

# Senior Thesis/Capstone Approach

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## Where do you find a Senior Thesis/ Capstone Course and How is it defined?

Perlman and McCann (1999) examined how capstone courses are structured within the Psychology undergraduate curriculum using an online catalogue. Not surprisingly, they found the likelihood of requiring a capstone course was dependent on the type of institution. At baccalaureate colleges 82% required a capstone course, compared to 77% at comprehensive institutions and 28% at doctoral institutions. The capstone course required a senior research project at only 5% of the institutions studied. Although we would argue that a culminating research experience provides the most effective way for students to integrate knowledge learned throughout the curriculum and apply their knowledge of the discipline in an engaging learning experience, there are a number of alternative capstone experiences found in undergraduate Psychology programs. The most common alternative senior courses or senior experiences include an issues-oriented course, a history and systems course, a content course such as developmental or cognitive, or an internship or practicum as a senior-year requirement (Ault & Multhaup, 2003).

In a follow-up investigation, Perlman and McCann (2005) focused on undergraduate research experiences to determine what students actually do when they practice psychological research. For questions pertaining to an undergraduate thesis or major project, once again the requirement varied by type of institution. At 4-year institutions, 38% included a senior research requirement, with the requirement included at 34% of master's institutions and 7% of doctoral institutions. Very seldom did the students share their research beyond the classroom setting.

## Randolph College: A Historical Background

Randolph College in Lynchburg, VA was founded as Randolph-Macon Woman's College in 1891, which at the time in the words of its founder

and first President William Waugh Smith was, "a college where our young women may obtain an education equal to that given in our best colleges for young men..." Recognized for its academic strengths from its start, R-MWC was the first women's college south of the Potomac to receive a Phi Beta Kappa charter, and the first women's college to be admitted to the Association of Colleges and Preparatory Schools of the Southern States. Randolph College began admitting men in the fall of 2007 and is currently an independent, liberal arts, United Methodist-related college offering 29 major programs, with 75 full time faculty and approximately 725 students from over 40 states and more than 40 countries, allowing for a 9:1 student/faculty ratio.

The college is classified by the Carnegie Foundation as a Baccalaureate College. *U.S. News & World Report's* publication, America's Best Colleges, ranked R-MWC 7th in the nation for international diversity based on percentage of international students and also recognized for the campus ethnic diversity.

The Psychology laboratories at Randolph College began when the College first enrolled students in 1893 by Celestia Suzannah Parrish. Interestingly, she was not very familiar with the field of Psychology, particularly the "new" experimental Psychology at the time. She in turn persuaded Edward Titchener at Cornell to allow her to study the discipline under him and did so in the summer of 1893 (Rowe, 1992). Since the Psychology department's founding, the department maintains a commitment to providing a curriculum that is based in the research process. The current labs, now named in Parrish's honor, were the first Psychology laboratories in the South. Ms. Parrish's tradition of teaching the scientific study of behavior and mental processes is one that is continued in the current academic program of the department.

## Randolph College: The Psychology Curriculum

Today, Randolph College offers a laboratory-based study of Psychology with the principle goal of

the curriculum to provide students with skills and knowledge that will allow them to design, execute, analyze, and interpret an independent research project for the required capstone course. The curriculum is progressive in that it is designed to add research skills to a student's repertoire with repetition and augmentation at each level of education. The department offers study in a broad range of the fields in Psychology, including courses in Abnormal Psychology, Cognition, Learning, Memory, Developmental, Testing and Measurement, the Psychology of Gender, Health, Environmental, Physiological, and Social Psychology. The emphasis within these areas is to prepare the student to critically evaluate evidence about behavior and mental processes. The knowledge and skills acquired in this program enable the student to continue his or her education at the graduate level or to pursue careers in related areas as a liberally educated man or woman. The psychology curriculum incorporates a developmental approach in which students at the introductory level course are provided with the knowledge and skills needed to build on in order to perform original research in the capstone course during a student's senior year. The psychology faculty continues an on-going assessment of the curriculum, with consideration of the APA principals for quality undergraduate Psychology programs (Halonen et al., 2007). During the 1990's the department grew in size from three full-time faculty to its current staff of five.

The Randolph College Psychology curriculum begins with a two-semester Introduction to Psychology sequence. This course sequence provides a thorough introduction to the theory and content of Psychology. Students extend their knowledge of theory and content about at least one area of Psychology when they take a required elective from a selection of 200 level courses that include Child and Adolescent Psychopathology, the Psychology of Gender, as well as Social, Developmental, and Abnormal Psychology courses. Students who major in Psychology are also required to complete a two semester research methods sequence. The first course is focused on applied statistics, whereas the second course is focused on principles of research design and methodology. The research methods course sequence requires students to use at least two information technology tools when they learn to conduct data analyses with SPSS and to conduct searches of the databases that reference the psychological literature.

The APA style research proposal that students develop in this sequence supports the development of their ability to communicate in writing. The research methods sequence is a prerequisite for all 300-level courses and above. Psychology majors further hone

their research skills and deepen their knowledge of specific content areas of the discipline when they take one of four laboratory courses: Cognitive Psychology, Learning, Physiological Psychology, or Advanced Social Psychology. Each lab provides students with practice at collecting, analyzing, and presenting of data. These courses support further development of the standards and capacities that were initiated in earlier courses. A History of Psychology course is required of all Psychology majors to provide students with an overview of the questions and theories that have shaped modern Psychology. Students majoring in Psychology also complete a 300-level elective from a selection of courses. This elective allows them to deepen their understanding of a particular area of the discipline and once again focuses on research methodology.

### **The Capstone Course at Randolph College**

Finally, all students are required to complete the two-semester Senior Seminar in General Psychology as a capstone experience. The Randolph College course is team-taught by three to four members of the department and is focused on the production of a student designed research project with approximately 18 to 22 senior majors each year. This idea of a culminating research experience in which students are responsible for all aspects of the experimental process is not new and was in fact noted as an important component of any undergraduate Psychology program by McKeachie and Milholland (1961). In preparation for our course, during the spring semester faculty meet with junior majors to discuss the details of the upcoming capstone course, to review the current syllabus for the course, and to recommend that students consider and search for possible topics for their group research project during the summer months prior to the course. At times, students form research groups prior to the start of the capstone course, though it is more common that students form these groups during the first week or so of the fall semester.

The fall semester of the capstone course is focused on reviewing research methodology and developing a research proposal. Faculty inform students that the focus of class time will be to provide information and guidance needed to successfully complete the research design and proposal. The semester begins with a take-home exam that requires students to review basic research methods, design, and statistics. During the first day of class, students are asked to discuss their areas of interest, which allows all members of the class to identify who

shares his or her interest. In the week or two that follows, students form research groups or teams and decide on the general topic for their year-long research project.

The group experience provides students with the opportunity to develop the capacity to work collaboratively; however, if G.P.A. requirements are met and the student has interest, he or she can apply to read for honors in the major and in turn can create an individual senior research project. The decision to require group work was based on a number of considerations. The most notable influencing factor was student/faculty ratio. In order to provide the appropriate guidance for all proposed projects, requiring group projects significantly increased the time each faculty member could spend with each group and in turn significantly improved the quality of the research question. A second important factor pertains to the size of the available participant pool. When conducting research at a small institution, one needs to rely on a small number of students to include as potential participants. Decreasing the numbers needed from our participant pool increased the number of participants involved in each project, which in turn, provides an increase in statistical power for most projects. Finally, students benefit from group work experience given the parallel experience most will encounter if they continue their study at the graduate level or in the workplace.

Once groups are formed, faculty research advisors are assigned through discussion among the faculty teaching the course. Assignment of groups to advisor is based on area of expertise among the faculty and based on an equal division of research advising. In the weeks that follow, students are required to conduct a literature search and provide in class presentations of articles related to their research topic. These assignments require students to answer a specific list of questions that includes the following: What is the hypothesis, how does this hypothesis relate to the literature, describe the independent and dependent variables, what is the design of the experiment, do you see any internal or external validity risks, what statistical analysis was used, summarize the results, why are these findings important and how do these findings relate to the literature and to your proposed research. Often, due to the size of the class, smaller discussion groups are formed for these presentations.

Toward the end of the fall semester, students provide an in-class presentation focused on the development of their hypothesis and the details of their methodology. Using PowerPoint, students are expected to clearly communicate the hypothesis of their proposed research, how their prediction fits in the existing literature, briefly describe the major

findings in the literature, as well as describe in detail their methodology and choice of statistical analysis. Faculty meet immediately following these presentations and provide feedback to be incorporated in both the Institutional Review Board (IRB) application as well as the APA style research proposal, both of which are, due at the end of the fall semester, and read by two of the faculty members teaching the course. The presentation feedback most often focuses on asking students to more clearly connect their proposed research with the literature findings, as well as clarification about their methodology to ensure that students will in fact be testing the hypothesis as stated.

When the seniors return for the spring semester, they proceed with data collection as soon as they receive approval from the IRB. To encourage students to work on their paper early on in the semester, the first assignment requires students to address the changes needed in the introduction of the paper. Students continue to work in small groups with a faculty advisor to execute a research study. Participants are recruited on campus as well as from other local institutions. When younger participants are needed, local preschool directors often cooperate and inform parents of the opportunities to involve their children.

Class meetings are scheduled throughout the semester to review statistical analyses specific to the projects for that semester, as well as a review of creating tables and graphs. The results of the senior projects are first presented in-class and once again faculty provide feedback to assist students to further improve their presentations for a second required presentation of their research at the spring conference of the Virginia Psychological Association (VPA). Usually, the feedback focuses on changes related to the time limit of 12 minutes, coordination of their slides and the talk, more clearly presenting methodology and statistical analyses, and finally communicating what the findings mean and how these findings relate to the literature. If students incorporate the feedback provided after their in-class presentation, they receive an increase for their presentation grade for the class.

One component of our departmental assessment is obtained from a rating scale used to rate specific elements of our students' presentations, which are judged by faculty from participating institutions. Because of this assessment component, funding is provided for both students and faculty to attend VPA by the Randolph College assessment budget. In addition, students turn in their final paper two weeks before the end of the Spring semester. The final paper is read and graded by the same two faculty members who read it the previous semester. All students are

given the opportunity to revise the paper based on the feedback received, which can increase the paper grade. The department asks all students to hand in a “clean” copy of the paper for the departmental library, which in turn creates a very helpful resource for seniors in future years.

### Assessment and Refinement

To provide the most effective research senior year experience for our students during their senior year, numerous changes have been made over the past 15 years. In the past, due to limited staffing and the importance of covering the topic matter, we also covered the history of Psychology in the capstone course. Not only was this a large academic load for one course, it also detracted from the students’ focus on their research. The most significant change was the requirement to conduct group work rather than individual projects, which was primarily due to faculty (research advisor)/student ratio and the participant pool limitations. Because this is often their first experience with a research presentation, we also added the fall semester methods presentations, which significantly improved their spring semester presentations both in class and at the regional conference. Changing the IRB application submission from the spring semester to the fall semester allowed students to begin data collection earlier. Additional changes also include an assignment at the beginning of the spring semester to address changes needed to the introduction section of the paper, as well as class meetings focused on data analysis to be used by students that semester rather than just a general review of SPSS.

### Concluding Thoughts

In recent years, students’ research has been recognized with undergraduate research presentation awards at the Virginia Psychological Association Conference, a Psi Chi research award for undergraduate research work, and a Psi Chi undergraduate research grant. The success of the Psychology program is seen best through accomplishments of our graduates. The benefits of undergraduate research experiences, including greater appreciation for the scientific nature of the discipline, increased student engagement, enhanced preparation for and acceptance to graduate school are clearly stated in the literature (Berthold, Hakala, & Goff, 2003; Elmes, 2002; Keith-Spiegel, Tabachnick, & Spiegel, 1994; Mink, 1979).

Alumnae have gone on to earn their Ph.D., Psy.D., M.S.W. and M.A. at universities across the

country reporting back that the particular attention to each student’s understanding of the scientific process throughout the Psychology curriculum was in large part the key to their success in their graduate work and beyond. Development and execution of these research projects provides our students with an opportunity to apply the skills and capacities that they have been working on in the research methods sequence and laboratory courses.

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