Argo-Graph: Using graph for learning in Physics labwork

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Abstract

Argo-Graph is a collaborative software supporting the co-construction of a shared representation of a scientific argumentation used for labwork in Physics. This is a support for student’s comprehension of a scientific phenomenon. We present the tool specifications and first elements of its evaluation.

1. Theoretical approaches

Our work has its foundations in two domains, collaborative learning and scientific argumentation. Firstly, during labwork students have to execute manipulations and to analyze theirs results. Labwork situation hopes to confront student’s skills with the reality [2]. Students often work by pairs, and so they have to resolve a problem collaboratively. Secondly, the analyze must be scientifically correct, it means with hypothesis (for and against) and arguments (theories and experimental results).

2. Argo-Graph: our proposition

Our work was devised in two parts: first, we analyzed real situations of labwork in our University by an ethnomethodological study. Consequently, we obtain important elements about argumentation for labwork, like learning dialogues [1]. Second, we elaborate Argo-Graph, in order to support argumentation for labwork. The discussion is supported by a graph, an external representation of the problem to resolve [4].

The application needs no particular components except a JVM and Internet connexion. We use a platform called PLACE [3], which managed all services about collaborative work (like Argo-Graph, tchat ...). PLACE is in charge of the propagation of information, like real-time modifications of the graph. Figure 1 is a very simple example of graph, where students have to explain how you can have light on a bike.

3. Evaluation

A first experimentation of Argo-Graph was just made. Students were working by two or three during 30 minutes. The first results show that the tool is very easy to use for them and give a new way for activating their reflexion. We hope to give further elements about impact on the communication and the apprenticeship soon.

4. References