

Behavioral Science Research Degrees in the New Millennium

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According to a new regulation of the Office of Higher Education in the Ministry of Education of Thailand, every curriculum has to be improved within 5 years from the date that the new regulation will come into effect. The Behavioral Science Research Institute at Srinakharinwirot University, which is now offering an Applied Behavioral Science Research Degree Program (ABSRDP), is in the process of program improvement. In doing so, related model(s) and empirical evidence about education and training doctoral graduate students in the past decades should be reviewed so that a desirable new curriculum could be proposed. The literature reviewed in this article is mostly in the discipline of psychology, which composes the main content taught in the ABSRDP.

The purposes of this article are 1) to summarize the current ABSRDP, 2) to review researcher training model(s), 3) to review factors affecting research training and research productivity, and 4) to propose a degree program in behavioral science research.

The Applied Behavioral Science Research Degree Program

The Behavioral Science Research Institute has offered the ABSRDP since 1984. The purpose of the program is to create a researcher, a lecturer, and a developer of human resources for the welfare of individuals and society. The program has a philosophy that the graduate who can conduct excellent research should be well equipped with a variety of methodology skills and multidisciplinary content which includes psychology, sociology, education, and other related sciences. Moreover, the

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graduate should be highly moral and maintain research ethics and professional standards. The degrees conferred are M.S. and Ph.D. in Applied Behavioral Science Research. The degree title clearly indicates that the focus of the program is research training. The program is divided into 2 types: 1) the coursework plus dissertation and 2) 2 research projects plus dissertation. The theme of the curriculum is about socialization, preparing individuals to be productive and effective members of society. In this article, I will focus on the first type of doctoral program.

The courses offered are categorized into 3 groups: 1) research methodology and statistics, 2) content about work socialization and topics related to the well-being and the effectiveness of individuals, organization, and society, and 3) research practice. The program now provides students with more credits for elective courses so that they can learn according to their interests and strengths or weaknesses. Since the number of required credits for elective courses is greater, the number of required compulsory courses is fewer and some of the original courses have to be fused into a new course. This also happens to statistics courses. Students who are quantitatively oriented or who would like to strengthen their statistics knowledge have to take other advanced statistics courses.

Since the purpose of the program is to create a researcher, a lecturer, and a developer, an appropriate model to be reviewed will be a scientist-practitioner model. The model is debated regarding the outcomes of the program, and whether it produces a clinical psychologist to be a researcher or a practitioner.

The Scientist – Practitioner Model

The term scientist-practitioner has been transformed from scientist-professional which was first coined at a Boulder, Colorado, conference in 1949 (Fraser, Jensen, & Lewis, 1991) in the debate on graduate training in research methods for a clinical psychology program. In 1990 this model was discussed again in the National Conference on Scientist-Practitioner Education and Training for the Professional Practice of Psychology held in Gainesville, Florida. The purpose of the conference was to

define the essential characteristics of the scientific-practitioner model (Belar & Perry, 1992).

The graduate of this training model is capable of functioning as an investigator and as a practitioner, and may function as either or both, consistent with the highest standards in psychology. The integration of scientific methods with professional practice is the focus of this model. The model is not restricted to specific content areas. I consider that this model can cover many areas of behavioral sciences which embody an overall theoretical, empirical, and experiential approach. Thus, the scientific-practitioner model could be applied to a multidisciplinary approach of ABSRDP. It is quite clear that the aim of this model is equivalent to the purpose of ABSRDP. I will summarize the main ideas of the model from the conference policy statement in 1990 and later propose an ultimate research training degree program in behavioral science.

Basic Principles of the Model

The scientific-practitioner model of education and training in psychology is an integrative approach to science and practice. Education and training in the scientific-practitioner model provide the student broad exposure to the knowledge base in the science of psychology and related fields that form the foundation of the discipline. The graduate education of applied and professional psychologists includes the conduct of scientific research as well as the application of products of psychological research. The student should be taught to use research results professionally in his or her professional practice as well as to conduct his or her own research.

The integration of education and training in the model is a continuous process. Socialization of the student within the model is an integral part of the process which requires appropriate role models who demonstrate appreciation for both scientific inquiry and practice in psychology.

The scientist-practitioner model produces a psychologist who is uniquely educated and trained to generate and integrate

scientific and professional knowledge, attitudes, and skills so as to further psychological science, the professional practice of psychology, and human welfare.

Components for the Preparation of the Scientist-Practitioner

The components for the preparation of the scientist-practitioner consist of a didactic component, an experiential component, and the integration of all education and training. The goal of the didactic scientific component is to ensure mastery of the material in the body of knowledge in psychology. This mastery includes issues of normal and abnormal behavior and human life span development. The curriculum shall encompass instruction in professional ethics and standards, research design and methodology, statistics, and psychological measurement. The history and systems of psychology must be included in every doctoral program in professional psychology. The area contents program content should include biological, cognitive-affective, and social bases of behavior, and individual behavior of the model.

The second component, the scientific experiential component, involves a student's learning by doing, participating, and contributing to knowledge. Scientific experience may occur in the classroom, through tutorials, in laboratory/field experiences, and in the close supervision. Moreover, doctoral dissertation should be viewed as a learning experience. Students should be encouraged to select research topics and methods relevant to their development as scientist-practitioners; therefore diversity in methods is endorsed.

Factors Affecting the Research Training Outcome

The scientist-practitioner model of graduate education has been a source of controversy for decades since its inception. One of the debates is about the fact that few practitioners in professional psychology produce research. Gelso (1993) argued that the most effective setting in which to influence scientific production

is the graduate training situation. He posited some ingredients which have received moderate-to-strong empirical support.

He proposed that graduate students' research attitudes and eventual productivity will be positively affected to the extent that the following ingredients occur. The first and probably the most important research-enhancing ingredient is scientific behaviors and attitudes of the faculty. The faculty members need to be intrinsically interested in conducting research and need to be involved in research themselves. Second, the department needs to provide sufficient research opportunities, encourage research, and reinforce research efforts. The encouragement-reinforcement could be many and varied. Third, students should be involved in research early in their training and in a minimally threatening way. Beginning research seminars, participation on research teams, and work with individual faculty members are examples of possible early training. Those who are not mathematically oriented may find statistics to be a threat. Students may learn to use statistics in an actual research course and in their research experiences. Fourth, students need to be taught that each and every empirical study has inevitable limitations so that they are not afflicted by this "perfect research" malady. Fifth, students need to be taught and facilitated to use varied methodologies. Finally, the integration between research and practice needs to be introduced and demonstrated to students.

Gelso's results are similar to the findings of Shivy et al., (2003) which revealed that students ranked "faculty modeling," "positive reinforcement," and "early involvement" as the most important aspects of the training environment. Moreover, Shivy and colleagues found that interpersonal factors constituted the most important factor in a research-training environment. Faculty advisors who are helpful, caring, and involved with students draw them into research. Besides, faculty advisors who are passionate and positive about their research and convey that passion likely motivate students.

Some psychologists (e.g., Krebs, Smither, & Hurley, 1991) argue that both training environment and personality and dispositional characteristics are related to research productivity. Krebs et al. (1991) studied graduates of doctoral program in counseling psychology and found that research productivity was

positively correlated to Vocational Personality Inventory (Investigative) scores, five of nine Research Training Environment Survey scores were positively correlated with research productivity, and that there was an interaction between the two variables. The interaction indicates that a strong research training environment positively influences research productivity only for respondents with relatively strong investigative interests.

Zachar & Leong (1992) studied graduate students in psychology departments containing both APA-accredited counseling and clinical programs and an experimental program. The results indicated that interest in scientist activities and interest in practitioner activities were both predicted by the same variables, but in opposite directions. The theoretical orientation embracing an objective view of the world was most predictive of scientific interests. The theoretical orientation embracing a subjective view of the world was most predictive of practitioner interests.

Other studies indicated other personality variables correlated to research productivity. For example, Helmreich et al. (1978) and Helmreich et al. (1980) found that among academic (personal or social) psychologists, achievement motivation correlated positively with both number of publications and number of citations.

In Thailand, Winai Damsuwan (1999) studied both situational and personal variables affecting the intention of the faculty of a public university to achieve academic excellence in research. He found that self-esteem and subjective expected utility had an indirect effect via research volition on intention. The researcher recommended the university develop appropriate reward structures, work norms, research climate, and research experience to the faculty to promote the intention to achieve academic excellence in research.

Graduate Training of Research in America

Methodology Training

A survey of 186 departments offering a Ph.D. in psychology in the United States and Canada to assess training in statistics,

measurement, and methodology conducted by Aiken et al. (1990) found that Ph.D. students were receiving traditional training in methodology and statistics, training that supported laboratory rather than field research. Applied behavioral scientists have now turned their attention to a variety of new research questions that address issues in the setting outside the laboratory. Students working in field settings received training techniques that were rarely applicable to their research questions and settings. Moreover, new and important quantitative methods such as causal modeling, confirmatory factor analysis, and meta-analysis were not being taught in the majority of graduate programs. Finally, measurement has declined substantially in the curriculum.

Dissertation Preparation

Typically, after graduate students have finished their coursework and qualifying examination, they choose a topic and advisor, develop a proposal, and carry out the research. Prior coursework in content, methodology, and statistics are presumed to be sufficient preparation for the dissertation. However, research advisors realize that the process of preparing a research proposal engenders frustration, anxiety, and avoidance. Thus, research preparatory course has been offered in some graduate programs. The Virginia Consortium for Professional Psychology (VCP), "Psychological Research Planning" was taught at the end of students' second years following their completion of comprehensive exams. Cash and Sanchez-Hucles (1992) studied 35 second-year, VCP clinical psychology doctoral students who completed this course. The course's principal purposes were to achieve attitudinal improvements among students and to facilitate the initiation of individual dissertation planning. "Attitudinal" here refers to students' dispositions towards research activities and includes affective, cognitive, and behavioral aspects of planning, analyzing, documenting, and defending their dissertation projects. The text used was Sternberg's *How to Complete and Survive a Doctoral Dissertation Topics*. This text was covered during class

meetings. Topics covered included selection of a research topic; the politics, policies, and resources of the dissertation process; selection of an advisor and committee; methods and resources for a literature search; development of a research design and hypotheses; proposal writing and defending; the ethics review process; strategies for time and project management and data collection; computerized data entry and analysis; writing the dissertation; the formal dissertation defense; and the management of anxiety, resistance, and social support. Each student finally submitted an abstract of a proposed dissertation, naming a potential chair (with whom he or she had actually consulted) and possible committee members.

The design and analysis of this study used four (between classes) by two (pre-post repeated-measures) multivariate analyses of variance. The results of the study revealed that the course significantly enhanced students' self-appraised knowledge and skills, strengthened self-efficacy expectancy concerning the requisite tasks of the dissertation, and reduced anxiety about the process.

Behavioral Science Research Degrees in the Future

The behavioral science research degree to be proposed is based on the scientist-practitioner model, the literature review, the current situation of graduate study in Thailand, and the writer's opinion.

Admission and Recruitment

Usually the number of doctoral students accepted by the graduate program for many curriculums in Thailand is a fixed number, such as 5 or 10, for each batch. This happens because the graduate school (Srinakharinwirot University, for example) has a regulation that each department proposes the number of students to be accepted before the application. Before making a decision on the number of students accepted each year, the department, especially the advisor, should consider how many students each advisor can properly supervise. Thus, the number of students

accepted in each batch is not necessarily fixed. The applicant should also make sure that he or she learns not only about the specialization of the program and the faculty but also the advisor who can devotedly supervise the expected topic of interest.

There is evidence that the active involvement of students in research during their master's degree has a positive effect on their decision to prepare a thesis (Mummendey, 1996, p. 127 cited in Baldauf, 1998, p. 170). The research experience, whether the student's involving in the faculty's research project or conducting enthusiastically his or her master's thesis or creating one's own research after graduation should be a necessary criterion of recruitment which may be a good predictor of research interest and finally, research productivity.

The information on criteria used by graduate selection committees in psychology from the U.S. graduate programs was updated by Lawson (1995). Some of the most important selection criteria used by graduate programs in psychology in the United States are Graduate Record Examination (GRE) scores, grade point average (GPAs), and other nonobjective criteria (research experience, work experience, extracurricular activity, clinically related public service, and letters of recommendation).

These criteria are also used by the graduate programs in Thailand but the academic aptitude test is constructed by the Thai universities. However, the GPAs of universities are hardly comparable because of the differences among the standards of evaluation. Moreover, some graduate programs have applicants take an entrance examination in order to examine their knowledge in relevant areas of study. The purpose of study of the applicant should be more emphasized to see whether it matches with the goal of the program.

Most doctoral programs ask for two to three letters of recommendation. However, the letters are not seriously considered in some departments because most of the letters only touch on positive aspects, deliberately leaving out an applicant's shortcomings. Thus, a better way to consider letters of recommendation is to examine the extent to which these perceptions match how he or she is seen by others (Mitchell, 1996). Strong recommendations from thesis advisors during his

or her Master's degree and those from his or her superordinate convey that the applicant has a genuine interest in research and will be an effective practitioner.

As the literature suggests that the personality dimension is correlated to either the scientist's or the practitioner's characteristics, a measurement of the applicant's personality should be considered. This is not a criterion to accept or not accept the applicant but it is an informative measure for the advisor to appropriately supervise him or her to select courses or recommend experiences to fulfill the applicant's weakness.

Preparation of a Researcher-Practitioner

I use the term researcher instead of scientist in agreement with the title of the ABSRDP and the main purpose of the program. The preparation of the researcher-practitioner could be categorized into two components: a didactic component and an experiential component.

For the didactic component, graduate students in research training degrees in behavioral science should master the body of knowledge in the discipline of psychology, sociology, and related areas. The three foundations of human behavior: biological, cognitive-affective, and social bases, should be involved in the curriculum. It seems difficult for students to master both psychology and sociology; therefore, the behavioral science research degree program should have themes of study so that students will focus on one theme.

Concerning research methodology, only a quantitative approach used to study the behavior of individuals and social problems, which are so complex, is not enough. Qualitative and mixed methodology should be taught. Furthermore, the curriculum should encompass advanced statistics, research design, and measurement. At present, a measurement course is not offered in ABSRDP at the doctoral level. A similar situation also occurs in the United States. Cone and Foster (1991) found that only 13% of the departments offer full courses in test construction.

The experiential component is the degree to which a student is involved in learning by doing, participating, and

contributing to knowledge (Belar & Perry, 1992). Students should be introduced to research in content courses or participate in research practice very early in the program so that they will be familiar with research and have a positive attitude towards conducting research later. Faculties who express their intrinsic interest in research activity and who have warm and helpful personalities will enhance students' research attitudes and sense of self-efficacy. The preparation of a dissertation could be taught in the form of a research practicum course which covers the content and process of "Psychological Research Planning" (Cash and Sanchez-Hucles, 1992). Moreover, the climate of the research proposal defense and oral examination of the dissertation should be academic-friendly rather than threatening. This will enhance good impressions in students on the research experience and a sense of achievement.

Finally, the scientist-practitioner model emphasizes the integration of scientific methods with professional practice. The content of psychology or multidisciplinary courses should always be related to empirical evidence and other elements of scientific processes, such as defining research problems, critical thinking, hypothesis testing, and discussing research results. Furthermore, the practice of being a developer or a trainer should be based on empirical research. The multidisciplinary nature of research and the elements of research should be continuously integrated and reinforced throughout the program.

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