The Study of Unsafe Behavior of Construction Workers Based on Kolb's Experiential Learning Theory

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Abstract

Unsafe behavior is the direct cause of safety accidents. This paper analyzes the unsafe behavior of construction workers with the help of the model of Kolb's Experiential Learning Theory from the perspective of individual knowledge accumulation, and puts forward specific suggestions on the prevention of unsafe behaviors.

Keywords

The unsafe behavior of construction workers, Kolb's Experiential Learning Theory, knowledge accumulation.

1. Introduction

The construction industry will continue to grow in the next few years as the pace of urbanization accelerates. However, the construction industry is a high-risk industry prone to safety accidents due to its complex environment, dense staffing and high mobility. In recent years, the related departments and construction enterprises have made many contributions to the construction safety production, and the safety accident management tends to improve. As shown in figure 1. But according to data, an average of one construction worker dies in a safety accident in the UK, and two construction workers die every day in the United States. While in our country, only in housing project, there are two accidents per day and three deaths on average. This has to do with Europe and the United States, there is still a gap compared with developed countries, construction production safety situation is still grim.

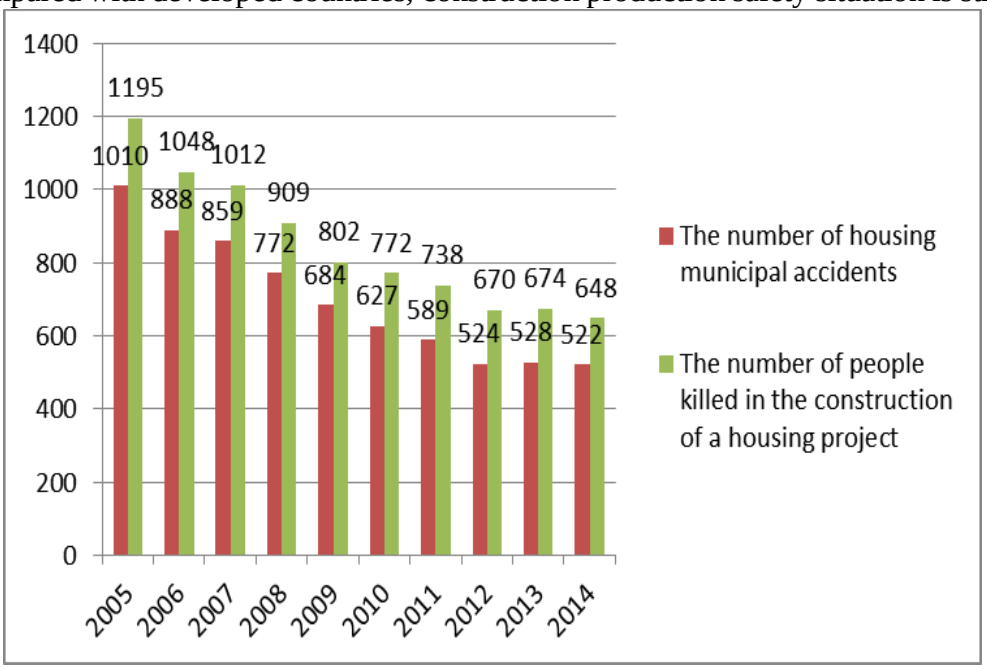

Figure 1 National housing project safety accident from 2005 to 2014

2. Unsafe behavior of construction workers

The famous American safety engineer Heinrich has investigated 750000 cases of industrial injury accident in the United States, 98% of the accident in the scope of the person's ability can achieve is preventable, beyond the reach of people, only 2% of the accident is prevented. In preventable accidents, people's unsafe behaviors accounted for 88 percent of accidents, which can be seen as the main factor in accidents.

The unsafe behavior of construction workers can be divided into two categories: intentional behavior and unintentional behavior. The intentional act is an act of ignorance, which refers to the failure to work in accordance with the relevant rules and regulations of safety construction, such as not wearing a helmet; knowing that the crisis is not completely ruled out, still unrushed construction; there is no protection for high altitude work. The intentional unsafe behavior of construction workers is not a quick fix, but a trial - feedback process. Of tedious, repetitive work such as psychological or environmental impact of construction workers take unsafe act, without serious consequences after several attempts, the intentional unsafe behavior will become a habit as time passes.

The level of cognitive or education of the first-tier construction workers is low, and they do not know how to cope with the occurrence of unsafe behaviors. Having no intention of behavior is dangerous, mainly is refers to the behavior in what they do no accurate judgment of right and wrong, for example, in the face of a construction problems not met before, I don't know what measures to take. It is mainly affected by the lack of experience and the lack of safety training education.

3. The application of Kolb′s Experiential Learning Theory in the study of unsafe behavior of construction workers

3.1 Knowledge accumulation

Qu Bingxiang make some study on Marx's "Das Kapital" and a series of manuscript about the "knowledge accumulation" problems. The "knowledge accumulation" summed up in two basic forms, one is the accumulation of "social average productivity of wisdom" or "social knowledge and the accumulation of productivity" (hereinafter referred to as "social knowledge accumulation"); The second is "the accumulation of skills and knowledge (scientific forces) of the workers themselves" (" accumulation of personal knowledge "). He think that are included in the "personal knowledge accumulation" is a personification of knowledge, early into the man's flesh, bones and muscles and the brain, turned into a man's wisdom, ability and skills, is a kind of real creativity, as long as the combined with a certain objective conditions can become enormous material force and realistic material wealth.

Empirical learning is a process of feedback, whose essence is knowledge accumulation. Famous Japanese scholars, the pioneers Nonaka thought of knowledge management of enterprises through knowledge socialization mode (from tacit knowledge to tacit knowledge), externalization model (from tacit knowledge to explicit knowledge), combination mode (explicit knowledge to explicit knowledge), and internalization (from explicit knowledge to tacit knowledge) model to realize the enterprise knowledge spiral accumulation. Pei xiaobing and others believe that the accumulation of knowledge is the learning process of "middle school" and "middle school", which constantly obtains new knowledge and accumulates new experiences in innovation practice.

3.2 Kolb′s Experiential Learning Theory

Kolb proposed his own experience learning theory (ELT) after summarized the study made by Dewey , Lewin, Piaget, Rogers and other scholars. He thinks experiential learning process is composed of four adaptive learning phase ring structure(1984). Kolb thinks people in the general case experience learning process is composed of four adaptive learning phase ring structure(As shown in figure 2), including: (1) specific experience (2) reflection observation (3) abstract concepts (4) practice test. At the same time, the experience study circle is an open system, learners in the four stages in the process

of the reciprocating cycle, internal and external knowledge are merged together each other, resulting in a rising spiral complex learning.

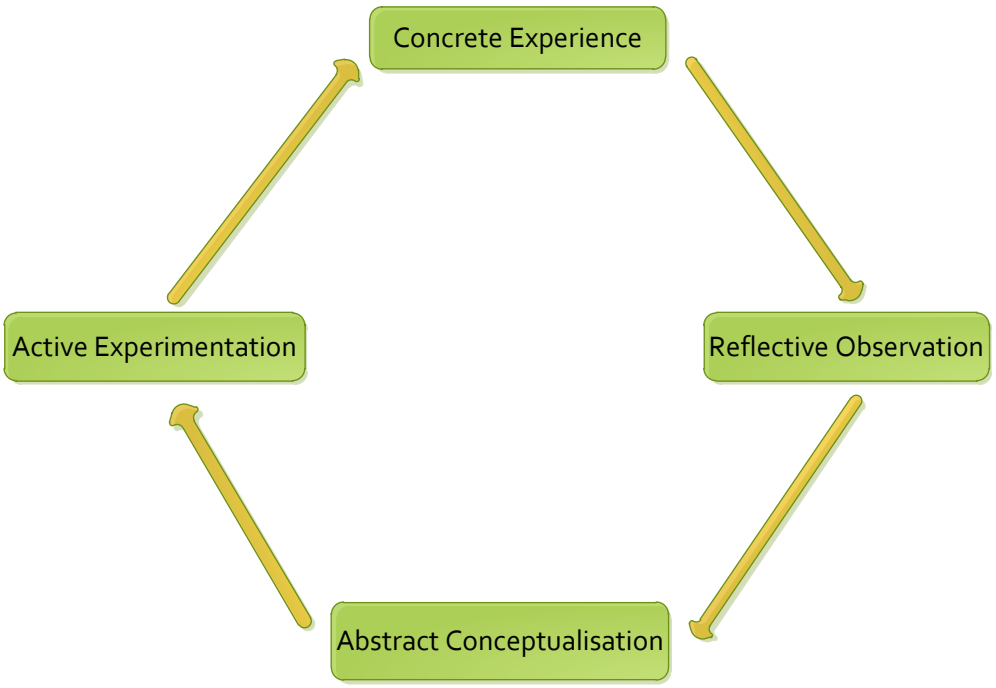

Figure 2 the model of Kolb's Experiential Learning Theory

3.3 The model of Kolb′s Experiential Learning Theory in construction safety domain

Studies have shown that learning is the main way for builders to acquire skills. In concrete experience, construction workers discover new knowledge through situational awareness and communication with others, and integrate old and new knowledge to gain new knowledge in work. In reflection observation, construction workers in the previous stage to yourself specific experience with previous experience gained by the comparison of knowledge, summarizes the differences and similarities between the two, to show the differences and similarities between old and new knowledge and working process for reflection, get a new understanding and the understanding. In abstract conceptualisation , the construction workers themselves in specific experience and reflection to observe the abstract into the concept of a rational, because every construction worker's understanding and cognition is different, so will produce different concepts, made rational learning results. In active experimentation, the construction workers test the correctness and reliability of their own knowledge experience. On the other hand, this practice can be seen as the beginning of a new cycle and a starting point for further reflection of construction workers.

The model of Kolb's Experiential Learning Theory in construction safety domain is shown in figure 3. Construction safety accidents not only cause casualties and property losses, but also cause the fracture of safety knowledge accumulation chain. Killed in personnel safety after the accident, the individual experience in the learning circle model "practice test" to "specific experience" link fracture, namely if safety accident is caused by people's unsafe behaviors, and trigger has been killed in the accident, accident is triggered the unsafe behavior of the accident can disappear with the death of trigger, although there may be workers in the core area, but about trigger psychology at that time, he didn't do this is what is considered unsafe action and other issues, we don't know, it's brought adverse effects to our safety management, with no clear direction of the management. the model of Kolb's Experiential Learning Theory itself is a continuous cycle process of the accumulation of experience, the practice to the concrete experience of fracture, not only means the individual knowledge accumulated stop, also means that the lack of information in the organization.

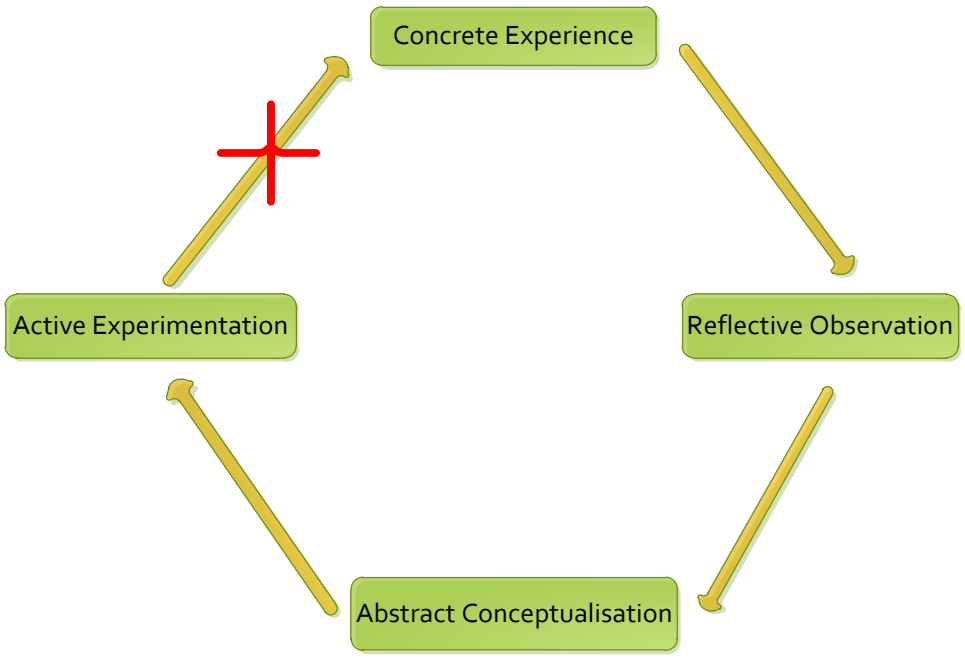

Figure 3 The model of Kolb's Experiential Learning Theory in construction safety domain

4. Advice

Pay attention to the safety training of front-line construction workers

According to the survey, construction workers work liquidity is big, the work experience, skill levels, such as uneven, and construction companies rarely to formal training of workers, generally only for simple team's sermon. Faced with different characteristics and requirements of the project, construction enterprises should be in front of the project construction for workers, according to their experience and their own characteristics, the security classification, different levels of training plan formulation.

Enterprises should strengthen the management of safe behaviors

In terms of intentional unsafe act, although the construction workers know the dangers of their work environment and safety attention points, but the behavior are not corrected in time, also have no related accidents, will make more and more workers try to unsafe behavior, eventually shift safety environment deterioration, unsafe behavior to form groups. In response to this situation, the on-site security management personnel shall formulate corresponding measures for supervision and management. For example, talking to construction workers on a regular basis and understanding their psychological emotions. We will implement the system of rewards and punishment and give play to the supervision of the masses.

Build knowledge sharing platform

The first-tier construction workers have abundant practical experience, how to integrate, refine and disseminate the experience knowledge they possess is the key to the safety knowledge management of construction enterprises. At the same time, the competitiveness of a company also comes from its knowledge accumulation, so it is important to build a secure knowledge sharing platform within the enterprise. For example, the organization has experienced construction workers to conduct on-site explanation or video teaching activities; Different working groups learn from each other.

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