate decreased. This also leaves Lewiston-Auburn College of the University of Southern Maine without an education program. The CLASS program provided highly qualified educators in the local communities. However, as with many colleges and universities at the present time, the University of Southern Maine receives less money from the state, tuition income is down, and outside revenues and resources are lacking. The decision to end the CLASS program was a difficult one, but there now exists an established process to apply lessons learned to effectively attract and retain excellent students to future teacher preparation programs.

The alternatives provided by the program demonstrate that there is a viable and practical path to teacher education for non-traditional students. The hope is that funding and financing continues for smaller programs (in terms of the number of matriculating students) such as CLASS. As more non-traditional students enter colleges and universities it is imperative that all disciplines and programs consider different courses of study to support these individual academic

goals. These include alternatives such as the CLASS Modified and JETT/CLASS scope and sequence methodologies that provide students opportunities in a quality education without sacrificing the integrity of the program.

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Investigating possible benefits of student loan-backed securitization in the context of the Malaysian higher education

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ABSTRACT

The introduction of asset-backed securitization (ABS) in Malaysia has benefited the economy. Though only spanning over eight years, the securitization process and its continuous innovation have contributed to resolving and risk managing problems such as lease, auto loans, credit cards receivables and commercial mortgages. We particularly focus herein on the student loan problem, which has not yet been implemented as a securitization process in Malaysia. This work considers the characteristics of Malaysian higher education, suggests a structure for student loan securitization, and studies the potential of the asset-backed securitization process in resolving the problem. The expectation is that the new financial instrument will benefit both the students and the government.

Keywords: securitization, student loan backed securitization, debt financing, conceptual framework, innovation

Introduction

Student loan-backed securitization (SLBS) has been applied worldwide, in developed countries as well as recently in some developing countries. This is a way to help higher education (HE) for all, for example, research done by Fried and Breheny (2005), Hartung et al. (2006) and Larrain and Zurita (2007), indicates that the roles of educational loans are important to provide an opportunity to students to further their studies in HE, particularly students from low and middle income backgrounds. The function of educational loans is to reduce the government expenditure on higher education, which is attributed to the growing demand for HE and due to the increasing educational cost incurred per student entry to HE institutions. However, there is a variety of challenges to the financing of HE worldwide, as well as to the administration of educational loans to students (Francis Atuahene, 2006). At the same time, as education is considered a route to economic development and progress (Woodhall, 2002; Salmi, 2005), educational loans are becoming a major feature of financial support for students, particularly in developing countries (Ziderman, 2004).

Student loan-backed securitization, also known as student loan-backed bonds (Lazzaro, 2008), is a creative process of raising funds. A definition along these lines is provided in Fan et al. (2004), emphasizing that the funds are raised through the issuance of marketable securities backed by future cash flows from revenue producing assets. This modern understanding of the ABS process differs from the traditional definition given when the problem initially occurred and narrowly considered. Asset securitisation differs from collateralised debt or traditional asset-

based lending in that the loans or other financial claims are assigned or sold to a third party, typically a special-purpose company or trust. This special-purpose vehicle (SPV) in turn issues one or more debt instruments (the asset-backed securities) whose interest and principal payments are dependent on the cash flows coming from the underlying assets (Giddy, 2000).

Student loans are loans offered to students to assist payment of the costs of education. These loans usually carry lower interests and are usually issued by the government. Often, they are supplemented by student grants that do not have to be repaid (Student Consolidation Loan, 2008). The role of student loans can be defined as financial aid, given to students by a federal or private lender, that is specifically intended for education costs. Student loans are highly desirable in order to secure additional funding resources in HE (Vandenberghe and Debande, 2005).

Most countries have their own systems as well as programmes to finance their HE students (Chapman and Harding, 1993; Barr, 2003), consisting both of government and private loans. By setting up specific bodies or organizations to manage them (Chapman, 2006), the government can offer loans to a wide variety of students. For example, Malaysia formed the National Higher Education Fund Corporation (NHEFC) in 1997 to organise and provide loans for HE students (NHEFC, 2008). NHEFC offers loans representing the federal government to enable selected students pursue their studies in the Malaysian universities and colleges. Similarly to the corresponding bodies in other countries, NHEFC is funded directly by the government using the government budget. Most countries, however, have realised that they cannot rely on the government budget. Economically, governments have limited resources and they are shared among a number of social needs such as public healthcare, housing, and education (Ziderman, 2005).

Non-repayment of student loans keeps increasing every year due to reasons such as unemployment and students continuing with a study for another degree (Khan, 2008). In order to maintain sufficient resources for current and future students, as well as to reflect the significance of the government inspiration to support student loans, NHEFC requested in 2007 a loan of Ringgit Malaysia 2 billion (USD 0.57 billion) from the government budget, however the request was rejected. The reason was that the government budget had to focus more on social needs such as healthcare, housing and public facilities for citizens. To resolve the funding problem for the HE system, NHEFC has no choice but to borrow money from the Employees Provident Fund (EPF) under the Ministry of Finance, as an alternative resource. The critical question raised here is how long NHEFC will need to borrow money in order to provide loans for students. Will that be enough to support the increasing numbers of students every year? What other resources could support NHEFC in its role as the main educational loans corporation in Malaysia? Based on these unresolved issues, the researchers here are motivated to testify that SLBS is set to become the best alternative resource for NHEFC, without burdening the social obligations of the Malaysian government. The role of the government in the SLBS process is as a guarantor rather then issuer, and therefore the burden on its financial capacity is reduced. On the other hand, the private capital markets and banking systems become key players in the process, and hence are actively involved in providing financial resources to students.

In addition, a review of literature on student loans indicates that the problem is not a research priority in Malaysia. The majority of investigations have taken place in the United States (Hartung et al., 2005). This paper thus attempts to investigate whether student loan backed securitization is suitable as an alternative financing in the Malaysian HE, in order to relieve the pressure currently imposed on the government budget. We will analyse and consider possible effects of introducing student loan securities as a type of asset-backed securitization. Student

loan securities have been implemented in other countries; however, it is a new concept for Malaysian HE.

Practices in Developed and Developing Countries

The process of asset securitisation is a new and innovative financing method used for funding and risk management purposes (Giddy, 2000). The technique of asset securitisation involves the separation of good assets from a company or financial institution and the use of those assets as backing for high-quality securities that will appeal investors. The assets, financial claims or contract securing future revenue flows, are typically sell to a special-purpose entity that is independent of the originator's credit (Giddy, 2000). Student loan-backed securities market in the US has been used successfully to help provide funding for the costs of education. Student loans are characterised with an increased demand due to the rising HE costs, the higher resources needed by students and their families to fund their education, and the enlarging population and increasing amount of people pursuing degrees. Student loans has been identified as one of the four core asset classes financed through ABS (Fried and Breheny, 2005) and it is expected they will continue developing in the future.

Similarly, in developing countries such as Chile (Brunner, 2007; Larrain and Zurita, 2007), student loan backed-securitization helps provide funding for the costs of education even though there it is still a new process . The Chilean system stands out for being the most privatized and opened to the market within the developing countries (Fried and Abuhadba, 1991; Brunner, 2007; Larrain and Zurita, 2007). Chile is also unique in the strength with which the forces of supply and demand operate, and in its high dependence on private financing. It can be assumed from its institutional structure and level of participation of private registration, that private financing plays an important role in addition to the relative importance of the corresponding state and family (Larrain and Zurita, 2007). This is consistent with structuring the loans in order to channel the resources of private investors, both through the banking system as well as the capital market. It also helps the states and the federal government in efficiently using their cash resources, and focus these on other social functions (Larrain and Zurita, 2007).

However, in most European countries, public financing has been considered as the traditional approach for supporting HE (Vandenberghe and Debande, 2005). Even though tuition fees have been introduced in various countries, they only contribute a small amount to the funding needs of HE institutions. Nevertheless, the transfer of the financial burden to students in Europe could be justified by the high rate of return received on investing in their HE, once they graduate. It measures in terms of earning premium and lower risk of unemployment, as well as the positive impact on the quality of life (Vandenberghe and Debande, 2005).

Malaysian Higher Education

The existing bodies providing loans for students in HE in Malaysia are limited to a few organizations such as MARA, JPA and the Ministry of Higher Education (MOHE). The HE sector in Malaysia comprises of public and private institutions, governed by the Ministry of Higher Education and its agencies as well as by the Department of Private Education. Universities in Malaysia have to find the best alternatives to reduce their dependency on the government budget, in order to sustain their role in providing HE for students. According to Lee (1997), the government provides resources such as educational loan to enable students to pursue

HE in local and overseas institutions, in order to achieve the national goal to turn Malaysia into a developed nation by year 2020 (Badawi, 2004). Vision 2020 states that Malaysian government is committed to achieve student enrolments up to 200,000 for each public university. Furthermore, the government is keen to meet the policy target of having 40 per cent of youth aged 19 to 24 admitted into HE. By 2020, the government expects that 60 per cent of high school students would be admitted to public universities, while the rest will go to private colleges or universities (Mok, 2007). Public universities in Malaysia have, in the recent years, attempted to diversify their financial resources by charging tuition fees from students, increasing the number of students, branching out to work closely with businesses and industry, and offering professional courses, consultancy and community services (Mok, 2007). Over the past two decades, the priority given by the Malaysian government to human resource development and the vision of the importance of HE, have translated into significant investments in developing the sector. According to the Eighth Malaysia Plan, education in general accounts for 20 per cent of the total government expenditure. Nearly 47 per cent of the total development allocation for education is set aside for HE, which is equivalent to Ringgit Malaysia 8.9 billion (USD 2.5 billion) out of Ringgit Malaysia 18.7 billion (USD 5.3 billion) (Salmi, 2005).

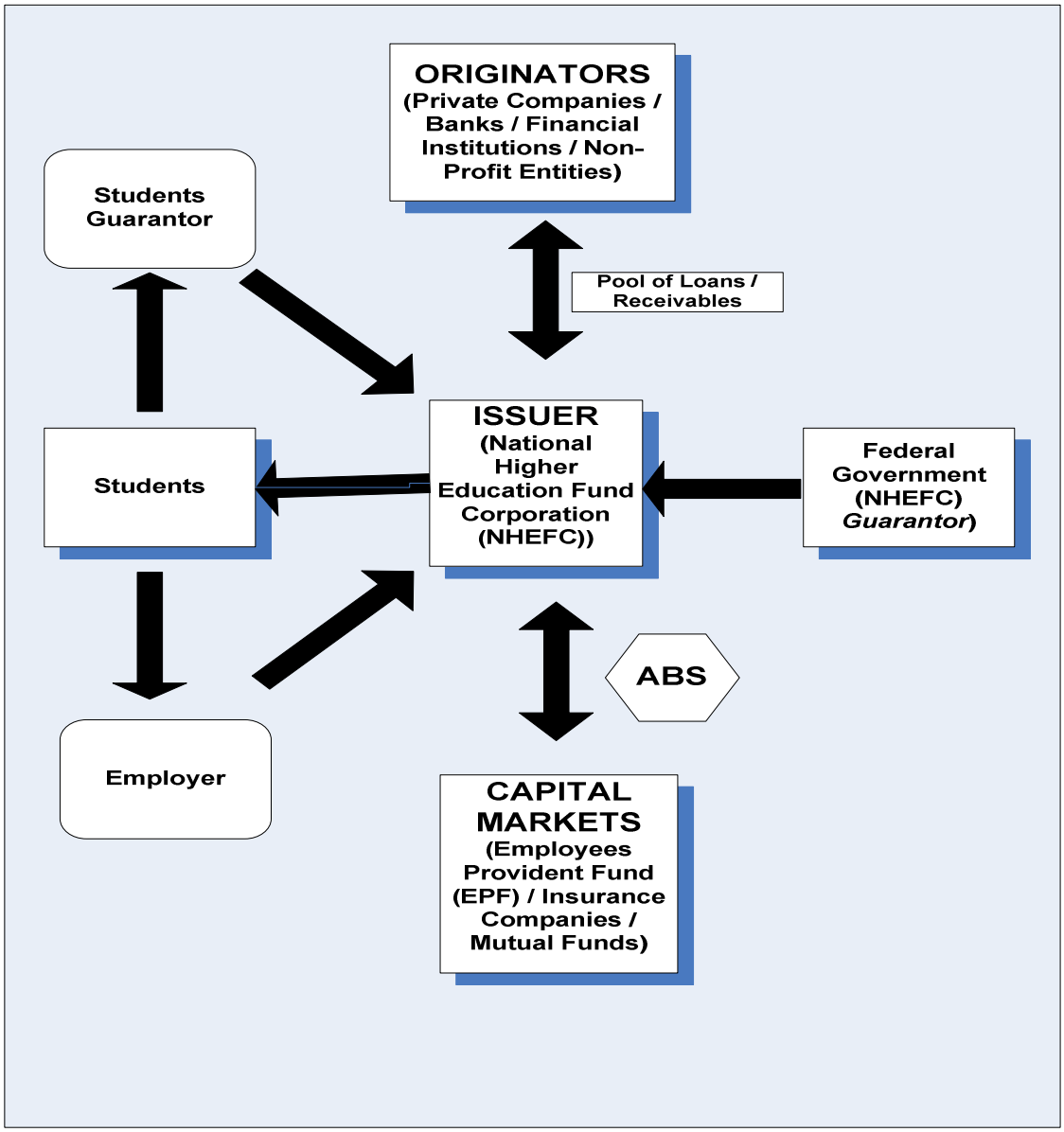
In order to drive the education sector forward, the National Higher Education Fund Corporation was founded under the National Higher Education Fund Act in 1997 (Act 566) to manage funds for the purpose of HE. The functions of this body are to offer and give educational loans in the form of financial assistance to students, and to provide administration, supervision and collection of loan settlement services (NHEFC, 2008). Furthermore, this body also takes part in collecting deposits, and designing and offering saving schemes for HE. The original objective of NHEFC is to ensure efficient loan financing for students who are eligible to pursue studies at institutions of higher learning. This is in line with government aspirations that no student should be denied access to HE because of financial reasons. NHEFC has played the role for almost ten years in helping students to pursue to HE. However, due to non-repayment of loans, NHEFC has to find alternatives to maintain the resources and the student loan backed securitization can be alternative way of creating resources.

Proposed Conceptual Framework for Student Loan-Backed Securitization

We propose here a conceptual framework for student loan-backed securitization to be implemented in Malaysia. The point of departure for the framework is the Chilean system (Larrain and Zurita, 2007), however it is modified to suit with the characteristics of the HE system in Malaysia.

In Chile, there are six key participating agents throughout the process, i.e. students, HE institutions, government, capital market, financial system and the Managing Commission. The Chilean system process, as explained by Larrain and Zurita (2007), requires students to provide proof of their socio-economic status in order to apply. The higher education institutions (HEIs) provide partial guarantees for second year students onward during the study period. On the other hand, a specific body is formed, known as the System's Managing Commission, to centralize all applications in a single system and determine the maximum number of students that can receive the benefit from the system. Then, it securitizes the loan

Figure: *Proposed student loan-backed securitization process corresponding to the characteristics of the Malaysian HE systems.*



portfolio obtained from the banks and receives and maintains custody of HEIs' loan guarantees. The function of the government is to determine the amount of resources available for guarantees and the amount of cash resources available to repurchase loans from banks. Banks or originators grant loans to students with direct disbursements to the HEIs and select the loans to be sold to the Managing Commission, as well as manage loans in the approved portfolio including the loans sold back to the Managing Commission. The capital market, in terms of pension funds, insurance companies, and mutual funds as long term investors, obtain the securitized portfolios, both those owned by the Managing Commission and the banks that decide to securitize them (Larrain and Zurita, 2007).

However, for the Malaysian system, we propose a slightly different process, as the originators here should be private companies, banks, financial institutions or non-profit entities, in order to provide a pool of loans. The difference with the Chilean system is that the Managing Commission or the corresponding Malaysian body NHEFC is not involved as originator, since

the financial institutions are expected to securitize independently part of the pool of loan portfolios. On the other hand, the role of issuer is proposed to be undertaken by NHEFC, as the main body organising student loans in Malaysia. The federal government as well as students will guarantee loans issued by NHEFC during their study period. Once students graduate, the employers are expected to be involved through salary deduction from students' accounts to repay the loan. On the other hand, the capital market involvement is proposed to take place through the Employees Provident Fund, Insurance companies and mutual funds. The proposed conceptual framework is expected to generate resources for NHEFC through securitization of student loan, relieving the burden currently imposed on the government budget to finance the student loans in Malaysia. The Figure presents the proposed conceptual model (Ismail et al., 2008b).

Another characteristic of the proposed model is that it will involve implementing principles of sustainable finance and Islamic finance when developing the structured securities. The first Islamic securitization in Malaysia was sukuk ABS introduced in 2005 (Ripain et al., 2006), and the process involved transactions where the underlying assets could not contain any elements contradicting syariah. On the other hand, the mere pooling of non-interest bearing assets alone does not automatically create an Islamic securitization scheme. For instance, apart from elimination of the interest factor, the underlying asset would also need to fully satisfy a set of conditions. These include the presence of the asset or certainty over its deliverability, performance or availability at a future date. Next, the underlying subject matter can be adequately identified, specified or characterized without any uncertainty and that the seller has ownership over the asset (Ismail et al, 2008a).

To understand further about the Islamic securitization, we will provide as an example the process involved in he lease-based securitization. It starts with the identification of a suitable underlying asset, and to be suitable the asset must be capable of both sale and leasing. In terms of the contractual flow, the process normally starts with the originator selling the identified asset to the special purpose vehicle (SPV). The SPV will then enter into a lease contract with the originator. The lease contract creates a stream of income in the form of rental payments in favour of the SPV. The SPV then issues the sukuk that are supposed to represent an undivided proportionate ownership over the leased asset. From the Islamic legal perspective, the buyers of the sukuk effectively buy a portion of the leased asset and thus become co-owners of the asset. As owners, the sukuk-holders are also the lessors to the originator, and are therefore entitled to the stream of rental payments. Finally, at the end of the lease period, reflecting the maturity of the sukuk, the originator will redeem the sukuk from the holders through buying back the underlying asset from them (Ismail et al, 2008a).

Based on the above explanations as well as the overall expectations, the Islamic securitization in Malaysia has received worldwide syariah compliance endorsement. It is accepted in major markets in the Middle East and Europe. The endorsement ensures acceptability of the Islamic securitization by the international markets.

Conclusion

The student loan-backed securitization process has the potential to resolve the problem in the Malaysian HE in providing funding for the costs of education. Students and families are expected to benefit from this research, as securitization of student loans would provide adequate financial resources to students. This research will also compliment the aspiration of Malaysia to develop a viable bond market, where ABS is expected to take place through highly rated

corporate and government bonds in the Malaysian financial markets by 2010 (Capital Market Master plan, 2001). Thus ABS is expected to have significant growth in conjunction with an active bond market by 2010. Therefore, this research is timely and can contribute to the body of knowledge in the Malaysian bond market.

The authors believe that student loan-backed securitization is poised to perform well once introduced, and set to outperform most private debt securities. Therefore, it would become an important corporate debt financing for originators, and also appeal to Malaysian investors as a form of investment. The Malaysian ABS market has been consistently developing over the last eight years, and is currently overcoming recent doubts in the efficiency of structured instruments through incorporating in their design principles of sustainable finance and Islamic finance. The Malaysian ABS is improving its position significantly in terms of number and size of issues. By looking at the positive trends, the authors have a strong confidence that the introduction of student loan-backed securitization in the Malaysian capital market is expected to increase in momentum and provide a viable source of financing to the National Higher Education Fund Corporation.

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The study of growth between academic self-concept, nonacademic self-concept, and academic achievement of ninth-grade students: a multiple group analysis

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Abstract

The two purposes of this research were to develop and validate latent growth curve model between academic self-concept, nonacademic self-concept, and academic achievement and to test invariance of model form and parameters in the model between boy and girl groups of students. The research samples were 820 nine-grade students. The research instruments consisted of Self-descriptive Questionnaire and The student academic achievement tests in Mathematics, English, Science, and Thai Language. The data analysis were employed descriptive statistics, multiple correlation, MANOVA repeated measures, multivariate latent growth curve analysis, and multiple group analysis.

The research results revealed the model between academic self-concept, nonacademic self-concept, and academic achievement was good fit with the empirical data with goodness of fit statistics of χ^2=25.240, df=24, p=0.393, RMSEA=0.008, CFI=1.000, RMR=0.031, GFI=0.994, and AGFI=0.989 and the model was invariance in form and variance only in parameter of the observe variable error correlation matrix.

Keywords: Self-concept, Academic Achievement, Development, Latent Growth Curve Model, Multiple Group Analysis

Introduction

The main purpose of education is the progress of physical, sociality, emotion, and wisdom of student sustainably. The adequate education makes good quality human resources for a rapidly developing country. According to this reason, many countries have been trying to develop the educational quality in the national policy and strategy to enhance effective implementation. As in Thailand, this idea dominantly appears in An Education Reform Act for Further Development for The Thai People: National Education Act of B.C. 2542. The major content emphasizes the development of many functions of Thai educational system. When the act was implemented during 1999-2005, the educational organization reported the results of student's outcomes. The student's academic achievements in five important subjects were under 50% every year or under a satisfying level, especially in Mathematics and English subjects. This crisis raised many questions about educational development process because the act cannot improve the student's academic achievement that everyone had expected.

The student's academic achievement problem is not occurring in Thailand but it also in many countries around the world. Some country have been trying to solve this problem by educational staff development, teaching processes, and parent and community cooperation, and some country have been looking backward to student inner character by depicting causal relationship influencing to academic achievement. The result of studies revealed some important factor strongly related with academic achievement is "self-concept", the perception of oneself about strength, weakness, value, belief, and attitude from environment or social interaction

(Longres, 1995; Marsh & Craven, 1997; Slavin, 2003; Huitt, 2004; Jordan & Porath, 2006; Suldo, Riley, & Shaffer, 2006; Fraine, Damme, & Onghena, 2007). Self-concept was explored since 1980's and divided into two main factors academic self-concept and nonacademic self-concept (Marsh & Shavelson, 1985; Marsh, 1990), the person who have positive self-concept frequently success in activities but easily fail in activities for who have negative self-concept (Wigfield & Karpathian 1991; Franken, 1994). From later research results show more important of academic self-concept than nonacademic self-concept, the variances explain in academic achievement from academic self-concept greater than nonacademic self-concept (Lyon, 1993; William, 1993). It was supported many later researches to study just only academic self-concept factor for improving student academic achievement and neglect an important of nonacademic self-concept though its closely related with the student's real life more than academic self-concept (William, 1993; Longres, 1995; Suntonrapot, Auyporn, & Thaweewat, 2008; Suntonrapot, Auyporn, & Thaweewat, 2009), it's imply the studies of self-concept were not transparency in self-concept factors. However, the recent development of research methodology in self-concept aspect elucidated the important equally between academic self-concept and nonacademic self-concept to academic achievement in short-term and long-term period. Furthermore, the academic self-concept has variance explain in academic achievement more than academic self-concept comparatively (Suntonrapot et al, 2008; Suntonrapot et al, 2009). These research results provided important information for the teacher and the school administrator to set appropriate activities in time frame for enhancing positive self-concept of students and becoming to enhance student academic achievement in the future.

The advantages of research result make clearer in controversy aspect about correlation research and change point of view to study the relationship between self-concept and academic achievement (Marsh, 2003; Guay, Marsh, & Boivin, 2003; Guay, Marsh & Craven, 2006, Suntonrapot et al, 2009). The new dominant methodology for studying the relationship is "Causal Ordering Model", the repeated measure model generated from the chicken-egg question for study longitudinal relationship comprised with four effect directions (Suntonrapot et al, 2009). The results of causal ordering analysis provide many important effects between different times from the same variable (Horizontal Effect) and between different variables (Bottom-up, Top-down, and Reciprocal Effect). Although causal ordering model makes clearly in long-term interaction effect between two or more variables, its potential cannot be considered the growth of variables during long-term period. Currently, the most suitable analytical methodology considering growth of variable is "the latent growth curve approach", the methodology was developed from autoregressive model and growth curve model (Duncan, Duncan, Strycker, Li, & Alpert, 1999) for modeling growth of individuals over time by a random coefficient model on a latent variable level (Meredith & Tisak, 1990) and was applied to use with the structural equation modeling (SEM) to predict parameters in the model deeply, manifestly and efficiently. The interesting character of the latent growth curve model is 1) the competency for goodness of fit testing of hypothetical model and 2) its take the correlation between each time of variable measurements to estimate the parameters. Hence, the latent growth curve model can show information more clearly than the causal ordering model comparatively.

From knowledge of prior research about the relationship between self-concept and achievement amalgamate with the progress of analysis, this study was emphasized to extend the recent knowledge more clearly than previous studies in term of development theory and methodology in the future.

Research Purpose

The two purposes of this research were 1) to develop and validate latent growth curve model between academic self-concept, nonacademic self-concept, and academic achievement of nine-grad students in Thailand and 2) to test the model form and parameter invariance of latent growth curve model between boy and girl groups of student.

Research Hypothesis

From the related literature review, researchers have expected two research answers that were 1) the latent growth curve model between academic self-concept, nonacademic self-concept, and academic achievement were fit with the empirical data and 2) the latent growth curve model between academic self-concept, nonacademic self-concept, and academic achievement were invariance in model form.

Theoretical Framework

This study was emphasized to extend previous knowledge from Suntonrapot and et al (2008) and Suntonrapot and el al (2009), both of the researches base on review important research results of Marsh and Shavelson (1985) and Marsh (1990), whose was study self-concept and academic achievement unyieldingly and together with the later research results and suggestions. The multivariate latent growth curve model comprised with three variables in the model. Each variable received three time measures and each measure was used four months approximately. Three time points provide an opportunity to test for nonlinear trajectories (Duncan et al, 1999) for designed shape of hypothetical model. The first variable was academic achievement (ACH) measured from the academic score in Mathematics, English, Science, and Thai Language subjects, the second variable was academic self-concept (ASC) measured from Mathematics academic self-concept, English academic self-concept, Science academic self-concept, and Thai Language academic self-concept, and the last variable was nonacademic self-concept (NSC) measured from physical ability, peer relation, physical appearance, and self-efficacy. The another important view, this study have tried to develop the model explained academic self-concept, nonacademic self-concept, and academic achievement growth of nine-grad students in Thailand which were teenagers, the girl and boy groups have different growth (McInerney & McInerney, 1995; Jordan et al, 2006). The multiple group analysis of hypothesis model needed to test accuracy and efficiency of the model.

Methodology

This study tried to depict growth of academic self-concept, nonacademic self-concept, and academic achievement of nine-grad students in Thailand which were linked research results clearly than Suntonrapot et al. (2008, 2009). Methodology was employed the same samples and methodology, the secondary data source, but different analyses approach for answering research questions.

Participants

The research samples were 820 nine-grad students, 294 boys and 526 girls, in public school under the office of educational service area from all regions of Thailand (north 139, central 130, west 125, south 138, and Bangkok/the capital city 130 students). The research samples were obtained from three stage random samplings. The unite sampling of each stage was province, school, and classes respectively.

Research Instrument

The research instruments consisted of two type instruments. The first type was the student's self-descriptive questionnaire (six rating scales varied from the most unlike me to the most like me, respectively) for measuring in self-concept variables, comprised with 78 items and reliability with Cronbach's alpha of 0.925. The guide lines of questions in the questionnaires were translated from SDQII (Marsh, 1998) in Mathematics academic self-concept, English academic self-concept, physical appearance, peer relation, and physical ability. The goodness of fit statistics from structural validity of a questionnaire shows good fit between the instrument factors and the empirical data [χ^2=18.360, df=19, p=0.499, CFI=1.000, GFI=890, AGFI=0.790, and RMSEA=0.000]. The second type instrument was four student achievement tests in Mathematics, English, Science, and Thai Language subjects with 46 items, 50 items, 50 items, and 50 items respectively, mean of item difficulty 0.416, 0.452, 0.490, and 0.488 respectively, mean of item discrimination 0.425, 0.442, 0.473, and 0.460 respectively, and reliability with Cronbach's alpha coefficient of each test 0.865, 0.876, 0.893, and 0.897 respectively.

Data Collection and Data Analysis

The research data was collected from three time measurements in the early period, middle period, and final period of an educational year with the same research sample. The first time was collected at the early of May, 2007, the second time was collected at the end of September, 2007, and the third time was collected at the end of February, 2008. Each instrument was used an hour for data collection process per time. The research data was employed descriptive statistics and multiple correlation to explore the basic data including with testing the mean different among three measurements by MANOVA repeated measures and employed the confirmatory factor analysis (CFA) for model development and validation of latent growth curve model and multiple group analysis between boy and girl groups of student by using statistical package program. Each research sample was assigned six digit numbers to be code for easily linking each data measurement together.

Result

1. The result of descriptive statistics.

The basic result of three times data analyses from nine-grad students were 296 boys (36.09%) and 526 girls (63.91%). Over all the repeated measure data, the mean of every variable has increased from the first time to third time measurement respectively. The mean and coefficient of variance of academic achievement was the highest in all variables. The variability of variables trended to be normal distribution. The 36 pairs of correlation coefficient of nine

variables were 33 pairs statistical significant at .01 and 1 pair statistical significant at .05 level different from zero. Most relationships between variables were positive from vary low to very high (0.092-0.912) except the correlation between the first time measurement of nonacademic self-concept and the third time measurement of academic achievement was negative relationship. It was notified that each variable in different measurement time was highly relationship level. The descriptive statistics and correlation matrix of variables were shown show in Table 1 and Table 2.

The result of mean comparison between three measurements times by MANOVA repeated measures reveal the relationship of variables can use multivariate analysis of variance and incline to be linear relationships. Furthermore, the post-hoc comparison by Bonferroni method was shown the mean of variables in each measurement time were statistical significant at .01 level. The third measurement mean was the highest in rank.

Table 1. Descriptive Statistics of Variables

Variables	Time	N	Min	Max	$\bar{x}$	S.D.	C.V.	Sk	Ku
ACH	1	820	10.310	35.850	18.050	4.549	0.252	0.93**	0.56**
	2	820	10.180	40.050	19.059	5.178	0.271	1.15**	1.07**
	3	820	9.760	41.010	20.608	5.934	0.288	0.98**	0.59**
ASC	1	820	0.970	4.190	2.652	0.482	0.181	0.55**	0.70**
	2	820	1.200	4.660	2.752	0.463	0.168	0.84**	1.29**
	3	820	1.070	4.520	2.856	0.493	0.173	0.29**	0.82**
NSC	1	820	1.670	4.540	2.862	0.468	0.164	0.41**	0.21**
	2	820	1.790	4.750	2.908	0.431	0.148	0.75**	1.08**
	3	820	0.820	4.900	3.007	0.436	0.145	0.39**	1.78**

* p < .05, ** p< .01

Table 2. Correlation Matrix of Variables

Variables	ACH1	ACH2	ACH3	ASC1	ASC2	ASC3	NSC1	NSC2	NSC3
ACH1	1.000								
ACH2	0.847**	1.000							
ACH3	0.841**	0.912**	1.000						
ASC1	0.256**	0.196**	0.163**	1.000					
ASC2	0.322**	0.339**	0.309**	0.720**	1.000				
ASC3	0.445**	0.425**	0.470**	0.650**	0.751**	1.000			
NSC1	-0.064	-0.070*	-0.057	0.417**	0.330**	0.184**	1.000		
NSC2	0.092**	0.115**	0.121**	0.374**	0.489**	0.327**	0.676**	1.000	
NSC3	0.205**	0.215**	0.271**	0.338**	0.419**	0.468**	0.590**	0.777**	1.000
$\bar{x}$	18.050	19.059	20.608	2.652	2.752	2.856	2.862	2.908	3.008
SD.	4.549	5.178	5.934	0.482	0.463	0.493	0.468	0.431	0.436

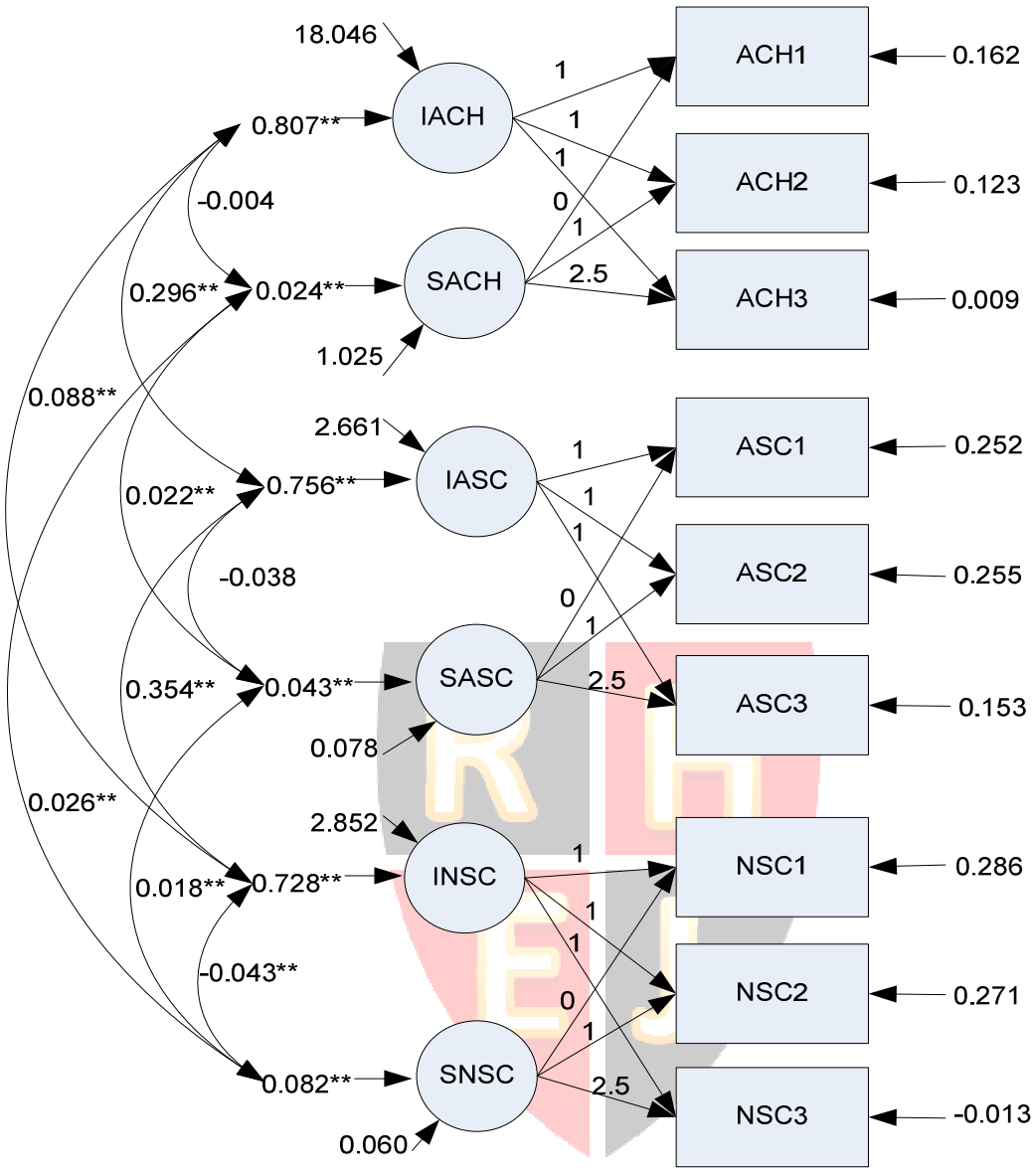
* p < .05, ** p< .01

2. The result of latent growth curve model development and validation, the model was vary good fit with the empirical data with χ^2=25.240, df=24, p=0.393, RMSEA=0.008, CFI=1.000, RMR=0.031, GFI=0.994 and AGFI=0.989. The academic achievement was the highest mean of initial (18.047) and slope (1.025). Between two factors of self-concept, the

initial of nonacademic self-concept was slightly greater than academic self-concept (2.852/2.661) but the slope of academic self-concept was slightly greater than nonacademic self-concept (0.078/0.060). All parameter estimators were statistical significant at .01 level. For observed variables, all variables have high reliability level (0.735-0.996). The parameter estimators in the model bring to consider growth of academic self-concept, nonacademic self-concept, and academic achievement during one academic year. The academic achievement has initial level and growth rate higher than other variables. The initial and slope of academic self-concept and nonacademic self-concept were pertinent. The growth of nonacademic self-concept was slightly higher than academic self-concept. However, the growth between academic self-concept and nonacademic self-concept were closely over and over from early to lately academic year. It was implied that the initial of academic achievement was expected to increase by 1.025 each year, the initial of academic self-concept was expected to increase by 0.078 each year, and the initial of nonacademic self-concept was expected to increase by 0.060 each year. The latent growth curve model and growth line of variables were shown in Table 3, Figure 1 and Figure 2.

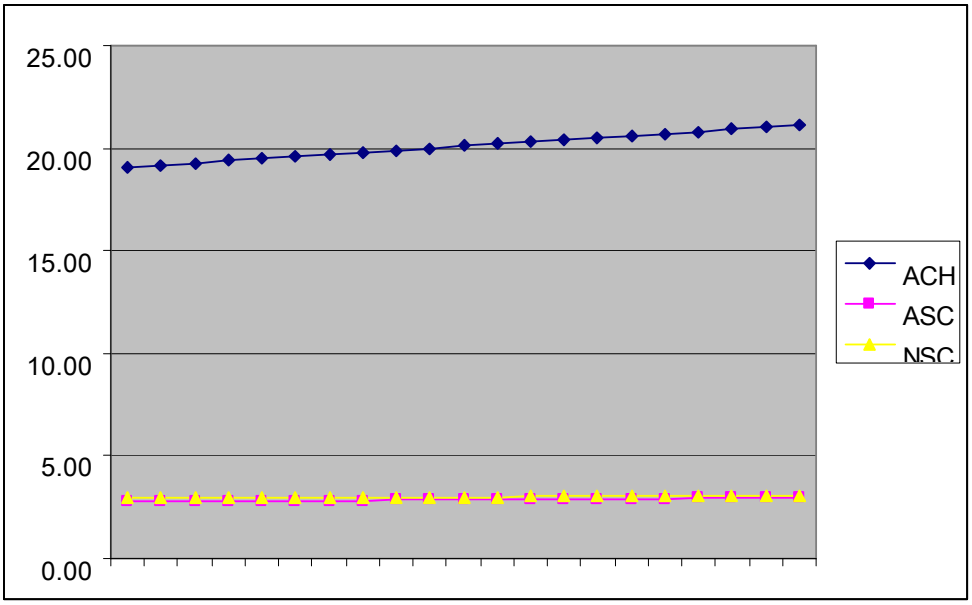
Table 3. Latent Growth Curve Parameter Testing

Latent Variable	$\bar{x}$	SE	t-value	Observe Variable	Initial		Slop		R^2
					Coefficient	SC	Coefficient	SC	
IACH	18.046	0.056	323.311	ACH1	1	0.912	0	-	0.832
SACH	1.025	0.013	81.065	ACH2	1	0.912	1	0.162	0.869
				ACH3	1	0.912	2.5	0.404	0.996
IASC	2.661	0.057	46.368	ASC1	1	0.875	0	-	0.765
SASC	0.078	0.019	4.122	ASC2	1	0.886	1	0.262	0.740
				ASC3	1	0.883	2.5	0.521	0.827
INSC	2.852	0.057	50.239	NSC1	1	0.846	0	-	0.746
SNSC	0.060	0.021	2.920	NSC2	1	0.865	1	0.346	0.735
				NSC3	1	0.863	2.5	0.690	0.955

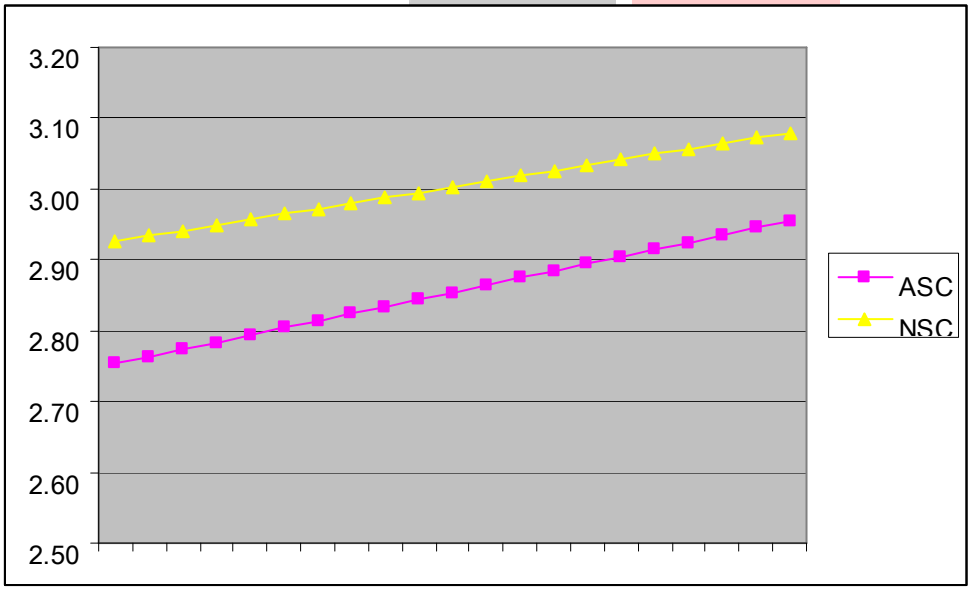


χ^2=25.240, *df*=24, *p*=0.393, RMSEA=0.008, CFI=1.000, RMR=0.031, GFI=0.994, AGFI=0.989

Figure 1. Multivariate Latent Growth Curves of Academic Achievement, Academic Self-Concept, and Nonacademic Self-concept



2A Growth of ACH, ASC, and NSC



2B Growth of ASC and NSC

Figure 2. Growth of Academic Achievement, Academic Self-concept, and Nonacademic Self-concept

3. The result of multiple group analysis of latent growth curve model between boy and girl group of students shown model invariance in from with goodness of fit statistics of χ^2 = 50.063, df=54, p=0.627, RMSEA=0.000, and CFI=1.000. For the parameter invariance testing, three parameter invariance hypotheses were good fit with the empirical data. The first and second hypotheses were not statistical significant at .05 level and third hypothesis was not statistical significant at .01 level. The result of three invariance hypothesis testing comparison show the second hypothesis, the parameter variance just only the correlation of measurement error of observed variables (TE), was the best fit with the empirical data to explain growth

parameter between boy and girl groups. All parameter of growth variables between boy and girl group were statistical significant at .01 level. The details of multiple group analysis were shown in Table 4 and Table 5.

Table 4. Multiple Group Analysis between Boy and Girl Groups

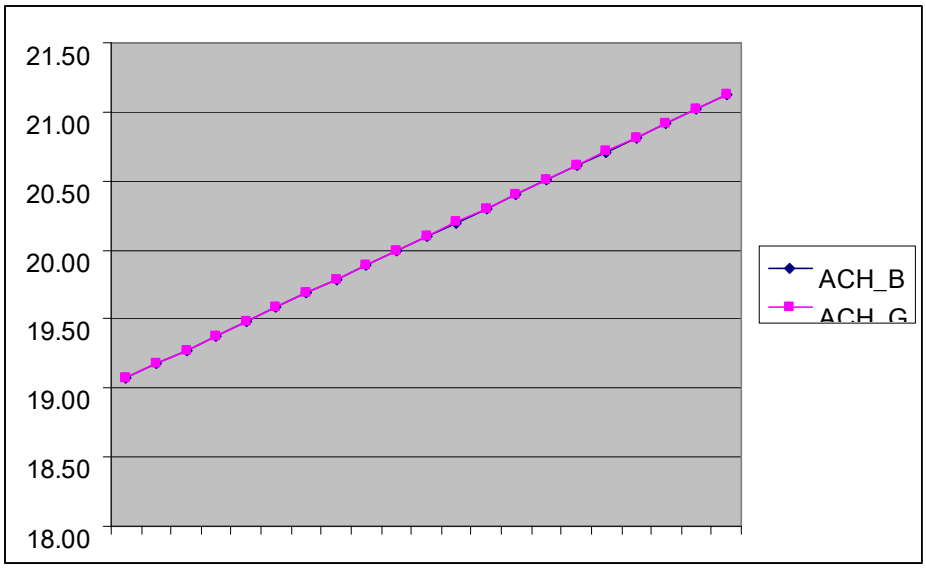
Hypothesis	χ^2	*df*	χ^2/df	*p*	RMSEA	RMR	CFI
Model Form	50.063	54	0.926	0.627	0.000	0.041	1.000
1. H_0: LY	50.063	54	0.926	0.627	0.000	0.041	1.000
2. H_0: LY PS	61.590	63	0.977	0.527	0.000	0.040	1.000
3. H_0: LY PS TE	95.710	72	1.329	0.035	0.028	0.035	0.997
Hypothesis Different Testing			$\Delta\chi^2$			Δdf	
2. – 1.			11.527			9	
3. – 2.			34.210*			9	

* $p < .05$

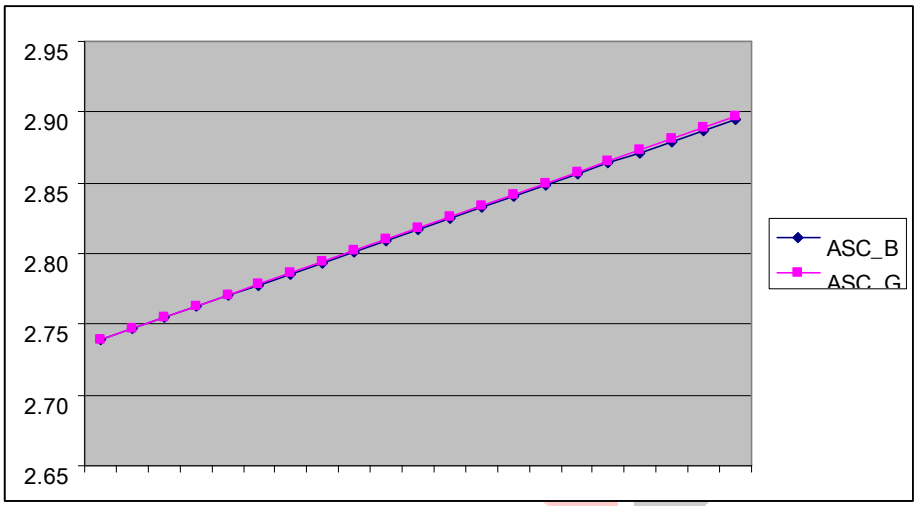
Table 5. Growth Parameters of Boy and Girl Groups

Latent	Boys			Girls		
	Mean	SE	t-value	Mean	SE	t-value
IACH	18.046	0.056	323.311	18.046	0.041	436.206
SACH	1.025	0.013	81.065	1.026	0.009	113.169
IASC	2.661	0.057	46.368	2.660	0.042	63.059
SASC	0.078	0.019	4.122	0.079	0.014	5.622
INSC	2.852	0.057	50.239	2.850	0.041	68.708
SNSC	0.060	0.021	2.920	0.062	0.014	4.498

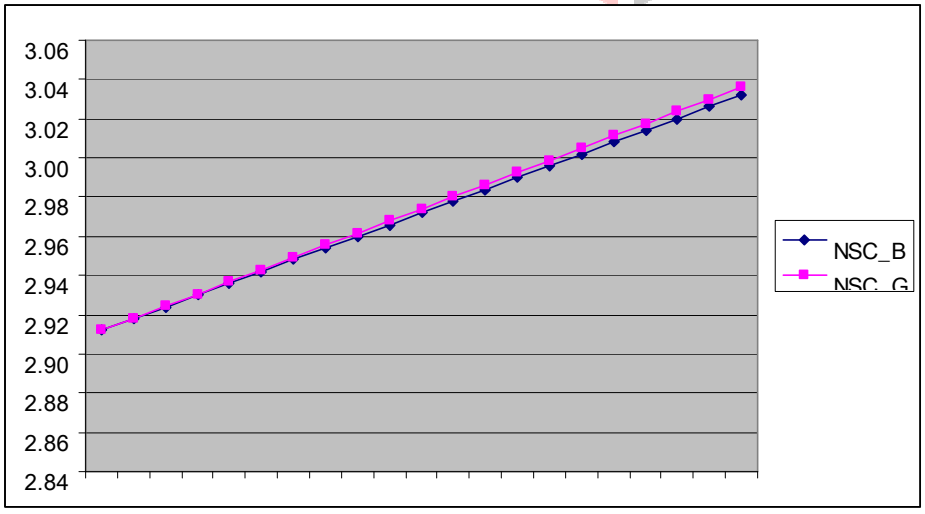
From multiple group analysis processes, the parameters of growth were depicted in comparing aspect in Figure 3. rely on the second invariance hypothesis testing. The growth of academic achievement between boy and girl were very closely all of the academic year [see Figure 3A.], the growth of academic self-concept was closely in the early period of academic year but it has just started slightly different from the middle to the lately period of academic year [see Figure 3B], and the growth of nonacademic self-concept was relevant to academic self-concept that appeared different growth rate of two groups of student, the girl group was higher growth of nonacademic self-concept than boy group [see Figure 3C.]. It's should notified the different growth rate between boy and girl groups in the lately period of academic year of nonacademic self-concept was more obviously than academic self-concept.



3A. Academic Achievement Growth



3B. Academic Self-concept Growth



3C. Nonacademic Self-concept Growth

Figure 3. Growth of Academic Achievement, Academic Self-concept, and Nonacademic Self-concept between Boys and Girls

Discussion

1. The result of latent growth curve model development and validation show the model was good fit with the empirical data due more than 90% of variables in the model have statistical significant in high level. It was supported from suggestion of prior researchers about extremely high relationship between self-concept and academic achievement. Moreover, this study was designed to study with many of research samples which effected to correlation coefficient of variables and goodness of fit statistics of hypothesis model (Duncan et al, 1999).

2. The result of multiple group analysis shows the latent growth curve model was invariance in model form and variance in parameter estimators only correlation of measurement error of observed variable matrix due to the latent growth curve model was good fit with the empirical data. Every indicator was fitted with every criterion. It was supported from research result of prior studies about no different of parameter estimators of academic self-concept, nonacademic self-concept, and academic achievement between boy and girl groups (Suntonrapot et al, 2008). For model variance in correlation of measurement error of observed variables, it was relevant to research result of causal ordering model development and validation and multiple group analysis and found parameter variance in only measurement error matrix. It should notified the competency of causal ordering model and latent growth curve model give the same result of parameter invariance information although the two models have different purpose and advantage.

3. The result of growth analyses show continuously increasing of academic achievement all year. It was supported from many research results and cognitive development theory or psychodynamic perspectives that academic achievement increase more and more rely on physical and complex thinking development over time from infancy to adult (Longres, 1995; Fraine et al, 2007). However, the growth of two self-concept factors opposed with suggestion of prior researcher (Fraine et al, 2007) about decreasing of self-concept when the student was growing. Furthermore, this research found different growth of both academic self-concept and nonacademic self-concept in lately of academic year probably due to the research samples were during teenage which have sensitively self-perception with social and environment (Longres, 1995). The boy and girl group start to find self-identity during the age of twelve to eighteen, Ericson's fifth stages psychosocial development (Parsons, Hinson, & Sardo-Brown, 2001), in this case, the girl group have growth in two factor of self-concept more than boy group (McInerney et al, 1995; Jordan et al, 2006), especially nonacademic self-concept.

4. The comparison of growth between academic self-concept, nonacademic self-concept, and academic achievement show the highest growth rate of academic achievement, nonacademic self-concept, and academic self-concept, respectively. This result agrees with prior research result about the horizontal effect of causal ordering model of academic achievement, and nonacademic self-concept, and academic self-concept (Suntonrapot et al, 2009). It was the second hint to show relationship and competency of two longitudinal models, the causal ordering model and the latent growth curve model.

Suggestions for implementation

From the research result, the researcher proposes two main implementations in the future.

1. The teachers and school administrators should plain various activities to support positive self-perception for enhancing academic achievement. In the embryonic period of the year, the activities may be plain the same for boy and girl groups and should be plain different activities for boy and girl groups for enhancing till the middle year. The kind of activities should be group or team activities to foster positive relation between student to student and student to teacher, especially in English and Mathematics subjects.

2. For appropriate time to support, the teachers and administrators should fix the kind of activities to support the nonacademic self-concept in the incipient period of the year and should emphasize the kind of activities to support the academic self-concept in the middle year.

3. The important role of teachers and parent were the good reflectors to share experience and to give information of both academic and nonacademic student outcome positively and let the student know their progress and choose the way to develop themselves liberally.

Suggestion of future research

1. The researcher should deeply investigate relation of two new longitudinal methodologies between the causal ordering model and the latent growth curve model comparatively. These research findings have some point suitably linked with the prior research unexpectedly although two researches have different purposes to study.

2. The researcher should expand various advance methods to investigate academic and nonacademic self-concept especially the multilevel approach due to both self-concept factors were point out to be multifaceted variable (e.g. Carroll, Houghton, Wood, Perkins, & Bower, 2007; Marsh & Shavelson, 1985) and received effect from various variables from many levels. In the present time, the multilevel structural approach was keeping an eye on psychological variables research (e.g. Marsh, Hua, & Kong, 2002). The multilevel method in self-concept research is limitation to amalgamate self-concept knowledge for improving student efficiently.

3. The researcher should plain to collect data at least one year per period rely on prior researchers suggestion. From this research result found little growth in self-concept variables. Furthermore, it appeared little different growth between boy and girl groups, especially nonacademic self-concept. The research result probably got more information to foster students if research plain to collect data longer.

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Undergraduate HRD programs in the United States

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Abstract

Responding to the need to broaden the knowledge base of HRD undergraduate program, this study compared the curricular characteristics and course content of such programs to published HRD models. The results of this study will provide instructional leaders a basis from which they can compare their curricula to like programs. This paper also calls attention to potential deficits in the breadth of HRD content areas covered in undergraduate programs and identifies areas for future research.

Keywords: Human Resource Development, undergraduate, HRD program, HRD Curriculum, Benchmarking.

Introduction

Responding to business and societal needs to develop the 21st century workforce, many colleges and universities offer undergraduate programs to help individuals prepare for jobs in the human resource sector. While the educational background of individuals serving the human resource sector vary based on position, the 2006-2007 Occupational Outlook Handbook identified that when filling entry-level positions, many employers seek college graduates who have majored in a human resources related field. Depending on the school, courses leading to a career in human resources may be found in departments of business administration, education, instructional technology, organizational development, human services, communication, public administration, or within a separate human resources institution or department (U.S. Department of Labor, 2006)

Given the considerable variation in paths leading to a degree in human resources, this study sought to determine the institutional characteristics and content area of undergraduate programs, specific to the field of human resource development (HRD). This study also compared the content areas of undergraduate programs to published HRD models to determine to what extent entry-level professionals are educated in the various components of HRD.

The rationale for the decision to narrow the lens of study to the field of HRD follows. First, the field of HRD is germane to the Academy of HRD. Second, there are questions about the boundaries of the field and its professional identity (Kuchinke, 2002), that this study might help answer. Third, when compared to other human resource fields (e.g. human resource management), there is a need to expand the reservoir of literature as less as been written on HRD practitioners and models (Mankin, 2001).

Given the emergent nature of HRD and society (Walton, 1999), it is important to benchmark undergraduate U.S. programs against converging HRD models. Even if academicians have not yet come to a consensus on the same definition of HRD (McLean & McLean, 2001) or

the need to have such a definition (Lee, 2001; Ruona, 2000a,b), investigating undergraduate curricula may lend insight into what instructional leaders perceive as important in developing HRD professionals. Additionally, such data may benefit HRD program coordinators who decide to review their curriculum and course design. Comparing undergraduate curricula to published HRD models may also help the HRD community observe to what extent their actions match their words. The authors believe that critical reflection on current practice is an important stimulus for improving HRD curriculum and models for the betterment of society.

Prior Literature

The study of HRD programs is at its infancy. As Kuchinke observed in 2002, systematic information on HRD academic programs and departments are lacking. The few studies that have been conducted indicate that there is a large degree of heterogeneity among programs, departmental affiliations, and specializations. For example, across the 55 universities in his sample, Kuchinke found 31 different programs names and11 different school or college affiliations. Other researchers (Chalofsky & Daugherty, 1999; Gaudet & Vincent, 1993; Hatcher, 1998; Klein & Butler, 2002) have found similar divergences in addition to disparities in the foci of curricula. However, these researchers also concluded that a significant number of programs were named HRD and that the vast majorities were hosted under a college of education. For example, Kuchinke reported that 18 out of 55 programs were name HRD and 42 out of 55 were hosted in the college of education. This suggests that some generalizations can be made. It also suggests that it may be difficult to generate a comprehensive list of all HRD related programs in the U.S. because programs use many different names and are affiliated with a number of different colleges.

When compared to graduate HRD programs, research indicates that undergraduate HRD programs are offered less frequently in U.S. universities. In their study, Gaudet and Vincent (1993) reported that only 21% of the programs surveyed offered bachelor degrees, while 56% offered master degrees, and 23% offered Ph.D. degrees. Chalofsky and Larson-Daugherty (1996) presented similar findings using the ASTD's Academic Directory of programs in HRD. The limited availability of undergraduate programs may be one reason that undergraduate HRD programs have not been researched more often.

In terms of curricula, there are also differences between program offerings (Hatcher, 1998; Gaudet & Vincent, 1993; Klein & Butler, 2002). For example, Kuchinke (2002) reported 31 content areas which varied from most frequently addressed areas such as instructional design, instructional delivery, and evaluation, to least frequently addressed areas such as quality management and educational policy. This variation in academic curricula may present an advantage to the HRD field because each program can design their curriculum to fit a particular aspect of the HRD practice or research area. However, it may also add to the ambiguous and problem nature of the concept of HRD especially if a basic level of education is not provided across all HRD components.

Theoretical Framework

This study was informed by several theoretical frameworks relating to the scope of HRD. First, McLagan's (1989) definition of HRD provided an underlying theme that guided the researchers through the data collection and data analysis processes. For the purposes of this

study, HRD was defined as the "integrated use of training and development, organization development, and career development to improve individual, group, and organizational effectiveness" (p. 53). While other definitions of HRD exist (McLean & McLean, 2001; Weinberger, 1998), the researchers chose this definition of HRD as it is seminal to the field and provided a practical benchmark vehicle.

Second, the components of HRD as identified by Thomson and Mabey (1994) provided a theoretical model from which HRD related undergraduate course content could be mapped to HRD disciplines. Thomson and Mabey identified three components of HRD: (a) organizational development (OD), (b) career development (CD), and (c) training and development (TD). This model was chosen for the three reasons. The first is historical. As most of the academic programs under study have been around for many years, the curricula under study would have been based on a model which existed at the time of program initiation. Second, newer models such as the New Learning and Performance Wheel (Davis, Naughton, & Rothwell, as cited in Werner & DeSimone, 2006) have typically been developed with a focus on skills and competencies instead of academic disciplines or curriculum designs. Third, as benchmarking is a process that compares current practices to a proven record, a widely accepted and applied model served our purpose best. Therefore, the model of Thomson and Mabey, represented diagrammatically in Figure 1, was used.

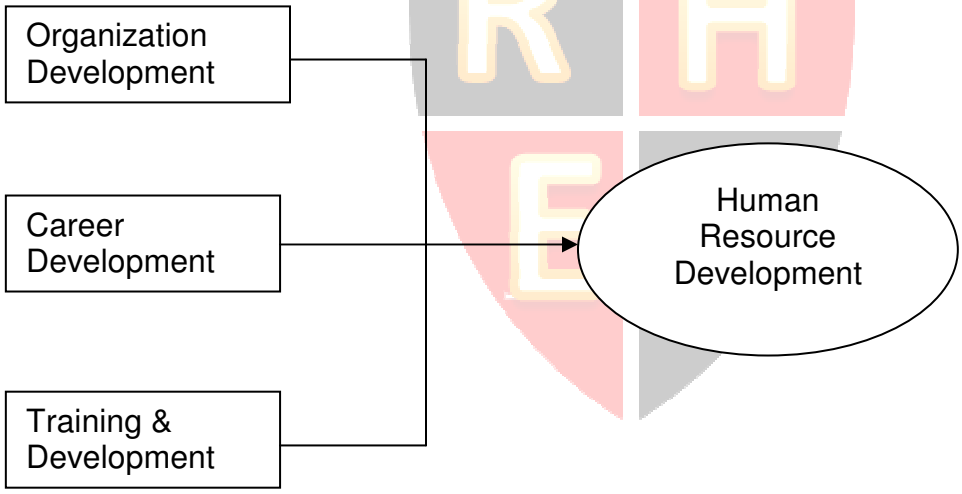

Figure 1. The components of human resource development (Mankin, 2001, p. 67)

Research Questions

The purpose of this study was to respond to the need to broaden the knowledge base related to the characteristics of HRD undergraduate programs in the United States by answering three questions:

1. What are the institutional characteristics of undergraduate HRD programs?
2. What is the core body of knowledge taught in HRD programs?
3. How does the core body of knowledge relate to HRD models?

Methodology

The methodology for this study was based on Spendolini's (1992) benchmarking process and Kuchine's (2002) study of graduate programs in the U.S. Modifications were made to suite the scope and purpose of this study.

The first step was to identify the target population. The target population for this study consists of all HRD undergraduate programs in the U.S. Given that the likelihood of a university with a graduate HRD program also having an undergraduate HRD program is high, the researchers generated an initial list of universities and colleges to research by reviewing resources for graduate programs. The researchers analyzed sources including Peterson's Guide to Graduate and Professional Study (**http://www.petersons.com**), an online graduate school directory (**http://www.gradschools.com**), and Kuchinke's (2002) list of 55 graduate HRD programs. As it was also posited that professors belonging to a HRD related society might serve as faculty in a HRD related program, academic and professional associations were included in the data collection process. Using membership lists from organizations such as the Academy of Human Resource Development (AHRD), America Society for Training and Development (ASTD), and International Society for Performance Improvement (ISPI), the researchers considered universities from which faculty members were affiliated.

For each university and college identified, the researchers searched its web site to determine if it had an undergraduate HRD program. With the understanding that there may be a large degree of heterogeneity among programs names, the search was conducted using key words, including Human Resource Development, Workforce Education, Instructional Technology, Instructional Design, Training and Development, Career and Technical Education, and Performance Improvement. As a consequence of this web search, a list of 27 universities with undergraduate HRD or HRD related programs was developed.

The second step was to establish a benchmark. Research question 3 required that a benchmark be established from which HRD program content could be classified and compared. Based on published theoretical frameworks, it was decided to map HRD related courses to the following HRD components: OD, CD, and TD.

The third step was to collect the data. For each undergraduate program identified, data from the program website were collected. In addition to program name, program description, college affiliation, undergraduate degree plan, and detailed course descriptions were obtained.

The fourth step was to analyze the data. Both qualitative and quantitative modes of analysis were employed. To map like programs, this study followed Kuchinke's (2002) methodology and employed simple frequency distributions. To answer research question three, a qualitative thematic strategy of data analysis was used to categorize and make judgments about the meaning of the HRD related courses. The course description data produced in step three were analyzed and coded based on three core HRD components: OD, CD, and TD using what Glaser and Strauss (1967) called a constant comparative method. To ensure reliability of the study, two researchers coded the data and made constant comparisons to establish a consistency of judgments between the researchers to determine code development and its applications to data analysis (Boyatzis, 1998). The number of course hours offered in each of the 3 areas was then tabulated and rank ordered. For courses covering the broad discipline of HRD, hours were split between the 3 content areas.

Results and Discussion

Exhibit 1 identifies the list of universities found to offer an undergraduate degree related to HRD. The sample included 27 universities. The size of this sample is somewhat smaller than prior literature (Gaudet & Vincent , 1993) that found 41 HRD programs being offered at the undergraduate level. The difference may be due to differences in how programs were categorized or potentially an observed decrease in the number of undergraduate programs offered.

As depicted in Table 1, the range of names for degrees relating to HRD is almost as diverse as the number of universities sampled. However, some synergy was found when considering program names containing the key words: human, resource, and development. In particular, 5 (18.5%) of the programs sampled exclusively used HRD to name their undergraduate degree. When considering programs with HRD in their names, the number of programs increases to eight. This finding is significant as the resulting percentage (29.6%) comes close to what Kuchinke (2002) found when studying graduate programs (32.7%).

Exhibit 1. *Universities Offering Bachelor's Degrees in HRD Related Field (n=28)*

Eastern Kentucky University	Southern Illinois University, Carbondale
Ithaca College	Texas A&M University, College Station
James Madison University	University of Texas, Tyler
Kansas State University	University of Arkansas
Louisiana State University	University of Central Florida
Marshall University	University of Louisville
Middle Tennessee State University	University of Minnesota
Northeastern Illinois University	University of Nevada, Las Vegas
Oakland University	University of New Mexico
Ohio State University	University of North Texas
Oklahoma State University	University of Southern Mississippi
Old Dominion University	Utah State University
Penn State University	Vanderbilt University
San Diego State University	Wright State University

Table 1. *Degree Names of HRD Related Programs (n=28)*

Degree Name – Specialization	Frequency
Adult and Technical Education - Training and Development	1
Adult Education - Human Resource Development	1
Applied Technology and Performance Improvement	1
Business Information Technology and Education - Training and Development	1
Career and Technical Education - Technical and Industrial Education (non-certification)	1
Communication Management and Design - Learning and Performance Concentration	1
Corporate Communication and Technology - Managerial and Communication Training Option	1
Human and Organizational Development	1

Human Resource and Leadership Development	1
Human Resource Development for Higher Education and Industry	1
Human Resource Development	6
Occupational and Technical Studies: Training Specialist	1
Organizational Communication	1
Organizational Leadership	1
Organizational Learning and Instructional Technology	1
Technical and Occupational Education	1
Technical Education and Industry Training	1
Technical Education and Training - Corporate Training and Development	1
Vocational Education	1
Workforce Education and Development - Industrial Training	1
Workforce Education - Postsecondary Workforce Education	1
Workforce Leadership - Workforce Performance	1
Workforce, Education, and Development - Training and Development Specialization	1

When considering the college affiliation of the universities offering HRD related undergraduate degrees, this study found that 10 (37.04%) were in the College of Education. However, when considering the number of colleges that include education in their name (just not exclusively), the number of colleges increases to 20. This finding is significant as the resulting percentage (62.95%) is similar to what Kuchinke (2002) found when studying graduate programs (72.36%).

Consistent with the demographics of the programs surveyed, 100% of the programs covered HRD content (see Table 3). The next highest areas of homogeneity were internship and occupational specialization or work experience. Nineteen (70.37%) of the programs sampled required that students participate in an internship, practicum, or field experience. Eleven (40.74%) of the programs sampled offered students a broad range of course choices to satisfy an occupational specialization and/or course credit for prior workplace experience.

Table 2. *College Affiliation (n=27)*

College	Frequency	Percentage
Agriculture	1	3.70
Business	1	3.70
Business and Technology	2	7.41
Communications	1	3.70
Education	10	37.04
Education and Human Development	3	11.11
Education and Human Ecology	1	3.70
Education and Human Professions	1	3.70
Education and Human Services	4	14.81
Education and Psychology	1	3.70
Liberal Arts	1	3.70
Technology	1	3.70

Table 3. *Course Content (n=27)*

Course Content	Frequency	Percentage
Accounting	4	14.81%
Career and Technical Education	4	14.81%
Communication	9	33.33%
Economics	4	14.81%
Finance	2	7.41%
General Business	3	11.11%
Human Resource Development	27	100.00%
Human Relations	5	18.52%
Labor and Employee Relations	3	11.11%
Internship	19	70.37%
Law, Ethics, and Regulations	4	14.81%
Management	9	33.33%
Marketing	3	11.11%
Occupational Specialization or Work Experience	11	40.74%
Psychology	7	25.93%
Public Relations	1	3.70%
Safety	1	3.70%
Sociology	1	3.70%
Statistics	5	18.52%
Technology	9	33.33%
Writing	6	22.22%

As a consequence of mapping HRD course content to HRD components, training and development was found to be the primary emphasis in 23 (88.20%) of the programs sampled (see Table 4). Organizational development was found to be the secondary emphases in 13 (48.15%) of the programs and career development was found to be the tertiary emphasis in 10 (37.05%) of the programs. On the flipside, only 1 (3.70%) program did not include training and development in its course content. However, organizational development was found to be not included in 8 (29.60%) of the programs and career development was found to be not included in 11 (40.70%) of the programs. When considering the distribution of jobs by occupation specialty in the category of human resources, training, and labor relations managers and specialists, the primary emphasis on training and development and the tertiary emphasis on career and development are generally consistent with findings from the 2006-2007 occupational handbook. The handbook indicated that in the year 2004, training and development specialists had the most number of jobs (216,000, 26.34%) followed by employment, recruitment, placement specialists (182,000, 22.19%). The Bureau of Labor and Statistics did not specifically parcel out jobs relating to organizational development in the category of human resources, training, and labor relations managers and specialists.

Table 4. *Course Content Emphases by HRD Component (n=27)*

HRD Component	Frequency	Percentage
Career Development		
Primary Emphasis	0	0.00

Secondary Emphasis	6	22.25
Tertiary Emphasis	10	37.05
Not Covered in Course Content	11	40.70
Organizational Development		
Primary Emphasis	6	22.25
Secondary Emphasis	13	48.15
Tertiary Emphasis	0	0.00
Not Covered in Course Content	8	29.60
Training Development		
Primary Emphasis	23	85.20
Secondary Emphasis	2	7.40
Tertiary Emphasis	1	3.70
Not Covered in Course Content	1	3.70

Conclusions

This study found similar institutional characteristics for HRD undergraduate program as prior research on graduate programs. While there was much disparity in program names, 30% of the undergraduate degree names contained the key words: human, resource, and development and 63% of the undergraduate programs sampled were housed in a college of education. These findings reflect the beginning of an expected trend of consistency between undergraduate and graduate HRD related programs.

With the exception of HRD related courses, internships, and work experience/occupational specialty requirements, the course content, exclusive of core university requirements, varied across the programs sampled. This seems to be reflective of the ambiguous nature of the concept of HRD and the fact that there is no universally accepted definitive statement of the meaning of HRD (Mankin, 2001). However, it is also possible that such a finding could be an artifact of differences in college affiliations and themes. Clearly, more research is needed to uncover the underlying themes behind these differences.

Perhaps the most salient findings relate to the mapping of program content to the core components of HRD. Given that HRD and TD are viewed by many as interchangeable terms (Walton, 1999), the preponderance of programs covering training and development as a primary emphasis is not remarkable. However, the lack of programs offering course content in CD is astonishing. Given that the second highest occupation reported by the Department of Labor in the category of human resources are those jobs that deal with career development, it seems that this need is being filled by undergraduate programs outside the disciplines of HRD. Also, given the impending issues relating to the retirement of the baby-boomer generation, one wonders if HRD undergraduates are being educated in concepts such as the stage of life and career development, the career plateau, and new employment relationships. Clearly, HRD undergraduate program coordinators should take care to ensure that their students are being provided a foundation in all the functions of HRD, not just the functions associated with learning. And if such functions are deemed not important to be explicitly covered in course content, perhaps new theoretical models of HRD should be developed that reflect what is being accomplished in business.

This study also provides new insights into future research on undergraduate HRD programs. Given that the number of undergraduate programs is small, it would seem feasible to

interview program coordinators to add another dimension of data to this study. Such interviews would also mitigate the limitation of this study's reliance on program website data. As the researchers had to make assumptions about the content included in courses, follow-on interviews could uncover potential problems with how data were classified. For example, one would expect that the course content described in a program website or document may not always reflect the course content that is delivered. Perhaps, the educational and professional background of the professors teaching HRD related courses would add another layer of information to the data collected. It would also be interesting to survey students participating in internships to determine how much time they spent conducting the three primary HRD functions (i.e., CD, OD, TD) identified in literature.

Implications

While the findings of this study are preliminary, they do provide information for HRD academics to consider. For example, given that the occupational outlook for human resource professionals is expected to grow faster than average through 2014 (U.S. Department of Labor, 2006), is it reasonable to expect that current undergraduate programs can keep up with businesses' need to fill job openings that will arise due to growth and attrition? Also consider a program's college affiliation and its impact on course curriculum. Are core courses required for college of education majors, for example, salient for future HRD professionals, given the differences between educational and business sectors? What about the role of work in undergraduate programs? Could businesses be better served if undergraduate programs required internships for all students that did not have prior work experience? Also consider the relationship between HRD models and undergraduate course curricula. What should the mapping of programs to models be? For example, should all undergraduate programs provide students sufficient education to help them understand how employees select, work within, and make decisions to change their working lives? Or is CD to broad a field to be covered in undergraduate programs? Perhaps, differences in HRD component emphases can be viewed as program differentiators. If so, how does the HRD community maintain the integrity of the field? Theses are just a few of the questions that the researchers hope this study initiates.

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Causal factors and consequences of parent involvement growth: the second-order latent growth curve model

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Abstract

The purposes of this research were to 1) assess the training needs of teachers and parents in parent involvement and 3M principle roles (M1: moral supporter, M2: monitor, and M3: mentor), 2) investigate the results of the school-based training on the teachers' skills, and 3) examine the effects of causal factors and the consequences of the parent involvement growth on the student achievement growth. Participants were 25 teachers and 564 parents of 1-6 grade students at Watpairongwua school. Data were collected via 3 sets of 5 rating scales questionnaire. The mean difference method, the content analysis, and the second-order latent growth curve analysis were the major analytic tools. Results indicated that volunteering dimension was the need of teachers and parents in parent involvement. However, the dimensions that need to improve their mind set were the collaborating with community, the learning at home, and the decision-making. As for the 3M principle roles, it was found that the dimension that needed the development was M1 (moral supporter); the inspiration by general rewards and inspired learning rewards. After the school-based training, teachers obtained research skills, designing and planning the activities that promoted parent involvement, and the effective implementation of activities in accordance with the goals of the development of students. The teachers also learn techniques of coordinating with parents of various groups and could get to know students individually indeed. The implementation of the activities that promoted the involvement of parents enhanced the relationship between teachers and parents. Teachers could gain the wisdom from parents for the development of students. It also created the close relationship between parents and children, which promoted the learning of students accordingly. Furthermore, results showed that the factors that had influences on the parent involvement growth significantly at 0.01 level were the parents' life context and the teachers' skills. Considering the influences of the parent involvement growth on student achievement growth, it was found that the latent slope variable of parent involvement had influences on the latent level variable of student achievement significantly at 0.05 level.

Keywords: School-based training, Teacher skills, Parent involvement, Student achievement, Second-order latent growth curve model

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Introduction

The concepts of partnership and collaboration encouragement among the groups involved, especially family, school and community are considered useful resources for the development of students with different backgrounds (Barbour, Barbour & Scully, 2005). Epstein (1995, cited in Sheldon and Epstein , 2005), suggested a framework that can enhance collaboration in schools through parent involvement. The framework is composed of 6 elements: parenting, communicating, volunteering, learning at home, decision making, and collaborating with the community. It helps schools to create activities that can promote parent involvement in their children's education. The chosen activities must correspond with goals, and effective operations must be planned.

Although parent involvement is important for the quality of education and functions as an important tool in preparing children to live in today's rapidly changing society, the role of parents in education in Thailand is still mostly limited to the traditional school framework, such as attending parent-teacher conferences and receiving information from schools. The research study conducted by Wongwanich et al (2006) revealed that teachers and parents desire to improve their skills so that they can have greater involvement in their children's education. Teachers need to receive training in how to implement activities that can encourage parent involvement and that can create learning opportunities for their students. Parents need to enhance their power of learning, teaching and decision making so that they can help the schools to improve their children (Gordon, 2004). In addition, teachers and parents must follow the 3M roles developed by Wongwanich et al (2006). Under this principle, each party plays an appropriate role to achieve the goal of parent involvement in school activities. The 3M principles include M1 (moral support), M2 (monitor), and M3 (mentor). Therefore, an effort to promote parent involvement includes the development of both teachers and parents so that they work collaboratively to help their learners or their children.

For professional development, training, especially the school-based training concept, is viewed as a basic method to enhance trainees' power (Gordon, 2004). The core of this principle is to help trainees and trainers gain mutual understanding of the goal of training processes and their roles (Wongwanich, 2005). This study, therefore, focused on school-based training, considering it a method that provides teachers with the skills to create activities that encourage parent involvement in their children's education, and that works with the parents to improve learners, which is the ultimate educational goal. This study also studied the changes or the growth of parent involvement in terms of causes and subsequent consequences by using the second-order latent growth curve model. The model has been proved to be a more effective way of measuring change or growth.

Theoretical Concepts

1. Concepts concerning parent involvement

Epstein (1995 cited in Sheldon & Epstein, 2005) classified parent involvement into 6 types: (1) parenting – the family's involvement in creating surroundings that support their children, (2) communicating – two-way-communications about school programs and children's improvement, (3) volunteering – recruitment and system setting to encourage parents to assist

their children's schools, families or other places, (4) learning at home – preparation of information and concepts regarding how families can assist their children with their homework and regarding materials used in the programs, (5) decision making – opportunities to invite parents from all backgrounds to be representatives and leaders in the school board of committee, and (6) collaborating with community – identification and integration of resources and community services to enhance the capability of the school programs and the schools themselves.

Hoover-Dempsey and Sandler (1995, 1997) proposed a theoretical model of parent involvement to explain how it positively affected children's performance. The model revealed factors affecting parent involvement behaviors and mechanisms of the influence of parent involvement that led to children's achievements through their perceptions and characteristics. Hoover-Dempsey and Sandler (2005) used the findings in their study to modify the proposed model, which showed that parents' decisions to be involved in their children's education were mainly based on parent's motivational beliefs, parents' life context, and invitations from the school and children. Perceiving their parents' involvement through their encouragement, reinforcement, modeling and instructions, children gain academic self-efficacy, intrinsic motivation and self-regulation. These finally lead to achievement.

2. Concepts concerning School-Based Training (SBT)

There are 10 significant principles underlying school-based training: (1) the training that is based on the actual problems and the needs of schools and trainees, (2) the training of school teachers or teachers in the community under the supervision of the school, (3) the training of teachers by a group of teachers with expertise and experience in learning reform and in teacher development through the use of school-based training, (4) the training that involves teachers who voluntarily take part in the training, (5) the collaboration between trainers and trainees in conceptualizing problems, planning, and developing activities, (6) the training that provides hands-on-experience, (7) continuous training through a variety of methods, (8) the training that uses the PDCA process, namely Planning, Doing, Checking and Action to make their operations a cycle of continuous development, (9) the training that is supervised, monitored and evaluated based on the "Kallyanamitra" processes, and (10) the training that is considered teachers' regular functioning with the purpose of raising the quality and the standard of the teaching profession, as well as the quality of learners (Pruet Siribanpitak and Aurapan Pornsima, 2003, cited in Office of the Education Council, 2004)

Objectives of the Research

The purposes of this research were to 1) assess the training needs of teachers and parents in parent involvement and 3M principle roles, 2) investigate the results of the school-based training on the teachers' skills, and 3) examine the effects of causal factors and the consequences of the parent involvement growth on the student achievement growth.

The Conceptual Framework of the Research

The research framework of parental involvement growth used in the study was based on the school-based training, and the study of causal factors and influences of parent development

growth, which included 3 variables: (1) parent's motivational beliefs (2) parents' life context, and (3) invitations from schools and children, proposed in the model of parent involvement process by Hoover-Dempsey and Sandler (2005). However, the last variable, invitations from schools and children, was changed to teachers' invitation skills. This reflects the invitation skills of teachers resulting from the school-based training they received. Previous studies on the consequences of parent involvement on learners' achievement revealed that the variables were separately measured only once. In fact, parent involvement should be dynamic, which means it can change in the same way as learners' achievement can. Due to the limitations of the studies in the past, the researchers were interested in studying the causal factors and consequences of parent involvement in their children's education in terms of change or growth. The consequences of the development were considered from the development of learners' achievement, which was measured by their life skills and learning behavior. To analyze the data, the researchers used the second-order latent growth model to study the causal factors and consequences of parent involvement growth. The conceptual research framework and model is presented in Diagram 1.

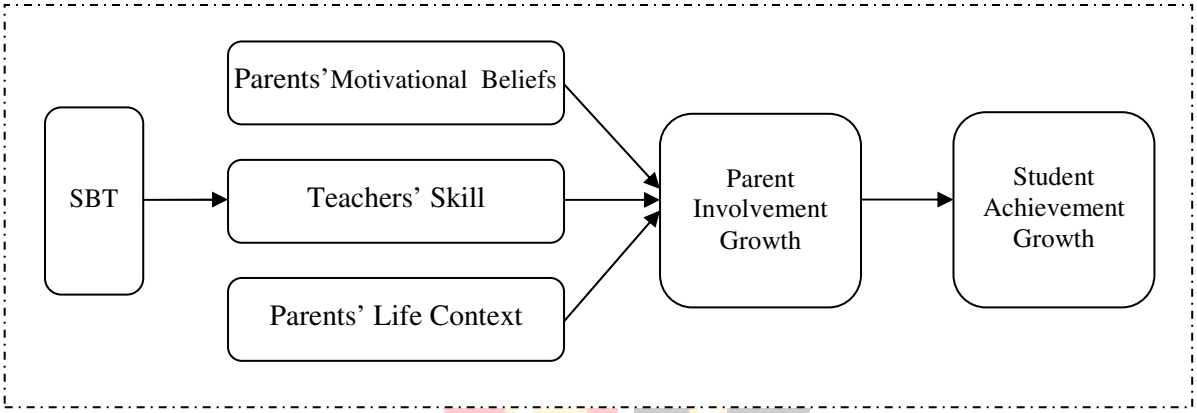

Diagram 1: Research Framework Model

Research Methodology

This research study involved 3 main phases. The first phase, *research phase* (August – September 2006), focused on the needs analysis of teachers and parents concerning parent involvement and the 3M roles. The levels of needs were analyzed by comparing the school's implementation of activities that promoted parent involvement and the 3M roles at present to what was expected. The second phase, *teacher development* (September – October 2006), consisted of 2 periods of training: one which took place during 14 – 15 October 2006, and the other during 30-31 October 2006. There were 5 steps of teacher training: (1) searching for new knowledge (2) demonstrating and practicing (3) reflecting and reviewing (4) practicing independently, and (5) exchanging knowledge. Lastly, the third phase, *parent development* (December 2006 – February 2007), involved 2 steps: (1) parent training, and (2) teachers' implementation of activities that promoted parent collaboration

The population included 25 teachers and 564 parents of the students at Wat Pai Rong Wua School, under the jurisdiction of the Suphanburi Educational Service Area 2. The subjects were divided into 2 groups: (1) the subjects that participated in the needs analysis stage in which the needs of activities to promote parent involvement were assessed. There were 25 teachers and

322 parents of Pratom 1 – 6 students engaging in this stage. Stratified random sampling technique was used to group them. (2) The subjects that participated in the development of parent involvement behavior stage, which consisted of 25 teachers and 564 parents. However, the data analysis by the second-order latent growth curve model could only be carried out using the data provided by 493 subjects since the rest did not provide the researchers with complete information.

This research study dealt with 2 types of variables: (1) the variables that were the causes of parent involvement growth, which consisted of 3 observed variables, namely parent's motivational beliefs, parents' life context and teachers' invitation skills, and (2) the endogenous latent variables and a group of observed variables, which were sub-divided into (2.1) parent involvement growth that was assessed 3 times by the endogenous latent variable called "parent involvement", which was further evaluated by 6 variables, namely parenting, communicating, volunteering, learning at home, decision making, and collaboration in the community; (2.2) development of learners' achievement that was measured 3 times by the learners' achievement endogenous latent variable, which was, then, evaluated by 2 observed variables: life skills and learning behavior.

The research study used 5 sets of 5-rating-scale instruments. The first set was a questionnaire inquiring into activities promoting parent involvement in their children's education. This questionnaire contained 2 types of questions. The second set was a questionnaire inquiring into parent involvement in their children's education. The third set was the evaluation form of learners' achievement. Cronbach's Alpha was used to measure the reliability of each set of instruments. The reliability values were between .72-.97. The investigation of the construct validity by Confirmatory Factor Analysis showed positive results confirming that the variables had construct validity that can be measured by observed variables or the indicators in each model.

Data analysis consisted of 2 parts. The first part concerned the basic data analysis of subjects' background and the basic statistical analysis of variables in the model by using SPSS for Windows. The second part dealt with the data analysis of responses to the research questions. For the data analysis of the levels of needs in training, SPSS for Windows was used. Regarding the analysis of the consequences of training on teachers' skills, content analysis and analysis induction were used. Lastly, the second-order latent growth curve model in LISREL program was used to analyze the causal factors and consequences of parent involvement growth

Results of the Study

1. The use of Mean Difference Method (MDF) to analyze the needs of teachers and parents in parent involvement training to promote parent involvement showed volunteering was the most needed aspect, followed by collaboration in the community, decision making, and learning at home, respectively. Communicating was the least needed. However, according to the data gained from the parents, collaboration in the community was the most needed while volunteering, decision making and learning at home were listed as less needed. Also, the less needed skill was communicating. The analysis of the 3M roles revealed that both teachers and parents would like to be moral supporters the most, followed by monitors and mentors in that order. The comparison between the ideal value and what was expected concerning parent involvement revealed that the value of expectation of the teachers was close to the ideal value whereas the difference in the level of expectation of parents and ideal value was more than 1.

This implied that there should be developments in belief in volunteering and decision making. The comparison of the ideal value and the expectation of the 3M roles showed that there was a difference in the teachers' level of expectation and ideal value at the level of more than 1. This meant development in the belief in the roles of giving moral support and being a mentor were needed. Table 1 shows the needs to develop beliefs in parents' moral support.

Table 1 The level of needs in implementing activities to promote parent involvement and self-development based on the 3M roles

Dimension	Teachers (n=25)				Parents (n=322)			
	What is	What should be	Training Need	Need to improve mind set	What is	What should be	Training Need	Need to improve mind set
Parent Involvement								
1. Parenting	**3.25**	**4.56**	**1.31**	**0.44**	**3.52**	**4.17**	**0.65**	**0.83**
- giving knowledge	3.18	4.63	1.45	0.37	3.53	4.24	0.72	0.76
- gathering information	2.80	4.32	1.52	0.68	3.41	4.13	0.71	0.87
- creating opportunity	3.76	4.72	0.96	0.28	3.63	4.15	0.53	0.85
2. Communicating	**3.86**	**4.63**	**0.76**	**0.37**	**3.79**	**4.27**	**0.49**	**0.73**
- giving knowledge	3.96	4.64	0.68	0.36	3.76	4.31	0.54	0.69
- gathering information	3.82	4.62	0.80	0.38	3.86	4.28	0.42	0.72
- creating opportunity	3.81	4.63	0.81	0.37	3.73	4.23	0.50	0.77
3. Volunteering	**2.12**	**4.31**	**2.19**	**0.69**	**3.04**	**3.82**	**0.78**	**1.18**
- giving knowledge	2.24	4.28	2.04	0.72	2.99	3.72	0.74	1.28
- gathering information	2.00	4.36	2.36	0.64	3.05	3.85	0.80	1.15
- creating opportunity	2.12	4.29	2.17	0.71	3.09	3.89	0.80	1.11
4. Learning at home	**3.02**	**4.43**	**1.41**	**0.57**	**3.42**	**4.12**	**0.70**	**0.88**
- giving knowledge	3.14	4.66	1.52	0.34	3.46	4.19	0.73	0.81
- gathering information	2.88	4.32	1.44	0.68	3.41	4.14	0.73	0.86
- creating opportunity	3.04	4.30	1.26	0.70	3.39	4.03	0.64	0.97
5. Decision making	**2.92**	**4.34**	**1.41**	**0.66**	**3.22**	**3.94**	**0.72**	**1.06**
- giving knowledge	3.08	4.32	1.24	0.68	3.17	3.92	0.76	1.08
- gathering information	2.44	4.28	1.84	0.72	3.23	3.93	0.70	1.07
- creating opportunity	3.25	4.41	1.16	0.59	3.27	3.98	0.71	1.02
6. Collaborating with community	**2.65**	**4.48**	**1.83**	**0.52**	**3.25**	**4.09**	**0.84**	**0.91**
- giving knowledge	2.64	4.48	1.84	0.52	3.30	4.07	0.77	0.93
- gathering information	2.48	4.52	2.04	0.48	3.10	4.06	0.95	0.94
- creating opportunity	2.84	4.44	1.60	0.56	3.35	4.15	0.80	0.85
3M roles								
Moral supporter	**2.71**	**3.94**	**1.23**	**1.06**	**3.13**	**3.85**	**0.72**	**1.15**
- providing verbal support	3.42	4.17	0.75	0.83	3.61	4.11	0.50	0.89
- giving general rewards	2.67	3.75	1.08	1.25	2.84	3.64	0.80	1.36
- giving rewards that promote learning	2.04	3.92	1.88	1.08	2.93	3.79	0.86	1.21
Monitor	**2.83**	**4.21**	**1.38**	**0.79**	**3.40**	**4.11**	**0.71**	**0.89**
- awareness of what to monitor	3.04	4.38	1.33	0.63	3.37	4.02	0.65	0.98

Dimension	Teachers (n=25)				Parents (n=322)			
	What is	What should be	Training Need	Need to improve mind set	What is	What should be	Training Need	Need to improve mind set
- follow up of working behavior	2.83	4.21	1.38	0.79	3.44	4.17	0.73	0.83
- assessment of performance	2.63	4.04	1.42	0.96	3.39	4.14	0.75	0.86
Mentor	**2.29**	**3.97**	**1.68**	**1.03**	**3.42**	**4.15**	**0.73**	**0.85**
- setting an appropriate learning goal	2.33	3.92	1.58	1.08	3.38	4.13	0.75	0.88
- promoting and seeking learning opportunity	2.38	4.00	1.63	1.00	3.41	4.13	0.72	0.88
- developing oneself to be a good source of learning	2.17	4.00	1.83	1.00	3.48	4.19	0.72	0.81

2. The development of the training program used in this research was based on the school-based training framework, which consisted of 4 processes: step 1 – preparation before training, step 2 – training, step 3 – implementation, and step 4 – exchanging knowledge. Using the information obtained from the evaluation of the needs for training, the researchers designed a training program that was relevant to the actual problems and the needs of the school and the participants in the program. The training focused on giving the participants hands-on-experience through collaboration in brainstorming, planning, and problem solving processes. In addition, observations, meetings, knowledge exchanges, analyzes, criticism as well as group and individual consultation were also emphasized to improve the quality of the implementation, and make it appropriate for learner development. "Kallayanamitra" follow up processes and a full cycle of evaluation based on the PDCA process were included. Moreover, the use of persuasive techniques to encourage teachers to participate in the training and implementation of activities that promoted parent involvement by encouraging teachers to write up the results of the implementation as their action research projects was also highlighted. Based on the information gained from the evaluation of needs, related literature, and direct experience of the researchers and the teachers concerning previous training, the development of the training curriculum was processed with collaboration among the researchers and teachers in Watpairongwua School. The training involved 7 processes: (1) determining goals/aims, (2) creating the content of the program, (3) determining methods of training, (4) determining materials and equipment used in the training, (5) writing a training plan, (6) implementing the training, and (7) evaluation of the training shown in Diagram 2.

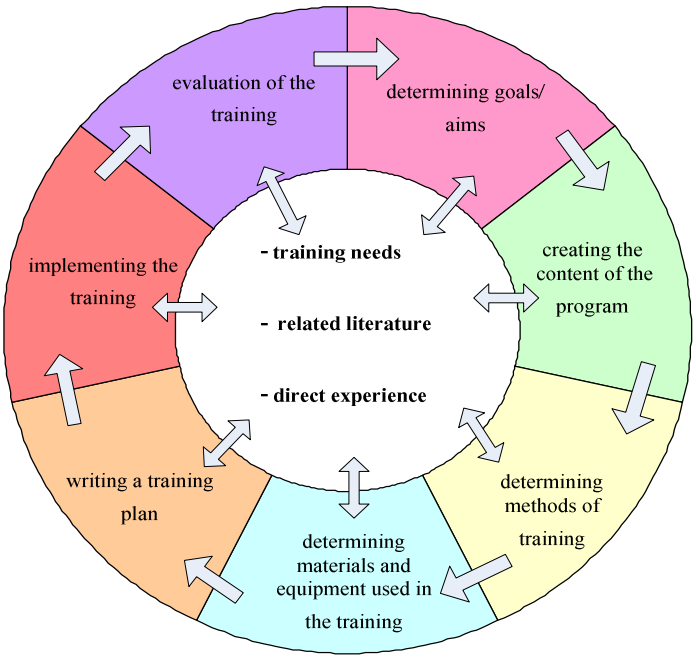

Diagram 2: Training Model
Source: Developed from the Needs-Centered Training Model (Beebe, Mottel & Roach, 2004)

The results of the training showed all 25 teachers attended the program, paid attention to what was trained, and showed responsibility for their duties. They were satisfied with the friendly learning atmosphere between the trainer and the trainees, and among the trainees themselves. The teachers were satisfied with the trainer, the method and the content of training. It was found that after the training, most teachers were more enthusiastic in doing their job, and perceived the value of working collaboratively with parents in developing the learners. The results from the teacher training consisted of 14 research proposals of the teachers, 14 activities that promote parent involvement and the 3M roles, and the activity implementation plans that would be conducted during school semesters. The results of the training were presented in Diagram 3.

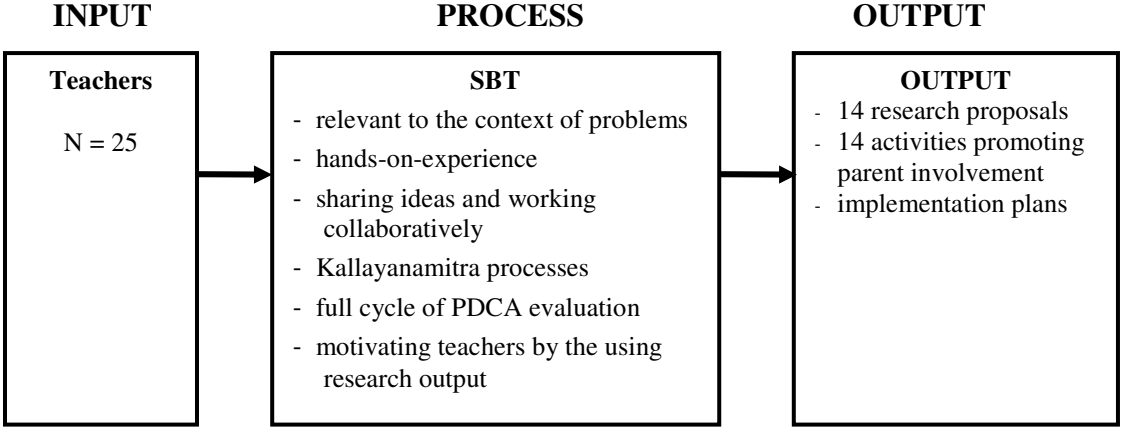

Diagram 3: The Results of the Training by Using School-based Training (SBT)

The implementation of the activities to increase parent involvement in their children's education as mentioned earlier included 2 main activities: (1) activities promoting parent involvement by creating awareness and knowledge concerning their involvement and the 3M roles. The training was divided into 3 parts. The first part was ice-breaking activities. The second part was a Walk Rally activity. And the last was a meeting between teachers and parents to set up their roles in helping each other develop learners. The results of the parent training showed that parents attentively participated in the activities. They planned their work together. They had fun participating in each activity, and gained knowledge from the discussion they exchanged. Parents could determine how they would take part in developing their children by following the activities the teacher created. After the activities, teachers learned how to communicate with parents from a variety of backgrounds. Teachers learned more about the individual learner. Not only did the activities improve the relationships between teachers and parents, but they also built closer relationships between parents and their children. In addition, teachers gained information regarding parents' knowledge and abilities. They, therefore, could invite these parents to be speakers to share their knowledge with the students in the school. The results of parent involvement development were shown in Diagram 4.

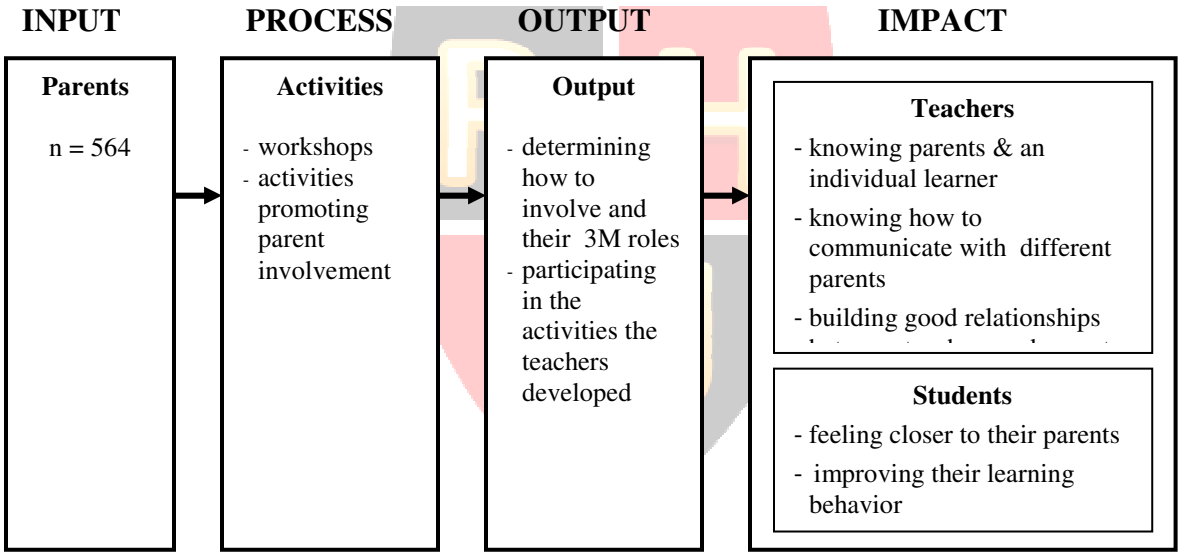

Diagram 4: The Results of Parent Involvement Development

3. The results of the analysis of parent involvement growth showed a linear development model corresponding with the empirical data in both parent involvement and development in learners' achievement more than other variables. According to the study of the causal factors and the influences of parent involvement growth, the proposed model matched the empirical data. (Chi-square value = 150.05, p value = .079 degree of freedom = 127, NNFI index = .998, and RMSEA value = .019) The reliability coefficient values of the observed variables in the model were between .130-.902. The variable that gained the highest reliability coefficient value was from the third measurement of learning at home. The variable that had the lowest reliability coefficient value was from the third measurement of learning behavior. The variables in the model could explain the variance in the latent variable of parent involvement growth, the latent slope variable of parent involvement development, the latent variable of learners' achievement

development, and the latent slope variable learners' achievement development at the level of 45.60%, 27.30%, 29.63%, and 19.40 %, respectively

When the variables in the model were considered, it was found that the variables that significantly influenced parent involvement growth at the level of .01 were parents' life context and teachers' skills. When considering the influence of parent involvement growth on learners' achievement, the researchers found that the latent slope variable of parent involvement significantly influenced learners' achievement at the level of .05, but had no significant influence on the latent slope variable of learners' achievement at the level of .05 as shown in Table 2 - 3 and Diagram 5.

Table 2 Path Analysis of the Model of Causal Factors and Consequences of Parent Involvement Growth

Variable	**PI_L**			**PI_S**			**ACH_L**			**ACH_S**		
	TE	**IE**	**DE**	**TE**	**IE**	**DE**	**TE**	**IE**	**DE**	**TE**	**IE**	**DE**
MBL	0.004 (0.003)	-	0.004 (0.003)	-0.394 (0.045)	-	-0.394 (0.045)	-0.095 (0.037)	-0.095 (0.037)	-	0.008 (0.006)	0.008 (0.006)	
LCT	-0.001 (0.002)	-	-0.001 (0.002)	0.350** (0.036)	-	0.350** (0.036)	0.087 (0.034)	0.087 (0.034)	-	-0.004 (0.004)	-0.004 (0.004)	
TSK	0.002 (0.002)	-	0.002 (0.002)	0.132** (0.026)	-	0.132** (0.026)	0.035 (0.015)	0.035 (0.015)	-	0.001 (0.002)	0.001 (0.002)	
PI_L							1.000	-	1.000	1.000	-	1.000
PI_S							0.252* (0.097)	-	0.252* (0.097)	-0.008 (0.013)	-	-0.008 (0.013)
χ^2 = 150.055 df = 127 p = 0.079 NNFI = 0.998 RMSEA = 0.01												
Variable	PARt1	COMt1	VOLt1	LRNt1	DCSt1	COLt1	PARt2	COMt2	VOLt2	LRNt2	DCSt2	COLt2
Reliability	0.427	0.451	0.354	0.874	0.456	0.437	0.406	0.436	0.322	0.907	0.414	0.395
Variable	PARt3	COMt3	VOLt3	LRNt3	DCSt3	COLt3	LSt1	LBt1	LSt2	LBt2	LSt3	LBt3
Reliability	0.442	0.447	0.338	0.902	0.441	0.418	0.505	0.530	0.361	0.408	0.352	0.130
SEM		PI_L	PI_S	ACH_L	ACH_S							
R^2		0.456	0.273	0.296	0.194							

Table 3 Correlation Matrix between the Latent Variables

Latent Variables	PI_L	PI_S	PI1	PI2	PI3	ACH_L	ACH_S	ACH1	ACH2	ACH3	MBL	LCT	TSK
PI_L	1.000												
PI_S	0.336	1.000											
PI1	0.749	0.583	1.000										
PI2	0.854	0.671	0.912	1.000									
PI3	0.901	0.732	0.857	0.955	1.000								
ACH_L	0.207	0.151	0.073	0.081	0.080	1.000							
ACH_S	0.419	0.718	0.012	-0.014	-0.034	0.300	1.000						
ACH1	0.249	-0.283	0.048	0.054	0.048	0.776	0.457	1.000					
ACH2	0.362	-0.473	0.052	0.040	0.875	0.724	0.793	0.042	1.000				
ACH3	0.389	0.047	0.033	0.037	0.031	0.792	0.820	0.758	0.172	1.000			
MBL	0.561	0.552	0.486	0.482	0.608	0.693	-0.019	0.025	0.021	0.013	1.000		
LCT	0.621	0.522	0.530	0.666	0.757	0.050	-0.006	0.034	0.033	0.027	0.918	1.000	
TSK	0.407	0.323	0.343	0.428	0.484	0.038	0.015	0.030	0.035	0.032	0.865	0.594	1.000

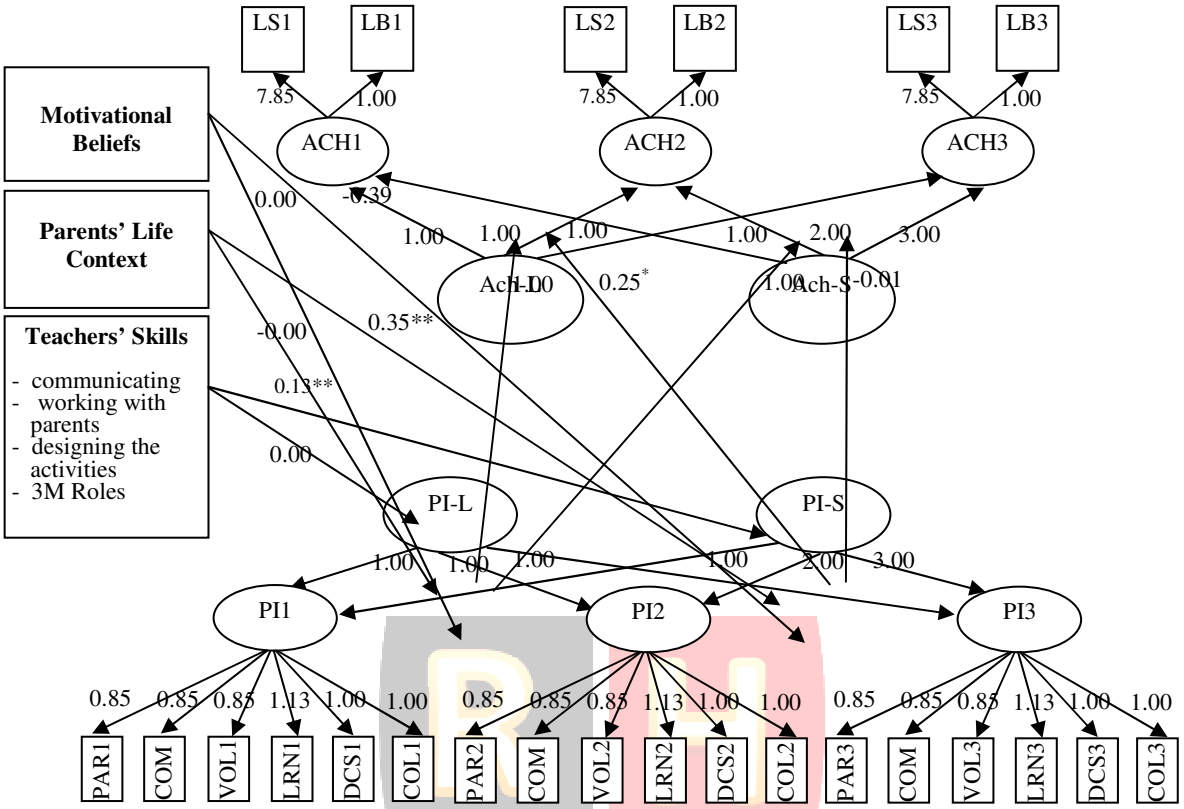

Diagram 5: The Model of Causal Factors and Consequences of Parent Involvement Growth

The model consisted of 3 variable groups: 1) causal variables including; Parents' Motivational Beliefs, Parents' Life Context, and Teachers' Skill; 2) parent involvement growth including parent involvement (PI) from 3 repeated measure. PI was defined by Epstein's 6 types of parent involvement including: Parenting (PAR); Communicating (COM); Volunteering (VOL); Learning at home (LRN); Decision making (DCS); Collaborating with community (COL); 3) achievement growth including achievement (ACH) from 3 repeated measure. Ach was defined by Learning behaviors (LB) and Life skill (LS). The number represented measure time.

Research Discussion

There were 4 main issues derived from the results to be discussed. The first issue was the needs of teachers and parents in parent involvement training. The second was the results of the training on teachers' skills. The third was the causal factor and the consequences of parent involvement growth on learners' achievement, and the fourth was research limitations.

1. The needs of teachers and parents in parent involvement training and the 3M roles

The evaluation of the needs in parent involvement among teachers and parents showed the same direction of needs in parent involvement and the 3M roles. This might be because both groups correspondingly received the information concerning activities implementation of the

school. This reflected the school's ability to publicize information and news to parents, and also corresponded to the research finding that showed communication was the least needed when compared to other aspects of parent involvement.

The results of the comparison between the ideal value and the expected picture concerning parent involvement showed that teachers' expectation was similar to the ideal value while for the parents group, the difference in the ideal value and the expected picture values was more than 1 in the aspects of volunteers and decision making. This showed teachers realized the importance of parent involvement in developing learners while parents did not perceive the importance of volunteering and decision making as important. Parents still believed that teachers should be the individuals who played a significant role in developing learners. This might be because after the recent education reform, teachers have gained more insight into how to get parents more involved in education. In addition, from teachers' past experience, parents had significant roles in implementing various activities in the school, especially those that could develop learners' development. This led to the expectation by teachers of more parent involvement in education. Regarding the difference of the ideal value and the expected picture in the 3M roles, the difference of both extremes concerning motivation in the views of both groups was more than 1. This might be because of teachers' and parents' beliefs in taking care of their own responsibilities. For example, parents' responsibility was to nurture and teach their children. Therefore, it was a common practice for both teachers and parents to be responsible for their duties. Both teachers and parents, then, felt that motivation was not important. This also reflected the beliefs of people in the provincial communities. They believed that praising or motivating their children could end up spoiling them. This concurred with Suwimol Wongvanich et al (2006), who also found less of a parents' role in motivating their children.

2. The results of the training on teachers' skills

The developed model of teacher training was based on school-based training. It was composed of 4 stages, namely preparation before training, training, implementing, and exchanging knowledge. These stages corresponded with the process and the operational methods proposed in the school-based training program of UNESCO (1986) and the Office of the Education Council (2004).

School-based training focused on collaboration learning between trained teachers and trainers (Suvimol Wongvanich, 2005). Teachers' interest was aroused when the opportunity was given to them to be involved in setting up the curriculum and the training styles that met their needs. Motivating them to write up their research studies also contributed to an increase in their interest. The output of the training in how to design activities and how to plan activities was created by the teachers leading to greater pride in themselves and enthusiasm in preparing, designing instruments, and implementing activities as planned.

After the implementation of parent involvement activities, it was found that the activities that the researchers and the teachers at the school used in the workshop to build awareness and insight into the importance of parent involvement in their children's education, and into the importance of the 3M roles were informative, entertaining, and practical. It conformed to the research study conducted by National Youth Bureau (2002) that claimed the training style that was suitable for providing families with knowledge was that of workshops.

The results of the synthesis of activities promoting parent involvement and the 3M roles that the teachers developed showed that every activity focused on developing the 3M roles of

parents, which were motivating, monitoring, and mentoring. It was found that most activities concentrated on developing parent involvement in the aspects of learning, followed by nurturing and volunteering, decision making, communicating, and collaboration with community, respectively. This was different from the results of the study conducted by Suwimol Wongvanich et al (2006) in which they showed the school organized activities to develop the role of parents in nurturing their children the most. Communicating and collaborating in community, volunteering, learning at home, and decision making were listed next in rank order. The reason behind this was that the teachers set the aim of the development by focusing mostly on the learning aspect. Therefore, activities that teachers developed focused a lot more on learning at home.

3. Causal factor and the consequences of parent involvement growth on learners' achievement

According to the analysis of parent involvement growth, key variables that influenced parent involvement growth were teachers' skills and parents' life context. This meant that teachers possessed an ability to promote parent involvement in their children's education. It showed that school-based training could help the teachers gain the ability to create activities to do so. The teachers exchanged knowledge and made progress in their work based on the framework of school-based training. Lessons that the teachers learned could be concluded and integrated into other aspects of learners' development such as support of local wisdom, development of an individual learner etc. Parents' life context involving spending available time with their children, and the capacity of developing their children influenced parent development in the same way as proposed in the model designed by Hoover-Dempsey and Sandler (2005), and in the research study by Hong and Ho (2005). These groups of researchers found that parent involvement influenced learners' achievements.

In terms of the influence of parent involvement growth on learners' achievement, the latent slope variable of parent involvement had an influence on the latent variable of learners' achievement, but no influence on the latent slope variable of learners' achievement. This was perhaps due to, in the model of parent involvement, developing learners' achievement being influenced by parent involvement via learners' characteristics (Hoover-Dempsey and Sandler, 2005). Eliminating these variables with the hope to reduce the complexity of the model might negatively affect the influence line.

4. Limitations

There were 2 limitations, namely the sample group and the length of time spent in implementing activities that promoted parent involvement. The first limitation concerned the sample group used in the data analysis phase to study parent involvement growth since 21.67% of the parents did not participate in the training on building awareness and understanding in parent involvement, and the 3M roles. This might lead to different levels of parent involvement growth. The researcher, however, did not analyze the data gained from the subjects with different conditions separately. The second limitation was the time spent on each activity. Since the activities that the teachers created required different amounts of time to complete; for example some activities could be done within 1 month while others might take more than 1 month to

complete and they, then, started with different levels of development depending on teachers' readiness. This might also affect the measurement of parent involvement growth.

Suggestions:

1. Suggestions for making use of the results of the study

(1) The training model developed in this study was based on the school-based training that participants needed. Therefore, applying this training model in other situations must be done with caution. Careful consideration on the actual problems and the needs of the school, and of the participants is required. The training focused on providing the participants with actual practice through conceptualization, plans, collaborative work between trainers and trainees in solving problems, knowledge exchanges as well as group and individual consultation. This was to improve their work and make the plan suitable for learners' development. In addition, the Kallayanimitra follow-up and a full cycle of PDCA evaluation process were also included.

(2) The conditions underlying the success of this program were as follows. Firstly, stretching the training periods after the semester ended and before the new semester started allowed the teachers some time to develop their research proposals, and prepare themselves before starting work in the new semester. Secondly, motivation through the use of research output resulted in teachers paying attention to developing and implementing activities promoting parent involvement. Moreover, the administrators' view on the importance of the training was part of the success. The administrators' roles included giving moral support to the teachers, following up with the success of the teachers' success, and accommodating all activities the teachers organized such as providing them with equipment and places to organize activities.

(3) Parents' belief must be further developed since the findings showed limitations in their belief in the importance of their roles on their children's education. The importance of their participation in their children's education must be publicized, or strategies must be used to change their attitudes to make them believe that education management and learner development require collaboration among all individuals involved.

2. Suggestions for future research studies

The effective development of parent involvement should begin with the change in parents' attitudes. Parents still believe that teachers or schools have a dominant role in education management. An effective method of changing their attitudes is needed, especially for the group of parents who do not value their children's education.

The study of the influence of parent involvement growth on learners' achievement showed that parent involvement growth significantly influenced the latent variable of learners' achievement at the level of .05, but had no significant influence on the latent slope variable of learners' achievement. This was perhaps due to the elimination of a mediating variable between parent involvement and learners' achievement in order to reduce the complexity of the model. This might lead to no significant relationship between the variables. Therefore, it is suggested that future research studies include such variables as self efficacy, self regulation, intrinsic motivation, etc.

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