



Seeking more Opportunities of Check Dams' harmony with nearby Circumstances via Design Thinking Process

Huan-Chun Lin (1), Su-Chin Chen (1), and Chen-Chen Tsai (2)

(1) Chung-Hsing University, Taiwan, Province Of China (hjlineng@gmail.com), (2) Taiwan Forestry research Institute, Taiwan, Province Of China (tasi1021@gmail.com)

The contents of engineering design should indeed contain both science and art fields. However, the art aspect is too less discussed to cause an inharmonic impact with natural surroundings, and so are check dams. This study would like to seek more opportunities of check dams' harmony with nearby circumstances. According to literatures review of philosophy and cognition science fields, we suggest a thinking process of three phases to do check dams design work for reference. The first phase, conceptualization, is to list critical problems, such as the characteristics of erosion or deposition, and translate them into some goal situations. The second phase, transformation, is to use cognition methods such as analogy, association and metaphors to shape an image and prototypes. The third phase, formation, is to decide the details of the construction, such as stable safety analysis of shapes or materials. According to the previous descriptions, Taiwan's technological codes or papers about check dam design mostly emphasize the first and third phases, still quite a few lacks of the second phase. We emphasize designers shouldn't ignore any phase of the framework especially the second one, or they may miss some chances to find more suitable solutions. Otherwise, this conceptual framework is simple to apply and we suppose it's a useful tool to design a more harmonic check dam with nearby natural landscape.

Key Words: check dams, design thinking process, conceptualization, transformation, formation.