User Experience Research for the Next Decade in Education and Visual Arts

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Abstract
The purpose of this study is to investigate how UX-related subjects have been studied in both Education and Visual Arts between 2000 and 2019 to identify the trends and the relationship between the two disciplines. This study collected peer-reviewed journal articles found in Penn State University's online library that included User Experience or UX in their titles. These articles were then analyzed to identify what subjects were studied and how they were related within the two disciplines. The data allowed visualization of frequencies and relationships between subjects using Gephi 0.9.2, freeware software for visualizing data. The findings depicted the mainstreams of the research subjects and relationships between subjects in Education and Visual Arts. Our findings would support researchers seeking to study a future research UX-related subject in the Education and Visual Arts as well as in the multidiscipline.

Keywords
User Experience, Subject Network Analysis, Education, Visual Arts

Disciplines
Illustration | Industrial and Product Design | Interior Design | Visual Studies

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User Experience Research for the Next Decade in Education and Visual Arts

Through Analyzing and Visualizing Research Subjects for the Last 20 Years

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ABSTRACT
The purpose of this study is to investigate how UX-related subjects have been studied in both Education and Visual Arts between 2000 and 2019 to identify the trends and the relationship between the two disciplines. This study collected peer-reviewed journal articles found in Penn State University’s online library that included User Experience or UX in their titles. These articles were then analyzed to identify what subjects were studied and how they were related within the two disciplines. The data allowed visualization of frequencies and relationships between subjects using Gephi 0.9.2, freeware software for visualizing data. The findings depicted the mainstreams of the research subjects and relationships between subjects in Education and Visual Arts. Our findings would support researchers seeking to study a future research UX-related subject in the Education and Visual Arts as well as in the multidiscipline.

CCS CONCEPTS
- Applied computing → Education; Digital libraries and archives; Education; Collaborative learning; • Networks → Network performance evaluation; Network performance analysis.

KEYWORDS
User Experience, Subject Network Analysis, Education, Visual Arts

ACM Reference Format:

1 INTRODUCTION
Both in Academia and in the practical field of design and technology, User Experience (UX) is an important research topic that has been studied for more than two decades along with the development of technologies and media. Moreover, creating online education materials with well-developed UX for emerging technology and media is getting significant. Thus, the researchers selected two disciplines Education and Visual Arts. Education includes field of online education and Visual Arts contains field of visual design. The purpose of this study is to investigate the current situation of UX in Education and Visual Arts and the relation to them through network analysis of UX-related subjects which were published between 2000 and 2019 in these two disciplines. To achieve this goal, the investigators considered three research questions: 1) how many UX-related research studies have been conducted during the last 20 years?; 2) what kind of subjects have been studied?; 3) how are the studies connected to one another?

2 METHODS
Network analysis could be described as a representation of the link between items in a given data set displayed by keywords and connectedness between keywords [1]. This characteristic of network analysis can immediately show important information in a visualization form [2, 3]. To identify the trend of UX-related subjects over the last 20 years, we used Penn State University’s (PSU) online library search engine to collect peer-reviewed journal articles containing User Experience or UX in their titles. PSU uses an article distribution system called Academic Search Complete (ASC) to categorize all resources into the PSU library system. Accordingly, articles in the PSU system may be discovered with keywords different from the authors’ initial intention. Our inclusion criteria were education, visual arts, user experience, UX, or written in English,
peer-reviewed journal articles published between 2000 and 2019. We reviewed the title, abstract, and full text of the searched articles and excluded articles not relevant to our topic. Gephi 0.9.2, a software package used for data visualization, was used to visualize a network connecting the subjects discovered to reveal relationships between them. Microsoft Excel was also used for descriptive analysis.

3 RESULTS AND DISCUSSION

This study found a total of 135 UX-related articles from these two disciplines. Particularly, the number of UX-related studies has increased since 2015, i.e., 86 out of 135 studies (63.7%). For example, five studies were found in 2014 and 24 studies were discovered in 2019 (Figure 1). Figure 2 (a) shows the relationships among subjects and their frequencies in Education and Visual Arts using Gephi. Circle size represents the frequency of studies for each subject, and line stroke weight represents the level of correlation between two connected subjects. Figure 2 (b) depicts 21 found subjects in both Education and Visual Arts – UX, Analysis, Studies, Qualitative Research, Design, Usability, Product Design, Research and etc. – out of a total of 633 subjects in 135 UX studies in Education and Visual Arts. Top five overlapped subjects – UX, Analysis, Studies, Qualitative Research, Design, Usability – have been studied more than 8 times. Since this study focused only on specific disciplines, Education and Visual Arts, our findings may not fully describe the entire UX trend between 2000 and 2019. However, the outcomes of this study could be meaningful to scholars in Education and Visual arts by providing a trend of UX studies and their relationship in order to anticipate future research subjects.

4 CONCLUSION

While UX-related research in Education and Visual Arts has not been well-studied over the last two decades, the number of UX-related studies have been rapidly increasing since 2015. The terms UX, Analysis, Studies, Design, and Usability all represent the mainstream of research subjects in Education and Visual Arts; studies of these subjects have not only been published more than eight times over the last 20 years, and they also have a strong relationship with one another. Over the next decade, trend and relation of UX studies in the disciplines of Education and Visual Arts could serve as a solid cornerstone for future UX studies regarding online education material or system designs. This study could provide a guideline for future researchers to expand multidisciplinary UX-related research to identify trends and relationships through a wider range of UX-related research.

REFERENCES