

# The Productive Struggle Design Framework

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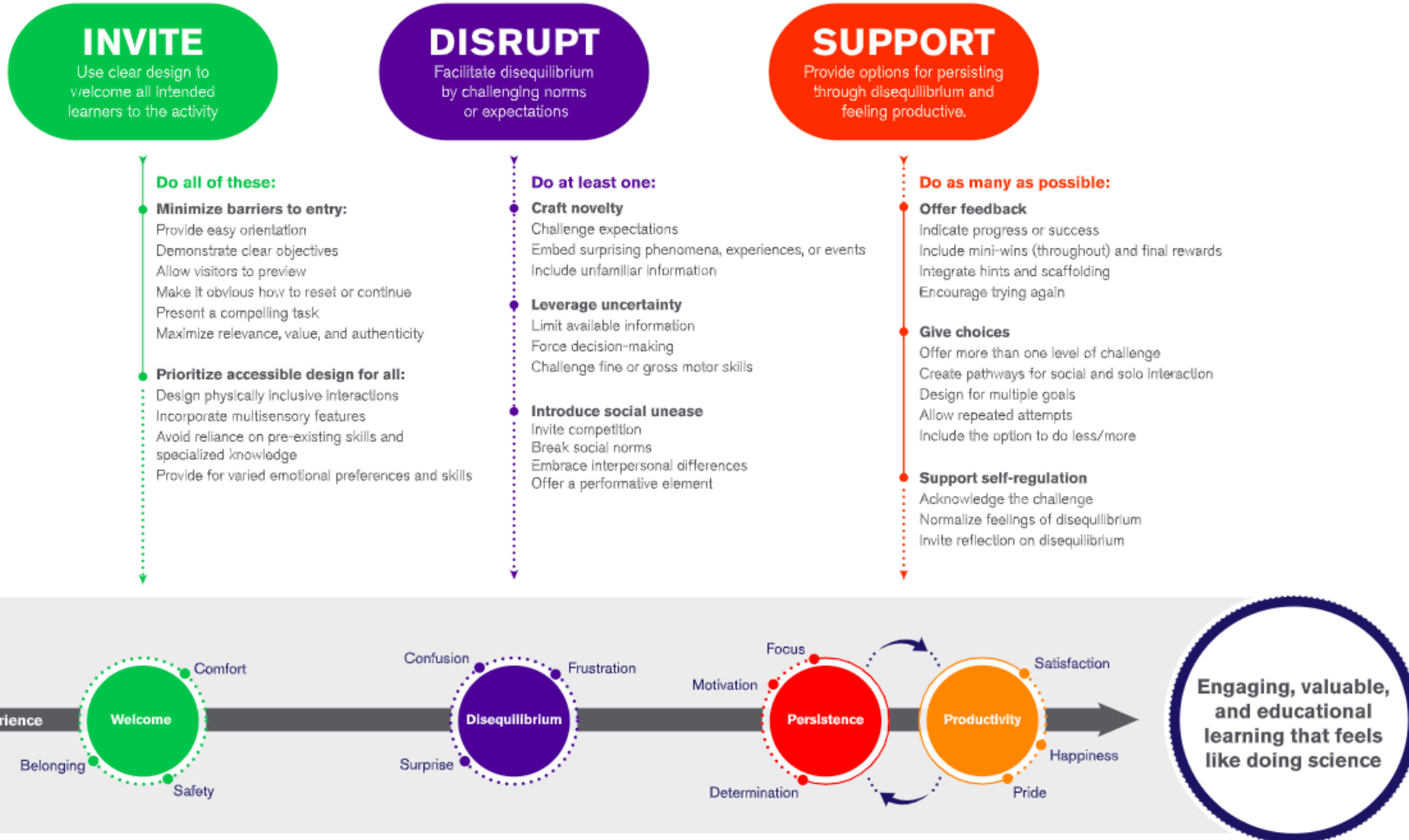
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## About our project

This work comes out of an NSF-funded Research in Service to Practice project (DRL-1612577). The project used a design-based research approach to develop the research-based design framework shown here, which shares strategies for designing science exhibits that foster productive struggle.

## What is productive struggle?

During productive struggle:

1. a learner confronts an impasse, obstacle, or social unease and feels disequilibrium (confusion, frustration, surprise, unease, etc.),
2. the exhibit supports the learner to persist
3. the learner overcomes the obstacle, feeling a positive resolution or satisfaction with their effort

## Why productive struggle?

Our research shows productive struggle is a **valuable** experience that can enhance **learning, and engagement**. Designing for productive struggle can also support **emotional accessibility**, making science learning available to a broader audience.

## Our process

Our design-based research gathered data from over 450 people as we iteratively developed, tested, and refined our design framework. Our data collection included observations, interviews, surveys, stimulated recall, eye tracking, and galvanic skin response.