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Title[Edit Title](#)**Learning from Success or Learning from Failures?****Short Description**[Edit Short Description](#)

Problem-solving skills are critical for students to succeed in future career. To better prepare them for real problems, many researchers argued authentic cases experienced by practitioners should be included in instruction to expand students' experience. Although practitioners experience both success and failures in reality, fewer failed experiences are included. Therefore, the study aims to explore the advantages and limitations of different case types and propose the importance of a more balanced case-based learning environment.

Abstract[Edit Abstract](#)**Case-based Learning**

The effectiveness of using cases in the process of instruction to develop students' real-world problem-solving skills is often explained by the theory of case-based reasoning (CBR), which is a problem-solving paradigm of using knowledge learned from similar past experiences to find solutions to current problems (Aamodt & Plaza, 1994; Kolodner, 1992; Slade, 1991). According to CBR, by making useful analogical inferences based on past experiences, people are able to propose appropriate solutions based on the new context (Kolodner, 1997). As a result, in general, solving a problem that one met before is easier than solving a problem that one has never encountered or heard of (Kolodner, 1992).

However, as novices, students are in lack of previous experiences to help them solve problems they face. To address this problem, CBR can be applied through a case-based learning environment to enrich students' own experience (Hernandez-Serrano & Jonassen, 2003; Jonassen, 1997; Jonassen & Hernandez-Serrano, 2002), so students are able to reason beyond what they could do otherwise based on cases indexed into their memory (Kolodner, 1997). In other words, a case-based learning environment may help students contextualize the content knowledge they learn and understand how to apply it in practice to solve real problems (Tawfik & Jonassen, 2013).

Success-based VS Failure-based Cases

Although in real contexts, practitioners experience both success and failures, the number of failed experiences may somehow be misrepresented in existing cases because practitioners are usually reluctant to talk about their failures (Cannon & Edmondson, 2005). While successful cases can provide learners with examples to imitate, failures, on the other hand, also represent good opportunities to reflect and learn from.

In 2013, Tawfik and Jonassen carried out an experiment and the result showed that failure-based cases promoted students' overall argumentation skills, which are closely related with decision-making and problem-solving skills. They suggested that failures might be included in cases to alert learners of latent problems or pitfalls that may otherwise remain uncovered in success-based cases.

But due to limited literature regarding failure-based cases, more studies are needed to explore the advantages and limitations of different case types.

Advantages and Limitations of Success-based Cases

Advantages:

Success-based cases provide good practices (Tawfik & Jonassen, 2013) for students to model.

Success-based cases may boost students' confidence in the knowledge known in the field.

It is relatively easier to get successful experiences from practitioners.

Limitations:

In success-based cases, possible deviations from the right decisions or gaps between desired outcomes and actual performance are too difficult to identify to trigger further exploration and analysis (Ellis, Mendel & Nir, 2006; Schank, 1999).

Success-based cases may not create the urgency for reflection and explanation and therefore may discourage students to think about why the solutions work and accordingly deny the chance for possible improvements (Ellis, Mendel & Nir, 2006; Tawfik & Jonassen, 2013).

Success-based cases may confine students' thinking to what is shown in the cases, intensify their confidence in current solutions (Ellis & Davidi, 2005; Ellis, Mendel & Nir, 2006; Gino & Pisano, 2011) and prevent them from thinking in different perspectives. As a result, students may simply replicate what is done in the cases without taking into account other factors in the specific contexts, which might actually account for the success.

Success-based cases are more likely to cause attribution error (Gino & Pisano, 2011). With success-based cases, it is easy to attribute the success to the illusion that the problems are completely in our control (Baumard & Starbuck, 2005; Cannon & Edmondson, 2005), while, with failure-based cases, students are less likely to make the same attribution. Instead they tend to focus more on explanation and improvement (Wong & Weiner, 1981).

Advantages and Limitations of Failure-based Cases

Advantages:

Failure-based cases have a motivational advantage to encourage students to reflect and trigger the "why questions" (Ellis & Davidi, 2005; Ellis, Mendel & Nir, 2006; Gino & Pisano, 2011; Schank, 1986; Sitkin, 1992; Tawfik & Jonassen, 2013; Weiner, 1985; Weiner, 2000; Wong & Weiner, 1981). The motivational

advantage may be caused by the discomfort or anxiety prompted by failed experiences as well as learners' desire for explanation and improvement (Ellis, Mendel & Nir, 2006; Tawfik & Jonassen, 2013). The act of generating explanations is found to facilitate learning, promote deeper understanding and improve the acquisition of problem-solving skills (Chi et al, 1989; Chi et al, 1994; Schank, 1999).

Failure-based cases provide opportunities for students to experience expectation failures, which are preconditions for learning to occur (Schank, 1999).

Failure-based cases may generate more indices in learners' memory and learners' mental models of failed experiences are richer in constructs and links (Ellis, Mendel & Nir, 2006; Heimbeck et al, 2003; Schank, 1999; Tawfik & Jonassen, 2013).

Failure-based cases may alert learners of latent problems or pitfalls (Tawfik & Jonassen, 2013).

Limitations:

Failure-based cases may decrease students' confidence in what's already known.

Failure-based cases may cause negative emotional effects and therefore prevent student from drawing meaningful lessons (Bandura, 1982; Heimbeck et al, 2003).

Failure-based cases may pose the risk of wrong modeling.

It's more difficult to get failed experiences from practitioners (Cannon & Edmondson, 2005).

A Call for a More Balanced Case-based Learning Environment

Since practitioners experience both success and failures in real life, success-based cases alone may not be enough to represent real-world situations. Therefore, the inclusion of failure-based cases may be an effective compliment to help students promote problem-solving skills. Besides, given the advantages and limitations of different case types, it's justified to argue that a more balanced case-based learning environment is needed to fill the gap that success-based cases fall short so that students not only learn good practices that ensure the achievement of desired outcomes, but also become aware of the potential pitfalls to avoid.

Future Research Plan

For future research, more focus will be given to the mechanism of failure-based cases to explain how they work to help students promote problem-solving skills. Besides, design principles will be proposed to help construct a case-based learning environment with failure-based cases to maximize their advantages and meanwhile minimize their limitations.

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Instructional Development

Session Category[Edit Session Category](#)

Research Proposal

Additional Information[Edit Additional Information](#)*No Data Entered***Proposed Session Length**[Edit Proposed Session Length](#)

0 hour, 30 minutes

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