Healthy Eating formalisation with ISiS model and ScenEdit tool

Introduction to ISiS model and ScenEdit tool

This research work is part of "visual instructional design languages" [Botturi & Stubbs S, 2008] research, the purpose here is to combine two approaches in the teacher’s designing process: (a) to organize the scenario by eliciting formally the intentions of the designer and by representing explicitly the learning strategies chosen and (b) to favour exploration of reusable components in specific libraries adapted to specific communities of teachers. To this end, we have co-elaborated the ISiS (Intentions, Strategies, and interactional Situations) intention-oriented conceptual model [Emin & al., 2009] in a participative design approach with experimented and inexperienced teachers mainly at French secondary school. This model is based on a goal-oriented approach and proposes a specific identification of the intentional, strategic, tactical and operational dimensions of a scenario. ISiS aims to capture the teachers’ intentions and strategies in order to better understand scenarios written by others and to favour sharing and reuse practices. Part of the work with teachers is to formalize and design patterns of learning scenarios, teaching methods and recurrent interactional situations. ScenEdit[^1] [Emin & al., 2010] is a web-based tool that implements the three dimensions defined in ISiS. With ScenEdit users can obtain a visual description of the scenario including the locations where the activities occur and the tools and resources to be used by the participants as part of the situational context. This visual representation can be exported as an xml or a pdf file to be shared with other practitioners. ScenEdit offers some patterns of different levels (intentions, strategies, interactional situations) elaborated from best-practices found in the literature or within communities of practice.

ISiS model describes 3 dimensions of a scenario: intentional, strategic and tactical dimensions; the result is an “a priori” description of the scenario. The Intention level describes the designer’s intentions, closely linked to the knowledge context which defines targeted knowledge items (competencies, abilities, conceptions or misconceptions, etc.). The Intention is expressed in terms of 4 elements: the formulator of the intention, the actor concerned by the intention, and the intention itself: an operation on a knowledge item. The Strategy level is related to teaching methods, in order to reach goals related to the intentions formulated at Intention level, the designer opts for the strategy (at pedagogical or didactical level) he considers to be the most appropriate. Two kinds of strategies can be distinguished: sequencing strategies which organize the arrangement of logical phases (for example a scientific inquiry strategy can be modelled as a series of four phases), distribution strategies which plan different solutions for identified cases (for example, a differentiation strategy takes into account three possible levels of mastering). Strategies can be combined by successive refinements: for example, a sequencing strategy may specify one of the cases of a distribution strategy: each phase or case of a strategy can be performed through various pedagogical modes and can be refined by another intention according to the type of activity, the availability of computer services, etc. the teacher wants to use. The interactional Situation level represents the tactical level, i.e. the proposed solution to implement the formulated intentions and strategies. Each “interactional situation” is defined as a set of interactions with a specific set of roles, tools, resources, locations, according to the situational context. The situational context of a scenario gathers the typical abstract elements involved in all the interactional situations defined in the scenario. The abstract elements can be resources and tools that can be manipulated to support the activities (e.g. electronic or non-electronic tools and resources, documents, videos, services…), locations where activities take place represent the Physical space (e.g. a precise room -physics lab, classroom, restaurant, home- or a place with certain characteristics -internet connected location, school restaurant) and roles that can be distributed to the participants. The dependencies between these elements among an interactional situation are defined in terms of “a certain role in needs a certain resource in to produce certain resource out using certain tool at a certain location for a certain role out” (as shown in figure 3).

Healthy Eating scenario formalisation with ISiS model and ScenEdit tool

In Healthy Eating scenario [Anastopoulou & al., 2012], pupils are asked to investigate on the topic of Healthy Eating. The teaching method is based on an Inquiry-based Learning method composed of 8 phases (Find my topic, Decide my question or hypothesis…). Pupils collect individually a photo diary of their personal eating habits and then they explore the relation between their daily diary and the Recommended Daily Intake. As a class, pupils propose and send questions to an expert in nutrition. A deeper analysis of Healthy Eating scenario comparing ISiS and 4Spices representations can be found in [Pérez-Sanagustín & al., 2012].

Figure 1 shows this scenario implemented with the ScenEdit graphical tool, where each type of component (Intentions, Strategies, Situations) is shown with a different symbol: a triangle for a step, a rounded rectangle for an intention, a rectangle for a strategy, a circle for a phase and a clap or a picture for an interactional situation.

Fig 1. Healthy Eating scenario using ScenEdit tool

In ISiS, the main intention of this scenario is to “develop” the “learner” ability to involve in an “Inquiry-based Learning process”. The teaching method is represented by a sequencing strategy of 8 phases called “Inquiry learning – nQuire” (as shown in figure 1). Regarding to the associated activities, in ISiS they represent the level of interactional Situations (figure 3). The situational context of this scenario (figure 2) gathers all the elements needed by the different interactional Situations. In terms of tools, each pupil needs a laptop, a camera and a connection to the internet to access the website of the nQuire project for the class. The software used are either traditional office software either specific software included in nQuire local website. In terms of resources (in and out), the website contains all the data collected by the pupil (images, diagrams, notes…) and all the elements given by the teacher (description of the inquiry objectives, information, links…). In terms of roles we identified “pupil”, “group”, “class”, “teacher” and “nutritional expert”. In terms of locations, there are 2 types of physical spaces used in this scenario: “home” or “school restaurant”
to collect evidences and photos about the pupil’s diet, and the “classroom” where some of the activities are taking place.

Figure 3 shows the form used to define the interactional situation: “Collect data of the food diary meal”, in which actors, tools, resources and locations are specified using icons that can be easily added by the designer in the form by browsing his “preferred reference situational contexts”.

Fig 2. Situational context of Healthy Eating scenario in ScenEdit

Fig 3. Collect data activity using ScenEdit tool
References


[Pérez-Sanagustín & al., 2012] Pérez-Sanagustín, M.; Emin, V. & Hernández-Leo, D. (2012), Considering the space in the design of learning activities: the ISIS and 4SPPIces models applied to science inquiries, in 'ICALT 2012' proceedings, to be published.