

Nutrition Research Manual



Benedictine University
College of Education and Health Services
Nutrition Department
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Table of Contents

Introduction	1
Nutrition Department Research Advisor List	2
Administrative Procedures	3
Roles and Responsibilities	3
Role of the Research Advisor	3
Responsibilities of the Student	5
Institutional Review Board	6
Brief Summary of Sequence of Research Activities	8
Research Process	8
Nutrition Research Course Requirements	8
Nutrition Research Course Descriptions	8
Nature of Research	8
Data Collection	9
Hypothesis Testing and Significance	10
Effect Size	11
Research Paper Organization and Content	13
Organization	13
Preliminary Pages	13
Chapter/Section 1: Introduction	14
Chapter/Section 2: Literature Review	15
Chapter/Section 3: Methodology	15
Chapter/Section 4: Findings	17
Chapter/Section 5: Discussion	18
References	18
Appendices	20
University Academic Honesty Policy	20
Research Paper Format	21
Paper and Printing	21
Pagination	21
Heading, Spacing and Margins	21
Lists	22
Font Size and Style	22
Reporting Statistical Information	23
Inclusion of Tables, Figures, Graphs, and Photos	23
Style Guidelines	24
Spelling and Word Use	24
Copyright	25
Approval of Master Research Students	26
Oral Defense	26
Grade for Research Paper and Participation in Study	27
Binding and Distribution	27
Electronic Submission	28

Appendices	29
A. Example Research Paper Title Page	30
B. Research Approval Form	31
C. Example Copyright Waiver Form	32
D. Example Copyright Page	33
E. Example Table of Contents and List of Tables	34
F. Example Format of Abstract	37
G. Example Reference Page	38
H. Review of Research Paper Format Checklist	39
I. Example Chapter/Section Page	41
J. Example Copyright Permission Letter	42
K. Example of Research Presentation Announcement	43
L. Example Layout of Poster for Presentation	44
M. Group Binding Form	45
N. Individual Binding Form	47

Acknowledgements

Some adaptations of concepts were gleaned from the Research/Thesis Manuals of other colleges and universities, including: Calumet College of Saint Joseph; Hood College; Illinois Institute of Technology; Texas A&M University; University of California, Irvine; University of Delaware; University of Illinois at Chicago; and University of Washington School of Public Health and Community Medicine.

Introduction

This *Nutrition Research Manual* contains guidelines to foster the successful completion of the nutrition research study. These guidelines include administrative procedures and the guidelines for the content, organization and format of the research paper chapters/sections. The appendices include required forms and other pertinent information.

These guidelines and regulations take precedence over all guidelines for the thesis published prior to August 2012. These guidelines may be augmented by requirements provided by your specific Research Advisor. It is the student's responsibility to adhere to the requirements as detailed in this *Manual*.

Why require Research?

A graduate research requirement is consistent with the philosophy of the main professional organization in nutrition - the American Dietetic Association (ADA).

- "Application of Research" is one of the six Standards of Performance for Dietetic Professionals
<http://www.eatright.org/sop/>
- "Research strengthens the credibility of the profession... The ADA understands the importance of research to our profession and the need for dietitians to be instrumental in making advances in the science of all aspects of nutrition, health, and food issues." (Manore MM, Myers EF. Research and the dietetics profession: Making a bigger impact. *J Am Diet Assoc.* 2003 ;103:108-112.)

Nutrition Research Outcomes

Throughout the activities associated with completion of the research study and paper, the student is expected to perform in a professional manner, demonstrating intelligence, initiative, flexibility, and self-management.

One of the program goals for the Master of Science in Nutrition and Wellness is:

- Conduct evaluation and outcomes research, for example as community-based research or a wellness program evaluation.

The research courses contribute to meeting the following Competencies/Learning Outcomes for Dietetic Internship Programs.

- CRD 1.4 Evaluate emerging research for application in dietetics practice
- CRD 1.5 Conduct projects using appropriate research methods, ethical procedures, and data analysis.
- CRD 2.2 Demonstrate professional writing skills in preparing professional communications (e.g. research manuscripts, project proposals)

If a research paper fails to conform to the requirements in this *Nutrition Research Manual*, the Nutrition Department will *not* accept the paper.

Nutrition Department Research Advisor List

College of Education and Health Services
Nutrition Department
Research Advisors

Research Advisors for the 2012 through 2013 process are:

Catherine Arnold, M.S., Ed.D., R.D., L.D.N.

Professor and Department Chairperson of Nutrition

Ed.D., 2006, Northern Illinois University; M.S., 1985, Rush University; B.S. 1984, Benedictine University

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Bonnie Beezhold, Ph.D., CHES

Assistant Professor

Ph.D., 2008, Arizona State University; M.S., 2002, John Hopkins University; B.S., 1984, DePaul University

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Assistant Professor

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Administrative Procedures

Research Study Process

Each fall, usually towards the end of the fall term, the research topics will be shared with students, including by announcement in the NTR courses. Students register for NTR 697 (and then later NTR 698) under a certain research supervisor. There is limited enrollment in each section, as research projects are based on a particular number of participating students. Slots in sections will not be reserved for students; instead registration is on a “first come” basis as with other courses in the program. Students should view NTR 697 and 698 as a course.

The Research Advisors in the Nutrition Department are open to listening to student suggestions about the direction of a designated research project; it is assumed the student would have already examined the literature on the topic to identify areas needing further investigation. The department will not support individual topics due to the workload burden on the single student for strong performance. Angles and/or topics of projects may be altered by the Research Supervisor as a result of new research studies and/or conversations with members of the Institutional Review Board (IRB) while seeking approval for the project. Thus, the discussion with the research team providing tentative approval of a topic does not guarantee Institutional Review Board approval for that study. New project proposals *must* have the *written approval* of the Nutrition Department Chair.

Some research studies will have a Research Committee, with the *written approval* of the Nutrition Department Chair. The composition may vary but normally the Research Committee will consist of a Primary Research (Co-)Advisor and an Assistant Co-Advisor, at least one of whom must a full-time member of our university Nutrition Department. Appropriate choices for a co-Advisor normally include faculty (including lecturers and site preceptors) who hold a

doctorate or completed a master degree with a thesis. A co-Advisor external to the university must submit a curriculum vita to the Nutrition Department Chairperson for approval to participate in that particular research study; approval is jointly granted by the Primary Research Advisor, MS in Nutrition and Wellness Director, and Department Chairperson.

All Research Advisors, Co-Advisors, and student participants must provide evidence (i.e., certificate) of completion of the NIH Human Subjects Training.

Roles and Responsibilities

Role of the Research Advisor

The Research Advisor(s) serves as the primary investigator, while Assistant Co-Advisors and the students are the secondary investigators.

The Research Advisor(s) has the primary responsibility for guiding the student throughout the entire research process.

Guidance includes:

- Guidance in development of hypotheses.
- Assisting in development/requiring a timeline for completion, as needed.
- Monitor, not direct, progress. (Progress is the student’s responsibility)
- Assessment of student’s ability to conduct the research plans, and refer to available resources as appropriate. For example, refer student to Academic Support Center for assistance in writing.
- Advice to student as to primary and subtopics appropriate for the literature review.
- Being open to methodology improvements suggested by the student, since he/she just completed a comprehensive literature review.
- Assistance in development of data collection instruments (e.g., tests, survey, tally tool), as appropriate.

- Assistance in completion of the university Institutional Review Board (IRB) proposal form. Forward proposal to IRB once completed.
- Training on data collection methods, which may include procedures for use of equipment, interviewing, distribution of surveys or tests, appropriate e-mail recruitment procedures, development of an online survey, etc. Student may then be responsible for training others.
- Assistance or establishing community site affiliations for purposes of data collection.
- Assurance of proper subject selection, including randomization of subjects, as appropriate.
- Serving as an additional reference for use of proper statistical tests for analyses of hypotheses (based on hypothesis section). The Advisor role is confirmation and/or clarification *after* the student first investigates using resources.
- Serving as an additional reference to clarify for instrument coding and SPSS variable labels for consistency. The Advisor role is confirmation and/or clarification *after* the student first investigates using resources.
- Extensive critique of the structured abstract, all chapters/sections of the Research Paper and format during the final term of registration (assuming student paper is ready!). Provide feedback to student. This process may take several “rounds” of critique.
- Collaboratively set date for Oral Defense with other Research Advisor and Nutrition Department Chair.
- Advice regarding the Oral Defense to the student as needed by requesting PowerPoint in advance.
- Approval of final copy of team research report.
- Give approval for binding (in writing/e-mail) to Department Chair.

If co-Advisors, the Primary Research Advisor works with the Assistant co-Advisor to achieve a consensus on acceptability and

final grade. The Primary Thesis Advisor has the “final word” on grading when conflict arises.

Responsibilities of the Student

The student is responsible for reading and adhering to the contents of this *Nutrition Research Manual*. The student may be asked to sign the form attached to the cover of this *Manual* and submit it to his/her Research Supervisor.

The student is responsible for contacting the Research Advisor to learn more about working on a particular study in a timely manner. Lack of initiation by the student in a timely manner may result in a delay of his/her graduation due to research course sequencing.

The student must complete the online research training by NIH (IRB section of this *Manual*), and submit an electronic copy of the certificate of completion to: (1) his/her Research Advisor, (2) the chair of the Nutrition Department (Dr. Catherine Arnold at carnold@ben.edu) and (3) NTR 629 course instructor.

Students register for NTR 697. As part of the course requirements, students complete and submit an individual literature review. Students then work collaboratively with other members of their research team to merge ideas into a single chapter/section (Chapter 2). Although a high quality job is expected, your Research Advisor will consider this a *draft* and may require changes/updates by the time the final version of the research report is submitted nearly a year later.

It is expected that students work as a collaborative member of a team to accomplish goals of research project.

The students have the responsibility for establishing and adhering to a feasible timeline for completion of the data collection and other activities. The students should demonstrate initiative by taking the lead for setting up aspects of the research study as jointly determined with the Research Advisor.

It is the student's responsibility to communicate regularly with the Research Advisor about progress, difficulties, and/or lack of progress.

As part of the NTR 697 course, it is the responsibility of the student team to cooperatively discuss and collaboratively implement the data collection protocols for the research projects. The student team collaboratively writes the Methodology chapter/section (Chapter 3) and the Introduction (Chapter 1).

At the discretion of the Research Advisor, the student and/or student team may be responsible for completion of the IRB proposal and sending it electronically to the Research Advisor. Print and sign a paper copy and submit it directly to your Research Advisor. After the IRB receives the proposal, plan on at least a two week turn around time. The IRB may require changes to the proposal. Your advisor will need your electronic signature (.jpg or .gif). Plan ahead and submit it early in the term.

The student is responsible for participating in training sessions, as advised by the Research Advisor. The student is responsible for adhering to protocols when collecting data. The student is responsible for coding the instrument, input of data into SPSS, and labeling of variables in SPSS. The student is expected to be resourceful making reference to his/her statistics textbook, required SPSS textbook, and online SPSS tutorials.

The student is responsible for data analysis in SPSS and interpretation, which is part of the course requirements of NTR 694 and NTR 698. In addition, Research Report Chapter/Section 4 is written as a required part of the NTR 698 course requirements. Using the guidelines in this *Manual* and his/her SPSS textbook, students are expected to take initiative and develop a high quality draft of this chapter in the summer *prior to* course registration - as the submission date for it is in week two of the fall quarter.

Collaboratively, with members of his/her research team, students complete and submit Chapter/Section 5 of the Research Report under the direction of your Research Advisor in NTR 698 (a high quality draft is due in the 3rd week of the fall term).

It is expected that the student research team submit the proposal, drafts of instruments, and all Research Report chapters for critique as *an electronic copy via e-mail*. Occasionally the Research Advisor may request a paper copy submission as well or instead. Submission should be directly to the Research Advisor. It is expected that all submissions (including drafts) are typewritten using MS Word, adhering to the proper format as described in this *Manual*.

It is expected that the student maintain a positive attitude and be receptive to constructive feedback. The student is responsible for making corrections to the research proposal, data collection instruments, and all aspects of the Research Report as directed by the Research Advisor(s), within a two week time period following critique. All corrections should be made to the electronic document.

The student *research team* should meet with his/her Research Advisor to discuss the Oral Defense at least one week prior to the intended defense date (week 5 or 6). There are two parts to the Defense: (1) public Oral Presentation with research student team members and (2) individual Question and Answer period. During the public Oral Presentation, each student must present, as a minimum, his/her own hypotheses, results, and conclusions. Guidelines for the entire team presentation are posted online. The student must prepare for and successfully "pass" both parts of the Defense. The Question and Answer period of the Defense occurs following the public Oral Presentation, and is held on a separate date.

The student research team should e-mail a copy of his/her intended PowerPoint presentation for the Oral Presentation to his/her Research Advisor one to two weeks

prior to the Defense (due in week 5 of the term) in order to solicit feedback prior to the defense (normally about week 7 or 8 of the term).

Following the defense, each student must submit a copy of his/her SPSS final coded data file to the Research Advisor and Nutrition Department Chair.

Each student research team must submit error-free electronic copy of the completed Research Report to the Research Advisor(s) and the Nutrition Department Chairperson following the guidelines outlined in this *Manual*.

If the quality (e.g., content, format) of the Research Report is high, and it is submitted in a timely manner, the Research Advisor will approve binding. Each student is responsible for the completion of his/her Research Report Binding Form in a timely manner (or will forfeit his/her chance for a bound copy).

If the student wishes more than one personal copy of his/her Research Report, he/she must enclose a check (refer to Research Report Binding Form for the amount).

Institutional Review Board

The Institutional Review Board (IRB) of Benedictine University is the administrative body established to protect the rights and welfare of research subjects. All research involving human or animal subjects must be in compliance with the university guidelines for protection of human subjects.

All research proposals involving humans or animals must be submitted to the IRB of Benedictine University for approval prior to the initiation of any research activities involving the subjects. The IRB has the authority to disapprove or require modifications of any proposal of research activities. Research approved by the IRB is subject to review and disapproval by officials of the university.

The IRB subdivides research into three categories, based on the level of review by the IRB: Exempt, Expedited, and Full Review.

- *Exempt* - research conducted in established or commonly accepted educational settings involving normal educational practices; research involving observation of public behavior; and research involving collection or study of existing data, documents or specimens, if these sources are publicly available.
- *Expedited* - Recording of data from subjects 18 years or older, using non-invasive minimal risk procedures; low to moderate exercise by healthy individuals; non-invasive sample collections (e.g., hair, saliva, sweat).
- *Full Review* - studies involving minors; studies involving pregnant subjects; studies that involve the collection of body fluids or other samples gathered by invasive methods (e.g., blood samples); studies that involve radioactive materials or exposure; survey data that have the potential to reveal sensitive aspects of the subjects' behaviors (e.g., illegal drug use).

The Benedictine University Nutrition Department does not conduct any animal research, nor conduct research using radioactive materials, surgical procedures, or fetuses.

Prior to the initiation of data collection, all students must complete the online training program sponsored by the National Cancer Institute. This training program also meets the **NIH human subjects training requirement** for obtaining federal funding. It is a free web based course that will take an estimated two hours to complete (per the site introduction).

The tutorial is available online at:
<http://phrp.nihtraining.com/users/register.php?submit=Register>

Print ONE copy of the certificate. Then, **save the certificate electronically** (as an image) and e-mail to:

- Your NTR 629 course instructor.
- Your Research Advisor.
- The Chair of the Nutrition Department, Dr. Catherine Arnold at carnold@ben.edu

The IRB form, related data collection instrument(s), and informed consent letter(s) are to be typed. To access the IRB form online, visit: http://www1.ben.edu/programs/education_health/IRB/index.asp.

Your Research Advisor may add additional requirements to the timeline. A grade of a "B" or better must be earned in all research courses (because they are Core courses in the MS in Nutrition and Wellness program).

Brief Summary of Tentative Sequence of Research Activities

Term(s)	Related Course	Activities towards completion of research requirement
1st fall	NTR 629	Complete and submit NIH tutorial. Register for NTR 697
Fall/ Winter/ Spring/ Summer	NTR 697	Evaluate existing research Write chapters 1, 2, and 3. Assist with planning. Draft IRB. Conduct research.
Summer	NTR694	Conduct and interpret variety of statistical tests
Summer	NTR 698 pre-work	With research team, if data collected begin interpretation. By October, write high quality draft of chapters 4 and 5.
2nd fall	NTR 698	Week 2 - submit ch. 4 Week 3 - submit ch. 5 Week 5 - submit PPT Week 5/6 - review PPT with Research Advisor Week 6 - provide PPT updates to Res. Advisor Week 7/8 - public Oral Defense (team) Week 7/8 - team submits preliminary pages and updates of entire Research Report Week 7/8/9 - individual Q&A defense Week 9/10 - finalize report and submit required forms.
Late fall	NTR 698	Get "pass" score for research

Nutrition Research Process

Nutrition Research Course Requirements

Prior to beginning the graduate nutrition research course sequence NTR 694, 697, and 698, a student should have successfully completed a statistics course and have knowledge of basic research principles (complete NTR 629).

Students completing the Master of Science in Nutrition and Wellness program must complete a Nutrition Research Report.

Nutrition Research Course Descriptions

MPH 511 (4), Introduction to Statistical Analysis. Basic statistical concepts and Excel applications including frequency distributions, central tendency, variability via parametric and non-parametric methods.

NTR 629 (4), Health and Wellness Research Planning. Principles and application of the research process with a focus on community-based research and evaluating outcomes of health educational programs. Prerequisite: Credit or concurrent registration in MPH 511. Fall.

NTR 694 (2), Applied Data Analyses. Overview of quantitative and qualitative analyses and reporting. Pre-requisites: NTR 629 and MPH 511. Summer.

NTR 697 (2), Research I. Students complete a review of current literature and actively participate in research processes, including planning, project implementation, data collection, data entry, and initial data analyses. *Students must take NTR 697 and 698 in the same calendar year with the same Research Supervisor (Course Instructor) to meet M.S. in Nutrition and Wellness program research competency requirements for graduation.* Transportation may be required for data collection. Prerequisite: NTR 629.

Consult your Research Advisor about when you must register for NTR 697.

NTR 698 (2), Research II. Students will continue the research process through analyses and interpretation of statistical data and outputs, development of appropriate graphics, and oral and written dissemination of the research results and conclusions. Prerequisites: NTR 697 and NTR 694. Fall.

Poor time management, poor quality work, or unforeseen circumstances on the part of the student may delay graduation date and require registration in NTR 699 for one or more times in order to complete the Research Report and M.S. degree.

Additional research courses are available at Benedictine University to further one's knowledge in research.

Nature of Research

A master level Research Study is a scholarly pursuit resulting in a manuscript that provides a theoretical foundation, detailed accounting of methodology, statistical analysis of results, and interpretation of results. The research study is conducted, in full or in part, by the student under the guidance of a Research Advisor. The study explores an original research question using appropriately rigorous methods. The original study generates new knowledge and/or applications.

Many types of research studies are appropriate for the master research study. Common types of studies include experiments, descriptive studies, instrument development using principal components analysis, content analysis, and program evaluation.

Experimental, or quasi-experimental, studies explore the effects of a treatment or intervention. Generally there should be at least two groups (e.g., control and treatment) with at least thirty subjects per group.

Descriptive studies measure the magnitude of a problem, clarify priorities (e.g., conjoint analysis), or examine relationships among variables. The data may be collected through observations, interviews, and/or questionnaires. Generally there should be at least 50 participants for a correlation analysis. There should be at least 100 respondents in order to examine differences among survey respondents. Realize that since survey response rates are often 20% or less, the potential participants for your research study should ideally be 1,000 or include the entire population, whichever number is less.

A *Principal Components Analysis* is used to consolidate numerous variables. For example, when developing a new survey, the reliability and validity need determination. A principal components analysis aids in establishment of reliable constructs in questionnaires. When conducting a principal components analysis there should be at least 300 respondents for “good” reliability. However, a smaller sample size (e.g., 150 subjects) is acceptable if there are several high loading (i.e., $> .80$) variables. If there are at least four variables that load at $\geq .60$, the results are considered reliable regardless of sample size.

Content analysis examines the contents of communication for existing or current patterns or relationships or future trends. A content analysis may examine novels, newspapers, journals, articles, cookbooks, speeches, pictures, songs, advertisements, textbooks, etc. for patterns or relationships or trends.

A *program evaluation* assesses the effectiveness of a program, treatment, or intervention. Unless it is a large scale program, students conducting a program evaluation study should expect to contribute significantly to writing, promoting, and delivering the program / intervention.

Additionally, pre-experimental (pilot study), cohort and developmental studies, qualitative case studies or series, historiography, meta-analysis, and qualitative field studies are potential approaches,

depending upon the hypothesis and existing level of known knowledge about the topic.

Although a collaborative approach is being utilized, and your Research is a “group study,” each student will have his/her own distinct hypothesis and “angle” for review and analyses.

Data Collection

The student is an active participant in the collection of data related to his/her research study. The student must adhere to the protocols outlined and approved in the research and IRB proposals.

The student is expected to demonstrate professionalism at all times during the course of research. Students are expected to communicate effectively and with respect and courtesy at all times. When on site, students must remember that they are guests of a site; site preceptors deserve your utmost respect.

When arrangements for data collection need to be coordinated with other organizations, students must realize that it may take a minimum of 3-4 weeks to arrange participants and site usage. Students are expected to honor data collection arrangement dates and times as set. If a student is unable to attend all scheduled dates due to illness or emergency, the student must contact the Research Advisor prior to the event.

IMPORTANT - In the event that a student repeatedly fails to fulfill responsibilities as scheduled without cause and/or proper notification, violates confidentiality, acts dishonestly, and/or endangers self or others, the Research Advisor will dismiss the student from his/her charge. As appropriate, action will be taken to fail (less than a grade of a "B") the student for the research course in question. In such an event, no special accommodations will be made for the student. The student will need to begin the entire process over with a *new* study, and probably the *following* academic year (this may delay graduation for a year or more).

It is the student's responsibility to provide reliable transportation to and from all research related events and activities, including data collection sites, and the university (e.g., meetings, data collection) as needed. Like every other responsible driver, students must have appropriate automobile insurance. Students receiving an illness or injury, or involved in an accident on site, should follow the policies and procedures of that site, covering their own expenses (students are responsible for their own health care). Benedictine University, the Dietetic Internship or DPND or M.P.H. or M.S. in Nutrition and Wellness Program Directors, Field Coordinators, Department Chairs, Deans, Research Advisor, or Research Committee Members are *not* liable for the safety or conduct of the student while traveling to or from sites, or during activities at the facilities.

Your Research Advisor may ask you to track your research activities in a log format, especially if you are participating in grant-funded research. To create a log, insert your name and the title of your research study at the top of the log form. Then make a table with five columns across and label them as date, hours, activity, mileage, and expenses. Fill these regularly and submit to your Research Advisor as requested.

Hypothesis Testing and Significance

Hypothesis Testing

When testing and interpreting each of your hypothesis (H_0) you should follow these steps.

1. State the H_0 .
2. Set the criterion (statistical significance or α level) for rejecting H_0 . This includes establishing a significance level (setting α) and determining the critical value (e.g., t_{cv} , F_{cv}).
 - For example in a distribution with $N=15$, the t_{cv} for a two-tailed test with an α level of .05 would be written as $t_{.05(14df)} = 2.145$ (the 2.145

can be found on the t distribution table).

3. Compute the test statistic (e.g., z score, t, F), preferably using SPSS. In some cases, compute the confidence interval (CI).
4. Decide whether to fail to reject or reject H_0 by comparing the critical value statistic against the computed test statistic. If the observed test statistic (e.g., t) does exceed the critical value (e.g., t_{cv}), then H_0 is rejected.
5. If H_0 is rejected, determine how big the difference is between the means - known as the effect size.

Statistical Significance

Statistical Significance (α) refers to how believable the statistics are, even if the result is small. When H_0 is retained, the difference between the means is not significant. When H_0 is rejected, then the difference between the means is statistically significant. If the sample mean is significant, it represents the population mean. If a result is not statistically different, it is not important (numerically).

However, existing statistical significance does not establish the practical significance or importance; effect size examines importance. To increase statistical significance, increase number in the sample for greater precision.

It must be decided how much error is acceptable in the hypothesis. Most commonly, the level of significance (α level) is pre-set at .05 and .01. A two-tailed or non-directional H_0 means that half of the significance is placed in each of the distribution "tails" ($\alpha/2$). Most researchers use a two-tailed test. If $\alpha = .05$, then it means that we could be wrong 5% (1 in 20) of the time. There are two types of error: Type I or α error (reject H_0 when H_0 is true); and Type or β II error (do not reject H_0 when H_0 is false). These two types of error are inversely related. If the researcher decreases the potential for Type I error by changing the α level from .05 to .01, the risk for a Type II error increases. Thus there is *always* some uncertainty about the results.

After α is set and the data is gathered, the researcher uses a sampling distribution to determine the probability (p) of that data. The p value is correct when H_0 is true. If $\alpha = .05$ and $p \leq .05$ then reject H_0 . If $\alpha = .05$ and $p > .05$ then accept and retain H_0 . For example, if $p = .06$, it is not significant; do not reject H_0 . If $p = .043$ or $.01$, then reject H_0 and recognize the difference between the means as statistically significant. If your test results in $p < .05$, then the sample results obtained occur fewer than 5 times in 100 when H_0 is true.

To visualize, plot the distribution of the group means – the overlap between the distributions means likely no difference (accept H_0), whereas no overlap indicates probable significance (accept H_A). If accept H_A , then we have a significant difference between the groups.

Effect Size

Effect size (d) looks at how big the difference is between the means. It examines the *importance* of the statistically significant results.

Report it for all statistically significant results; you are not required to report the effect size if results are not statistically significant.

T Tests - interpreting the effect size (how big is the difference between samples):

- .80 and greater is a large effect
- .50 is a medium effect
- .20 is a small effect
- Scores between are combined effect (e.g., medium large for score of .65)
- less than .20 is little is any effect

The basic formula for t test effect size (statistics book have detailed formulas) is:

$$d = \frac{(\bar{x} \text{ mean} - \mu_0)}{\sigma}$$

... where μ_0 represents mean specified by H_0 ; σ represents standard deviation of H_0 .

ANOVA Tests - Interpreting the effect size (how big is the difference) of f values:

- .40 and greater is a large effect
- .25 is a medium effect
- .10 is a small effect
- Scores between are combined effect (e.g., medium large for score of .38)
- less than .10 is little is any effect

The basic formula for f test effect size (statistics book have detailed formulas) is:

$$f = \frac{\sigma_{\text{treat}}}{\sigma_{\text{error}}}$$

χ^2 Tests - Interpreting the effect size (how big is the difference) of ϕ coefficient values:

- .50 and greater is a large effect
- .30 is a medium effect
- .10 is a small effect
- Scores between are combined effect (e.g., medium large for score of .40)
- less than .10 is little is any effect

The basic formula for ϕ test effect size (statistics book have detailed formulas) is:

$$\phi = \text{the square root of } \frac{\chi^2}{N}$$

Interpreting the effect size of *correlation coefficients* (r):

- .90 to 1.00 (-.90 to -1.00) very high
- .70 to .90 (-.70 to -.90) high
- .50 to .70 (-.50 to -.70) moderate (large)
- .30 to .50 (-.30 to -.50) medium
- .10 to .30 (-.10 to -.30) small
- .00 to .10 (.00 to -.10) little if any

The correlation coefficients are determined through SPSS calculations.

Reliability coefficients (Kuder-Richardson formula) for tests should be at least .70. The reliability coefficients of commercially available tests are often .90 or higher.

To interpret the correlation in terms of explained variance, square r to get the *coefficient of determination*. A r of .50 has a coefficient of determination of 25%, meaning that result is 25% better than a r of .00; or that we know 25% of the relationship between the two variables; or that 25% of the variance in Y is associated with the variance in X.

Another method to determine the effect size is to determine the *confidence intervals* (Refer to a statistics book).

Research Report Organization and Content

Organization of Research Report

The Research Report should be organized into three major divisions: Preliminary, Content and Appendix. Within each are multiple sections. Begin each division and section with a separate page. For example, each chapter begins at the top of a new page.

Preliminary:

1. Research Title Page
2. Research Approval Form
3. Copyright Waiver Form
4. Copyright Page
5. Table of Contents
6. List of Tables, including title and page number
7. List of Figures and Photos, including title and page number (if appropriate)
8. Acknowledgements and Sponsorship (if grant funded)
9. Structured Research Abstract

Content:

1. Chapter 1 – Introduction
2. Chapter 2 – Literature Review
3. Chapter 3 – Methodology
4. Chapter 4 – Findings
5. Chapter 5 – Discussion
6. References

Appendices (or Appendix):

1. Original copy(ies) of data collection instrument(s), if approval granted.
2. Informed Consent Forms
3. As appropriately, lesson plans, educational handouts, or other materials given or shown to participants

Preliminary Pages

Research Report Title Page

The title of your study should be descriptive and limited to 12 words. It should indicate the outcome of your study, such as "Nutrition Education Increases Dietary Fiber Intake Among Elderly."

To keep the title short, omit words such as "A Study of." Do not use subtitles.

The Title Page should be double-spaced and formatted according to the example in the Appendix. Include the following elements:

1. Descriptive Title
2. Each Student's Full Legal Name (without initials or credentials) followed by his/her type of undergraduate degree, college/university, and year. Note that ALL student members of the research team are to be listed here in alphabetical order by last name.
3. Statement regarding degree requirements.
4. The appropriate master degree program at Benedictine University
5. College and university name
6. Name of Research Advisor(s), with education credentials
7. Month and year of *research* completion (use the month that marks the *end* of the quarter, e.g., December 2013 or March 2014). In other words, if you received your grade for NTR 698 in December 2013, but did not graduate until March 2014, you should list 2013 as the completion year.

Refer to Appendix A.

Research Approval Form

Type the Research Approval Form. Include the signature blocks as shown. Type names of the Research Advisor, etc., in the appropriate places. Include their highest academic credential (if area of credentials differs, include all).

Refer to Appendix B.

Copyright

The Copyright Waiver Form and Copyright Page are described in the Copyright section of this *Manual*.

Refer to Appendices C and D.

Table of Contents

The Table of Contents should *not* include the Research Report Title Page, Research Report Approval Form, or the copyright pages. The Table of Contents should include the beginning page number for each section following the Table of Contents and first-order Chapter subheadings. Refer to the **Appendix E** for an example.

The List of Tables should be in the same format as the Table of Contents. The List of Figures should also be in the same format as the Table of Contents. Each has its own separate numbering system. Refer to the **Appendix E** for an example.

Page numbering should begin with i for the Preliminary pages and 1 with Chapter 1 through the Appendices. (Note: You would insert a "new section" not a "new page" to change the page numbering within a MS Word document.)

Acknowledgement Page

The acknowledgment page is typically used to express personal and/or professional gratitude to one or more people, permission to use copyrighted material(s), and funding source(s). This page is optional, unless all or part of the research was grant funded and/or in collaboration with other faculty or student groups on this campus. This page may also include a dedication.

Research Abstract

The purpose of the research abstract is to provide a short concise summary of the research methods and findings. The abstract is limited to 250 words.

Refer to the **Appendix F** for formatting information. Single-space the heading but double-space the text of the abstract. Do not include any tables, figures, or bullet points in the abstract. As in the Appendix example, you may elect to boldface the left hand headers. Students are also encouraged to view examples of structured research abstracts in

the *Journal of the Academy of Nutrition and Dietetics*.

The format and content of the structured abstract page are:

ABSTRACT OF THE RESEARCH STUDY
Title

By

Student Name, Degree Name
Student Name, Degree Name
Student Name, Degree Name
Student Name, Degree Name

Benedictine University, Lisle, Illinois
Research Completion Date (Month Year)
Research Advisor: (Name)

- Objectives:
- Design:
- Measures:
- Subjects:
- Statistical Analysis:
- Results:
- Conclusions:

The Research completion date is the month that marks the end of the quarter in which the Research was successfully orally defended, completed, and accepted by the Nutrition Department for publication (e.g., December 2013). For a few who do not fulfill the requirements in a timely and/or high quality manner, the Oral Defense and department acceptance of the Research may be in different terms; the latter term is the term of completion.

Chapter 1: Introduction

The Introduction should describe the following four areas (each should be divided by a representative subheader):

1. Description of the problem and rationale. The description often includes information on:
 - a. The scope of the problem (e.g., statistical incidence or prevalence data).
 - b. Consequences associated with the problem.
 - c. Brief introduction to the literature (in Chapter 2).
2. Problem description concisely describes the purpose of the study, and a brief description of the study (e.g., study population, overview of investigative method).
3. Null Hypotheses. Normally there are several null hypotheses per student for exploration. The proper format should be utilized.
 - a. To test a difference (e.g., among groups, test scores), draft the hypothesis as: “There is no difference between...”
 - b. Although correlation studies do not have a true hypothesis, draft it to begin as: “There is no relationship between...”
 - c. For a true qualitative study, there will not be a hypothesis.
4. Variables to be Examined, with Operational Definitions (Make a bulleted list).

Chapter 2: Literature Review

The literature review provides an examination of relevant published work, serving as a foundation for the research problem statement and hypothesis. The review should be current targeted and thorough, incorporating all pertinent references. Second level headers are encouraged for organizational purposes.

The literature review chapter does not contain a typical introduction or conclusion (this introduction is part of chapter 1 instead). The literature review should be an estimated five full pages in length (not including references) *per student* on that research team. Thus, each student authors one or more subsections of the literature review, and the

team collaboratively organizes it, and review it for consistency, content, grammar, and flow.

Chapter 3: Methodology

This section is to be collaboratively written by all student members of the research team.

The Methodology section explains the procedures utilized for every aspect of the study in enough detail for replication in a future year.

Study Design

1. Explain the design
2. Diagram the design, if experimental.

Participants

1. Participant/Subject/Sample selection, including:
 - Inclusion and exclusion criteria.
 - As appropriate, how randomization was accomplished.
 - Potential threats to internal and external validity of the study sample selection methodology. How did you attempt to reduce these threats through your study design? (Use appropriate terminology.)
2. Subject recruitment. Including statements provided in recruitment materials, letters, and/or emails.
3. Role of the participants.
4. Procedures associated with the development (and pilot) of data collection tools.

Data Collection Methodology

1. Actual time frame for data collection.
2. Study setting (name and address of cooperating institutions to be given to Research Advisor with proper coding of data). Provide a more general description of the setting for confidentiality purposes.
3. IRB approval level (i.e., exempt, expedited, full review).
4. Participant recruitment. If written, include message sent to participants.

5. Explain how informed consent was obtained (if appropriate).
6. Detailed description of intervention plans/methods (if any). Lesson plans are to be included in the Appendix as appropriate.
7. Detailed procedures used to collect the data.

Validity and Reliability of Method

8. Discussion of validity of data collection *methods* utilized.
9. Potential threats to internal and external validity of the study data collection *methodology* (refer to your research textbook for threats to validity).
10. How did you attempt to reduce these threats through your study design?
11. Discussion of how reliability of data collection *methods* was examined. This may include *Inter-Rater* reliability, which is a measure of agreement (% agreement)

Measurement Tools

In this subsection, discuss each tool one at a time - use subheaders to separate discussion of each. First describe the tool (e.g., purpose, source, nature of questions, length, graphics), then report/reference information from the instrument source (and others as appropriate) about reliability and validity. Next, report your analysis of validity and the results you computed when examining the reliability of the instrument. Lastly, for each tool, explain in detail how the instrument was coded for data entry into SPSS (e.g., male =1 & female =2). Be specific For organizational purposes and clarity, it is acceptable to list using bullet points in this section. Do not just make reference to the appendix!

Validity of the Instruments

Concise but thorough description of all data collection instrument(s), including the purpose and contents of the tools. Include a description of the tools utilized in an intervention.

Discuss validity of each data collection *instrument*. If using an existing or adapted instrument, make reference to information provided. For example:

1. *Content validity* – How well do the questions represent an adequate sample of the potential items in the domain (i.e., comprehensive)? Ask an expert. Format is an aspect of content validation: Is the language clear and appropriate? Is the type size appropriate? Does the format provide adequate work space (if needed), and clear directions?
2. *Construct validity* - How well does the test or instrument assess an underlying theory or model? Is the evidence obtained consistent with theoretical explanations, especially for development of a psychological or attitude inventory, or determination of items in a category.
3. *Criterion validity* - Compare scores obtained on the test (the one being validated) with the scores obtained using one or more other external instruments measuring the same variable. The external instrument acts as the standard of comparison, or the criterion. Examine relationships.
4. *Face validity* - Does the test appear to measure what it claims to measure?

Reliability of the Instruments

Students must report the reliability of data collection instrument. If using an existing or adapted instrument, include previously reported Cronbach alpha and/or other reliability findings and properly reference the information.

The appropriate reliability tests should be selected and listed in Chapter 3. Results or findings of analysis are reported in Chapter 4.

1. *Test-Retest* - Measure of stability; consistency over time (r)
2. *Parallel for the ms* - Measure of equivalence (r)
3. *Internal Consistency* - Measure of consistency across items within the same construct. Longer tests have greater reliability:
 - *Principal Components Analysis* looks at all variables and possible relationships

until no more correlations. It is a data reduction technique to reduce the number of variables, as well as classify variables. It assists in subdividing variables into the predominate relationships - e.g., subscores about eating disorders on a health risk appraisal. The test uncovers the number of subgroups, predominant variables in that group, and how predominate they are in that subgroup. This procedure only develops significant factors. A Principal Components Analysis asks: How do I determine if the questions in my subscale of my survey or test belong together? OR Which group of subjects likes which types of services?

- *Cronbach's alpha* is a good test when more than one answer is possible - e.g., 10-point essay.
- *Kuder-Richardson* is used for when the response choice is dichotomous: when only right or wrong responses are possible.
- *K-means Cluster Analysis* detects groupings in data. It is like an ANOVA in reverse. It is a good choice if you suspect that the data may not be homogeneous. Goal of test is to minimize variability within clusters and maximize variability between clusters. The test detects how distinct the clusters are. It begins with no knowledge of the groupings and asks: Which data are similar enough to be grouped together?

Statistical Procedures

1. Provide a reference for the statistical software utilized.
2. Describe any special treatment of data (e.g., stratification, split).
3. Statement of computer program(s) and tests to be utilized.
4. Statement of which statistical tests (with level of significance) were computed to examine which variables - refer to your hypotheses.

Chapter 4: Findings

This chapter provides a comprehensive analytical examination of all findings.

Outliers

Provide a description of how outliers and missing data were treated.

Descriptive Profile of Study Participants

1. Use descriptive statistics and tables to depict the overall study participation rate. You should include both number (N) and percentage (%) of total.
2. Use descriptive statistics to provide a profile of the sample studied. Make reference to tables, charts, graphs, and figures by number.
3. Use appropriate inferential statistics (e.g., χ^2) to assist in providing a profile of participants and group differences. Include meaning of the statistical results. Make reference to tables, charts, graphs, and figures by number.

Hypothesis Testing

Inferential statistics examine the results against one or more pre-established hypothesis. Prediction and association analyses explore relationships. If highly qualitative methods were employed, discussion should include a theoretical model developed from the data collected. Make reference to tables, charts, graphs, and figures by number.

Use **descriptive subheaders**, such as Relationship between Breakfast Consumption and body Weight, or Effect of Intervention on Dietary Fat intake. Subheader titles should be clearly connected to hypothesis being tested. Do *not* label this subsection of chapter 4 "Hypothesis Testing."

Students should write their findings in correct format (e.g., *How to Use SPSS*)

textbook), including the following information for inferential results:

1. Name the variables examined and state the statistical test employed.
2. Report numerical statistical result, including level of significant (p) and effect size (eta or d).
 - If reporting correlation analysis, report only those statistically significant results that are $>\pm .3$ and be certain to identify if it is a positive (+) or negative (-) correlation.
 - Report post hoc outcomes here or in a separate paragraph, depending upon nature of test and complexity of outcomes.
3. Include meaning of each statistical result reported. Consider practical significance in your discussion.

Use a *separate paragraph* to describe each test computed for each set of variables.

Insert supporting tables, graphs, or figures *after the* description in the text (refer to format section!). Do not split these items across two or more pages. In this case, more tables with less information per table is better.

At the end of *each* subsection, compare results to hypotheses (make certain to match your hypothesis statements in chapters 1 and 4). Discuss, and clearly state whether the results failed to reject the H_0 or rejected it?

Note: The results of the reliability analyses are included in Chapter 3, unless the primary focus of the Research was the determination of the validity and reliability of instrumentation, then include in Chapter 4 instead.

Chapter 5: Discussion

The content of the Conclusion chapter is to be based on evidence presented in body, and is the educated opinion of the writer. The content is to be relevant, valid, and accurate.

Summary of Findings and Conclusions

Factual interpretation of key results, and comparison of your results to results of other researchers. Explain, by reference to other studies (providing citations), how your study results are similar and/or differ from the previous research. Explain how/why your results may differ (factually grounded opinion).

1. Discuss meaning(s) and implication(s) of your results that go beyond the actual reported results.
2. Can the results be generalized? If yes, to whom?
 - a. *Population generalizability* is the degree to which a sample represents the population of interest. Purposeful or convenience sampling can never guarantee representativeness on all relevant variables. Loss of over 10% of original sample should qualify conclusions.
 - b. *Ecological generalizability* explores the degree to which the results can be extended to other settings or conditions.

Conclusions of the study. Insights to the problem(s) studied (refer to your research question and null hypothesis for the problem) nature and importance.

Implications and Applications

Implications and specific applications and recommendations of the findings for:

1. The nutritionist/RD and/or other health care professionals (or others) in combating problem(s).
2. Future related research.

Strengths and Limitations

Strengths and limitations of the study, including specific ways this study could be improved, if replicated.

References

Legally a Research Report is classified as a publication. Great care must be taken to avoid a violation of any United States copyright laws (Refer to the Copyright Section of this *Manual*).

The degree candidate is responsible for proper citations and obtaining written permission for use from the owner. Benedictine University, research site affiliation, employees of the university or affiliation, and Research Advisor(s) take no responsibility for damages that may arise from violations of copyright by a degree candidate.

It is expected that the majority of references utilized in the Research Report are current, within the past five years. However, it is appropriate to utilize the landmark references in a field, even if 30 years old – ask your Research Advisor for advice. It is expected that the majority of references be from peer-reviewed professional journals. Make certain to obtain copies of journal articles. complete with tables and figures. Do not rely on the small amount of information provided in the journal abstracts.

Citing Works within Text

Students must take care to properly cite the works of others within the text. All text citations must be listed in the references by order of appearance in the text. All references must be cited in the text.

Use the medical format for citations within text. Refer to the *Journal of the American Medical Association* for details.

Do *not* use footnotes or endnotes in the Research Report.

Reference List (at end of Research Report)

You will compile all references (from all students on the team and from across the entire Research Report) into a single

Reference List that cites sources by order of appearance in the Research Report.

Use the medical format for within the document and the reference list. Refer to the **Appendix G** for an example reference page. The reference list should not contain any sources not utilized by the student.

Some examples for common types of publications are provided below:

Journal:

1. Riboli E, Norat T. Epidemiologic evidence of the protective effect of fruit and vegetables on cancer risk. *Am J Clin Nutr.* 2003;78(suppl):S559-S569.
2. Auld GW, Romaniello C, Heimendinger J, Hambidge C, Hambidge M. Outcomes from a school-based nutrition education program alternating special resource teachers and classroom teachers. *J Sch Health.* 1999;69:403-408.
3. McPherson RS, Hoelscher DM, Alexander M, Scanlon KS, Serdula MK. Dietary assessment methods among school-aged children: Validity and reliability. *Prev Med.* 2000;31(suppl):S11-S33.

Book:

4. Bandura A. *Social Foundations of Thought and Action: A Social Cognitive Theory.* Englewood Cliffs, NJ: Prentice Hall; 1986.
5. Lowenthal KM. *An Introduction to Psychological Tests and Scales.* 2nd ed. Hove, UK/Philadelphia, PA: Psychology Press; 2001.

Organization is listed as Author:

6. Joint Position of Society for Nutrition Education (SNE), The American Dietetic Association (ADA), and American School Food Service Association (AS-FSA):

School-based Nutrition Programs and Services. *J Nutr Educ.* 1995;27:58-61.

7. Position of the American Dietetic Association: Total diet approach to communicating food and nutrition information. *J Am Diet Assoc.* 2002;102:100-108.
8. Institute of Medicine, Food and Nutrition Board. *Dietary Reference Intakes for Vitamin C, Vitamin E, Selenium, and Carotenoids.* Washington, DC: National Academy Press; 2000.

Web Site:

9. US Census Bureau, State and County Quick Facts, Oklahoma Quick Facts. Available at: <http://quickfacts.census.gov/qfd/states/40000.html>. Accessed January 5, 2005.
10. Prevalence of Overweight Among Children and Adolescents: United States. Available at: <http://www.cdc.gov/nchs/products/pubs/pubd/hestats/overwght99.htm>. Accessed January 5, 2005.

Government Report – No Author

11. *Physical Activity and Health: A Report of the Surgeon General.* Atlanta, GA: US Dept of Health and Human Resources and Centers for Disease Control and Prevention; 1996.

Refer to the guidelines of the *Journal of the American Medical Association* for details on referencing other publication forms.

Appendices

Appendices are located at the end of the Research Report, and should include pertinent Data Collection instrument(s), if approved for reprint and Informed Consent Forms. If applicable, include outlines of intervention lesson plans and any handouts which were distributed to participants (consult with your Research Advisor as to what goes into the Appendices).

Each appendix should begin a new page. Each appendix should be clearly titled with the appendix letter (e.g., APPENDIX A) followed by the title. If there is only one appendix, refer to it as APPENDIX, not APPENDIX A.

All items in the Appendices must have margins consistent with those of the rest of the document (refer to Research Report Format and Style section of this *Manual*). If needed, electronically scan the document (e.g., tally tool, survey, educational handout) and insert it as an image on the correct appendix page. Make certain to maintain the correct minimum margin widths.

University Academic Honesty Policy

All students are expected to read and adhere to this policy. Visit our university website at URL: <http://www.ben.edu/ahp/>.

Research Report Format and Style

Research Report Paper and Printing

The Research Report will be printed on acid-free, bright white heavier weight paper through the Nutrition Department. Paper size will be 8-1/2 x 11 inches. We use paper from the same source for printing the entire Research Report. We print on one side of the paper only.

Since the document is printed in black and white, students must convert color graphics so they are legible to the reader. For example, graphs can use dotted and dashed lines of varying lengths to make them distinguishable in black and white printing.

Once a student research team receives notice of completion by the Research Advisor(s) AND notice from the Research Advisor that the manuscript adheres to this *Research Manual* for formatting, one member of the team must submit one neat, legible and error-free electronic copy to the Director of the M.S. in Nutrition and Wellness program. The Director of the M.S. will review the formatting for adherence to formatting guidelines. The manuscript must be submitted in MS Word, not as a PDF or in another word processing format/program. On images, there must be no visible corrections, including correction fluids or tape, crossed out words or letters, handwritten additions, smudges or spots. Formatting must adhere to the guidelines in this *Research Manual* or the Director of the M.S. will not approve it for binding. ***Carefully refer to the formatting guidelines that follow and the checklist in Appendix H.***

One copy of the Research Report will be printed for each student from (whom we received the Binding Form) - refer to Binding and Distribution. If an individual student desires more than one copy for him/herself, additional copies can be printed at a cost to the student.

Pagination

Page numbers should be in the exact same position on every page and centered approximately 3/4" from the bottom of the page (no less than 1/2" from the bottom of the page). Page numbering of the Preliminary Pages should begin Roman numeral i, and it is recommended to suppress the appearance of the number on the Title Page (only). Page numbering of the Content section (begins with Chapter 1) should begin with Arabic number 1, and continues sequentially through the end of the Appendix pages. Note: to transition from page numbering from the preliminary pages to the chapter pages, under 'page layout' tab in MS Word, add a Break called 'Next Page'. Do not manually type page numbers; insert page numbers through MS Word.

Begin each division and section with a new page. For example, each chapter begins at the top of a new page. Text continues within a chapter. Do not begin a new page with a sub-header, unless there is less than one line of text under.

Heading, Subheadings, Spacing and Margins

Format for Headers and Subheaders

Research Report section and chapter headings should be uppercase, centered, and at the top of a new page. Chapter headings should use two lines, the first of which indicates the chapter number and the second (double-space between) states the name of the chapter. Refer to Appendix for a sample page of a chapter. For example:

CHAPTER 2

LITERATURE REVIEW

Second level headers (principal, first-order sub-headers) must be centered, and mixed case. For example:

Health Behavior Theories

Exercise caution with the overuse of sub-headers. Third level headers, if needed, should be left-justified and underlined. These headers are in mixed-case letters. For example:

Transtheoretical Model

Refer to **Appendix I** for a Chapter/Section page.

Spacing Between Lines

Double-space all of the text of the Research Report, with the *exception* of block quotations and long headings. Single-space references greater than one line in length, but double-space between each reference.

Have on a double space between paragraphs, headers, and subheaders (not 3 or 4 spaces).

Tables, figures, legends, photo captions, and text for graphs should be single-spaced.

Appendices may be single or double-spaced, as they reflect actual items (e.g., instruments, forms) utilized during the study process. Insert three or four spaces between tables or figures and text (be consistent in the number of spaces throughout your Research Report!).

Do not begin a new page with only one line from the previous paragraph. Always have at least two related lines of text at the bottom and top of each page. “Orphans” and “widows” are *un*acceptable. Orphans are single lines of text at the end of a page. Widows are single lines of text at the top of a page.

Margins

Left-hand page margins should be 1.5”. All other page margins should be 1.0” only. The

page margin guidelines apply to all components of the report, including tables, legends, graphs, appendices, etc.

The *first page* of each of the following pages requires a top margin of 2”: List of Tables, List of Figures, Acknowledgements, Abstract, each Chapter, and Reference List.

Left-justify the margins of the entire Research Report, **except indent 1/2-inch at the start of each new paragraph**. Right-justify page numbers in the Table of Contents. Do *not* full-justify margins.

Lists

The use of lists, ordered (i.e., Arabic number 1, 2, etc.) and unordered (i.e., bullets), should be used sparingly or not at all in the Literature Review (Chapter 2) and Discussion (Chapter 5). Do not use lists of any form in the Abstract.

Font Size and Style

Font sizes of 12-point are recommended for readability throughout the text of the Research Report. Tables, charts, figures and graphs normally have a font size minimum of 10-point. Extremely large tables may have a font size of 8-point font. Page numbers may have a 10-point font. Chapter Headings should be 12-point font size.

A single consistent type size and style should be utilized throughout the report. This means that unless a table or figure is very large, all tables and figures should have the *same* font size. All font styles for table and figure titles, table and figure legends, and page numbers should be consistent with text. Thus, when you add a table or graph generated by your SPSS analysis, you must change the font in graphs prior to export from SPSS and 'cut and paste' tables from SPSS to MS Word where you can change the font style and size to match for consistency.

For best reproduction and legibility, use a standard font. The following font styles are recommended choices: Times New Roman,

Garamond, Arial, and Courier. Serif font styles (e.g., Times New Roman, Garamond) are best for readability.

Boldface, underlining, and italicizing words in the Research Report are not normally acceptable, except for titles of publications (e.g., journals, books) according to the guidelines contained herein.

Reporting Statistical Information

Adhere to format for author guidelines published by the *Journal of the Academy of Nutrition and Dietetics*.

All equations and mathematical symbols must be typed into the text or inserted as typed images. No handwritten material is acceptable.

Unless you are reporting the results of analytical laboratory analysis (e.g., blood, urine), report all results only using two decimal spaces. Use the following statistical rounding rules:

1. Round statistics at the *end*.
2. Round to the nearest 2 decimal points (unless lab study – consult Advisor).
3. How to round:
 - Round 0 to 4 down.
 - Round 6 to 9 up.
 - Round 5 to the nearest **even** number. E.g., 0.035 rounds to 0.04 and 0.045 rounds to 0.04.

In order to reduce the size of your tables, refer to the American Psychological Association *Publication Manual* for example tables depicting which statistical results are pertinent to report in a table.

Within the text, spell out all numbers less than 10 and those beginning a sentence.

Always use numbers for page numbers, tables, figures, fractions, decimals, percentages, and units of measure (unless they begin a sentence).

A decimal less than one should begin with a zero (e.g., 0.83 not .83), unless they precede

values for significance (*p*) or correlation (*r*) or effect size (*d*, *eta*).

When reporting results for sample sizes smaller than 100, you must provide frequency data. For example, state two of seven. You may elect to include the percentage (e.g., 29%) in parenthesis.

Inclusion of Tables, Figures, Graphs, and Photos

There are no pre-established minimum or maximum numbers of tables or figures for inclusion in your report. Generally one includes at least between five to 10 tables and figures.

Include tables and figures within the text of the report at the end of the paragraph that first references the table, assuming there is adequate room on that page for the entire table. Do *not* split a table unless it is truly a very large multiple page table.

Subsequent reference to a title of a table or figure should include the page number in parenthesis.

Tables and figures are numbered consecutively throughout the report using Arabic numerals. The numbering of tables is independent from the numbering of figures, i.e., begin with Table 1 and Figure 1.

Photos, graphs, and charts should be considered as figures. For the best reproduction in black and white, use patterns rather than colors on graphs, bar charts, and histograms.

All photos should be taken with a digital camera or scanned to create an electronic image. The digital image should be electronically inserted into the document in the appropriate place. Do not attach any actual photographs to Research Report pages.

Each table or figure should have a short descriptive title. *No titles should be identical.*

Some tables and figures may need legends of description. Left-justify the title and legends.

Make certain to list the tables and figures by exact titles on the appropriate preliminary page.

Tables and figures must fit within the specified page margins.

Style Guidelines

Students should to adhere to the American Psychological Association *Publication Manual* for style guidelines.

Refer to this *Publication Manual* for guidelines on punctuation, abbreviation, hyphenation, and capitalization. Be consistent throughout the text.

Punctuation

Follow commas, semicolons, colons, and periods with one blank space. Allow one space between each word of text.

Do not place any punctuation after a title, subtitle, or page number.

The term “et al.” has a period after “al.”

The terms “e.g.” and “i.e.” have two periods each and are followed by a comma when in use. “E.g.” means “for example” and “i.e.” means “in other words.”

Hyphenation

Use of hyphens and dashes should be limited and used only if needed. To hyphenate a word, divide it between syllables as shown in a dictionary. Never split a word across two pages.

Quotations

The use of quotations should be minimal or not at all. The Research Report should be written in the words of the student writing the Research Report! If used, short quotations

located within the text should be in (double) quotation marks. Place commas or periods inside the ending quotation mark. Longer quotations should be in block quotation format. Be certain to include a reference citation.

Capitalization

Capitalize nationalities, languages, races, countries, and names. Do not capitalize prepositions (e.g., to, for, of, by), articles (e.g., a, an) or conjunctions (e.g., or, for, and) in titles within the text and in the reference list, except if it is the first word of the title.

Spelling and Word Use

A computer spell-check will *not* accurately correct all spelling and word choice mistakes. Sometimes it even erroneously switches to a foreign language during proofing! Manually proofread the entire report to ensure that it is error-free. For example, carefully choose words such as affect and effect, and since and because.

Copyright

Copyright is a form of protection provided by law for the life of the author plus 50 years. It protects actual work, not the idea. Government publications usually are in the public domain and available for use in whole or in part. Absence of copyright notice does *not* mean that the work can be freely copied. Students must obtain permission of the copyright owner prior to inclusion of any copyrighted materials (e.g., tables, charts, graphs) within their Research Report, even if you own the book or journal and even if the book is no longer in print. You may need to pay a fee to use materials and must provide citation on reproduction. The student must provide his/her Research Advisor with the copyright permissions received. Note that penalties for violation of this law may exceed \$100,000! To obtain permission, direct your request to either author (of the journal article if he/she developed the tool), or publisher Copyrights and Permissions Department. Include all the pertinent information as outlined in the sample Copyright Permission letter (**Appendix J**). It may take 3-6 weeks to obtain permission— and they may say no.

Collectively, the student research team shall own the copyright on the final Research Report. Copyrighting the report with the government is optional and the responsibility of the student team. All student teams should include a Copyright Page in their Research Report. The Copyright Page should follow the Copyright Waiver Form (Refer to **Appendix C**). The following information should be typed (double-spaced) on the Copyright Page (example in **Appendix D**):

© Copyright by
Full legal name of student authors,
Year (of completion of Research Report):
All Rights Reserved.

The Copyright Waiver Form (**Appendix C**) enables others to utilize the Research Report and results. Place the form in the Research Report, following the Research Report Approval Form (**Appendix B**).

Since the Research Advisor is the Primary Investigator (his/her ideas and he/she is advisor to accomplish work), a student cannot assume primary authorship of the research and submit part or all of his/her Research for publication without the written approval of the Research Advisor. Unless otherwise stated in writing, if the student has joined the Research Advisor in a study of the Research Advisor(s) (identified and posed by a Research Advisor), the Research Advisor(s) is(are) the primary author(s) of the research question and methodology for the study. In such case, the Research Advisor(s) may pursue publication of results without written approval of the student, as long as the research student is given due credit as a contributor, researcher, and/or co-author. For consideration as a co-author, some publications require that all authors participate in the writing and review of the manuscript for submission.. Among student authors for professional publications - generally he/she who is the primary contributor to the writing of a journal manuscript or research abstract for presentation submission has 1st authorship among students. Students interested in participating should state this in writing.

In the event that the student has developed his/her own line of research through completion of a literature review, successfully posing an original research question and methodology for a study in order to gain departmental approval – the department requires that the student give written approval to the Research Advisor to publish the findings as a co-author at the onset of the process to gain approval (refer to Electronic Submission section of this *Manual*).

Data collected is the mutual property of the collaborators (i.e., Research Advisor and research students), unless otherwise stated in writing. Data collected is to be archived in the departmental locked files.

Approval of Master Research

Oral Defense

An oral defense of the Research is required following completion of the written Research Report. There are two parts to this defense: (1) public Oral Defense and (2) individual Question and Answer Period. A defense will not normally be allowed until Research Advisor approves a “near perfect” draft of the written Research Report - in particular Chapter 4 (Findings).

Public Oral Defense

The public oral defense normally takes place in the fall term for those registered in NTR 698. Normally no public oral defense will be allowed after the 9th week of the fall term.

The Research Advisors will invite external faculty and preceptors to the public Oral Defense. Students can extend invitations to family members and friends.

Presentation of the research (e.g., literature review, methods, hypotheses, findings, and conclusion - refer to web site for complete list) should be presented in a professional manner, similar to a presentation at a professional dietetic meeting. The use of a professional looking PowerPoint presentation is required. Optional - A structured abstract can be distributed to each person in attendance. It is expected that all materials presented be free of spelling, grammatical, and content errors.

Refer to **Appendix K**.

Individual Question and Answer Period for Defense

The Research Advisor will invite the appropriate parties to the “question and answer” (Q & A) portion of the individual defense (refer to example in Appendix). This part of the defense is only open to members of the defending student, Research Advisor(s),

Dietetic Internship program Director, M.S. in Nutrition and Wellness program Director, Nutrition Department Chairperson, and Dean of the College.

This portion of the defense follows the public Oral Defense, and is held on a separate day from the public Oral Defense. During this portion of the defense, the student may be asked for further elaboration on his/her research, which may include (but are not limited to) a request for additional information on theoretical foundation for data collection instrument and methodology, details on procedures, data analysis, validity and reliability, and/or areas of future research.

Decision

Following the defense, the Research Advisor(s) - with input from the faculty and administrators in attendance at the individual Q & A, makes one of the following determinations:

1. Full approval as presented.
2. Approval pending minor revision(s) of the report due in a week.
3. Deferment of decision to approve pending major revisions. The timetable will need to be determined between the Research Advisor(s) and student team.

If the manuscript is not yet complete, or the defense is unsuccessful - evidenced by an inability of the student to respond appropriately to questions posed (e.g., theory, choice of methodology or analysis, professional implications of findings) - or the oral presentation is of poor quality, the student or student team may receive a failing grade and need to register to an additional Research credit to defend the Research again. ***If the student team does not submit all required components of the research report, in proper format and on time, he/she may have his graduation date delayed and be required to register for additional research credits (NTR 699) every term until completion.***

Poster Presentation

If your research study is scheduled to be presented at a local dietetic association meeting as a poster presentation, consider the following guidelines.

The supplemental use of quality graphs, tables, charts, and illustrative aids are encouraged.

If it will be a tabletop display, consider using a stiff tri-fold poster, and consider the following:

- Use color appropriately for highlighting and creating borders.
- The placement of information should be neat with proper alignment.
- All information should be free of spelling errors and demonstrate proper use of grammar.
- Use bullet points.
- The font size (20-24 pt) and style should be appropriate and consistent.
- Do not have a “cute-sy” display!

Refer to **Appendix L**.

Distribution of a structured abstract is recommended.

Grade for Research

The Research Advisor solicits input from other faculty and administrators prior to issuing grades for Research courses. Grading rubrics are used for content. The format is assessed using the Research Format Checklist (**Appendix H**). No portion of the grade is awarded for “effort,” *just for outcomes*.

The Research Advisor submits the final grade for the research after the student successfully passes both components of the Oral Defense and completes other requirements such as electronic submission of the Research Report and submission of SPSS data file.

Additionally, prior to submission of a final grade, the student must submit to the

Research Advisor all instruments completed by study subjects for archives. The Research Advisor may also request a copy (paper or electronic) of all articles used for the literature review.

Binding and Distribution

Prior to binding, verify page sequences. The bindery does not correct mistakes in page order or omissions.

Copies of the entire Research Report are brought to the library for binding by the Nutrition Department. Of the bound copies, two remain with the library, one is sent to the Nutrition Department, and one is *held* for each student co-author of that Research Report to pick up (each student does get his/her own copy). The Nutrition Department will be responsible for printing and binding any additional departmental copies if there are any external Research Advisors.

AFTER the Research Report has final approval of the Research Advisor for both content and format AND the subsequent approval by the Director of the M.S. for format, then each research team will submit (1) ONE completed approved (by Research Advisor) Team Research Report Binding Form (**Appendix M**), (2) one individual Binding Form per student co-author, (3) signature - signature in black pen on white paper and drop off, or scan and email, and (4) one electronic copy of the approved Research Report. ***Submit all of the aforementioned documents to the Nutrition Department Administrative Assistant Egle Liutkus (eliutkus@ben.edu).***

If a student desires more than one copy, s/he should mark this on his/her individual binding form and include a check made out to Benedictine University Nutrition Department for \$30 per extra copy. Submit this with the individual Report Binding Form.

If the student would prefer that the final bound copy be mailed, she/he must include a

check payable to Benedictine University Nutrition Department for \$15 per copy to be mailed. This needs to be included with the individual binding form.

Once submitted, binding takes two to eight months, depending on the student timeliness and cycle for submission by the university.

Electronic Submission of Research Report

An electronic archive is maintained for each Research Report. Each student is responsible for submitting their final reports to:

1. Research Advisor(s)
2. Nutrition Department Administrative Assistant Egle Liutkus at eliutkus@ben.edu

Each submission **MUST** be made electronically through e-mails (several e-mails due to file sizes) and/or CD-ROM. Each submission should contain the following:

1. One complete copy of the final version of the Research Report in MS Word. PDF is *not* acceptable. Another word processing program is *not* acceptable. Multiple files will *not* be accepted; the Research Report should be sent as one single document, including all forms. *No exceptions will be allowed.*
2. Structured abstract as a separate MS Word document.
3. Complete final SPSS data file as part of this transmission.
4. SPSS Output files (e.g., tables, graphs) are optional, but recommended.
5. An image (.jpg or .gif only) of his/her signature.
6. Final PowerPoint presentation from public Oral Defense.
7. Completed group Research Report Binding Form.
8. Completed individual Research Report Binding Form, with any supplemental checks.
9. From each student co-author, a "statement of interest" to pursue publication and/or presentation of the

findings of the study in a professional journal, abstract, presentation, or other professional outlet. The student should be specific as to nature of interest, if any. For example, the student may include a statement of interest in being a co-author if participating in the manuscript writing and/or reviewing. Additional interest in participation (e.g., presentations, poster sessions) should be stated. Omission of this statement means the Research Advisor, and possibly other members of the research team, may pursue publication or presentation without that student co-author who declined participation. Since co-author status in some professional outlets requires participation, the student co-author who declined participation might not be listed as a co-author on the publication and/or presentation. Although there is no specific format for this statement, the "permission statement" should include a date, Research Advisor's name, student's name, and title of the research study. An example follows:

Date: December 12, 2013

To: Bonnie Beezhold, Research Advisor

Cc: Karen Plawecki, Director of M.S. in Nutrition and Wellness program

I, Elliana Xue Arnold, give permission to and encourage Dr. Bonnie Beezhold, Research Advisor at Benedictine University, to pursue scholarly publications associated with my Research Report titled "The Effect of Worksite Wellness Education on Health Risk." As collaborator on the study, I request to participate in the writing process by critiquing the related manuscripts and be designated as a co-author. I also am interested in co-presenting any presentations or poster sessions related to my Research Report.

The student must make certain to deliver the data collection tools to the Research Advisor prior to completion.

Final Research approval will not be authorized by the Nutrition Department Chairperson without receipt of the electronic submissions.

Research Manual

APPENDICES

APPENDIX A: Example Research Report Title Page

THE EFFECT OF WORKSITE WELLNESS EDUCATION ON HEALTH RISK

by

ELLIANA XUE ARNOLD, B.S. (Cornell University) 2012

DOMINIC GIOVANNI BALSAMO, B.S. (University of Illinois) 2011

LAURA MAY GREENE, B.S. (Benedictine University) 2011

JULIA MARIE HARRIS, B.S. (Benedictine University) 2012

RESEARCH MANUSCRIPT

Submitted in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE in NUTRITION AND WELLNESS

in the College of Education and Health Services,

Benedictine University, Lisle, Illinois

Research Advisor:

Bonnie Beezhold, Ph.D.

December 2013

APPENDIX B: Example M.S. Research Report Approval Form

THE EFFECT OF WORKSITE WELLNESS EDUCATION ON HEALTH RISK
RESEARCH MANUSCRIPT

by

ELLIANA XUE ARNOLD

DOMINIC GIOVANNI BALSAMO

LAURA MAY GREENE

JULIA MARIE HARRIS

The Research Manuscript submitted has been read and approved by the Research Advisor. It is hereby recommended that this Research Manuscript be accepted as fulfilling part of the Master of Science in Nutrition and Wellness graduate degree in the College of Education and Health Services at Benedictine University, Lisle, Illinois:

Signature of (*Type Name, credential here*)
Research Advisor

Signature of Karen Plawecki, M.S., Ph.D.
Director, M.S. in Nutrition and Wellness
APPROVED FOR BINDING

Signature of (*Type Name, credential here*)
Research Co-Advisor

Signature of Catherine Arnold, M.S., Ed.D.
Chairperson, Nutrition Department
APPROVED COMPLETION OF
RESEARCH REQUIREMENT

Signature of Alan Gorr, Ph.D., M.P.H.
Dean, College of Education and Health
Services

November XX, 2013
Date of Oral Defense

December 31, 2013
Intended Graduation Date (Month, Year)

APPENDIX C: Example Copyright Waiver Form

I authorize Benedictine University, 5700 College Road, Lisle, IL 60532, to lend this Research Report, or reproductions of it, in total or in part, at the request of other institutions or individuals for the purpose of scholarly research.

Student Name (Print)

Student Signature and Date

Student Name (Print)

Student Signature and Date

Student Name (Print)

Student Signature and Date

Student Name (Print)

Student Signature and Date

Student Name (Print)

Student Signature and Date

Student Name (Print)

Student Signature and Date

Student Name (Print)

Student Signature and Date

Student Name (Print)

Student Signature and Date

Research Advisor Name (Print)

Research Advisor Signature and Date

APPENDIX D: Example Copyright Page

© Copyright by

Elliana Xue Arnold, Dominic Giovanni Balsamo, Laura May Greene, Julia Marie Harris

2013: All Rights Reserved.

APPENDIX E: Example Table of Contents and List of Tables

TABLE OF CONTENTS

	Page
LIST OF TABLES	vii
LIST OF FIGURES	viii
ACKNOWLEDGEMENTS	ix
STRUCTURED RESEARCH ABSTRACT	x
CHAPTER 1:	
INTRODUCTION	1
Introduction to the Problem	1
Problem statement	3
Hypotheses	4
Variables and Operational Definitions	5
CHAPTER 2:	
LITERATURE REVIEW	6
Subtitle.by (student name)	6
Subtitle.by (student name)	11
Subtitle.by (student name)	17
CHAPTER 3:	
METHODOLOGY	23
Research Study Design	23
Research Study Participants	23
Data collection methods	24
Measurement Tools	26
Statistical Procedures	29
CHAPTER 4:	
FINDINGS	31
Outliers	31
Profile of Participants	32
Subtitle (related to hypothesis 1) by (student name)	34
Subtitle (related to hypothesis 2) by (student name)	36
Subtitle (related to hypothesis 3) by (student name)	39
Subtitle (related to hypothesis 4) by (student name)	41
Subtitle (related to hypothesis 5) by (student name)	43
Subtitle (related to hypothesis 6) by (student name)	45
Subtitle (related to hypothesis 7) by (student name)	47
Subtitle (related to hypothesis 8) by (student name)	50
Subtitle (related to hypothesis 9) by (student name)	52
CHAPTER 5:	
DISCUSSION	55
Summary of Findings and Conclusions	55
Implications and Applications	60

	Strengths and Limitations of the Study	62
REFERENCES		64
APPENDIX A:	Data collection instruments (list names of instruments)	71
APPENDIX B:	Informed Consent Form(s)	75

LIST OF TABLES

Table	Page
1. Instrument Reliability Statistics	26
2. Social Expectancies Self-Efficacy Scale – Component Matrix	27
3. Nutrition Self-Efficacy Scale – Component Matrix	28
4. Physical Expectancies Self-Efficacy Scale – Component Matrix	29
5. Participation Rate	32
6. Reasons for Course Enrollment – Friedman Test Rankings	33
7. Comparison of Courses Repeated Measures ANOVA	36
8. Comparison of Courses Paired Samples Statistics	37
9. Summary Paired Samples <i>t</i> -test	45
10. Summary of Grand Means for Variables	48
11. Correlation Matrix of Variables	53

APPENDIX F: Example Format of Structured Research Abstract

ABSTRACT OF THE RESEARCH MANUSCRIPT
The Effect of Worksite Wellness Education on Health Risk

By
Elliana Xue Arnold
Dominic Giovanni Balsamo
Laura May Greene
Julia Marie Harris

Master of Science in Nutrition and Wellness
Benedictine University, Lisle, Illinois
December 2013 Research Advisor: Bonnie Beezhold

Objectives:

Design:

Measures:

Subjects:

Statistical Analysis:

Results:

Conclusions:

REFERENCES

1. Taras H, Potts-Datema W. Obesity and student performance at school. *Journal of School Health*. 2005;75(8):291-295.
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11. Piaget J. Intellectual evolution from adolescence to adulthood. *Human Development*. 1972;15:1-12.
12. Piaget J. *The Theory of Stages in Cognitive Development*. New York, NY: McGraw-Hill; 1971.

APPENDIX H: Review of Research Report Format Checklist

Directions: The student should provide the Research Advisor with a copy of this 2-page form for the preliminary and final review processes. The student should have already completed a careful proof of the Research Report against all criteria. The Research Advisor(s) uses this checklist during the Research review process. Reviewers place a checkmark in the box if the criterion is met. Record specific comments about problematic components in the space provided. The completed checklists are returned to the Research Advisor.

Student Names: _____

Research Report Title: _____

Student Reviewer Name: _____

Review #: _____ Date of Review: _____

1. Headings: Research Report section and chapter headings should be uppercase, centered, and at the top of a new page; Second level headers (principal or first-order sub-headers) should be centered and mixed case; Third level headers, if needed, should be left-justified, underlined, and mixed case; Headings are used and formatted in a consistent manner throughout the content text as appropriate; Each Appendix has a header consistent with guidelines.

Comments:

2. Line spacing: Double-space consistently throughout text. Exceptions: single-space for block quotations, tables, and figures (including legends).

Comments:

3. Margins: Top 1.0"; Left 1.5"; Right 1.0"; Bottom 1.0". Be certain to adjust the margins for your computer and the final laser printer you use; Left-justify all text, except right-justify page numbers in the Table of Contents. 1/2" paragraph indentation.

Comments:

4. Font Size and Style: 12 point font size for text; Font size is normally between 10 and 12 point for tables (be consistent, but 8-point font size may be used for very large tables); Consistent font style is used throughout text, titles, headers, tables, figures, legends and page numbers.

Comments:

5. Page numbers: Page numbers visible on all pages except can omit for page 'i' (Research Report Title Page); Preliminary pages numbered with lower case Roman

numerals; Chapter 1 starts with page “1”; Location of numbers are exactly in the same position (bottom center) throughout the document, including on pages with landscape table; Page number font matches text font; Page number font style and size consistent throughout.

Comments:

6. Tables and figures (graphs, diagrams, photographs, etc.): Presented in a clear and easily understood format; Tables and figures have titles; Numbering of tables is sequential throughout entire report, beginning with “1”; Numbering of figures is sequential throughout entire report, beginning with “1”; Don’t split tables or figures into smaller ones; Tables and figures should immediately follow text to which references the table; Later references to a table or figure include a page number reference in parenthesis; All captions formatted in a consistent manner (numbering, font, punctuation, location in relation to image); Landscape (sideways) pages have captions also in the landscape position, but the page number is in the same position as on regular pages.

Comments:

7. Research Report Title Page: Content, font style, and text placement match example in this current *Nutrition Research Manual*; Ideally no visible page number on this page.

Comments:

9. Research Report Approval Form: Content, font style, and text placement match example in this current *Nutrition Research Manual*.

Comments:

10. Preliminary pages: All pages present and in proper order; Table of Contents exactly matches the primary and subheadings used in text; Page numbers listed in Table of Contents are correct.

Comments:

11. Content pages: Text is organized in a coherent and consistent manner; Each chapter starts on a new page.

Comments:

12. References: Cited in the text correctly, according to the style of the *Journal of the American Medical Association*; All citations to others’ referenced; Full references listed in the reference list(s) correctly, completely, and consistently, according to the style of the *Journal of the American Medical Association*.

Comments:

CHAPTER III
METHODOLOGY

The research study design, participant criteria, methodology, measurement tools, and methods of statistical analysis are described for the study.

Research Study Design

A pre-test/post-test quasi-experimental design was utilized. Although control groups were utilized, there was no participant randomization. The experimental component was the goal setting and monitoring. The design is shown in Figure 1.

Figure 1. Research Design

Experimental Groups:			
• Group 2: Course A fall 2004	O ₁	X	O ₂
• Group 3: Course B spring 2004			
Control Groups:			
• Group 1: Course A spring 2004	O ₁		O ₂
• Group 4: Course B fall 2004			

Key: O₁ = Questionnaire set administration in week 1
X = Intervention of Goal-Setting Instruction and Monitoring Exercise
O₂ = Questionnaire set administration in week 13

APPENDIX J: Example Copyright Permission Letter

Date

Name of Holder of Copyright
Street Address
City, State Zip

Dear (insert name of Holder of Copyright):

I(we) am(are) a graduate student(s) at Benedictine University in Lisle, Illinois pursuing a Master of Science in Nutrition and Wellness. My Research Study is (insert title). I am requesting permission to include the following material in my Research Report:

Describe your request as applicable:

- *Authors, editors full name(s)*
- *Title, edition, volume of book or journal*
- *Copyright date*
- *ISBN for books, ISSN for magazines and journals*
- *Numbers of the exact pages of tables, figures, and illustrations*
- *Exact chapter (if applicable) and page numbers*
- *Contact information (phone, address, email)*

This material will appear in the Research Report as originally published. (or with adaptations described below – then describe the changes).

If permission is granted, proper acknowledgement and credit will be included in the Research document. Thank you for your consideration of my request. I look forward to your response.

Sincerely,

Your signature(s) and e-mail(s)

Your name(s) (typed)

Contact information
Benedictine University
Nutrition Department, c/o (name of Research Advisor)
5700 College Road
Lisle, IL 60532

APPENDIX K: Example Research Presentation Announcement

(Department Letterhead)

To: Names of
Research Advisors
Nutrition Department Faculty
Dean, College of Education and Health Services

From: Name of Research Advisor

Date:

Re: Research presentation by (Student's names)

(Student's names) will present and defend his/her Research on (day, date, time, place). The title of his/her Research is "... " You are cordially invited to attend the presentation.

APPENDIX L: Example Layout of Posters for Presentation

An informative title, formatted in “sentence case”, that attracts viewers Your name(s) here — Department of BlahDeBlah, Harvard Medical School, Boston, Massachusetts

INTRODUCTION

Planning the poster is important.

- Refer to the poster session guidelines to determine correct poster size.
- Contact the poster printing service bureau to confirm acceptable file formats, acceptable poster dimensions, turnaround time, and cost.

Take advantage of the poster's inherent ability to display graphic elements. With regards to text, be brief, and opt for photographs, tables, graphs or illustrations to elucidate organism, protocol, or experimental design. Don't overstuff the poster- leave some blank space.



Fig. 1. Allow room for figures and captions. Use a sans serif font for figure captions. To provide cue to reader that *headline is not reading normal text section*. Smaller font size also sets captions apart from body text blocks.

MATERIALS & METHODS

After you refer to the poster submission guidelines, open and examine poster template or use PowerPoint's Page Setup dialog box to set poster size. It is important to note that the maximum size for PowerPoint is 56" x 56". Larger posters can be printed by setting the dimensions to one half of the target dimension and instructing the poster printing service bureau to print the poster at 200%.

If printing at 200%, be sure to double the resolution of all photographic and scanned images to 250-400 dpi.



Fig. 2. Allow room for figures and captions. Use a sans serif font for figure captions. To provide cue to reader that *headline is not reading normal text section*. Smaller font size also sets captions apart from body text blocks.

RESULTS

Start making the poster by inserting all text content into *Text Boxes*. If using these templates, first delete all 'slides' but the one you plan to use. Select the contents of the existing text boxes and replace it with your own content. After inserting text content, format the content to an appropriate font choice, text style and size.

Sans serif fonts are good choices for the poster title, section headings and figure captions. Serif fonts are good for text block section content.

Don't underline. Italics and bold text is OK. Bullets should be avoided. Use standard, cross-platform fonts to avoid printing problems:

Arial	Verdana
Times	Trebuchet MS
Georgia	Times New Roman

Once formatted, edit the content. Be ruthless. If you are too attached to the content, enlist someone's help to reduce the verbiage. Remember a picture is worth a thousand words- plan to insert supporting graphics where possible, especially if it reduces the amount of blah, blah, blah.

Only after the text boxes have been inserted and edited can a determination be made about the size of inserted images.

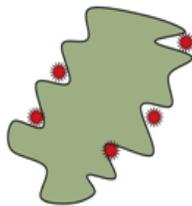


Fig. 3. Remember that you can draw complex shapes with PowerPoint drawing tools.

RESULTS

RASTER IMAGES (photographs, scans, images that come from microscopes) Using the *Rectangle Tool*, create raster image placeholders in the poster. Keep in mind the aspect ratio of images when drawing placeholders: draw landscape oriented and portrait oriented rectangles where appropriate. Double-clicking on the image placeholders and looking at the size tab will allow you to determine the correct physical dimension that you will need to make the raster images.

For raster images, plan to edit the image with Photoshop to set the correct:

- Physical dimension (see image placeholder)
- Resolution (125-200 dpi)
- File type (.jpg, .tif, .png)
- Color mode (RGB or Grayscale)
- Crop

Once edited in Photoshop, *insert* the raster image into PowerPoint. Do not resize inserted raster images within PowerPoint- doing so may result in non-printable posters.

(Don't forget images that will be printed at 200% need to be prepared at 250-400 dpi.)

VECTOR IMAGES (illustrations from other PowerPoint figures, tables, charts and graphs from other Microsoft applications, vector objects generated by other applications like Canvas, Illustrator, CricketGraph, ChemDraw and KaleidaGraph) No need to put in placeholders, no need to edit using Photoshop.

Paste Special, perhaps *Ungroup* and edit!

Another option is to save the vector as a .wmf or .eps file and *insertPicture...* from *File* as you would a raster image.

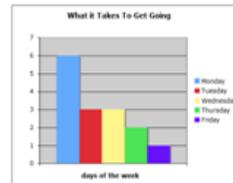


Fig. 4. The above graphic is an example of a vector taken from Microsoft Excel, copied and *Paste Specialized* into the poster. It was resized once in the poster with no reduction in image quality.

CONCLUSIONS

After all the content is entered, *inserted*, *Paste Specialized* and edited, resize the white section backgrounds to fit around text block section content.

Using the Alignment Tools can make the final steps easier.

Poster printing service bureaus - upload files to their websites:

- http://www.makesigns.com/scientific_posters.html
- <http://www.megaprint.com/medical.html>
- <http://www.thinksign.com/>
- <http://www.images.com/poster.html>

*These service bureaus are examples of what is available. Since Research Imaging Solutions has not tested these providers, we can not endorse their services.

Upon receiving the completed poster, be sure to proof read it, especially where there are scientific symbols present.

LITERATURE CITED

- Begg, J.E. 1980. Morphological adaptations of leaves to water stress. Pages 33-43 in *Adaptation of Plants to Water and High Temperature Stress*, edited by N.C. Turner & P.J. Kramer. Wiley Interscience, New York.
- World Health Organization. 1999. Malinal mortality in Africa. www.who.int/whr/Prevention/MIP-RM-food/AR05.htm (June 4, 2000).

The above are provided to illustrate format for articles, books, book chapters, and web sites (avoid web sites, though, if possible).

ACKNOWLEDGEMENTS

C. Praxington, Department of Biology, Swarthmore College, Pennsylvania

[Typically only initials are used for first (and middle) names, and people's titles are omitted.]

Download poster templates at it.med.harvard.edu/its

APPENDIX M: 2012-2013 GROUP Nutrition Research Report Binding Form

Title of Thesis on Front Cover (Type or Print - limit of 12 words): _____

By (Names of all student co-authors, list First Name then Last Name for each, alphabetical order): __

(Year of research completion): _____

Shortened Version of Thesis Title to be placed on the Spine (max about 45-50 combined *letters and spaces... maximum!!*): _____

(If your title is too long, the bindery will shorten the title that is placed on the spine, but the full title of your Thesis will appear on the front cover.)

Month (December or March or June or August): _____

Year (same as above): _____

Bindery Style:

(Please circle one)

Red Leatherette Cover with Gold Letters

Black Leatherette Cover with Gold Letters

(To be completed by the Nutrition Department Administrative Assistant)

Total Number of copies: _____

Contact Information of Nutrition Department Administrative Assistant *(if questions from the Bindery)*

Name: Egle Liutkus

Address: Benedictine University, Nutrition Department, 5700 College Road, Lisle, IL 60532

E-mail: eliutkus@ben.edu

Phone: (630) 829-6596



APPENDIX N: 2012-2013 INDIVIDUAL Nutrition Research Report Binding Form

EACH student is to complete his/her own INDIVIDUAL Binding Form. This form will be retained by the Nutrition Department Administrative Assistant, and not sent to the Bindery. It is to assist in distribution of bound Research Reports once they arrive.

Title of Thesis on Front Cover (Type or Print - limit of 12 words – *titles must match that submitted on the group binding form*): _____

Your Name: _____

Number of EXTRA copies: _____

Each student will receive ONE copy. If a student desires *additional* copies for family or friends, s/he must (1) record the number of EXTRA copies desired in the space above, and (2) include a check (\$30 x number of each EXTRA copy) must be made out to Benedictine University Nutrition Department. Submit the check with this form.

Mailing of Bound thesis (Please check one):

- I (student) will pick up my bound thesis (in person). (No check for mailing of thesis enclosed). I understand that I will be contacted by the Department Administrative Assistant once the bound thesis are in, and have a maximum of six months to pick up my copy(ies). Copies that are not picked up within six months after contact (using contact information you provide below) will be donated to the university library.
- Please mail my bound thesis to me (student). *I have enclosed a check for \$15 (payable to Benedictine University Nutrition Department) for each copy to be mailed to my permanent address listed below.*

Student's PERMANENT Contact Information (e.g., six to eight months from now):

Name: _____

Address: _____

Phone #: _____

E-mail Address: _____

Alt. Phone #: _____

Alt. E-mail Address: _____

Note: Our University now sends manuscripts to the Bindery only two to three times a year. Please be patient. It may take up to eight months for you to receive your copy(ies). If your contact information changes during this time, it is your responsibility to provide an updated Individual Binding Form to the Department Administrative Assistant (Egle Lintkus at elintkus@ben.edu). Thank you, and congratulations!!