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AN ATTEMPT TO STANDARDIZE THE COMMUNICATION SOFTWARE OF NEW KNOWLEDGE

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Abstract: *Standardization of educational software of logical project for new knowledge communication presumes identifying the defining characteristics: compliance with curriculum (school program), accuracy of scientific content, compatibility with characteristics of target population, highlighting achievement of operational objectives/derived competencies, doing individualized interaction, sequential feedback and formative assessment. Essential steps refer to the process as the adaptation of science content to the characteristics of target population, by alternate presentation form of scientific content in the three forms: image, sound and text. It follows to achieve an attractive aesthetic design for presentation of scientific content, a suggestive image representation for fundamental objective of the lesson, image that expresses the essence of scientific content. The next step will be split into paragraphs of scientific content to realize the feedback sequence, following the highlighting central scientific content elements of the lesson, strengthening progressive and selective retention. These objectives of the project are sustained/supported by identifying learning situations and setting scenario for unfolding of their teaching scenario. The moments of the lesson which target/track formative assessment, requires selecting content features that make the subject of assessment, selection and formulation of scenarios related items and solving problem statements generated by them. Another element which concerns the implementation of the lesson teaching scenario is related by storyboarding practice situations by operational the contents. Dynamic and attractive presentation contents should be the main feature that capture and maintain student attention on presenting scientific content. Our intention is to develop a progressive algorithm to achieve these features.*

Keywords: *educational technology, feedback communication, knowledge acquisition, learning systems, standardization*

Mathematics Subject Classification Code: 97U50, 97Q60

1. INTRODUCTION

An attempt at standardization a logical design of educational software for communication of new knowledge is conditioned by the defining characteristics of educational software:

- the characteristics of pedagogical nature, with normative role, which ensures compliance with the curriculum, correctness

scientific contents, highlighting achievement of operational objectives/derivative skills;

- particularities of content and characteristics of the target population and
- individualized nature of interaction, implementation of feedback and formative assessment[1].

Essential steps aim formulation and processing science content in order to adapt at the characteristics of target population,

through alternate forms of presentation such as image, sound, text and their mutual support.

2. PRESENTATION OF SCIENTIFIC CONTENT

2.1 Formulating and processing of scientific content. Achievement of a aesthetically and attractive design presentation of scientific content, is the guarantee of successful realization of the lesson of the first time, capture attention, and expressing and placement of the center of attention, such as suggestive image of the fundamental objective of the lesson, which play synthetic the essence of scientific content, maintain the interest for attending the lesson content. Naturally, these goals are subordinate to target population characteristics[4].

Without make a fragmentation of the lesson, a delineation of the lesson content into paragraphs, built around the essential elements of scientific content, is essential to make the moment of achievement sequential feedback. We identify two directions of standardization; first into the terms of presentation to scientific content and which regards takeover manual features and a second that regards teaching scenario, structured by lesson moments and materialized through sequence learning situations, corresponding of content elements.

2.2 Formulating and processing of scientific content. Scientific content associated of a educational software must be in accordance with normative documents, of regulative type, which constitute the formal or official curriculum. Designing learning programs must subordinated to the organizational forms of teaching, seen from the perspective structural and processual. Therefore, the educational software must be designed to be used both as auxiliary teaching in classroom and such as informatic product for student training, able to reproduce the learning experiences followed by the student in the classroom and constitutes a guide during the individual study of student's at home.

The first element of standardization consists in adapting the scientific content

(taken over even of the manual), to the particularities of target population. Included science must emphatically reformulated in phrases or short sentences, clear, unambiguous, balanced in terms of rigor at specialized language, but with a progressive note for its formation. Sometimes, textbooks don't excels in having this quality of the message. Compliance with programmatic documents is essential.

Next level of standardization refers to the structuring of the content into paragraphs, established around the essential elements of scientific content. Scientific content of a lesson is based on the several key elements of content (major ideas of the lesson) that constitute the core of paragraphs. Crossing related scientific content of a paragraph require necessarily, achieving the feedback. Remains to establish how it can be triggered feedback when achievement the end of paragraph by the student[4].

2.3 Positioning of the scientific content in page. One way to layout, recommended to several disciplines and content related of target population for secondary curricular cycle and neighboring areas is presented in the picture.

Porumbul	
Porumbul este una dintre cele mai valoroase plante cultivate datorita productivitatii foarte ridicate si multipleror intrebuintari a produselor sale in alimentatia oamenilor, in zootehnie si in industrie.	
<p>Datorita volumului sautator, porumbul ocupa la prezent locul al treilea intre paturile de cultura si este folosit in cantitati mari la manca omului si sub forma de malai, fie sub forma de produse agricole.</p> <p>Bobul de porumb se descompune de obicei in trei parti, dupa aspectul din Matreaza si forma bobului au oarecare similitudine pe lungimea lungime a piramidei. Bobul de la varf este mai mic si mai uscat. Culorile se pot prezenta in alb, galben, portocaliu, violet sau roz de diferite nuanse. Ingrasarea bobului este la unele varietati marita, iar la altele mai zdravita.</p> <p>Porumbul face parte din familia Gramineae, genul Zea, cu trei specii: Zea Mays L., Zea Mearasa si Zea peruviana. Cea mai importanta specie este Zea Mays, cu subspeciile urmatoare: Zea Mays Indurata, Zea Mays Indurata, Zea Mays Eridata, Zea Mays Saccharata, Zea Mays Cornuta, Zea Mays Jumbo, Zea Mays Anjou-Saccharata si Zea Mays Tunicata.</p>	<p>Perioada de formare si coacere a porumbului reprezinta cea 50% din perioada de vegetatie. Activitatea principalilor componente din bob sau luc la coacerea depinde. Porumbul trebuie recoltat atunci cand bobul se desprinde usor de pe stivale.</p> <p>Structura anatomica Structura anatomica a bobului de porumb este reprezentata cu cea a bobului de grau. Invelisurile sunt compacte si stivale legate de stivalele aluzionale, iar prin invelisurile se desprind sub forma de pulbere. Invelisurile sunt parcurse de catre celulele din epiderma, mezoepiderma si endosperm.</p> <p>Endospermul reprezinta cea 20% din masa bobului si este format din celule poliedrice mai mari decat ale bobului de grau. Si in cazul bobului de porumb se diferentiaza doua zone si anume zona stivalei si zona stivalei.</p> <p>La porumb, zona stivalei este situata la exterior pe partea laterala a bobului si prin macerarea si trece in malai gras.</p>
	
<p>Compozitia chimica a bobului de porumb</p> <p>Datorita compozitiei chimice complexe porumbul contine un numar valoros pentru om si animale.</p> <p>Continele reprezinta cea 80% din bobul de porumb din care animalele pot beneficia cea mai mare. Alaturi de acestea se mai gasesc zaharuri simple si altele 27, pentozani 6%.</p> <p>Substantele azotoase reprezinta 10 - 12% din substanta uscata a porumbului atunci la maturitate deplina, din care proteinele ocupa 95%.</p> <p>Substantele grase din bobul de porumb apartin urmatoarelor grupe: albumine, glicolize, prolamine si glicolize.</p>	

1. The layout of page

Scientific content, presented as text, is placed on the columns (four in this case), respecting the "golden rule of typographers" which says as a row should be no longer than 65-70 characters, including spaces. The length of row creates for the reader, the appropriate comfort to reading the text. Recommended font is Times New Roman, 11 or 12, regular, without background (white).



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An essential element in capturing the attention and introduction the student in the context of the lesson is the representation of fundamental objective of the lesson as image and placing it in the top right corner of the screen, in an area of maximum visual interest. This area will allow by temporary display of scientific content, depending on learning situations for teaching scenario, being the main area of interest for student. Is the portion of the screen which create of educational software rhythm, dynamics and consistency.

Presentation of the fundamental objective of the lesson as picture has a multiplier effect in presentation of the scientific content of lesson. It is the first element which attracts student attention and through visual effect allow instant introduction of the student in the context of the lesson. Image has an aesthetic, attractive and stimulating effect[4]. The immediate reaction of the student, after consumption of scientific content information provided by the image is to confirm the information perceived by reading the title of lesson.

This reaction is a task assumption for student, without this being explicitly formulated and constitutes the feedback form for capture attention moment. The immediately following text makes an summary introduction in the context of the lesson, clarifying the student of the content which will be addressed and constitutes, at the same time, one of finality enunciation, expressed through the operational objectives or derivative skills, associated with the teaching project.

Be observed the chromatic association between image, lesson title and introduction text. This is another element which confers to the initial moment of impact student-soft, attractiveness and aesthetic effect.

2.4. Identification of learning situations.

So far, the impact of student with educational software is similar to the student impact with manual. Static character of the presentation is dominant.

It requires a student-soft activation interface by supporting the static image and text information as video or audio recordings. Obviously, student will receive learning tasks as audio recordings. But equally important is that after completing the introductory text, student to be present introductory information or relevant synthesis for scientific content form of a sequence of images or video sustained by audio record or movie subtitles. It is necessary to remarked negative effect of subtitles, which constitute a disturbing factor in the assimilation the information presented video. Image support is made by audio recording[2].

Once exceeded this time of lesson which follows the capture attention, student task must be directed to reading of scientific content, presented as text. Text is generally unattractive and stationary presentation form for a significant sample of the target population. Therefore, the presentation of the scientific content as text must be sustained by the creation of learning situations to boost and to make attractive the presentation.

This shall be done through the identification of words in the text, called below links, that expresses essential elements or special scientific content. The links will appear italics in text, and the student, authorized user of educational software, will move mouse instinctively, triggering specific learning situations. Identification of links and establishing scenarios for learning situations, constitutes the essence of teaching scenario for educational software and is a measure of

teaching mastery for team design of learning program.

The determining word link are based on the premise that the student must be submitted to all the scientific content in a form as close to its capacity of understanding and before it placed in a situation of doubt. Therefore, any element of scientific content may create an opportunity for clarifying the ambiguities, by replay of the presentation of content elements in a more permissive for student, to trigger of learning situations enabling objectives or skills training established by the draft lesson.

3. TEACHING SCENARIO

In principle, range of learning situations triggered by a link is a great diversity, which requires a considerable variety of scenarios.

3.1 Establishment of scenario related of teaching learning situations. You can intuit some learning situations which generates standard scenarios:

a) explanation of the meaning of some terms or presentation of synonyms. In these situations, scenario may require the display a rectangular window of a short explanation text up to 4-5 words;

b) presentation of definition, eventually from the Explicative Dictionary. In these cases scenario may require a normal opening a window, usually in the area of display picture (top right), over the image wich suggests the primary objective of the lesson, that displays explanatory text or pictures sustained by text or audio recordings;

c) an extension by scientific content. In this case opens a window that can display text, images sustained by text, films sustained by audio explanations, sketches, drawings or sequences of images, eventually subtitled;

d) a resumption of scientific content elements, with greater or less difficulty degree. Presentation of is made in a window in which can present scientific content in a form required by the particularities of the target population;

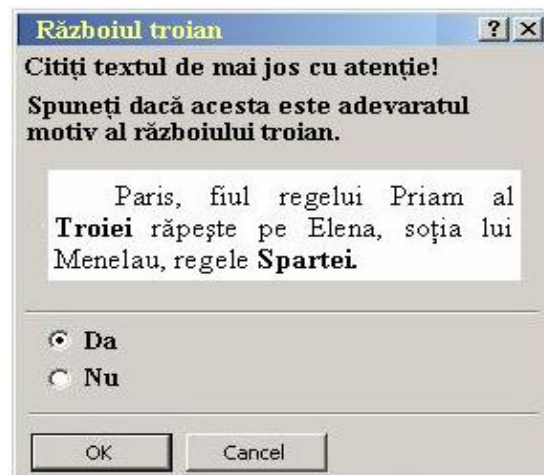
e) evaluation elements. In the window is displayed items sequentially. Window should

cover the portion of text that are subject to assessment.

In the scenario is provided the time interval in which the window is open and modalities to resume the learning situation[3].

3.2 Achieving of feedback and formative assessment. The division of the scientific content in paragraphs, established as part of major ideas associated with content, permit the achievement of sequential feedback, at the time when student reaches to the end of paragraph. In terms of the scenario produces a learning situation everything triggered by a link, the portion of text representing the content of the paragraph disappears from the screen and in the free space so formed are displayed successively objective, semiobjective or subjective items, imposed by the moment and purpose of. assessment. Problem solving situations, for each item, generates a scenario subsequence.

These moments of the class require the selection of content features being evaluated, choice of the type of items recommended by the assessment situation and formulation of items and scenarios for solving situations problem.



2. Presentation of items

Equally important is the graphics presentation of items, which must include the student family interface elements. In general, I have recourse to interface elements its own to operating systems and applications commonly used by students and that are friendly to it. In the figures below presents examples of graphical representation of items.



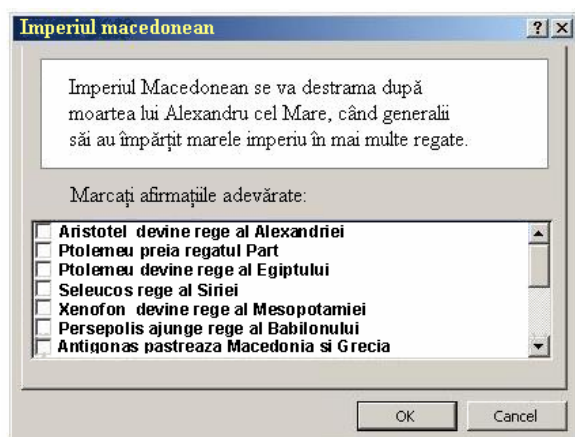
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3. Presentation of items

What should be stressed is that the scenario for the learning situation associated with an item should to guide the student to find the correct answer and did not show it, in a situation where he is in difficulty. In moments a lessons in which uses exercise method, the scenario of exercise situations in order to operational the contents, use also to items. In the image below, is used an completion item, where a student is in a situation to exercise the counting[5].

Teaching scenario describes the sequence of learning experiences for the student crossed, to solve the problem situation. In every stage generates a number from 1-10 and select an image from a database. Numbers reflect the



degree of difficulty of the learning situation and is elected by the student correct answer in the previous stage. Selected image is displayed, for chosen number of times. The student hears in speaker:

4. Image from scenario

If the student counted and write the correct number, a animated sequence is displayed with graphic element from the image (in our case with teddy bear). If the student does not respond correctly, heard in speaker:

- „Let's count together!”. The speaker is heard: one, two, three ... and at each step the image with spoken number is highlighted now (discrete zoom, a box highlighting or blinking) after which the student is allowed to complete in box the number. If the student completed correctly is displayed animated graphic sequence of images, as in the previous case. If the student does not respond correctly or second time, heard in speaker:

- „Let's count again!”. The speaker is heard: one, two, three ... at which time said number is written large on the image, then the student is allowed to complete in box the number.

Obviously, must be discussed and situation in which the student would answer incorrectly again. In this situation must imagine a animation that can lead number on the last picture the response box. On the correct answer, scenario repeats previous statements. Note that the student is gradually led to the discovery of correctly response and never the solution is required. As an additional element, student responses are stored and a statistic wrong responses lead to a higher frequency for numbers that repeat mistakes.

4. CONCLUSIONS & ACKNOWLEDGMENT

Dynamics and the attractiveness of presentation contents shall be the main feature to capture and maintain student attention on presenting scientific content. These elements constitute the essence of the teaching scenario which allows students to repeats, to other coordinates, lesson moments performed in classroom. It is desirable that, during the teaching scenario, subordinate of educational software, the student to receive tasks with be constituted in the "homework"[6].

Systematically and rigorously developing to portfolio of learning tasks, constituted as generic title "homework", is an important attribute of learning programs. This allows us to provide a wide learning experiences, progressive in difficulty and various in coverage area and disciplinary. All these approaches converge to achieving of the operational objectives or the skills training,

outlined in the preamble to educational project.

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