Systems Thinking – The Iceberg Model

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Systems Thinking

A system is made up of interrelated and interdependent parts. The key concepts in this definition, *interrelated* and *interdependent* provide insight into the importance of systems thinking when developing instructional designs. Systems thinking enables us to understand the factors and dynamics that make up a complex problem. This understanding is key in the design and implementation of sustainable solutions that result in expected consequences (Guerra-Lopez, 2018). The alternative to this approach is called the traditional view of design.

The traditional view focuses on individual behaviors, and as such, provides individual solutions as the answer. In other words, the problem and the solution are self-contained and isolated, with the perception that nothing and no one is else in the organization is affected. This view provides a superficial and often temporary solution to what may be a deeper problem. Although the focus is on the individual problem, the underlying reasons for the problem are limited to the observed attitudes, knowledge, and beliefs of the individual. This is the key difference between the traditional view and the systems view of instructional design. The traditional view does not investigate the underlying reasons for individual behavior and focuses instead on an immediate solution to the problem.

The systems view of design also looks at the attitudes and beliefs of the individual but goes further by reviewing all the interrelated parts of the organization, to determine what is causing these attitudes and beliefs. For example, the traditional view would expect a manager to discuss an employee attitude problem with the employee, outline what needs to be done to correct it, and then communicate the consequences of non-compliance. The solution is temporary because nothing is being done to determine what is causing the bad attitude, and the employee soon repeats the unwanted behavior. The systems view regards the individual as an interrelated

element of the organization that affects and is affected by other organizational elements. One of the key tools used in the systems view is the iceberg model.

Iceberg Model

The iceberg model helps us to observe what is in front of our eyes, but it also makes us aware of what we cannot easily see or access. The result is that we take a deeper look at what is happening to determine what is causing the behavior. There are four levels of thinking in the iceberg model: 1) the event level, 2) the pattern level, 3) the structure level, and 4) the mental model level. The event level is at the top of the iceberg and deals with observable daily events. Systems thinking supports the remaining levels as crucial elements when designing learning solutions to behavior problems. Working through the levels to discern the reasons for an observable event in an organization clarifies the importance of these levels and identifies how they work together in the development of sustainable design solutions.

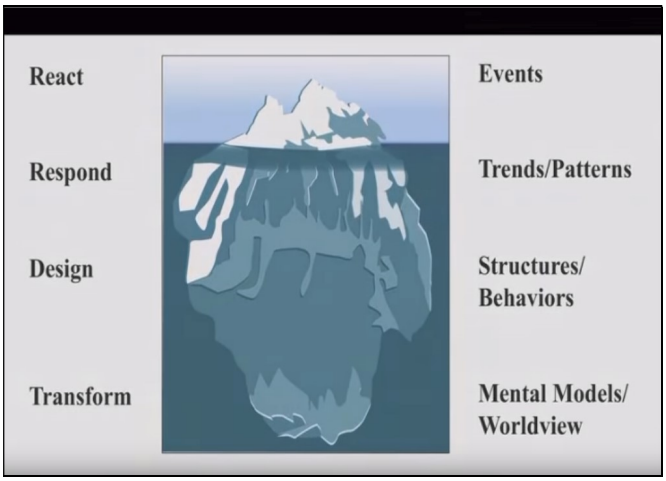

Figure 1

Event Level

The event level at the top of the iceberg includes the observable events that we see every day, but do not attempt to understand or analyze them. They can be as basic as getting out of bed or as complicated as a conflict between team members in an organization. We may notice the

conflict between team members, but our focus is on eliminating the conflict, not determining what is causing it. If we go beyond the event level, we can see the value of using the iceberg model to deal with a common daily event in the organization – employee absenteeism.

According to Robbins and Judge (2018), organizations lose time and money when employees do not report for work. Workflow disruptions and delayed decisions can cause problems, but extensive absenteeism can directly impact the effectiveness and efficiency of the organization (p. 28). Since absenteeism can be caused by various factors and can affect various aspects of the organization, it is essential that the problem be approached from a systems perspective. Several questions must be asked to determine what is causing employees to miss work and whether the absence is related to personal or organizational factors. When and why do employees miss work? What are the absenteeism rates for each department in the organization? Are employees involved in more stressful projects absent more often than other employees?

The event of absenteeism is easily observed at the top of the iceberg, or from the event level of thinking, which deals with our perceptions regarding the event. Managers often react to the event (the symptom) level by attempting to work through the event without identifying its cause. They focus on the administrative process, which requires the employee to notify management of the absence. Managers often delegate the work of the absent employee to a coworker, and feel that in doing so, they have been successful in keeping the ship "afloat." Unfortunately, no one tries to determine why the employee was absent, and the next time that they are absent, the process is repeated. The event level is the *What* aspect of the iceberg model; it identifies the daily events that we observe and react to. The next level in the iceberg model (patterns) pushes us to start looking beyond observable events to identify patterns that indicate when the events are occurring.

Pattern Level

From the event level, we may notice that employees are absent from work. Managers usually work with other employees to cover the workload of the absent employee, but do not usually take the time to determine when the observable event occurred. The key is to look at the event as part of a series of events and not as an isolated incident. Identifying the patterns or trends involved in absenteeism can help management begin to develop a workable and sustainable response to the event. It can also help managers to anticipate behavior based on these trends. This can help managers work more effectively with employees because they know which behaviors to expect in a given situation. Patterns help us to identify whether we need to pursue a matter, such as absenteeism, or whether the event we have observed is a single instance that does not need to be addressed.

The iceberg model increases our awareness of the need to pursue the reasons for the events (symptoms) by identifying the patterns surrounding the event (absenteeism). These patterns can be identified by asking pertinent questions. For example, are more employees absent on Mondays and Fridays? Is absenteeism higher in one manager's department than it is in another? What reasons are given for the absence? What can management do to decrease absenteeism? What is the workload of the absent employees? Asking these questions can help us to identify patterns of behavior. Identifying bad patterns indicates that something is wrong in the system and is causing these patterns. Conversely, there can also be good patterns of behavior that we must identify to compare and see if we can get employees to copy the good behavior. In the example of absenteeism, as we try to identify patterns for the employees who do not come to work, we must also identify patterns for the employees who do come to work.

These patterns take us from the observation of the event to the next step in the model, which is *When* the behavior is occurring. Knowing when a behavior will happen based on patterns helps designers and managers be more *proactive* and less *reactive* to employee behaviors. Once we identify the patterns to determine when the behavior is occurring, we can move to the next level in the model (structure) to determine what is causing the patterns that we have identified.

Structure Level

Once we identify the patterns or trends involving employee absenteeism, we can begin the process of determining why the event is occurring. What is causing employees to be absent on certain days? Why are more employees absent from one department than the others? What is the relationship between management style or employee workload and absenteeism? In addition to determining what has influenced employee absenteeism, we also need to determine the relationship between the items causing the absenteeism and the employee's decision to be absent.

These are just some of the questions that can be asked at the structure level. Employees may react to changes in the organization, new work policies, or even a new route to get to the office. Structures can be formal (processes, procedures, workflow) or informal (workarounds or shortcuts). When designing learning solutions, designers need to determine what is causing the patterns, and how the behaviors are affecting other elements in the organization. By understanding how the system is designed, we are better prepared to change the design to get the desired results. If we are trying to determine why absenteeism has increased in a specific department, we may identify the fact that the manager is on sick leave, and no one is monitoring employee absences. The structure level helps us identify *Why* the patterns are happening, which brings us to the last level of the iceberg model – the mental model level.

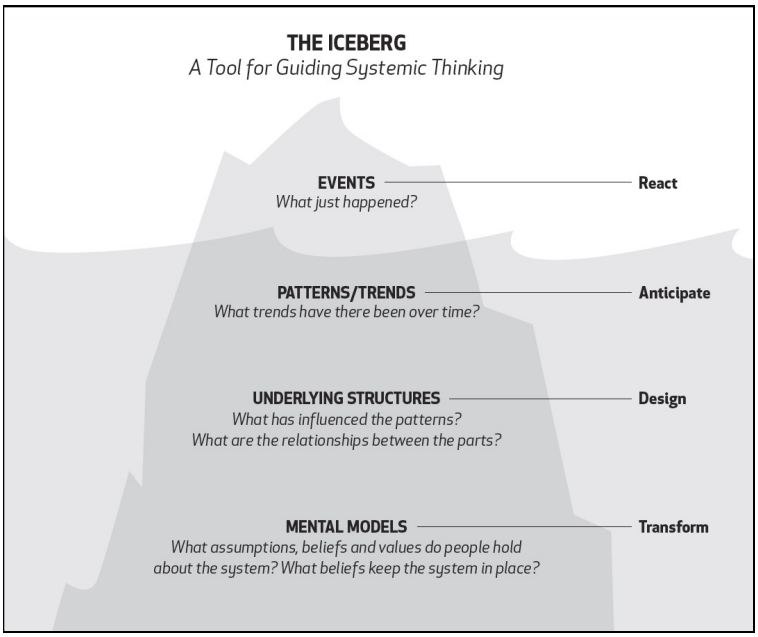

Figure 2

Mental Model

Once we observe the event (What), identify the patterns (When), and determine what has caused the patterns (Why), we can then begin the process of transforming (How) the beliefs and attitudes of the people involved in the event. Mental models include the beliefs, biases, and attitudes of the people who work in the system and those who designed the original system. Understanding the feelings of both these groups helps us to transform behaviors by implementing the designs that we developed in the structure level.

In the example of absenteeism, the mental model for the employee could include the assumption that their absence does not really affect the organization, and that their team members understand their need to be absent from work. Identifying these beliefs guides us in determining whether a solution will increase their awareness of how their absence affects the organization, their team, their manager, and their coworkers. Managers must also be made aware of the importance of understanding their role when dealing with employee absenteeism.

By working through the levels, we can progress from observing an event, such as someone being absent from work, to discerning whether the event indicates a pattern of behavior that must be addressed or if it is an isolated incident. If a pattern exists, we can then determine why it exists, and make the appropriate recommendations based on the mental models of those involved in the observable behavior.

Summary

My background in psychology and sociology has given me the ability to analyze a situation or a behavior to determine why a person is acting a certain way. I have always taught my students that behaviors are usually based on a memory that unconsciously *triggers* the behavior. When someone's behavior makes us angry or upsets us, if we try to determine why the person is acting in a certain manner, we can diffuse our emotional reaction, and work more effectively to resolve the situation.

From a management perspective, we are told that *big picture* thinking enables us to look at how a decision can affect more than the situation we are trying to resolve. A decision made in an organization is not made in a vacuum and can affect other areas of the organization without realizing it. Looking at the big picture enables us to look at the entire organization, instead of our immediate area. This can also be applied to decision-making in our personal lives, which can affect more than the reason for the decision.

Completing this assignment has increased my awareness of the importance of determining the underlying causes of human behavior, whether in the classroom, in my personal relationships, or in my job. Determining why people act in a certain way helps me to look at the reasons for my reaction to their behavior, which increases my self-understanding. I have been using various aspects of system thinking throughout my life, but this assignment has enhanced

my ability to review all aspects of a situation when making a decision, and before reacting to a specific behavior. My example of an observable event (absenteeism) was at the top of the iceberg, but there was so much more that was hidden below the surface! I have learned that people can notice and react to an event but working below the surface of the event to determine when and why the event is happening can result in a more sustainable and successful design solution.

As an instructional designer, these realizations have made me more aware of the importance of system thinking. Designing a training solution from a systems perspective must involve the use of the iceberg model to ensure that all levels are included in my design solution. People might not want to take the time to review the levels in the model and might opt to implement a quick and easy fix to a situation. Training materials can be developed in either case, but the lasting effect on the behaviors of those taking the training is more evident when using the iceberg model.

References

Guerra-Lopez, I. Wayne State University. (2018). *Unit 1 – Introduction Videos.* Retrieved from https://canvas.wayne.edu/courses/80618.

Robbins, S.P. & Judge, T.A. (2019). *Organizational Behavior.* New York, N.Y: Pearson.