Learning Legal Case Solving with the Computer Program PROSA

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Abstract: The computer program PROSA is an instructional environment for learning legal case solving. PROSA stands for PROblem Situations in Administrative law. PROSA enables the student to engage in legal case solving. PROSA supports, guides and evaluates the student’s activities and outcomes.

The Computer Program PROSA

The computer program PROSA is an instructional environment for learning legal case solving. The instructional environment consists of two horizontal layers and three vertical columns (Fig. 1). In the upper layer the stimulus materials to elicit the required performance are presented specified to type of material in the different columns. In the lower layer the learner guidance and response are presented specified to type of support. In PROSA the student is required to engage in legal case solving. Legal case solving is the construction of a legal solution for a specific legal case. In the construction process the legal rules are the legal problem solving tools. To construct a legal solution for a legal case the student has to select legal rules. A distinction is made between legal case solving activities, the process, and the legal solution constructed, the product. Both process and product are assessed in PROSA. PROSA offers two types of support: elaborations and response. An elaboration presents prerequisite knowledge and examples. The student may request an elaboration at any moment in the legal solution construction process. A response is a reaction of PROSA to an activity of the student or to an outcome produced by the student. A legal case solving session in PROSA is described in more detail to see how the instructional environment makes a student perform in legal case solving.

A Legal Case Solving Session in PROSA

The student has to carry out a series of activities to solve a specific legal case. The student has to use the output of the activities to construct the legal solution. There is one series of activities that is classified as the most recommended route. However, there is some variation possible in the sequence of activities. These routes are classified as possible routes. Variations of activities that are not desired are not possible in PROSA. The description of a session in PROSA is based on the most recommended route.

Constructing a Legal Solution

In PROSA legal case solving starts when the student has selected a legal case. The student first has to select a legal case from the set of available legal cases using the menu button legal case. The legal cases in PROSA are arranged to topic. Within each topic the legal cases are arranged to level of difficulty. The selected legal case is presented in the upper layer in the legal case part (e.g. the Alexander Boer case topic: interested party; difficulty level: easy). At the same time the question that belongs to the case is presented in the upper layer in the construct legal solution part (e.g. Is Alexander Boer an interested party according to the General Administrative Law Act? see Fig. 1).
The Process Activities Select and Match

The student now has to construct the legal solution for the legal case presented. This construction process involves using the buttons process and product in the construct legal solution part in the upper layer. The student first has to select the menu button process. The process button shows the two basic legal case solving activities: select and match. The first activity to carry out is select. Being presented with a legal case either a legal rule or a fact from the legal case has to be selected. The option select causes a change in the construct legal solution screen. A distinction is made between select legal rule and select fact. There also appears a specific part in the construct legal solution screen that is titled legal solution. This is where the student has to put the outcomes of the various activities, and so construct the legal solution (see Fig. 1).

Select a Legal Rule

The student now has to select a legal rule by choosing the legal rules button in the legal rules part in the upper layer. This button shows three different source categories of legal rules: statutes, other regulations and precedents. Within the statute option a further classification of statutes is made based on the area of law the statutes belong to. The student selects the option statutes from the legal rules button and then selects the statute that is applicable given the specific legal case and question to be answered (e.g. the General Administrative Law Act). The selected statute is presented in the legal rules part of the screen. Then the student has to select an applicable article (e.g. Interested party means the person whose interest is directly affected by an order). This article has to be dragged to the construct legal solution part of the screen, in the specific sub part select legal rules. The student can then bring this article to the legal solution (see Fig. 1).
Match Article Component and Fact

An article is still too abstract to be matched to a specific case fact. Therefore, the student has to decompose the article in its article components (e.g., the person; an order; interest is directly affected). The selection of an article component is followed by the selection of a fact from the legal case that can be related to the article component (e.g., Alexander Boer). Using the match option in the process menu relates the article component to the selected fact (e.g., the person = Alexander Boer). This relation is then automatically placed in the legal solution.

Answer the Question

The select activity has to be repeated until there are no statutes, articles, article components and facts left. The match activity has to be repeated until there are no more article components or facts. At that stage the student has to formulate the final answer to the question. She has to select the menu button product and choose the option answer (e.g., A. Boer is not an interested party in the meaning of the GALA) (see Fig. 2). The product button available in the construct legal solution part in the upper layer of the screen offers a set of options. These are: bring to solution, cut, up, down, large screen and answer. The option large screen is offered to enlarge the legal solution part to get a better overview of the legal solution constructed so far.

**Figure 2:** formulate answer

Elaborations and Response
In the lower layer the support is presented. There are two types of support: elaborations and response. The student may request support at any moment in the legal solution construction process. An example of an elaboration available in the legal case part of the lower layer in the form of a list of domain concepts is presented in Fig. 3. When selecting a particular domain concept, for instance interested party, the background knowledge about the concept and a reference to statutes and articles within statutes are presented. The student can use the assess button in the construct legal solution part in the upper layer to ask for an assessment of her activities (the process) and her legal solution (the product). The process is assessed according to the route followed. The product is assessed on completeness, correct sequence and correct answer. The assessment results, specified to process and product, are presented in the construct legal solution part in the lower layer.

**Figure 3**: presentation of an elaboration

**Implementation of the computer program PROSA**

The program Authorware is used for implementing the specification of the design of the instructional environment. Authorware is an authoring environment for creating and publishing interactive information and can be used for the construction of interactive learning and training applications. Authorware has many evaluation functions that make it possible to handle all kinds of input. The program Authorware has been chosen for the realization of PROSA on the basis of these specific Authorware aspects: interactivity and evaluation of input. As Authorware is an icon-based authoring tool, a program is made by assembling icons on a flow line. Different types of icons contain different types of objects like text, graphics or a set of instructions and herewith the content of a program. The way in which these icons are arranged on the flow line forms the architecture. In Fig. 4 the top level of the architecture of PROSA is shown. The icons on the main flow line are visible at this level.
When PROSA is run, Authorware executes the icons from top to bottom along the flow line. The first icon that is executed is the map icon ‘initialize’. This map icon contains a number of display icons that contain the first screen, the so-called startup screen. Furthermore the variables used in PROSA are defined and initialized in a calculation icon. These variables are used to keep track of the students’ actions and to store and use general PROSA information like available items for the menu buttons. And finally the ‘initialize’ icon contains display icons which contain the standard PROSA screen with the two layers and three parts (see Fig. 1). This ‘initialize’ icon is executed only once per session.

**Perpetual interactions**

The second icon ‘perpetual interactions’ (see Fig. 4) contains two kinds of so called **perpetual interactions**. An interaction is an interaction icon with different types of response type symbols attached to it. These response type symbols tell the interaction icon whether to display a button, a menu, a text-field or some other element. An interaction monitors the actions of the student and sends that information to the response type symbols attached to it. If Authorware encounters a perpetual interaction it activates the interaction and immediately continues down the flow line. This is used in PROSA because the student is given personal control in learning to solve legal cases. The first perpetual interaction displays the menu buttons available for the six different parts and defines the reaction of PROSA when the student uses the buttons. The student throughout the whole session of solving a legal case can use these buttons. The second perpetual interaction defines the responses of PROSA to the students activities regarding the construction of a legal solution in the sub parts select rule, select fact and legal solution part in the construct legal solution part of the screen. An example of such a student activity is dragging an article to the ‘select legal rule’ sub part of the construct legal solution part.

**Main loop**

After the perpetual interactions the main loop of the program occurs, the so called decision icon ‘legal case’ with map icons for every case topic attached to it. Within each case topic map a similar decision icon for the different levels of difficulty is used. When Authorware encounters a decision icon it branches to a path according to certain criteria. In PROSA these criteria are the choices the student makes. The student uses the menu button legal case and the choices she makes are stored in two variables caseTopic and caseDifficultylevel. On the basis of these variables Authorware first branches to the map icon of the chosen case topic and then to the map icon of the chosen difficulty level. A difficulty level map icon contains (1) display icons which contain the legal case text and the accessory question (2) a calculation icon in which the correct legal solution is stored in a variable (3) an interaction icon to monitor the students activities specific to
the chosen case. In the architecture a specific legal case and the accessory question are considered to be the basic element, because it is the current problem to be solved by the student and in this way PROSA is able to give case- and student specific feedback. Also many student characteristics can be recorded per case, like, for instance, the sequence of the students activities in solving the legal case, the legal solution the student constructs and the cases the student selects. These student characteristics are an example of characteristics that are recorded and maintained during all sessions of the student working with PROSA. In this way a student history is built to be able to adapt to the individual students activities and to evaluate the individual student.

**Subroutines**

The last icon at the top level flow line is the *map icon* ‘subroutines’ and Authorware never automatically encounters it. This icon contains a number of subroutines implemented as *map icons* attached to *framework icons*. These subroutines appear only once in PROSA, but are called many times by various parts of the program. An example of a subroutine is adding a student activity to the list that is used to keep track of the series of activities the student carries out to construct a legal case solution. Because of the way the main loop in PROSA is structured, new legal cases of the existing topics and difficulty levels can be added easily. Furthermore, legal cases of new topics and difficulty levels can be added. For each new case topic and difficulty level a new *map icon* containing the case specific *display, calculation* and *interaction icons* has to be added. The same structure can also easily be used for a different domain if the problems to be solved can be divided in a hierarchy of topics and difficulty levels.

**References**


