

# Case Study of Analyzing the Variety of ETD Layouts

Sung Hee Park<sup>1, 3</sup>, Bipasha Banerjee<sup>1,2</sup>, William A. Ingram<sup>1</sup>,  
and Edward A. Fox<sup>2</sup>

<sup>1</sup>University Libraries, Virginia Tech, USA

<sup>2</sup>Department of Computer Science, Virginia Tech, USA

<sup>3</sup>Department of Library and Information Science, Hannam University, South Korea

## Abstract

*Yet, segmenting such documents automatically and accurately is challenging in dealing with various ETD layouts from different majors, disciplines, and universities. To automatically segment and determine the chapter boundaries of those ETDs, we need to understand the variation in document templates across various disciplines and universities. In this study, we have performed a case study and manual quantitative research on the variation of ETD layouts. We have taken into account several factors likely to affect the variation of ETD layouts, such as STEM/non-STEM, university, department, major, and year of publication. We have found that the layout tends to be similar within a university with slight variation among the departments. The layouts tend to vary significantly across different universities. This is likely to occur as each university library or graduate school typically provides an ETD template. From our analysis of the numbering style of the chapter/section headings, we see that STEM fields (specifically physics) prefer style 3. On the other hand, non-STEM areas, such as education and English, prefer style 1. And Then, we performed the Chi-square(?2) independency test to analyze the dependency of STEM or non-STEM fields on the numbering styles. The p-value of the Chi-square independency test is <0.001. Thus, we have seen the statistically significant dependency of the numbering style on STEM/non-STEM areas through the independence test. The findings of this study can be used to further research in document object extraction and natural language processing for machine reading.*

**Keywords:** Document Layout Analysis, ETD Layout Format, Numbering Style

## 1. Introduction

The Electronic Thesis and Dissertation (ETD) is academic material that graduate schools produce as a result to educate students on research. ETDs contain a wealth of information from various academic disciplines. Existing ETDs can be easily reused by searching, browsing, summarizing, and topic modeling functionalities in the prospect of the “Machine Reading” technique, in which artificial intelligence can automatically grasp the meaning of a long document like an ETD. These long documents are organized into chapters and

---

Corresponding Author: Sung Hee Park, Email: shpark@vt.edu, Bill Ingram, Email: waingram@vt.edu, Bipasha Banerjee, Email: bipashabanerjee@vt.edu and Edward A Fox, Email: fox@vt.edu

sections, making segmentation vital for various downstream analyses such as chapter summarization and classification. A recent study has attempted to provide those kinds of functionalities (Chekuri et al., 2023). To this end, there have been studies to determine the relationship and dependency between a single document by dividing it into detailed components (for example, chapters, sections, figures, tables, formulas, references, etc.) (Huang et al., 2022). In addition, efforts have been made to abstract or characterize these ETDs by summarizing them for each chapter and dividing the lengthy document in detail through topic modeling (Banerjee, 2022). In this way, it is important to understand the layout characteristics of the document to separate the document in detail and extract objects (object detection) (Ahuja et al., 2022). Various multi-modal approaches have investigated document layout analysis using pre-trained layout models (Xu et al., 2021). Yet, segmenting such documents automatically and accurately is challenging in dealing with various ETD layouts from different majors, disciplines, and universities. To automatically segment and determine the chapter boundaries of those ETDs, we need to understand the variation in document templates across various disciplines and universities. However, ETDs don't follow a universal template and writing structure – thus vary greatly. Thus, it is imperative that we analyze the ETD layouts to determine the variation among them. This study can help us create better models to perform automatic ETD segmentation more accurately.

## **2. Data Preparation**

In this study, we perform manual quantitative research on the variation of ETD layouts. We have sampled ETDs from a population of over 500,000 ETDs from U.S. research institutions (Uddin et al., 2021). Purposive sampling was used by selecting 4–5 disciplines/departments from seven universities: the Ohio State University (OSU), the Virginia Polytechnic Institute and State University (VT), the University of Texas at Austin (UTAustin), the California Institute of Technology (Caltech), the Georgia Institute of Technology (GaTech), the Pennsylvania State University (PSU), and the North Carolina State University (NCSU). We selected STEM fields: computer science, biology, physics, mechanical engineering, and civil engineering, and non-STEM fields: psychology, education, English, and business. Similarly, using purposive sampling, we selected five ETDs from each of the four time periods (1996–2000, 2001–2005, 2006–2010, and 2011–2021), respectively. Table 1 describes the data set. The data samples used in this study show the following sampling distribution: OSU: 47 ETDs (STEM/non-STEM: 27/20), VT: 51 ETDs (31/20), UTAustin: 50 ETDs (30/20), CalTech: 27 ETDs (27/0), GaTech: 25 ETDs (25/0), PSU: 20 ETDs (0/20), NCSU: 20 ETDs (0/20).

## **3. Cases of ETD Layouts Variety**

In this research, our primary objectives are as follows. (1) We identify the main distinguishing characteristics and the elements that result in the diversity of ETD layouts. Those elements will be used as dependent variables in this study. Examples of dependent variables are sectional elements (curriculum vitae, publication, dedication), hierarchical elements (parts that are a level higher than chapters), chapter/section numbering style, and citation style in text and references (e.g., APA, IEEE, AIP, ACM). (2) We identify numbering styles that characterize the hierarchical structure of a document. (3) We identify if elements other than the dependent ones affect dependent variables such as the ETD layout and numbering style, which will be used as

independent variables in this study. Examples include universities, departments, STEM/non-STEM, majors, and year of publication. We want to specifically identify variations in layouts among documents from STEM and non-STEM fields and what makes those variables.

#### **4. Elements that form the ETD layout**

The sectional elements composing the document are as follows: Title page, copyright, dedication/acknowledgment, abstract/summary, table of contents, list of tables, list of figures/illustrations, abbreviation/symbol/nomenclature, chapters/sections/subsections/paragraphs, headers/footers, footnotes, bibliography/references, appendices, etc.

In this study, we have analyzed the cases of section elements like title page, table of contents, body text, and references of ETDs in the field of Education from 2000 to 2015 across universities. The cases can be shown in Figure 1, 2, 3, 4 and 5.

##### **4.1 Layout of title page**

The title page layout of the document varies in its composition. In the majority of cases, it follows the following format:

- ❖ Title: The title of the document is placed prominently at the top of the page.
- ❖ University, College, and Department: Information regarding the university, college, and department is included immediately below the title. Specifically, the full names of these entities are mentioned.
- ❖ Author Name: The author's name is listed below the university information. Only the full name is included, and in some instances, the author's name may be followed by their degree suffix.
- ❖ Document Type: The type of document, whether it is a thesis or dissertation, is indicated. However, there is inconsistency in the terminology used, as "Doctor" is sometimes referred to as "dissertation," while "Master" is referred to as "thesis."
- ❖ Degree Type: The degree type is clearly specified, with options including Doctor of Philosophy or Doctor of a specific major, as well as Master's degrees.
- ❖ Description of Requirement: In some cases, there is a statement indicating that the document fulfills certain requirements for the degree of <degree type> within the Graduate School of <university>.
- ❖ Submission Date: The date of submission is mentioned, with the format being <month>, <year> or simply <year>.

It's worth noting that for Virginia Tech, the document includes information about the location, including the city and state where the university is situated.

## **4.2 Layout of the table of contents**

The structure of the Table of Contents in this document adheres to a specific format. The title of the Table of Contents is uniformly designated as 'Table of Contents,' although in some Electronic Theses and Dissertations (ETDs), it may alternatively be labeled as 'Contents.' The font style employed for these titles follows an all-capital character convention, exemplified by 'TABLE OF CONTENTS.' Moreover, the initial letter of each word is capitalized, as exemplified by 'Table of Contents,' and all section titles are horizontally centered.

In terms of layout, section titles are aligned to the left, while logical page numbers are aligned to the right. Here, 'logical page' refers to a page utilized within the document, distinct from 'physical pages' which are assigned sequentially from the title page by the computer when the document is loaded. Dotted lines are positioned in the middle between these two elements to provide visual separation.

In situations where the body of text extends beyond the chapter level, section titles are indented. This indentation serves to clearly convey the hierarchical structure of the ETDs. Importantly, this structural information facilitated by indentation can be harnessed for the automatic recognition of document structure through advanced techniques in artificial intelligence and machine learning, such as large document layout models and transformer techniques.

It's noteworthy that some ETDs feature section titles spanning multiple lines, further complicating the layout. Additionally, the section titles within the Table of Contents mirror the font style used in the body of the text itself, ensuring a consistent and cohesive visual presentation throughout the document.

## **4.3 Layout of text body**

The text body of the document encompasses various elements, including parts, chapters, sections (and subsections), paragraphs, figures, tables, equations, notes, citations, page numbers, headers/footers, and more.

Regarding the layout of the text body, there are several options to consider:

- ❖ **Chapter Numbering:** Chapters can be numbered in different ways, such as CHAPTER 1, Chapter 1, or CHAPTER I, depending on the chosen style.
- ❖ **Chapter Title:** Chapter titles can be centered or aligned to the left, depending on the desired formatting.
- ❖ **Section Title:** Like chapter titles, section titles can also be centered or left-aligned.
- ❖ **Subsection Title:** Subsection titles are typically indented and can be underlined or italicized to indicate their hierarchical structure.
- ❖ **Columns:** The text body can be formatted with either a single-column layout, similar to a book, or a double-column layout for a more compact content presentation.

- ❖ Line Spacing: Line spacing within the text body can be set as double space or single space, depending on the desired readability and style preferences.
- ❖ These formatting choices play a crucial role in the visual presentation and readability of the document.

#### **4.4 Layout of page numbers**

In terms of page number layout, there are a few key considerations:

- ❖ Type: Page numbers can be presented in different formats. For the logical page numbers, Roman numerals such as I, II, V, X are commonly used in the front sections of the document, including sections like the abstract and acknowledgments. In the main body of the text and in sections like References, Bibliography, Works Cited, Appendices, Figures, and Tables positioned at the end of the document, Arabic numbers like 1, 2, 3, 4 are typically employed.
- ❖ Position: Page numbers can be positioned at various locations on the page, including the top left, top right, center, bottom left, bottom right, or even in the center of the page.
- ❖ Relation Between Header/Footer: When a document includes headers or footers, page numbers are often aligned either to the left or right. This alignment allows for the chapter title or document title to be centered in the header or footer section.

The choice of page number format and placement depends on the document's style guidelines and the desired visual presentation. It's essential to ensure consistency in page numbering throughout the document for clarity and readability.

#### **4.5 Layout of headers and footers**

There are various options for header/footer layout in a document, with the following possibilities:

- ❖ Types of Header/Footer Layout:
  - No Header/Footer: 0
  - Header Only: 1
  - Footer Only: 2
  - Header and Footer: 3
- ❖ Here are some specific cases of header or footer layouts:
  1. Case 1: Header with the title on the left and the page number on the right, right aligned.
  2. Case 2: Header with the author's last name and Arabic page number.
  3. Case 3: Header with a shortened title and either Roman or Arabic page number.

4. Case 4: Header with the author's name on the left, chapter title on the right, both aligned accordingly.
5. Case 5: Header with a shortened title and either Roman or Arabic page number, right aligned.
6. Case 6: Header with the author's full name (left, italic), chapter number, chapter title (italic, center), and Arabic page number (right).
7. Case 7: Header with chapter/section heading (chapter/section number, chapter/section title) on the left, Arabic page number on the right, toggled by odd or even pages.
8. Case 8: Header with the author's full name on the right, chapter title on the right, with a green header background color.
9. Case 9: Header with the author's full name (left, italic), centered and italicized chapter heading, and Arabic page number on the right, not toggled by odd and even pages.
10. Case 10: Header with the chapter/section name, section number (left), chapter/section title, separated by a space, and Arabic page number on the right, toggled by odd or even pages.
11. Case 11: Header with centered chapter/section heading (chapter/section number: chapter/section title) and Arabic page number on the right, not toggled by odd and even pages.

The choice of header/footer layout and format depends on the document's style and formatting guidelines, as well as the desired visual presentation and functionality.

#### **4.6 Citation style in text**

The citation layout in this document comprises several elements, including author names, publication dates, and page numbers. There are two primary types of citation layouts:

- Type 1: In this type, citations are structured as follows based on the number of authors:

For a single author, the citation format includes the last name followed by the year, enclosed in parentheses, e.g., Smith (2005). In some cases, author names and years can be enclosed within parentheses, e.g., (Smith, 2005). For two authors, both last names are connected with 'and,' followed by the year, and embraced with parentheses, e.g., (Johnson and Brown, 2010). For more than three authors, only the last names of the first two authors are listed, followed by 'et al.' and the year, all enclosed in parentheses, e.g., (Smith et al., 2018). When citing multiple sources at a single site, each citation is separated by a delimiter such as a semicolon within parentheses, e.g., (Smith, 2005; Johnson and Brown, 2010).

- Type 2: This type of citation includes the last name, year, and page number, presented as (Author's last name & Author's last name, year, p. page number). For example, (Chemiss & Golemann, 2003, p. 15) or, in the case of a citation within the text, it may appear as Kuhn (1970, p. 23).

These citation formats effectively convey the necessary information to identify and locate the sources referenced within the document.

#### 4.7 Reference Layout

The layout for the References section of the document involves the following elements:

- Section title: Typically labeled as 'References.' References: A list of all the sources and citations used in the document. There are different types of layouts for the

References section:

- ❖ Section Title: The section title can be either 'References' or 'Bibliography,' depending on the chosen style and convention.
- ❖ Position: The References section can be positioned at the end of the entire document, or in some cases, it may be placed at the end of each chapter. Additionally, there is the option of organizing the document with references first and then appendices, or vice versa, with appendices preceding the references section.
- ❖ Multiple Reference Styles: Electronic Theses and Dissertations (ETDs) often include multiple reference styles, depending on the citation format used throughout the document. These styles can encompass various citation and referencing formats, such as APA, MLA, Chicago, or specific institutional or journal-based styles.
- ❖ Reference Numbering Style: Depending on the referencing style chosen, references may be numbered in various ways. Some styles use sequential numbering (e.g., [1], [2], [3]), while others use author-year citations (e.g., (Smith, 2005)).

The choice of layout and referencing style in the References section plays a significant role in ensuring proper citation and source attribution within the document, as well as adhering to specific academic or institutional requirements.

#### 4.8 Chapter/section Numbering Style

Focusing on the chapter and section numbering styles, we categorized the chapter and section numbering styles into six styles: 'no numbering (0)', 'the 1st-level (1)', 'the 2nd-level (2)', 'the 3rd-level (3)', 'the 4th-level (4)', and 'the 5th-level (5).' The six styles indicate how deeply ETDs use numbering in the chapter/section headings (See Table 4). For example, "no numbering" is a style that does not use numbering even in the chapters. "The 1st-level" is a style that uses numbering at the top level of the document structure, such as parts and chapters. "The 5th-level" is a style that uses numbering up to the 5th depth level (For brevity, hereafter the numbering style is simply denoted by a number in parentheses). And then, we performed the Chi-square(?) independence test to analyze the dependency of STEM or non-STEM fields on the numbering styles.

## 4.9 Results

We observe that the ETDs from a university are very similar, with slight variation across disciplines. However, the layouts tend to vary significantly across universities. This is likely to occur as the university has an ETD template provided by the graduate school or the library. In terms of the chapter/section numbering style frequency analysis (See Table 5 for STEM ETDs and Table 6 for non-STEM ETDs), for STEM fields, style 3 had the highest ratio at 54.20%, and physics showed the highest ratio at 14.50%. Among universities, UT Austin showed the highest ratio at 15.27% for style 3 as shown in Table 5.

For non-STEM, the ratio of style 1 was remarkably high at 66% as shown in Table 6).

Among non-STEM, education, and English majors showed the highest usage of style 1 at 22% and 21%, respectively (See Figure 9). Among universities, OSU and PSU showed equally high rates of style 1 at 15% and 15%, respectively, and UT Austin (14%) and NCSU (13%) showed no statistically significant difference for each style among schools (See Figure 8). That is, in STEM fields, the numbering is introduced up to the subsection, and in non-STEM, the numbering is introduced only up to the chapters. The p-value of the Chi-square independence test is  $<0.001$ . Thus, we reject the null hypothesis that STEM/non-STEM fields are independent of the variety of numbering styles.

## 5. Conclusion

In this study, we perform a case study on the variety of ETD layouts. We consider several factors likely to affect the variation of ETD layouts, such as STEM/non-STEM, university, department, major, and year of publication. We find that the layout tends to be similar within a university with slight variation among the departments. The layouts tend to vary significantly across different universities. This is likely to occur as each university library or graduate school typically provides an ETD template. From our analysis of the numbering style of the chapter/section headings, we see that STEM fields (specifically physics) prefer style 3. On the other hand, non-STEM areas, such as education and English, prefer style 1. In addition, we also see the dependency of the numbering style on STEM/non-STEM areas through the independence test. Therefore, we conclude that the discipline information of the ETD affects the variation of its layout, particularly, the numbering style of chapters/sections. Through this study, we observe the diversity of ETD layouts and explore several factors influencing the variance. The findings of this study can be used to further research in document object extraction and natural language processing for machine reading.

## References

- Ahuja, A., Devera, A., & Fox, E. A. (2022). Parsing electronic theses and dissertations using object detection. Proceedings of the First Workshop on Information Extraction from Scientific Publications, 121–130. <https://aclanthology.org/2022.wiesp-1.14>




- Banerjee, B. (2022). Opening scholarly documents through text analytics. JCDL '22: The ACM/IEEE Joint Conference on Digital Libraries in 2022, Cologne, Germany, June 20 - 24, 2022, 47. <https://doi.org/10.1145/3529372.3530948>
- Chekuri, S., Chandrasekar, P., Banerjee, B., Park, S. H., Masrourisaadat, N., Ahuja, A., Ingram, W. A., & Fox, E. (2023). Integrated digital library system for long documents and their elements. JCDL '23: The ACM/IEEE Joint Conference on Digital Libraries in 2023, Santa Fe, New Mexico, June 26–30, 2023.
- Huang, Y., Lv, T., Cui, L., Lu, Y., & Wei, F. (2022). LayoutLMv3: Pre-training for Document AI with Unified Text and Image Masking. MM '22: The 30th ACM International Conference on Multimedia, Lisboa, Portugal, October 10 - 14, 2022, 4083–4091. <https://doi.org/10.1145/3503161.3548112>
- Uddin, S., Banerjee, B., Wu, J., Ingram, W. A., & Fox, E. A. (2021). Building A large collection of multi-domain electronic theses and dissertations. 2021 IEEE International Conference on Big Data (Big Data), Orlando, FL, USA, December 15-18, 2021, 6043–6045. <https://doi.org/10.1109/BigData52589.2021.9672058>
- Xu, Y., Xu, Y., Lv, T., Cui, L., Wei, F., Wang, G., Lu, Y., Florencio, D., Zhang, C., Che, W., Zhang, M., & Zhou, L. (2021). LayoutLMv2: Multi-modal pre-training for visually-rich document understanding. Proceedings of the 59th Annual Meeting of the Association for Computational Linguistics and the 11th International Joint Conference on Natural Language Processing (Volume 1: Long Papers), 2579–2591. <https://doi.org/10.18653/v1/2021.acl-long.201>

### Author Note

Sung Hee Park  <https://orcid.org/0000-0002-0710-8079>

Bipasha Banerjee  <https://orcid.org/0000-0003-4472-1902>

William A. Ingram  <https://orcid.org/0000-0002-8307-8844>

Edward A. Fox  <https://orcid.org/0000-0003-1447-6870>

**Table 1|**

*Dataset Statistics*

University	Category	1991–2000	2001–2005	2006–2010	2011–2015	2015–	<b>SUM</b>
OSU	STEM	5	5	5	5	7	27
	Non STEM	4	4	4	4	4	20
VT	STEM	5	5	5	5	11	31
	Non STEM	5	5	4	3	3	20
<u>UTAustin</u>	STEM	1	9	5	5	10	30
	Non STEM	4	4	4	4	4	20
Caltech	STEM	5	5	5	5	7	27
<u>GaTech</u>	STEM	5	5	5	5	5	25
PSU	Non STEM	3	5	4	4	4	20
NCSU	Non STEM	4	7	4	4	1	20
<b>SUM</b>		41	54	45	44	56	240

**Table 2**

*Layout type of title page*

Layout elements	OSU	UTA	NCSU	PSU	VT	
First element	title	title	title	university, lege, department	col- title	
Elements and order	Title, doc description of requirement, author, submission date, committee	type, Title, doc description Of requirement, university, degree type, university, submission date	author, type, college, doc type, discipline, copyright, submission requirement, degree	university, depart- title, (including author, type, de- major, of type), discipline, submission date, type, committee	Title, author, Title, doc (including degree sity), type, discipline, submission date, committee	author, of requirement doc (including doc univ- degree
Author name	Full name followed by degree suffix	fol- full name fol- gree suffix	Only full name	Only full name	Only full name	
Document type	Dissertation	Dissertation	Thesis presented but for <del>the</del>	Not presented dissertation doctoral de-	Dissertation in description of requirement	
Degree type	Doctor of Philosophy	Phi- Doctor of Education	Doctor of Philosophy	of Phi- Doctor of Philosophy	Phi- Doctor of Philosophy	
Description of requirement	Presented to	Presented in		Submitted to	Submitted to	
Submission date	<year>	<month> <year>	<month> <year>	<month> <year>	<month> <day><year>	





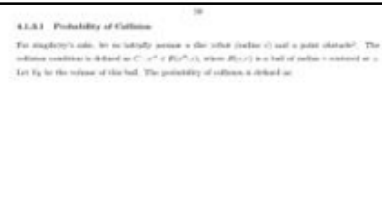
**Table 3**

*Layout types of chapter and section heading*

Layout elements	OSU	UTA	NCSU	PSU	VT
Chapter numbering (Arabic/Roman), align, same line (delimiter)/new line, Section title alignment (left/center), font style (italic/underline)	Yes(Arabic), center, new line Ex) CHAPTER 1 INTRODUCTION left, first capital, underline Ex) <u>Introduction</u>	Yes(Arabic), center, same line (:), bold Ex) Chapter 1: <u>Introduction to the Study</u> Left, all upper, bold	Yes(Arabic), center, same line (:), bold Ex) Chapter 1: <u>Introduction</u> Left, all upper, bold	Yes(Arabic), center, new line Ex) Chapter 1 General <u>Introduction</u> Center, first capital, italic	Yes(Arabic), center, same line (-), bold Ex) Chapter 1- <u>Introduction</u> Left, first capital, bold, section numbering Ex) 1.1 - <section title>

**Table 4**

*Chapter/Section numbering Styles for in document text*

Numbering style	Description	Example	source
0	Even chapter-level numbers don't exist.		ETD id: 247230 from English, UT Austin
1	Only chapter-level numbers exist but section-level numbers do not exist.		ETD id: 98948 from Education, OSU
2	Chapter and section numbers exist but section-level numbers do not exist.		ETD id: 116377 from Business, OSU
3	Even subsection-level numbers exist		ETD id: 42990 from CS, GaT- ech
4	Even subsubsection-level numbers exist		ETD id: 63305from Mechanical Engineering,

ENRICHING ETDs AND THEIR REACH

---

**Table 5**  
*Frequency analysis of numbering style of STEM ETD*

University	Discipline	0	1	2	3	4	5	Grand Total
CalTech	Biology		60	20	20			100
	Civil Engineering			40	60			100
	Computer Science			20	40	40		100
	Mechanical Engineering			50	16.67	33.33		100
	Physics			20	80			100
GaTech	Biology		20	20	40	20		100
	Civil Engineering			25		50	25	100
	Computer Science				66.67	33.33		100
	Mechanical Engineering		25		25	50		100
	Physics				75	25		100
OSU	Biology		25	25	50			100
	Civil Engineering			20	20	60		100
	Computer Science		14.29	28.57	42.86	14.29		100
	Mechanical Engineering				100			100
	Physics				100			100
UT-Austin	Biology				100			100
	Civil Engineering		16.67		66.67	16.67		100
	Computer Science				50	50		100
	Mechanical Engineering			14.29	71.43	14.29		100
	Physics		20		60	20		100
VTech	Biology	16.67	66.67		16.67			100
	Civil Engineering	16.67	16.67	33.33	16.67	16.67		100
	Computer Science				85.71	14.29		100
	Mechanical Engineering				66.67	33.33		100
	Physics			20	80			100
Grand Total		1.53	10.69	13.74	54.2	19.08	0.76	100

**Table 6**  
*Frequency analysis of numbering style of non STEM ETDs*

Discipline	0	1	2	3	4	Grand Total
Business Administration	2.0	6.0	1.0	2.0	4.0	15.0
Business/Economy/Finance	1.0	6.0	2.0		1.0	10.0
Curriculum and Instruction		5.0				5.0
Education	3.0	1.0	1.0			5.0
Educational Administration		5.0				5.0
Educational Policy and Leadership		5.0				5.0
English	4.0	6.0				10.0
English/History		15.0				15.0
Higher Education		5.0				5.0
Psychology	11.0	12.0	1.0	1.0		25.0
Grand Total	21.0	66.0	5.0	3.0	5.0	100.0

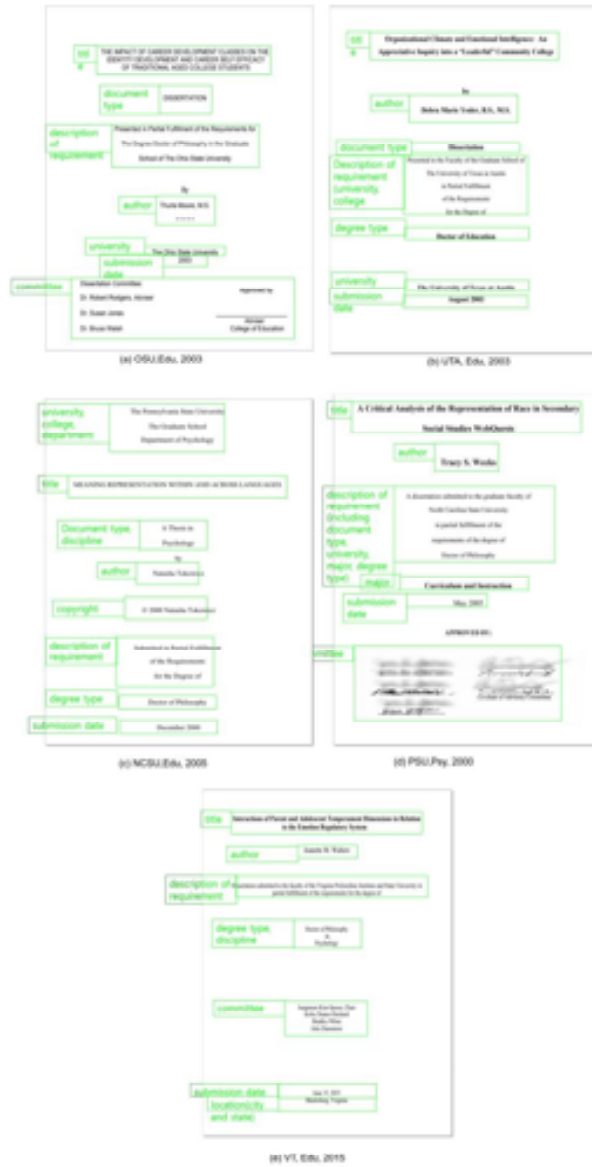


Figure 1

Title page layout in non-STEM ETD of Education field across Universities |

Figure 2: Table of contents layout in non-STEM ETD of Education field across Universities

Figure 3: Text body layout in non-STEM ETD of Education field across Universities

Figure 4: Citation layout in STEM ETD across Universities





Figure 5: Reference layout in STEM ETD across Universities

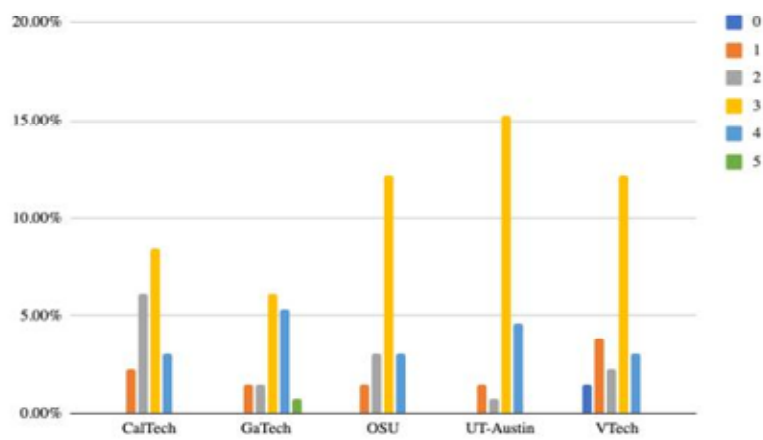


Figure 6: Chapter/section numbering style in STEM ETD across Universities

Among universities, the University of Texas at Austin showed the highest rates of 15% for the style 3 and the OSU and Virginia Tech showed the next high rate of 12.5% for the style 3, respectively,

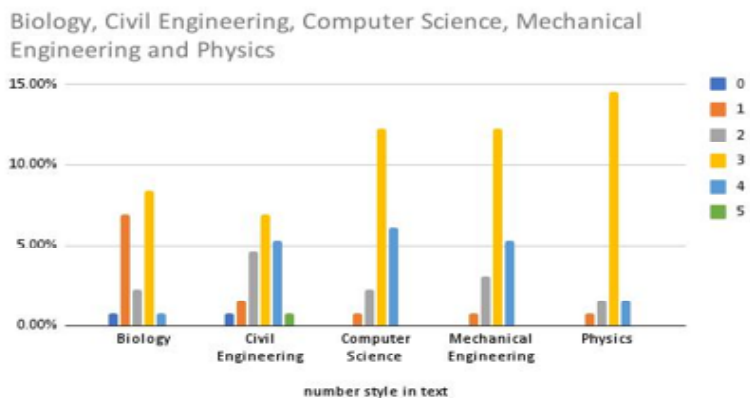


Figure 7: Chapter/section numbering style in STEM ETD across Discipline

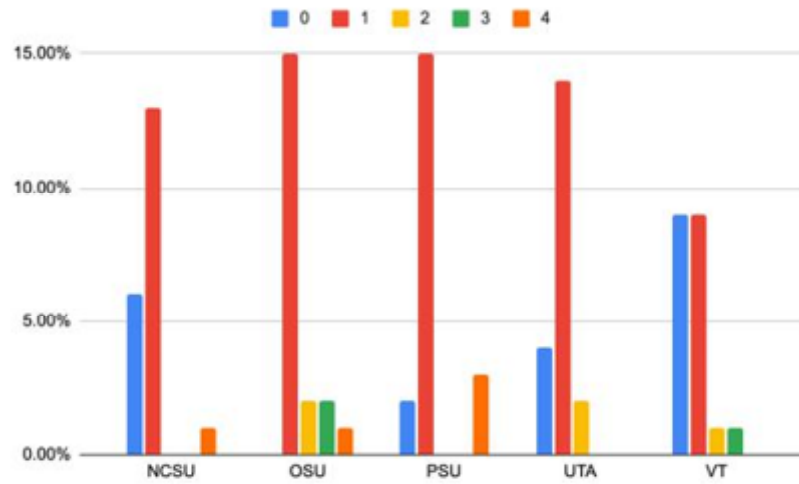


Figure 8: Chapter/section numbering style in Non STEM ETD across Universities

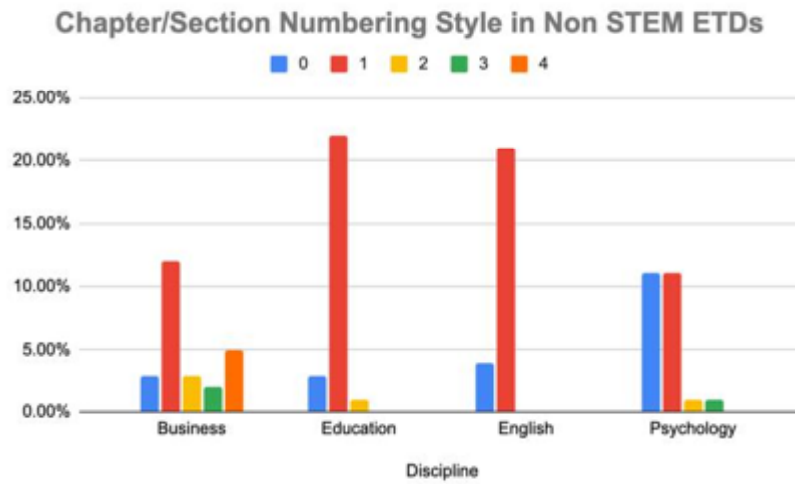


Figure 9: Chapter/section numbering style in Non STEM ETD across Discipline