



1.1 | Analyze: Systems Impacting Your ID Projects

Analyze the Systems Impacting Your ID Projects.

Use a *systemic*, or systems view when designing solutions for educational challenges. This will help identify the people, organizations, and other factors involved, and the relationships, interactions, and influences of these elements on the project. While today's learning environments are becoming increasingly complex, every system has inputs and outputs that you can identify (Carr, 1996; Carr-Chellman, 2006). For example, a preschool class system has inputs that include varying student characteristics and abilities, and a variety of home backgrounds and supports. The range of student abilities impact what the teacher can cover and the learning outcomes (outputs) that result. The students' home situations influence the physical and emotional state that they bring with them to school. The students' home systems thus influence the tranquility of the classroom and the children's receptivity to cooperative learning activities.

Analyzing the interrelatedness of all objects and sub-systems within the overall system is key to identifying and accounting for the potential impacts in your design. *Design thinking* can help you understand all the sub-systems, persons, objects, processes, and contextual factors involved. Design thinking has five phases that are applied during problem-solving to transform needs into viable solutions (Stefaniak, 2020; Stefaniak & Xu, 2020): empathize, define the problem, ideate, prototype, and test. During the empathize phase the designer must put themselves in the learner's position to better understand their needs and the systems that impact them. During problem definition the designer identifies and confirms all the factors involved, and then they ideate to brainstorm possible solutions. Confirmation that all systemic factors have been identified and that the design accounts for their interactions and influences is accomplished through prototyping and testing.

Select a learning system for which you design instruction (or hope to design instruction) and adopt the perspective of the learner to identify the different sub-systems involved. Consider the complexities introduced into the design process by the sub-systems, stakeholders, contexts, drivers, and challenges. Identify the resulting or related challenges for your learners and in your organization. What are the inputs (e.g., quality of instruction, experience of instructor, employee abilities, funding, technologies, etc.)? What are the outputs (e.g., student achievement, job placement, course evaluations, productivity ratings, etc.)? And what are the direct and indirect relationships and interactions? Create a visual map of all these elements. How might this systemic view of the learning environment help you identify challenges and solutions, meet needs, and communicate solutions to your stakeholders and learners?

References and for more information on systems and their impacts, see:

- Carr, A. A. (1996). Distinguishing systemic from systematic. *TechTrends*, 41(1), 16-20.
- Carr-Chellman, A. A. (2006). *User design*. Routledge.
- Stefaniak, J. (2020). The utility of design thinking to promote systemic instructional design practices in the workplace. *TechTrends*, 64(2), 202-210.
- Stefaniak, J., & Xu, M. (2020). An examination of the systemic reach of instructional design models: A systematic review. *TechTrends*, 64(5), 710-719.