

Comparative Software) and it means that the proposed game engine and the physical engine, as well as the whole software produced a positive impact in the students learning, since SimStructure could provide a way to students understand the physical effects of axial forces and node displacement. SimStructure promotes active learning, since students can examine and evaluate each exercise at its own pace and receive an instant feedback. Although it could not directly be measured, it could be observed the students engagement in the learning activities during the sessions, particularly when they use a software tools, because they produced an answer for the questions, what not happened in the traditional method.

The results of both evaluation by Bloom taxonomy and the software tools and learning strategies indicate that SimStructure can support learning and could give to students a better way to apply concepts and evaluate structures in a better way compared to traditional method to answer the exercises. In the first learning strategy, using only paper and calculator, it was observed that student tried to solve exercises as the same way they did in the classroom. It means that they did not try to analyze and evaluate a strategy to solve the exercise, but also did all calculations that they learnt and after that they try to analyze the question. Around 50% of students on the first week just calculate everything and did not have time to really answer the exercise; they did not realize that it was not necessary to do lots of calculation to solve the questions. That's was one of the reasons to have several null answers in the questions.

In most exercises applied in the learning strategies it not asked to students answer the questions using the same solution strategy they usually apply. It may one of the reasons to students make so many mistakes. According to Bloom taxonomy, the hypothesis could indicate students just apply knowledge, but cannot analyze or evaluate a scenario and could think about it.

The next steps of this work include the development of a communication mechanism in order to students could help each other during the studies. The objective is to use the peer tutoring concepts to create a rich learning environment and evaluate the student's development. Other learning strategies will be applied in order to evaluate the SimStructure features to more complex students reasoning, taking into consideration the analysis, evaluation and creation of Bloom's taxonomy.

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