Research from the Office of RIDIL

Technology and the ADDIE Framework

This white paper provides a summary of the work from:

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Overview

As technology is used in training, it is important to be mindful of how technology is used. To support this thinking the Analysis, Design, Development, Implementation, and Evaluation (ADDIE) framework was developed. People can use technology strategically in different ways when developing training. It would be helpful to know how it is being used to further support developers.

Purpose of the Research

When developing content for professional training, what technological strategies were used within each of the phases of the ADDIE framework and how do they benefit the training solution? These two questions from the research are the focus of this white paper:

RQ1. From the studies collected, what is the industry sector of the target learning audience and what was the planned delivery modality?
RQ2. How did the use of technology benefit the development of a training solution?

Method

A PRISMA systematic review methodology was utilized to answer the four questions guiding this study. Grounded coding was used to analyze how the technology benefitted the development of the training solution.

Findings and Discussion

Use of ADDIE across industry sectors

This systematic review revealed that across the research the use of ADDIE was identified across 13 different industry sectors. The majority of studies were in healthcare (36%). The distribution of the other industries can be found in Figure 1.
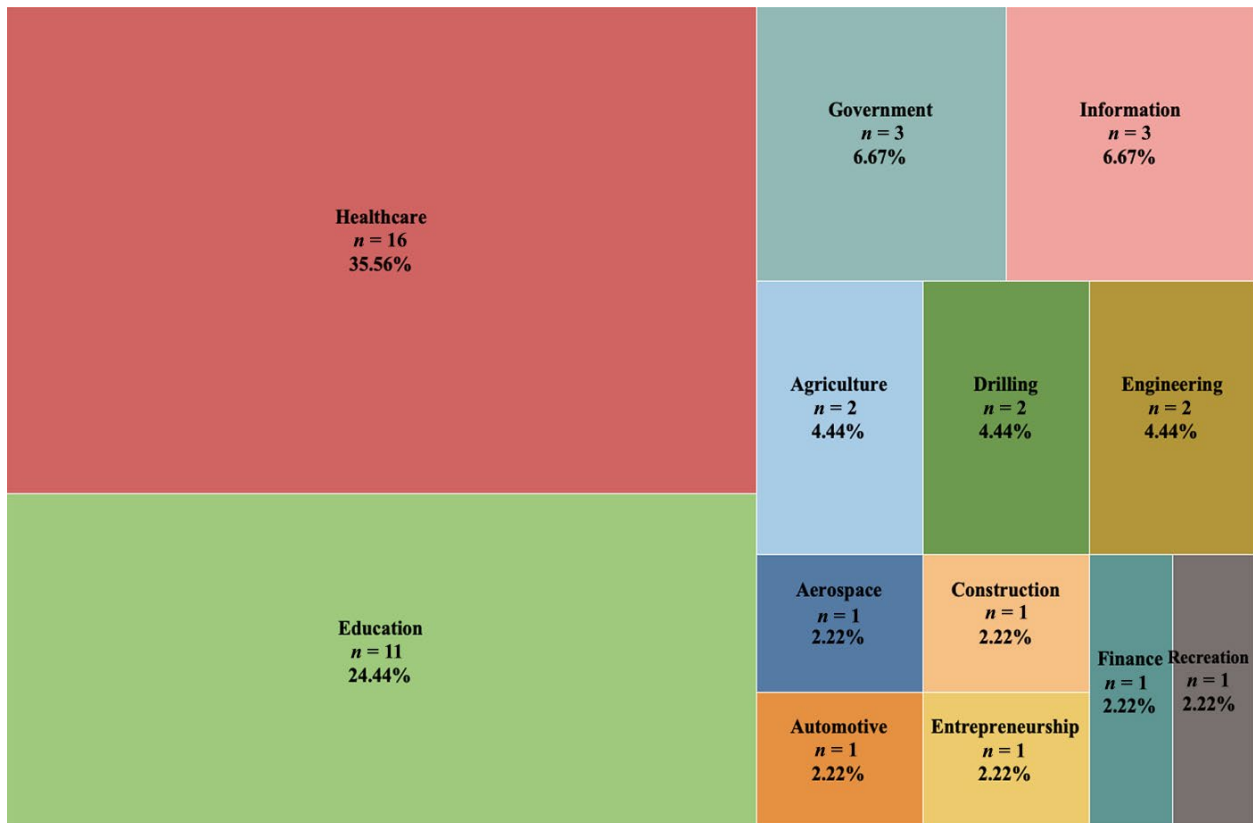
Figure 1. Industries using ADDIE

Image credit to Crompton et al., 2023

This finding shows that ADDIE is well used across multiple diverse industries in considering how technology is being used in educational design.

Educational modality

In examining the educational modality of those studies in this systematic review, the predominant modality was online with 64%, followed by hybrid 20%, and distance at 13%. Hybrid in this study was defined as a course that required some in person classes and at other points all students would be online. It was interesting to see that only a few of the in-person classes used ADDIE in thinking about the use of technology for learning design. It is understandable that online learning automatically demands the use of technology. However, to fully use all tools to their full potential, it would be important for in-person modalities to also use a purposeful approach to using technology or even to make the decision of why it should not be used. Possibly, those focused on in-person educational design may use other frameworks.

Technology benefits

The findings of the study showed four trends in how technology was used to organize, structure, and deliver training solutions. The four are *usability, learner experience, learning approaches, and financial*. These each have multiple subcodes that were found in the studies of the systematic review, See Figure 2. For higher education these benefits offer great benefits to students, educators, and administrators.

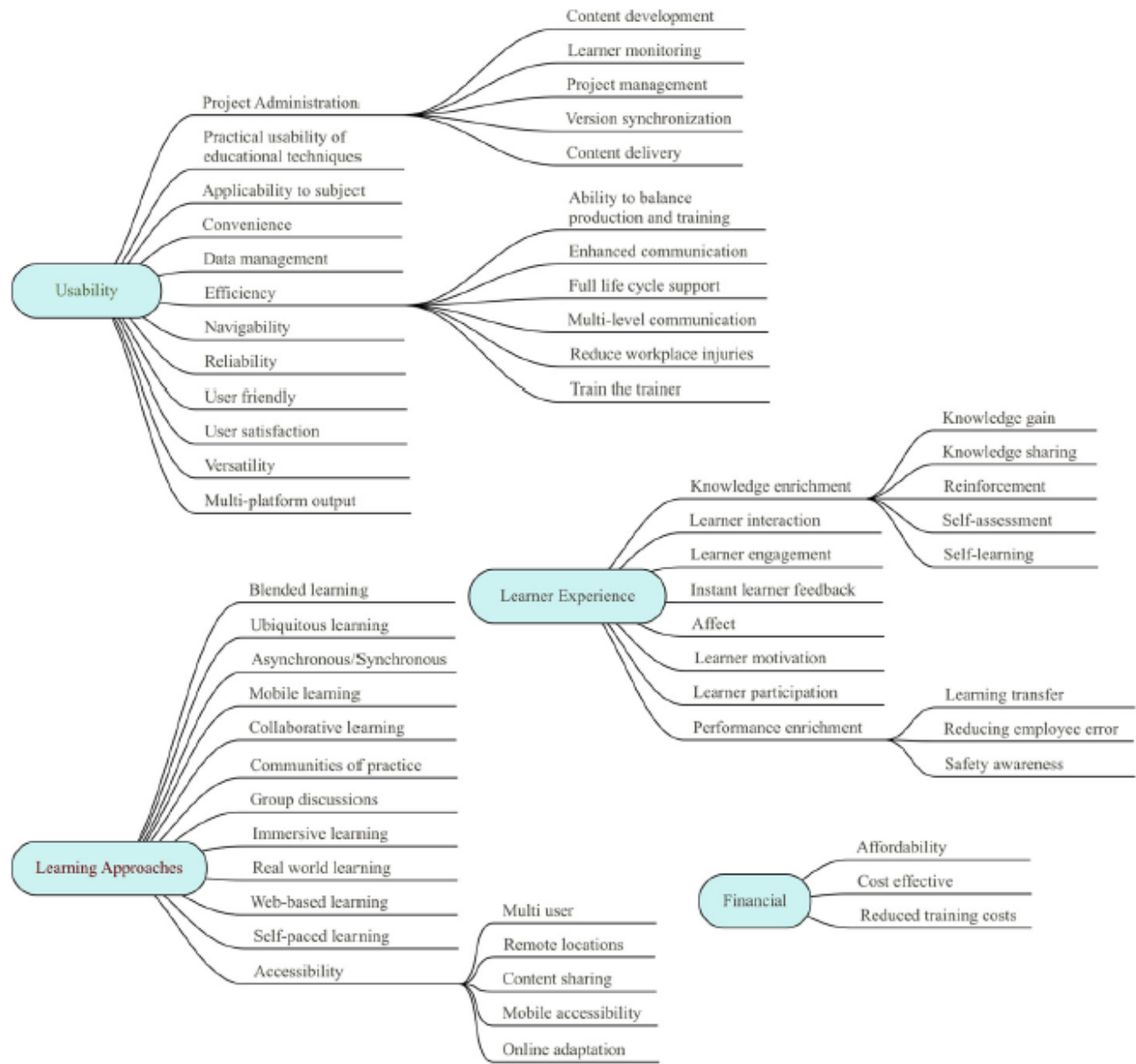Figure 2. Benefits of technology

Image credit to Crompton et al., 2023.

Usability – There was a variety of language used in regard to usability highlighted in the 23 subcodes. Usability was highlighted as the extent to which specificized users can achieve specified goals with effectiveness, efficiency, and satisfaction. For example, project administrators can be supported by technology with aspects, such as content development, management, and delivery. Technology can support in many other aspects, including providing efficient, reliable, and applicable course design.

Learner approaches – The findings revealed a variety of different learning approaches afforded to the educator and designers from the use of technology. See the list in Figure 2.

Learner experience – With learners at the heart of our work in education, it was positive to see the different opportunities for learners through using technology. The trends in learner experience seen in Figure 2 show further trends in the learner experience focusing on cognitive (e.g., knowledge enrichment) and psychological aspects of learning (engagement, motivation, and affect).

Financial – This trend has less subcodes but was found to be in the studies as often as the other major topics. The difference was that there was consensus in the language and benefit that the use of technology provided benefits in affordability, cost effectiveness, and reduced training costs. These financial themes were repeated across the studies.

Conclusions

The systematic review findings show how technology purposefully used in educational design led to four benefits for education: Usability, learning approaches, learner experience, and financial benefits. As educators or educational designers, it is useful to see the potential for using technology when designing and developing educational courses. The results of this study appeared to show that those designing online courses used the ADDIE framework to consider the use of technology in designing training. Many of these benefits can also provide benefits to in-person and should be explored. The results of this study may also show a trend in the use of the ADDIE framework for online learning and other frameworks may be used as a lens to consider technology use for in-person training.

References

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