

Making Data Visualization Design Worksheets Accessible

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INTRODUCTION

Data Visualization involves visualizing data in a way where the significance of that data is showcased. Worksheets showing students the flow or process of data visualization exists, however, these worksheets were designed for content not accessibility for those with visual impairments. Screen readers allow those with visual impairments to ‘read’ the screen just as well as those without vision problems [1]. The question this research aims to answer is “**how can data visualization activity worksheets be designed and made accessible for the visually impaired?**” The layout of the design worksheet example [2] [Figure 1] were adapted for data visualization worksheets for CGT 270 Introduction to Data Visualization. Activity worksheets were developed to display the process of data visualization. The outcomes of this work will improve the introduction of the data visualization process for students with visual impairments encourage broader participation in visualization.

METHODOLOGY

All formatted documents were revised to be compliant with Purdue University’s *Accessibility for Instructional Design* manual, and assessed by the screen reading program, JAWS, to determine the worksheet’s accessibility.



- A model for design activity worksheets was identified through scholarly research literature. [Figure 1]
- The layout of the model worksheet was then adapted to fit the needs of CGT 270 Data Visualization. This format, however, was deemed inaccessible by the Office of Institutional Equity because of the use of textboxes for each section. [Figure 2]
- After the model worksheets and data visualization activity worksheets designed for CGT 270 were assessed for accessibility, a representative from the Office of Institutional Equity strongly recommended using an outline format, which is 100% accessible using JAWS. [Figure 3]
- Figure 4 is a universally accessible format of the documents. All text had to be set to a specific heading style, and spacing of each text section had to be customized based on the heading style. [Figure 4]

RESULTS

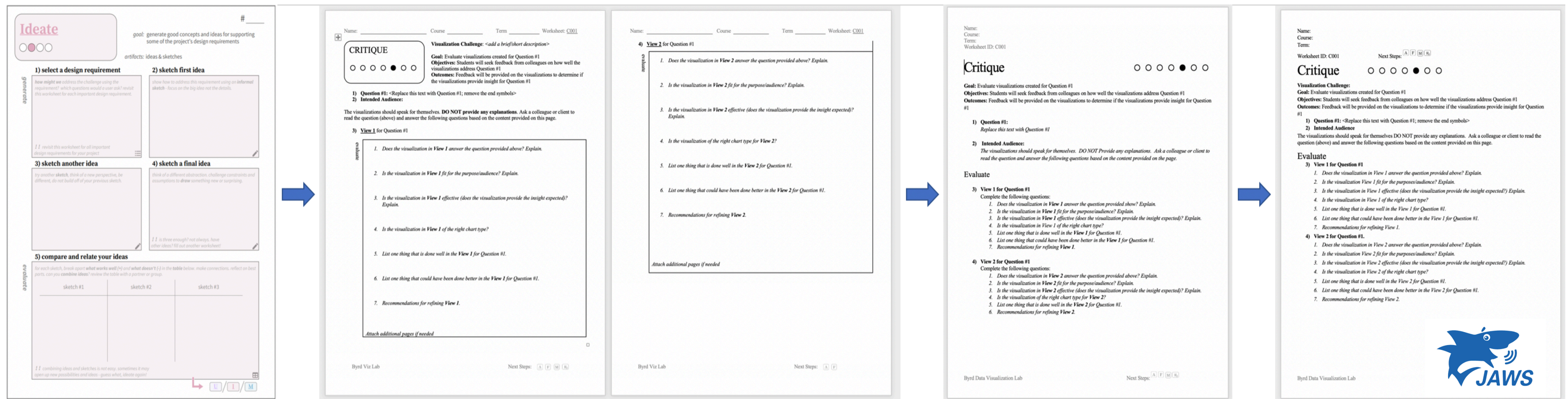


Figure 1: Worksheet chosen to be used as a design standard for the course worksheets [2]

Figure 2: First stage of the formatting process; extremely inaccessible due to use of textboxes

Figure 3: First updated draft, 100% accessible document for the software JAWS

Figure 4: Final, 100% universally accessible document

CONCLUSION

Universal accessibility is a requirement that benefits all students and encourages those with a disability to be welcomed in the classroom environment. Purdue is making efforts to mandate accessibility within all departments, but there is still a large gap that needs to be filled. **Raising standards for accessibility and normalizing accessibility in courses will lead to more participation of all students in courses with digital content.**

FUTURE WORK

Future work for this project will include migrating the accessible data visualization worksheets to an online platform and conducting user studies to assess the usability of the worksheets in the classroom, in different disciplines and in different venues (external training and workshops).

REFERENCES

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