**Introduction**

The requirements described in this *Thesis and Dissertation Handbook and Policy Manual* have been established for the preparation of thesis and dissertation manuscripts submitted in partial fulfillment of graduate degrees at UW-Green Bay. Manuscripts are required to be formatted and styled in forms suitable for library archiving and ProQuest circulation. Formatting standards were developed to ensure consistency in written presentation of research across all graduate academic disciplines at UW-Green Bay. Graduate Studies does not accept manuscripts that do not conform to these guidelines.

 The thesis or dissertation is a product of original thinking and research designed to appear in a form comparable to published works. A student and the University’s responsibility are to share the research with the academic community and make it available to the public. **The requirements contained in this manual are effective beginning the fall 2024 semester, and are based on the seventh edition of the *Publication Manual of the American Psychological Association* (APA).**

 Graduate Studies requirements cover the general rules of *format* and *appearance*. Students should consult their thesis or dissertation chair and committee for specific *content* requirements.

Students are encouraged to use a copy of the professional formatting manual for their discipline. When differences arise between the Graduate Studies requirements and individual academic styles, Graduate Studies requirements take precedence. Students may use the journal styles of their respective academic disciplines for their chapters, appendixes, and references. Preliminary Pages (Front Matter) should always conform to Graduate Studies requirements.

 The student’s first priority in formatting a graduate manuscript is to meet UW-Green Bay requirements. While Graduate Studies will allow latitude when a discipline-specific format style is needed for future publication of research, fulfilling formatting and publishing criteria for the University is the student’s primary obligation.

 This manual replaces all previously published UW-Green Bay format and style manuals. Changes in standards, differing styles in professional journals, and changes in the UW-Green Bay requirements occur occasionally. Students should not use library or departmental copies of previously approved UW-Green Bay manuscripts as examples of formatting and style. The most updated copy of the *Thesis and Dissertation Handbook and Policy Manual* is always available on the Graduate Studies website.

 Students are responsible for reading and following the requirements in this manual and for submitting documents of highest quality. The final, signed paper copy of a thesis or dissertation manuscript will not be accepted with corrections remaining, insufficient margins, or if the copies are of such poor quality that digitized and/or printed copies are not deemed finished and professional.

**Manuscript Preparation**

 The Graduate Studies website provides a general overview of the preparation process for theses and dissertations. Please note that some disciplines have program-specific requirements for manuscript preparation and approval. Please consult your Graduate Advisor for instruction.

**Committee Selection**

 Students should select a committee chair or major advisor, as appropriate, from their graduate program. The committee chair must be a UW-Green Bay Graduate Faculty member from the student’s degree program, and faculty generally welcome inquiries about their work and availability for committee service. When students are unsure or unfamiliar with the faculty in their program, they may consult with their initial advisor assigned to them on their Admission letter. Please note that faculty can serve on a limited number of thesis and dissertation committees, and therefore, a student’s first choice may not be available to accommodate their request.

Once the committee chair has been selected and approved, they work with the student to design a project and select additional committee members with the expertise to support the work. Committee members must hold the appropriate terminal degrees, and practicing professionals may serve as the third or fourth committee member. Any external committee members must be approved by the committee chair.

 Once all committee members are selected, accepted, and approved, the student should arrange a meeting with all members to discuss the objectives and methodology, and if it is necessary to take specific courses to better prepare the student for the project. From this meeting, the student will draft a proposal with the assistance of their committee chair, and send a copy to all committee members to review and react. It is valuable for the student to arrange a second meeting to discuss any suggested changes.

 While scheduling meetings of committee members may be difficult, it will save the student a great amount of time. Meetings can be brief (15-30 minutes), but can capture feedback and rationale for suggested changes early on.

**Research Proposal Form (GR-2)**

 A Research Proposal (GR-2 Form) must be approved by the committee chair and members. Before students can enroll for thesis or dissertation credits, they must be in good academic standing and have an approved Research Proposal on file with Graduate Studies.

 Research Proposals provide evidence that a student is prepared to undertake and complete a thesis or dissertation project. Students demonstrate their familiarity with the discipline through a review of scholarly literature, and have formulated an acceptable research procedure or methodology.

 An approved Research Proposal serves as a contract between the student and their committee that the project meets accepted standards of the academic discipline. Because the course of research is often uncertain, relatively minor and reasonable changes are expected as the work proceeds. However, major modifications must be agreed to in writing, and approved by the Associate Vice Chancellor of Graduate Studies & Research.

 The format and structure of a Research Proposal should be guided by the standards of technical or scholarly writing in the field of study, and must be approved by

the committee. Students should:

* Provide each committee member with their own neatly done copy of the proposal every time they are asked to provide feedback. Circulating a single copy with notes and edits from each committee member will cause confusion and delays.
* Give committee members adequate time (up to two weeks) to react to the drafts or requests for assistance or information. Be prepared to schedule an appointment to meet them when a problem arises.
* Avoid meetings and draft reviews around course enrollment periods or near the end of the semesters. Those times are especially busy for faculty.

The following outline presents a suggested structure of the major sections usually present in the proposal.

***Problem Statement***

Provide a clear statement of the specific topic to be addressed and the purpose of the work to be proposed. What is the problem to be solved, the issues to be analyzed, the questions to be answered, or the project to be completed? The general and specific objectives must be enumerated. This section is critical, because it establishes a framework for the rest of the document by presenting exactly what you will do and why it is being done. This section is usually the shortest of the Proposal and must be done carefully.

***Literature Review***

Provide a review of the published scholarly literature pertinent to the research topic. This is the longest section of the Proposal, and establishes the broader academic or technical context of the research. It demonstrates familiarity with the content and wider implications of the topic.

***Methodology***

Describe how the research will be carried out by including the research design, sampling protocol, and data analysis. Describe ways in which the data will be collected, the analytical techniques to be used, and the intellectual framework or conceptual models that will be employed.

***References***

List all works that appear relevant to the topic or only those cited in the Proposal. Adopt a set of standards acceptable in the field of study for references.

**Research Compliance**

 If the research protocol includes data collection from people, animals, or biohazardous material, students must initiate the appropriate application forms, and complete the formal review process(es) in a timely manner in conjunction with research approval and data collection. The [Office of Grants & Research](https://www.uwgb.edu/research/) oversees all areas of research compliance.

***Institutional Review Board***

The [Institutional Review Board](https://www.uwgb.edu/institutional-review-board/) should be consulted for all research involving data collection with human participants.

***Institutional Animal Care & Use Committee***

The [Institutional Animal Care & Use Committee](https://www.uwgb.edu/institutional-animal-care-use-committee/) should be consulted for all research involving animal care and use.

***Institutional Biosafety Committee***

The [Institutional Biosafety Committee](https://www.uwgb.edu/institutional-biosafety-committee/) should be consulted for all research involving biohazardous materials.

 Students must retain all research data for a minimum of five years, and may want to discuss any specific “holding” periods related to their academic discipline with their committee chair.

 Some data instruments and research tools (i.e., surveys, scales, questionnaires, or measurement tools) are copyrighted. Students interested in reproducing copies of copyrighted data instruments and research tools are required to request permission from the copyrighting agency prior to use. Please provide a copy of the copyrighted agency’s approval to Graduate Studies.

**Campus Resources for Researchers**

***Cofrin Library***

Librarians and the [Cofrin Library website](https://www.uwgb.edu/library/) are available with research strategies and database questions.

***Learning Center***

Staff in the [Learning Center](https://www.uwgb.edu/learning-center/) provide tutoring, writing assistance, and success coaching to help set goals and plan-out research to meet deadlines.

***Student Technology***

All active students are given a campus network account that can be used to access a variety of campus technology resources available through [GBIT](https://uknowit.uwgb.edu/page.php?id=24061). Students can also access Adobe’s Suite of products when using a computer on campus, or by using UW-Green Bay’s Remote Lab.

* - [Remote Lab - Student Access (uwgb.edu)](https://nam10.safelinks.protection.outlook.com/?url=https%3A%2F%2Fu28809559.ct.sendgrid.net%2Fls%2Fclick%3Fupn%3Du001.rVfS-2B1rVl-2Fe9Tqj81IdbuyiIjN4YISh-2Fc0yJbAqG-2B62QNh75SrW9HTOw4ruhs4IR1Dd1_22yv4Velg9aWCUtGPnZL0iM-2BFcyI-2Bm4dAtNXC1kHjMKDHTiUWdyGn-2FAeEaW-2FxgpV8RXp2jmQSa2W-2FnFEhJh0Ldizi4X70fBCvcnrTEF0IHngslcC5O26FURM2u-2FR-2BdmmU7rhiIFe2FI8eOm-2B5DjwTZQQ-2BY20Q5yLHmparbIkg8pUC9t7MAMTQflcdHYkShyRwRJL4J-2B0rTFwwBhs-2B6BvUw-3D-3D&data=05%7C02%7Choffmanm%40uwgb.edu%7C9d3a2e411419428ed06208dca5143992%7C7fc34f9d1f754f96b5b33cdcaab03aea%7C0%7C0%7C638566753504618917%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C0%7C%7C%7C&sdata=iyb4KWMhPPeAY%2BWy9lP3nTtZqmdM04OfqLBBc2hpCLY%3D&reserved=0) (steps to sign in)
* - [VMware Horizon (uwgb.edu)](https://nam10.safelinks.protection.outlook.com/?url=https%3A%2F%2Fu28809559.ct.sendgrid.net%2Fls%2Fclick%3Fupn%3Du001.rVfS-2B1rVl-2Fe9Tqj81IdbuzJZCthe1WFQKODju5ecgQz9bO4q6PIuMRazfyvzec-2Bm-2Fz79uNHRy2orYi8TU6Wi9w-3D-3DQQYI_22yv4Velg9aWCUtGPnZL0iM-2BFcyI-2Bm4dAtNXC1kHjMKDHTiUWdyGn-2FAeEaW-2FxgpVp7VXaruCiVO4PpiUKsbUnmes7IRL4ht1gsZFYlak2k-2BUwB8DcTdZUZYslY7wi1OkTZNUaQC2ua8WtxmcDhXykCohGYmYpDuMnhCkQhuFd6eXp28PLpdapho7mWpIHLoYK9m8PrbPrXdgCId3E-2FzmYA-3D-3D&data=05%7C02%7Choffmanm%40uwgb.edu%7C9d3a2e411419428ed06208dca5143992%7C7fc34f9d1f754f96b5b33cdcaab03aea%7C0%7C0%7C638566753504629831%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C0%7C%7C%7C&sdata=BxhXCOfcarSBhnVyA0fu%2Fvom7CIBcXe2%2BX5XTR3bjuI%3D&reserved=0) (link to sign in from personal computer)

\* Sign in with your GB email and password.

***Discounted Software***

GBIT provides a list of [discounted software](https://www.uwgb.edu/discounts/) available to all UW-Green Bay students.

***Research and Travel Grants***

Graduate Studies provides [research and travel grants](https://www.uwgb.edu/graduate/cost/graduate-financial-aid/#grants) for students completing their major research projects.

***Poster Printing***

The Office of [Undergraduate Research, Scholarly, and Creative Activity](https://www.uwgb.edu/ursca/poster-support/), along with UW-Green Bay Libraries, offers free poster printing to students who are presenting research at professional conferences.

**Off Campus Resources for Researchers**

***Purdue Online Writing Lab (OWL)***

A supplemental resource to the APA, Chicago, or MLA writing styles is available online through Purdue University’s website: [Welcome to the Purdue Online Writing Lab - Purdue OWL® - Purdue University](https://owl.purdue.edu/owl/).

***Professional Copy Editing Services***

Students may prepare their manuscript personally or have it typed and edited by another individual. All scheduling, quality of typing and editing, costs, or concerns are between the student and the copy editor.

**Defending a Thesis or Dissertation**

 Completing a thesis or dissertation requires a student to defend their work in an open, public, oral presentation. Faculty committee members will conduct the defense as appropriate for that discipline. Students are encouraged to review the program’s guides for defense and presentation requirements specific to their degree.

**GRAD 693/893**

 Once all thesis or dissertation coursework is completed, students must maintain semester-to-semester (fall, spring, and summer) enrollment while working on their thesis or dissertation. If the manuscript is not complete within the expected timeframe, students must enroll in GRAD 693 (for masters degree candidates) or GRAD 893 (for doctoral degree candidates) to continue accessing on-campus services and to meet the minimum enrollment requirement for graduation. Both courses are 0 credits, but carry a fee.

**Request for Thesis or Dissertation Presentation Form (GR-3)**

 Graduate students should schedule their defense one semester before they intend to graduate. This process may take months to finalize (i.e., spring defense scheduling should begin before the fall term ends). A defense typically lasts three hours; 30 minutes set-up, one hour presentation, one hour closed session with only the student and committee, and 30 minutes clean-up. After the student and all committee members agree to a day and time, students should contact Graduate Studies to reserve a University distance education room and a Zoom meeting.

 Scheduling the logistics of a defense *does not* guarantee a defense will be approved to move forward by the committee, but having the defense scheduled early is necessary for timely completion. Therefore, a confirmation that the defense will proceed as planned must be confirmed. A minimum of two weeks before the planned defense date, students complete a Request for Thesis or Dissertation Presentation (GR-3 Form). This form must be signed by all members of the committee, confirming the student’s research is ready to be defended. Aside from committee approval to defend, this form also requests specific details from the student that will be used by Graduate Studies to create a poster and announce the defense to the campus community.

**Approval of Thesis or Dissertation Presentation Form (GR-4)**

 After defending a thesis or dissertation, students will then initiate an Approval of Thesis or Dissertation Presentation (G-4 Form). Committee members must also confirm that the student’s defense was successful by signing this form. A completely signed form is required prior to starting the format review process with Graduate Studies, and due within 20 calendar days after the last day of the student’s graduation term.

**Format and Style Requirements**

 Theses and dissertations represent the student, committee, graduate program, and graduate education at UW-Green Bay. The format approval process is verification that the thesis or dissertation work meets the University’s requirements for format and style. Graduate students must provide a complete draft of the manuscript to Graduate Studies to initiate this approval process a minimum of 20 calendar days after the last day of the student’s graduation term. Upon receipt, Graduate Studies will confirm that a GR-2, GR-3, and GR-4 is on record for that student. All three of these forms must be completed before the format review can begin.

 Final manuscripts become part of the permanent collection of the UW-Green Bay Cofrin Library, are uploaded to ProQuest, and may be widely circulated. It is important that students follow the format and style requirements to ensure the final document is of highest quality. A final, complete manuscript is due to Graduate Studies within 20 calendar days after the last day of a student’s graduation term to begin the formatting process. After that deadline, students have an additional 22 calendar days to make final edits provided by Graduate Studies (total of 42 days combined). Students who do not meet these deadlines will have their graduation deferred to the following academic term.

**Preparing a Manuscript**

 Regardless of style, the manuscript is divided into three major sections; the Preliminary Pages (Front Matter), the Chapters (Text), and the Back (End Matter). All manuscripts are required to format the Front Matter exactly as described in this manual; however, the Text and End Matter may be adjusted to adhere to the preferred formatting style of the student’s academic discipline or a professional journal where they may also be published.

***Spacing***

The chapters and references list must be double-spaced with the exception of captions in tables and figures, footnotes, and endnotes. Preliminary Pages (i.e., Abstract, Table of Contents, Title Page, etc.) and Appendixes must follow the additional instructions listed later in this manual.

***Font***

The text must be printed in standard 12 point, Times New Roman font. Nonstandard fonts, such as script, will not be accepted. Lettering on graphs, maps, or other illustrations must be clearly visible and generally not less than six point in size.

***Margins***

All pages of the manuscript must have 1.5” for left margins, and 1” for top, bottom, and right margins. This is to prevent the content from getting lost in the crease if the student requests bound, physical copies. The entire manuscript must be left justified.

***Pagination***

Page numbers are placed at the top right corner. Preliminary Pages page numbers are lowercase roman numerals, and numbers in the Text and End Matter are Arabic numerals.

**Preliminary Pages (Front Matter) Formatting**

The Preliminary Pages are those pages before the Chapters (Text). All graduate students are required to conform to the standards for Preliminary Pages explained in this manual, regardless of style.

***Flyleaf***

A flyleaf, or blank page, is the very first page of a thesis or dissertation. Historically, flyleaves help maintain the structural integrity of a bound manuscript.

***Title Page***

The title page is considered page “i” in the Preliminary Pages, but the page is not numbered. When a manuscript is submitted to Graduate Studies for a format review, staff will create a Title Page for you and work with your faculty chair and the Associate Vice Chancellor for Graduate Studies & Research to obtain their signatures.

 **Title.**Preferably, titles should not exceed 13 words, and should be specific and precise. Eliminate unnecessary words such as “A Study of” or “A Case Study of” as they are redundant. Unless necessary for clarity, do not use abbreviated words.

 **Date.** The date listed in the center of the page should represent the date of acceptance by the committee.

 **Official degree titles.**The following are official degrees titles approved by UW-Green Bay. If unsure of degree title, please confirm with your committee chair.

* Doctor of Education in Applied Leadership
* Doctor of Education in First Nations Education
* Master of Science in Applied Leadership for Teaching & Learning
* Master of Science in Environmental Science & Policy

***Dedication***

The dedication is optional and follows the title page. It is intended for special recognition of persons, organizations, and/or others who provided particular encouragement and support to the author. The tone is personal. Centered vertically, the dedication is single-spaced, flush with the left margin and should not exceed one page.

***Acknowledgements***

Also optional, the acknowledgments recognize persons and institutions that have provided guidance and/or assistance to the author. The tone and focus are professional. Acknowledgements are double-spaced.

***Abstract***

Abstracts are required in all manuscripts, are single-spaced, and should be limited to 250 words. Abstracts provide a concise summary of the problem, methods, results, and conclusion. Your title and name must appear exactly how they appear in your Title Page.

***Table of Contents***

The Table of Contents lists the first and second levels of heading (required) and has full justification. Including third levels of heading is optional, but fourth and fifth levels of heading are not listed here.

***Lists of Tables, Figures, and Plates***

These lists are separate pages following the Table of Contents, and the order is List of Tables first, then List of Figures, and List of Plates last, when applicable. The same format is used for all lists, and they have full justification. Lists of Figures should include all charts, graphs, drawings, diagrams, photographs, etc., so separate Lists of Charts or Graphs are not created. Tables, figures, and plates used in the Appendixes are also not included in these Lists.

Plates are illustrations larger than page size or reproduced on paper different from that of the text. For example, page size photographs are considered plates. Page-sized plates may be spaced throughout the manuscript where they are first discussed within the text, or can be collected following the References section. Oversized plates must be carefully folded to measure not more than 7” x 10” with a 1.5” left margin.

**Chapters (Text) Formatting**

 Students should consult the format and style manual of their respective discipline for instructions on how to format the text, tables, and figures. MS Word has formats for preparing tables, however, the APA table guidelines feature no vertical lines and minimal horizontal lines that do not match available pre-formatted styles. Please note that a software’s default settings or options may not be appropriate.

***Pagination***

Each chapter, appendix, and the references list are considered major divisions within the manuscript, and should begin on a new page. Beginning page one (Arabic) at the start of Chapter 1 will allow for the manuscript to be numbered serially throughout.

***Landscape Printing***

When wide tables or figures are inserted in the text and appendixes, landscape printing is permissible (e.g., printing the table/figure parallel to the 11.5” side of the paper). Note that the top of the table or figure will then be at the left, bound side of the page and need a 1.5” margin. The page number should remain at the upper right corner of the 8.5” side, which will require repositioning for that page.

***Levels of Heading***

Each chapter begins on a new page. Chapter titles are considered “First Levels of Heading,” and subsequent levels are as follows (please see pg 47, 2.27 of the 7th Ed APA manual for further detail).

Not all manuscripts will require all five levels of heading, so students will use the levels as needed, beginning with the chapter titles as level one, then level two, and so on.

**Table 1**

*Format for the five levels of heading in the 7th edition APA Manual (APA, 2020, pg 47, 2.27).*

|  |  |
| --- | --- |
| **Level of Heading** | **Format** |
| 1 | **Centered, Bold, Title Case Heading** Text begins as a new paragraph. |
| 2 | **Flush Left, Bold, Title Case Heading** Text begins as a new paragraph. |
| 3 | ***Flush Left, Bold, Italic, Title Case Heading*** Text begins as a new paragraph. |
| 4 |  **Indented, Bold, Title Case, Ends With a Period.** Text begins on the same line and continues as a regular paragraph. |
| 5 |   ***Indented, Bold, Italicized, Title Case, ends with a period.*** Text begins on the same line and continues as a regular paragraph. |

***Tables and Figures***

 Tables and figures are best numbered consecutively throughout the text, and should be placed as close as possible to where the table or figure is first discussed within the text. Table and figure numbers appear above the title and are bolded. The title appears one double-spaced line below the table number, is double-spaced, italicized, and provides a brief but descriptive caption. Tables should have column headings that are left aligned, and the use of borders are limited (see Table 1). A figure legend should be positioned within the borders of the figure and explain symbols used (see Figure 1).

**Figure 1**

*UW-Green Bay Graduate Studies horizontal logo.*



**Back (End Matter)**

***References and Bibliographies***

Reference lists or bibliographies are a major division in the manuscript, equal to a new chapter. References and bibliographies are different types of lists used to cite sources. Reference Lists (also called Works Cited) only include the sources directly quoted, or referenced, within the text. Bibliographies (also called Works Consulted) include a list of all sources consulted that were relevant to the topic of the manuscript, but not necessarily cited in the text. Consult with your committee chair before making a determination of which option best describes the scope of your research.

All thesis and dissertation work requires the review and incorporation of information and concepts other than your own data and ideas, therefore all sources must be credited and documented. Primary concerns are of citation and consistency; therefore, students are welcome to follow the recommendations of their discipline’s formatting style. Sources should be listed in alphabetical order first, then chronological, and double-spaced. For APA style, the first line is flush with the left margin, and the second and succeeding lines are indented five spaces (with a hanging indent).

***Appendixes***

 Appendixes are considered a major division in the manuscript, equal to a new chapter. They appear after the References List or Bibliography. Appendixes usually include original copies or materials, so the margins may be narrower than the required 1.5” left requirement. Material(s) included in the appendixes contribute to the text by illustration and application.

**Format Review Process**

 Archiving thesis or dissertation manuscripts gives current and future students the opportunity to access the high-quality research produced at UW-Green Bay. Archiving cannot be completed until all of the previous requirements outlined in this manual have been met. The University subscribes to a library service that publishes every thesis and dissertation, and makes them available for others to find and read.

**Approval Procedure (Required)**

 Because the final manuscript will become part of the permanent collection of Cofrin Library and widely circulated, it is important that students follow the format and style requirements listed in this manual. Manuscripts are reviewed for content by the faculty committee prior to a format and style review is completed by Graduate Studies. Students must communicate with committee members to insure they have reviewed multiple drafts of the manuscript before the format and style review begins. Students must then send a final draft, PDF copy of their manuscript to gradstu@uwgb.edu within 20 calendar days after their last day of their last graduation term. It is the responsibility of the student to schedule a defense early enough to complete all faculty revisions and Graduate Studies edits to meet these required deadlines.

**Archiving (Required)**

 The final step of the manuscript review process (after the faculty committee approved the content, and Graduate Studies have approved the format and style) is to submit a final copy, signed title page, and Release of Rights Form to ProQuest. Graduate Studies will provide students with access to UW-Green Bay Libraries submission guide, which walks students through creating an account with ProQuest and submitting all materials. Students must complete this process within 42 calendar days after the last day of their graduation term, which is a date set by the National Student Clearinghouse for all degrees conferred nationwide. There are no exceptions to this deadline.

**Physical Copies (Optional)**

 Graduate Studies will assist students to print and bind physical copies of their final thesis or dissertation manuscript. Physical copies are optional, but students should consult with their faculty advisor if they require a copy. All physical copies are at the student’s expense. Please contact Graduate Studies for the most current price list.

**References**

American Psychological Association. (2020). *Publication manual of the American Psychological Association: The official guide to APA style* (7th ed.).

*MLA Handbook.* 9th ed., Modern Language Association of America, 2021. *MLA Handbook Plus,* 2021, mlahandbookplus.org/.

Editorial Staff., *The Chicago Manual of Style*. Chicago: University of Chicago Press, 2017.

**Appendix**

 Appendixes are considered a major division in the manuscript, equal to a new chapter. They usually include original copies or materials, so the margins may be narrower than the required 1.5” left requirement. Material(s) included in the appendixes contribute to the text by illustration and application.