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Evaluation by Rubrics: A Computerized System

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Abstract

This report details a computerized system that allows teachers to use rubrics as a means of evaluation in a curriculum competency. The computerized system for evaluation by rubrics allows you to design them, modify them, and generate a bank with them so that they can be used later. It is a software that allows you to assess, co-assess, and self-assess either team or individually, the evidence of learning in a course through rubrics and represents an example of how the proper use of the new technologies can become a differentiating factor assessment process of learning about traditional evaluative practices by providing tools that allow use of time and material resources in a more effective and efficient manner both, for the teacher and the student.

Keywords

Rubrics, Curriculum Competency, Software, New Technologies

1. Introduction

At the end of the XX century, and the beginning of the XXI, a change is observed in the new technologies in many areas of life, the information and media. These last are closer every day to people in databases, information running around drowning us in seas of information that becomes a challenge to surf (Lei, Shen, & Johnson, 2014; Roehrig, Groos, & Guzey, 2014; Singley & Taft, 1995). There has been a resounding change within society, leaving aside industrial society and builds on the information society, which emphasizes the value of the data produced and the power of knowledge as a means to change the reality; later *the learning society* suppose a step in it, and individuals must learn throughout life to survive. And finally, *the intelligence society* emphasizes

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the idea of shared and distributed intelligence (Beltrán, 2011, 2013).

The use of the computer, among other things, allows extending the content being assessed, generating expert systems of correction, administration via Internet, the best items for certain assessment objectives (optimal tests) or to certain people (computerized adaptive tests) and so forth. We agree with Prieto, Carro, Orgaz, Pulido, and González-Tablas (1993) and Ishiyama and Watson (2014) in the sense that one of the important applications of personal computers is the construction and management of computerized tests that can replace some fields to the classic pencil and paper tests; allowing storage of data without pre-encoding steps with greater accuracy, speed, and immediate feedback when giving results; and facilitate registration latency time response to each item and the multimedia presentation, with the inclusion of texts, graphics, photographs and even videos and simulations.

It is also clear that automated systems allow for more accurate and reliable data, increasing speed and efficiency of the analysis, presentation and storage, thus untying the teaching routine and mechanical tasks, thereby promoting greater availability of time for other teaching tasks (Roland, 2006; Singley & Taft, 1995; Warren, Lee, & Najmi, 2014).

On the other hand, one of the undeniable characteristics of education systems today is the complexity of the learning goals proposed (Jonassen, 2014; Petropoulou, Vassilikopoulou, & Retalis, 2011) since it is the assessment whose goal is to corroborate these learning objectives as well as identify the factors that influence or affect such learning, without neglecting the quality and improvement of the educational intervention (Marín, Guzmán, & Castro, 2012), to evaluate becomes a complex and overwhelming process for teachers. And it is this context where the rubrics describing the degree to which a learner is running a process or a product based on clear and consistent performance criteria, allow to monitor and self-assess learning product, reducing the subjectivity in evaluating and helping to identify errors, understand their causes and make decisions to overcome them turning them into essential tools to ensure that the evaluation is integrated into everyday classroom processes, be continuous, encourage feedback and be coherent within the teaching-learning process (Petropoulou et al., 2011; Roland, 2006).

Therefore, this current project describes a computerized system designed to facilitate the use of rubrics as a means of evaluation, self-assessment and co-assessment; that is a system designed to improve the assessment process in an educational program established with competence approach.

2. Method

Next, the steps performed in the design of the Computerized Assessment System for Learning by Rubrics (SIEAR) are specified.

2.1. Analysis

At this stage, several discussion meetings of the research group were defined in detail the components and functions of the Computerized Assessment System for Learning by Rubrics (SIEAR) to be taken into account in their design.

2.2. Beta Version: Design and Testing of SIEAR

Once the new editor was technically finished and steady enough to work normally, tests were done to identify either the features and/or functions that would require to be modified.

2.3. Design and Testing of Version 1.0 of SIEAR

Once the corrections and modifications were made to that of the beta version, a free error software was achieved with a quality, suitable to be used by latter users. This version was again subjected to tests to identify the features and functions that needed to be corrected.

2.4. Design Module Installation SIEAR

After reaching Version 1.0 soft ware package using Install Shield 5.5 Professional Edition installer new editor was designed for distribution to latter users.

2.5. Overview SIEAR

The Automated System for the Assessment of Learning Through Rubrics (SIEAR) is a software that allows to assess, co-assess and self-assess in a teaching course, either team or individually the evidence of learning by rubrics. It consists of six modules: Builder of the course structure, rubrics Builder, Settings, Learning Assessment, Reporting and System Generator.

The **Figure 1** shows the module builder of the course structure, in addition to allowing define the general characteristics of the course: name, authors, sections, students, teachers, evidence of learning.

Builder module rubrics allow design, import, and/or customize the rubrics by which the evidence of learning each of the activities proposed in the course will be evaluated, see **Figure 2**.

Figure 3 contains the configuration module allows predetermine some relevant characteristics of the user interface as colors, font size, coordinates, etc.

The learning assessment module, besides being the user interface; allows assessing, co-assessing, and self-assessing either team or individually the learning evidence of the course and storing the results of evaluations, self-assessments or co-assessments made; see **Figure 4**.

Figure 5 shows the module reports, besides focusing and displaying the results of assessments, co-assessments, or self-assessments made, allows to support them in a destination different than the original.

The generator system module, allows to copy, either aim is selected, the files that establish the Computerized Assessment System for Learning and Using Rubrics to be used in the course for which it was designed; it is illustrated in **Figure 6**.

3. Graphical Modeling Procedure for Using the Software

Step 1: Define the overall course structure and enrollment of students and teachers; see **Figure 7**.

Step 2: Design of learning activities, evidence of performance, assessments and rubrics; it is illustrated in **Figure 8**.

Figure 1. General Data display, builder module course structure.

Figure 2. Displayedit rubrics, rubric builder module.

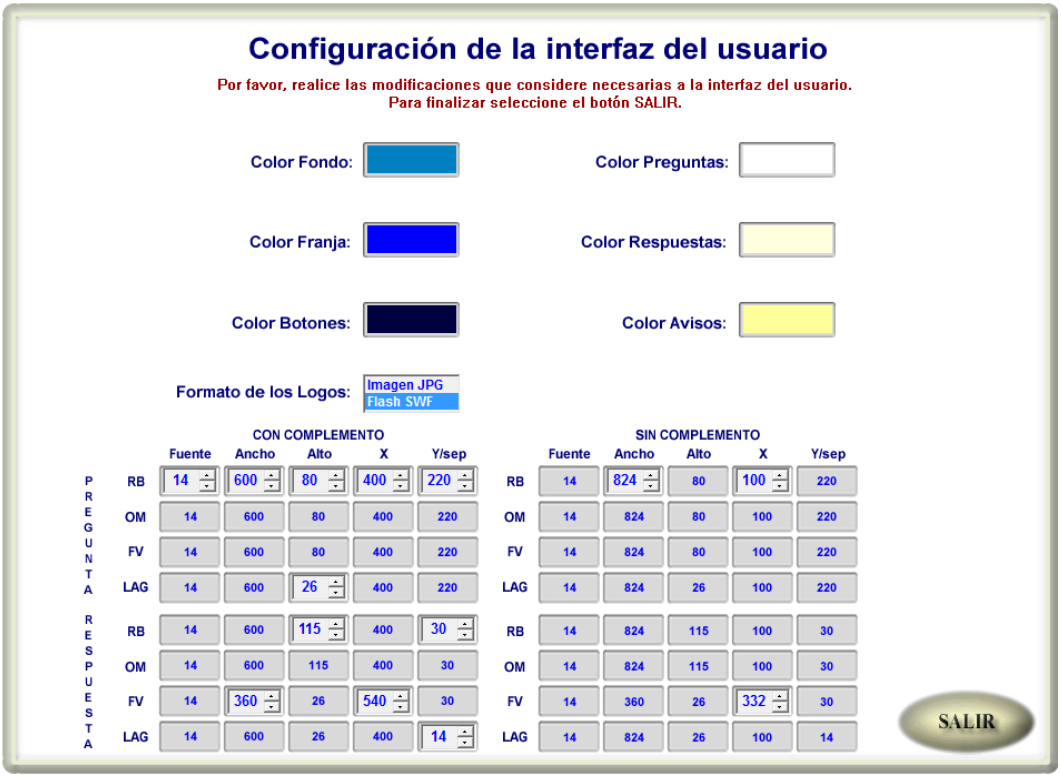

Figure 3. Configuration menu of SIEAR interface, module configuration menu.

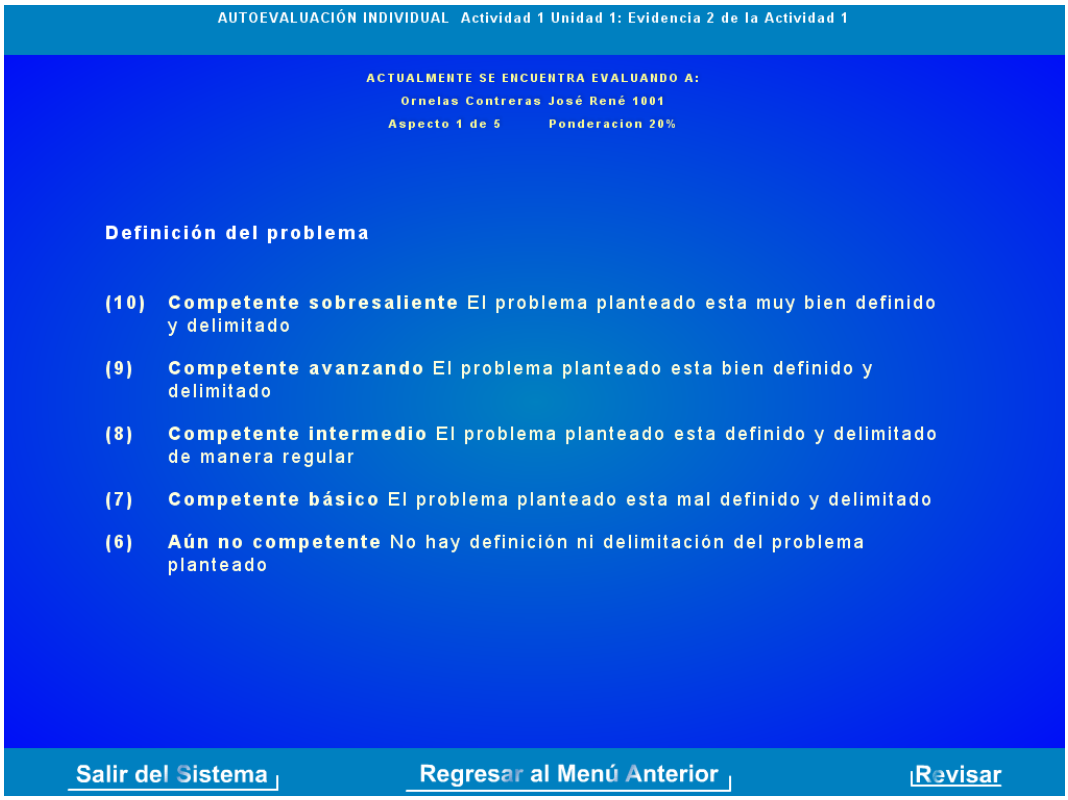

Figure 4. LCD for assessing aspects of the rubric, learning assessment module.

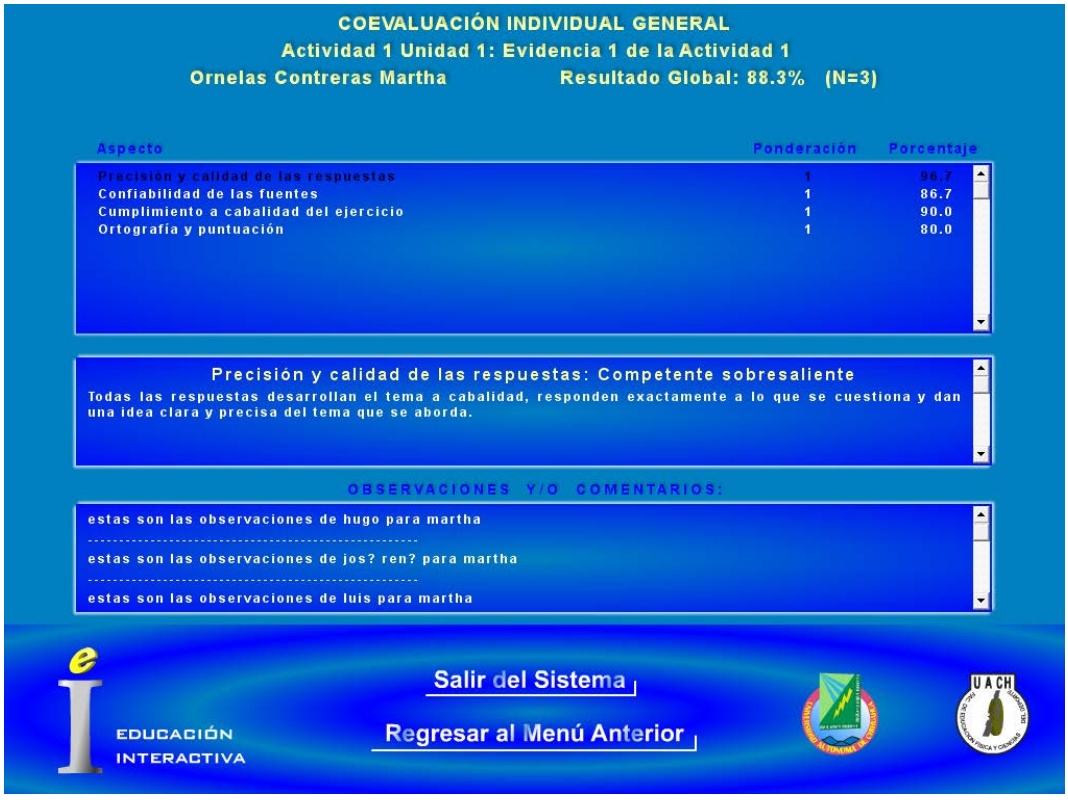

Figure 5. Menu results of the assessment of evidence, reports module.

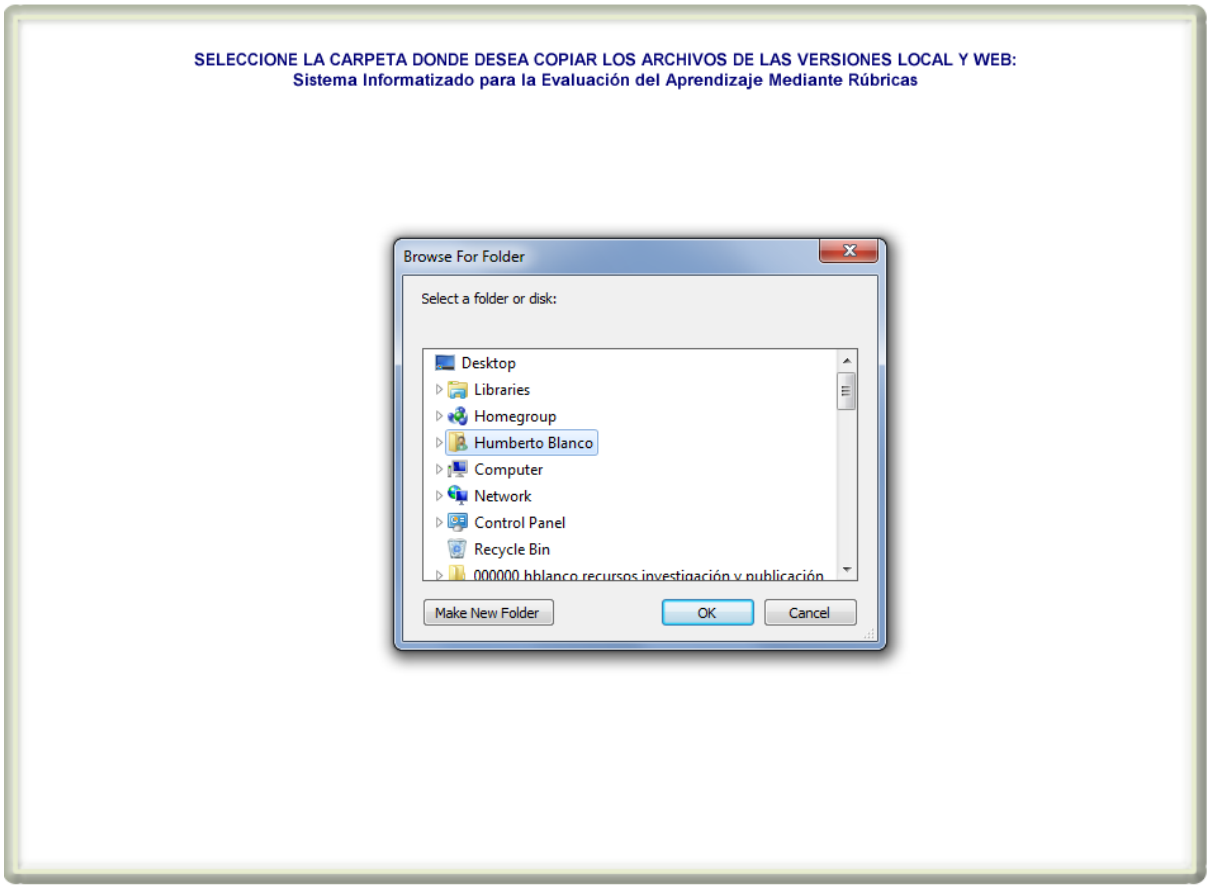

Figure 6. Screen: Where do you want to copy the files locally and web versions? Generator module system..

Step 3: You can see in **Figure 9** the self-assessments and/or co-student assessments and teacher evaluations for each performance evidence.

Step 4: Browse by the students and teacher reports on the results of evaluations, self-assessments and co-evaluations conducted; see **Figure 10**.

4. Conclusions

We believe that the main contribution of this type of software in the field of evaluation in education, basically represents a viable and effective computer use in the development, administration and scoring of assessment instruments example, which affects mainly the reliability of the data, besides the stage of collecting and reporting the results is carried out with relative ease and economy of time.

The Automated System for the Assessment of Learning Through Headings (SIEAR) favors the teaching-learning process because it acts as a guide, and improves the evaluation process as it allows him greater objectivity and transparency, making the tax assessment and not become a feedback tool that allows the student to have clear performance standards and discover specific aspects in which a greater effort must be made.

The SIEAR as such represents a good example of how the use of new technologies can become a differentiator in the process of learning assessment over traditional assessment practices by providing tools to use the resources of time and materials so more effectively and efficiently by both the teacher and the student. The prospects for new versions allow SIEAR thinking, among other things, expand the contents under assessment, and generate expert systems of correction.

Acknowledgements

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NOMBRE DEL CURSO, DIRECTOR, GRUPO DE DISEÑO, REVISORES Y TIPO DE SECCIÓN.
Escriba el prefijo del curso; utilice un máximo de 5 caracteres
Para finalizar oprima la tecla TAB.
Curso: Curso Ejemplo
Director del proyecto: Humberto Blanco Vega
Planeación y Diseño:
Humberto Blanco Vega
Juan Cristóbal Barrón Luján
José Rene Blanco Ornelas
Martha Ornelas Contreras
Ma. del Carmen Zueck Enriquez
Jesus Viciana Ramírez
Jeanette Lopéz Walle
Revisores:
Humberto Blanco Vega
Juan Cristóbal Barrón Luján
Tipo de sección: Unidad
Prefijo: cer
SIGUIENTE

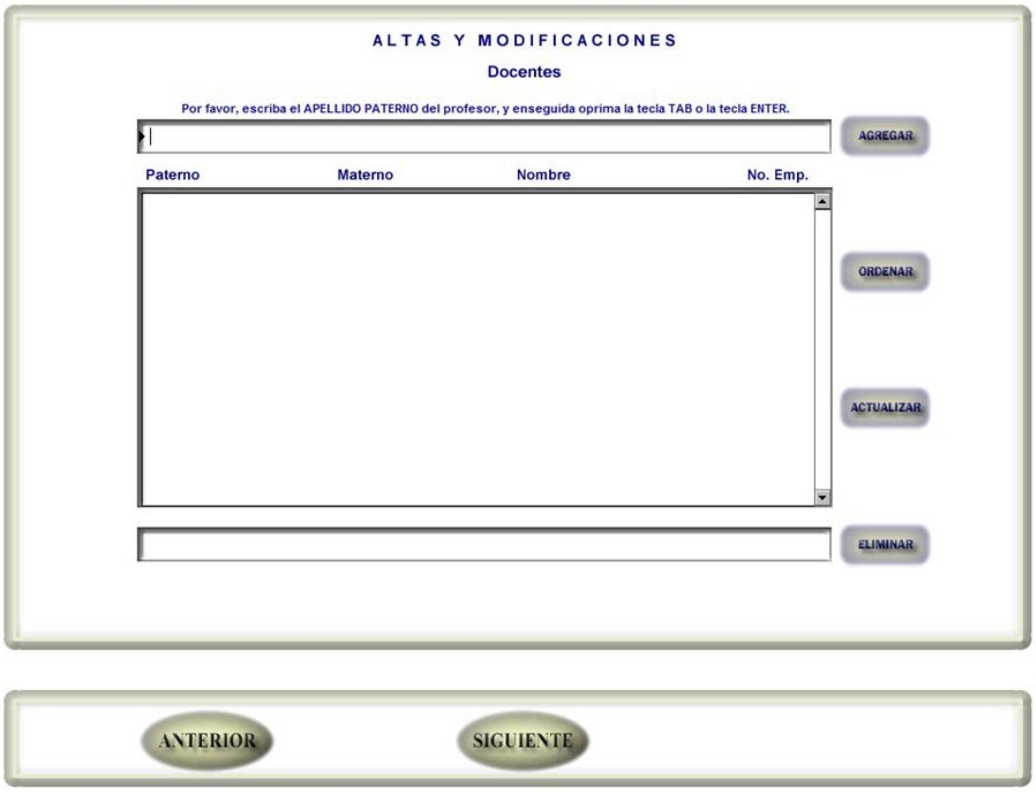
(a)

NOMBRES SECCIONES
Escriba el nombre de cada una de las Secciones.
Después de cada nombre oprima la tecla ENTER y para finalizar TAB.
Secciones:
Unidad # 1
Unidad # 2
Unidad # 3
Unidad # 4
ANTERIOR
SIGUIENTE

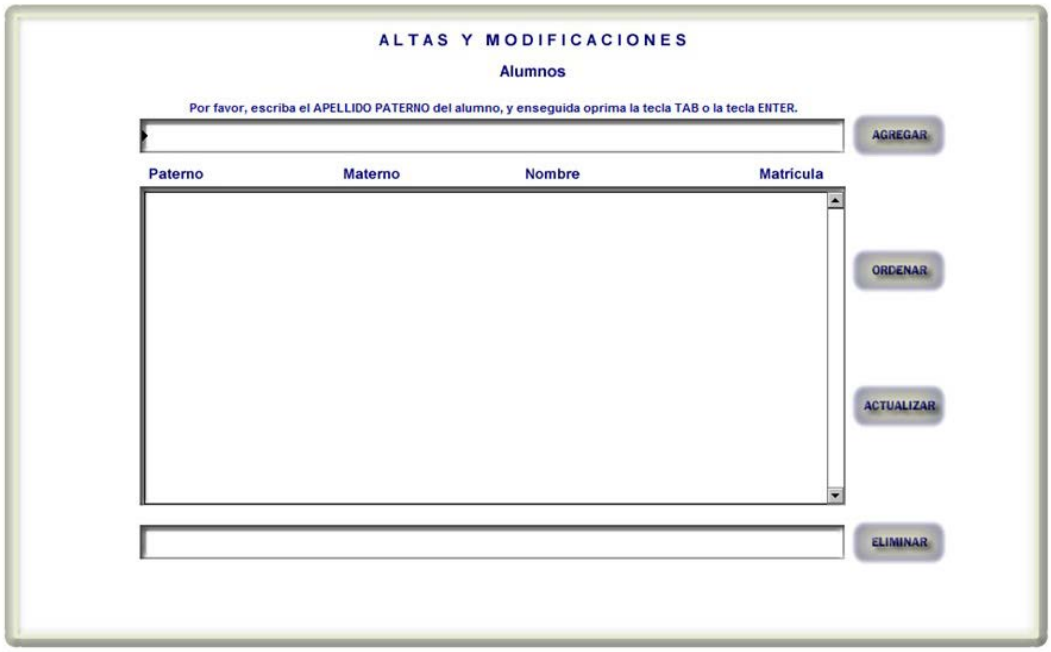
(b)

NOMBRE Y PUESTO DE CADA INTEGRANTE DEL DIRECTORIO
Escriba un nombre (utilice mayúsculas y minúsculas) y oprima la tecla ENTER.
En seguida el puesto (utilice puras mayúsculas) y oprima la tecla ENTER; y así sucesivamente.
M. C. Jesús Enrique Seáñez Sáenz
RECTOR DE LA UACH
M. D. Saúl Arnulfo Martínez Campos
SECRETARIO GENERAL DE LA UACH
Dr. Alejandro Chávez Guerrero
DIRECTOR ACADÉMICO DE LA UACH
M. C. Francisco Javier Flores Rico
DIRECTOR DE LA FEFCD
Dr. Jesús Enrique Peinado Pérez
SECRETARIO ACADÉMICO DE LA FEFCD
Dra. Martha Ornelas Contreras
COORDINADORA DE LICENCIATURA EN MOTRICIDAD HUMANA
M. C. Ramón Candia Luján
COORDINADOR DE LICENCIATURA EN EDUCACIÓN FÍSICA
ANTERIOR
SIGUIENTE

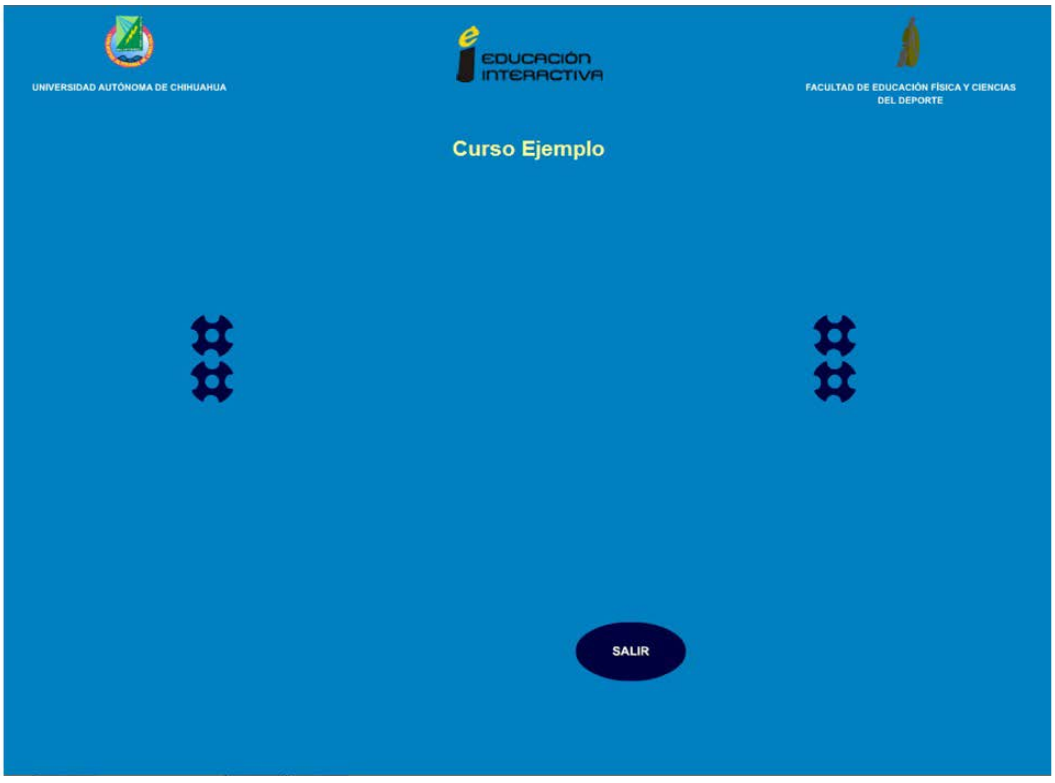
(c)


ALTAS Y MODIFICACIONES
Docentes
Por favor, escriba el APELLIDO PATERNO del profesor, y enseguida oprima la tecla TAB o la tecla ENTER.
AGREGAR
Paterno
Materno
Nombre
No. Emp.
ORDENAR
ACTUALIZAR
ELIMINAR
ANTERIOR
SIGUIENTE

(d)

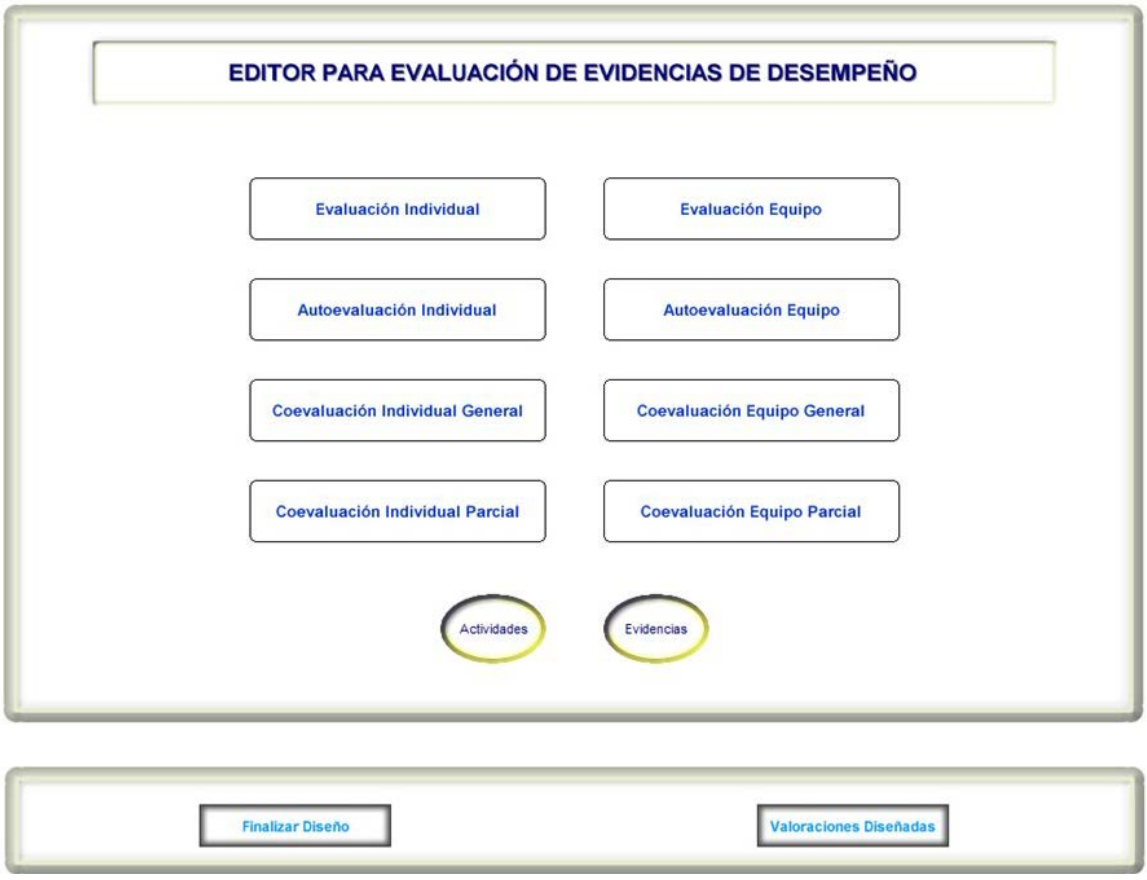


(e)

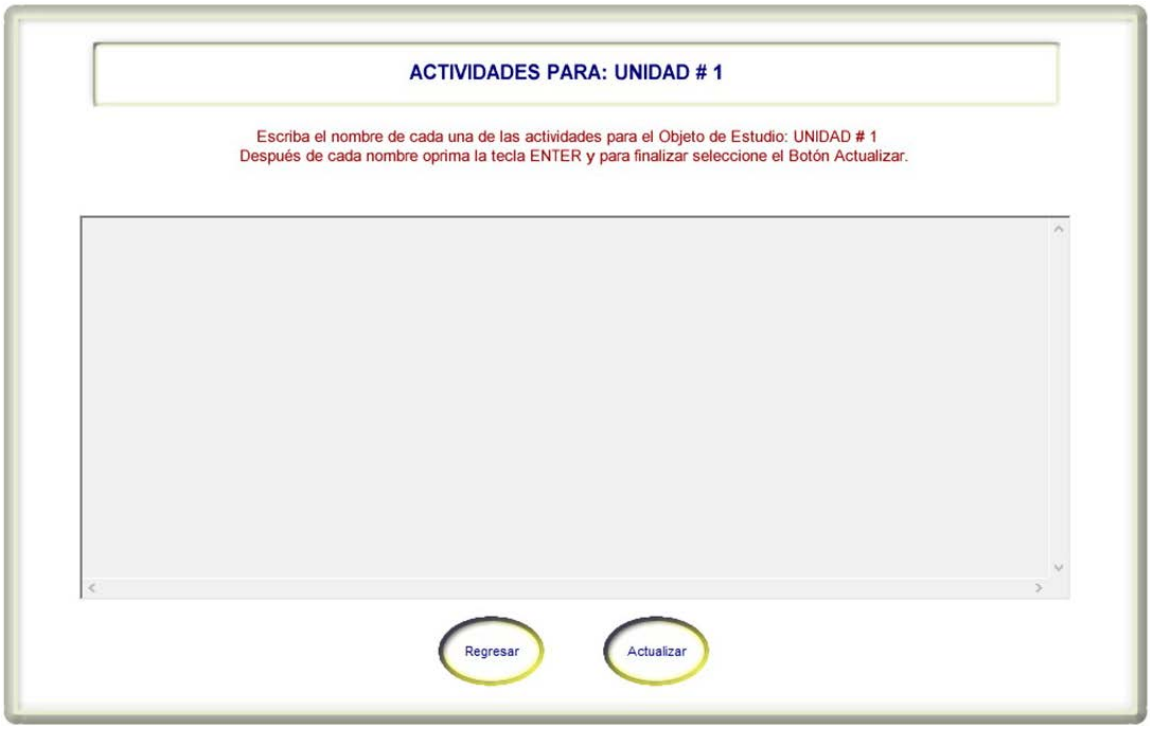


(f)

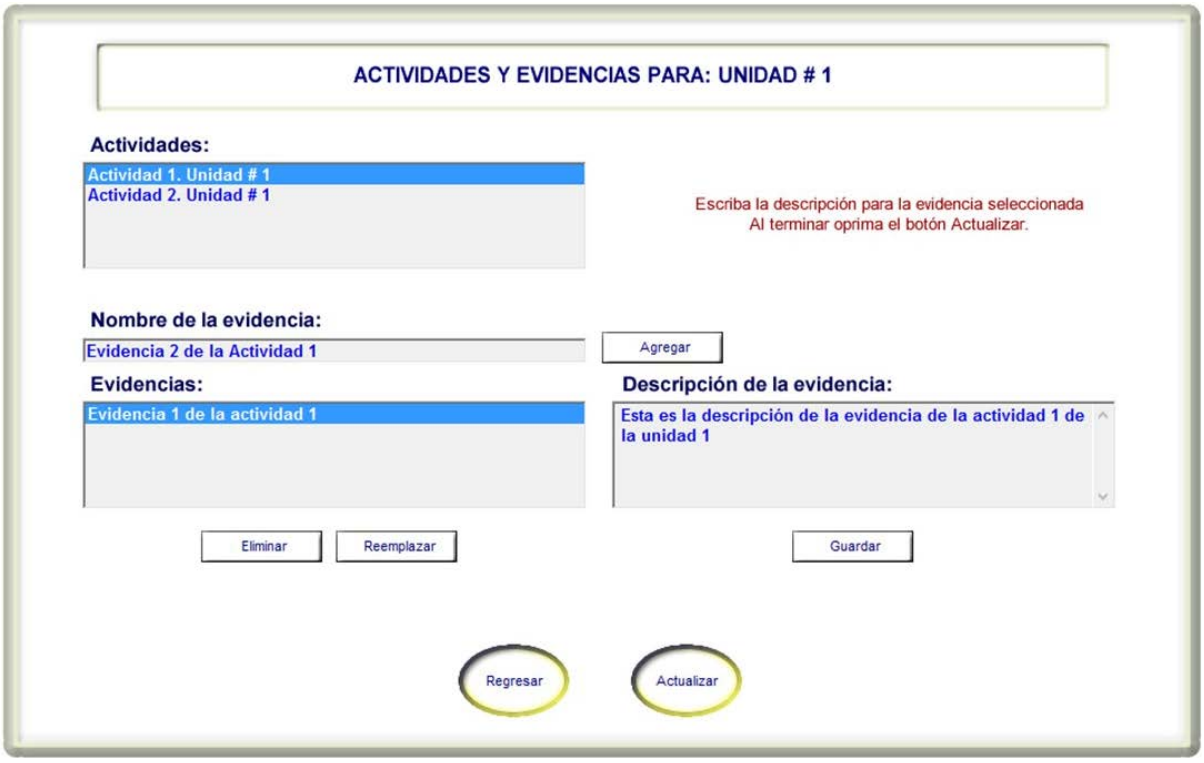
Figure 7. Screens of builder module course structure (part one).


EDITOR PARA EVALUACIÓN DE EVIDENCIAS DE DESEMPEÑO
Evaluación Individual
Evaluación Equipo
Autoevaluación Individual
Autoevaluación Equipo
Coevaluación Individual General
Coevaluación Equipo General
Coevaluación Individual Parcial
Coevaluación Equipo Parcial
Actividades
Evidencias
Finalizar Diseño
Valoraciones Diseñadas

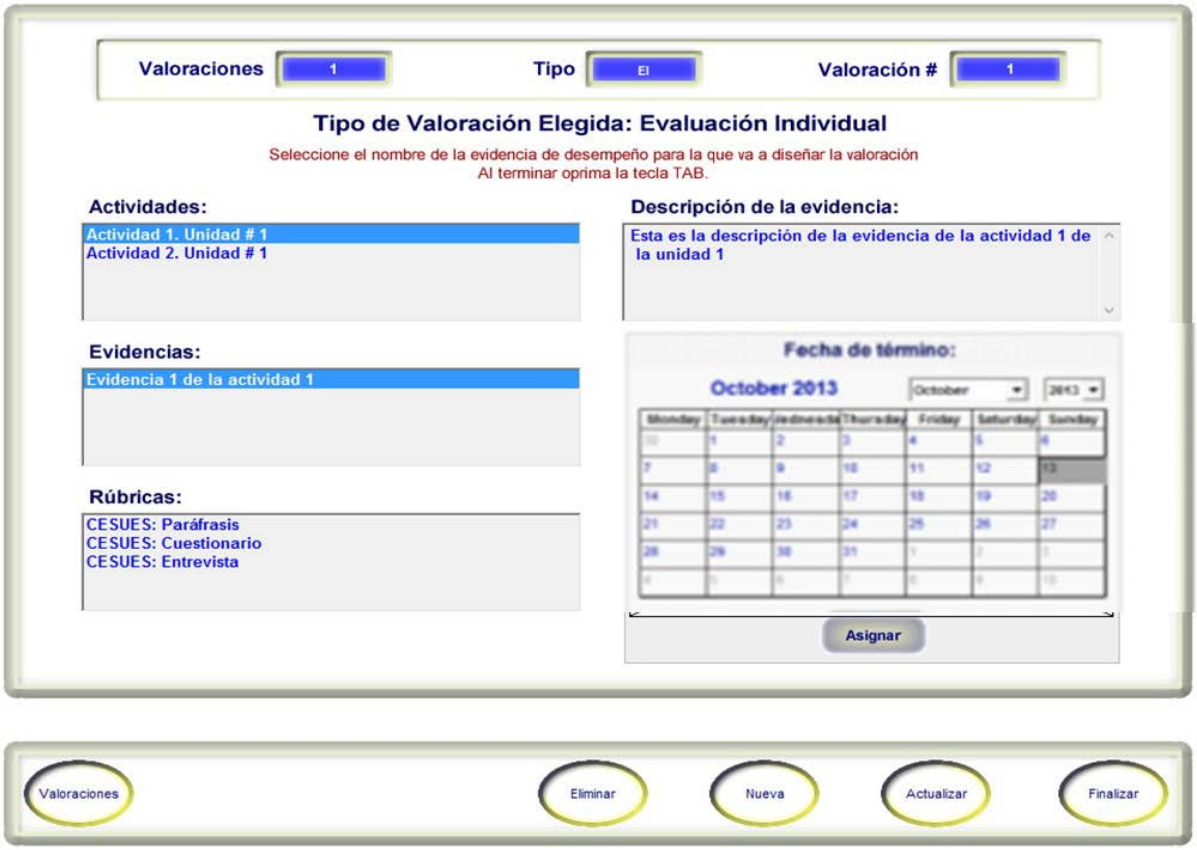
(a)


ACTIVIDADES PARA: UNIDAD # 1
Escriba el nombre de cada una de las actividades para el Objeto de Estudio: UNIDAD # 1
Después de cada nombre oprima la tecla ENTER y para finalizar seleccione el Botón Actualizar.
Regresar
Actualizar

(b)


ACTIVIDADES Y EVIDENCIAS PARA: UNIDAD # 1
Actividades:
Actividad 1. Unidad # 1
Actividad 2. Unidad # 1
Escriba la descripción para la evidencia seleccionada
Al terminar oprima el botón Actualizar.
Nombre de la evidencia:
Evidencia 2 de la Actividad 1
Agregar
Evidencias:
Evidencia 1 de la actividad 1
Descripción de la evidencia:
Esta es la descripción de la evidencia de la actividad 1 de la unidad 1
Eliminar
Reemplazar
Guardar
Regresar
Actualizar

(c)


Valoraciones
1
Tipo
EI
Valoración #
1
Tipo de Valoración Elegida: Evaluación Individual
Seleccione el nombre de la evidencia de desempeño para la que va a diseñar la valoración
Al terminar oprima la tecla TAB.
Actividades:
Actividad 1. Unidad # 1
Actividad 2. Unidad # 1
Descripción de la evidencia:
Esta es la descripción de la evidencia de la actividad 1 de la unidad 1
Evidencias:
Evidencia 1 de la actividad 1
Fecha de término:
October 2013
Rúbricas:
CESUES: Paráfrasis
CESUES: Cuestionario
CESUES: Entrevista
Asignar
Valoraciones
Eliminar
Nueva
Actualizar
Finalizar

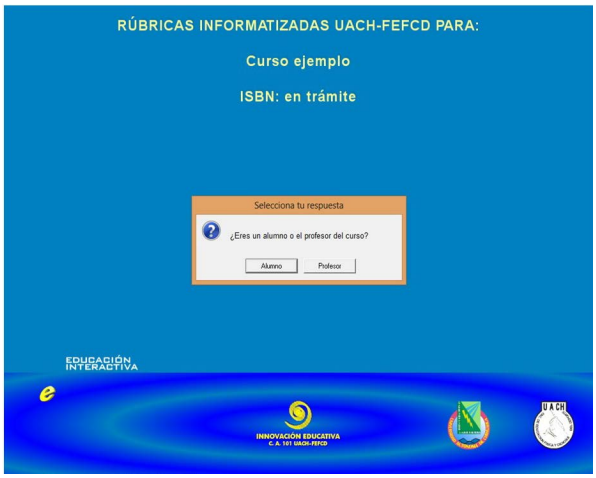
(d)

(e)

(f)

Figure 8. Screens of builder module course structure (part two).

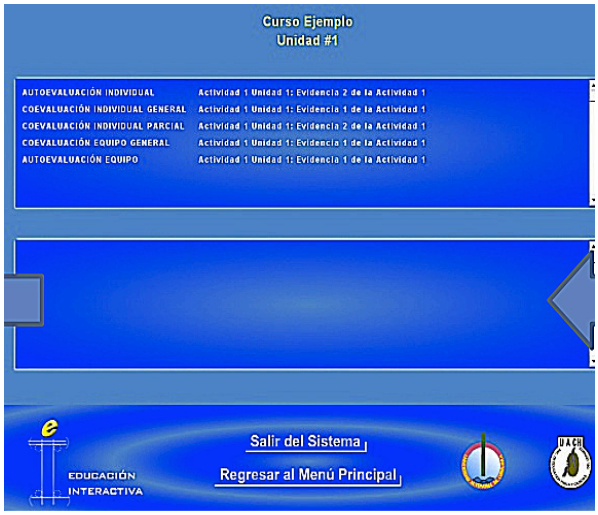
(a)



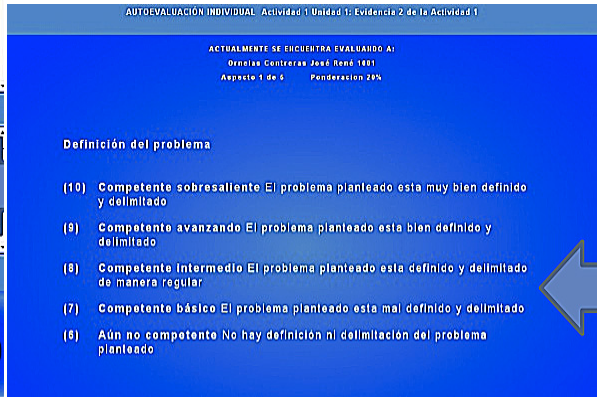
(b)

(c)

(d)



(e)



(f)

Figure 9. Screens of learning assessment module..

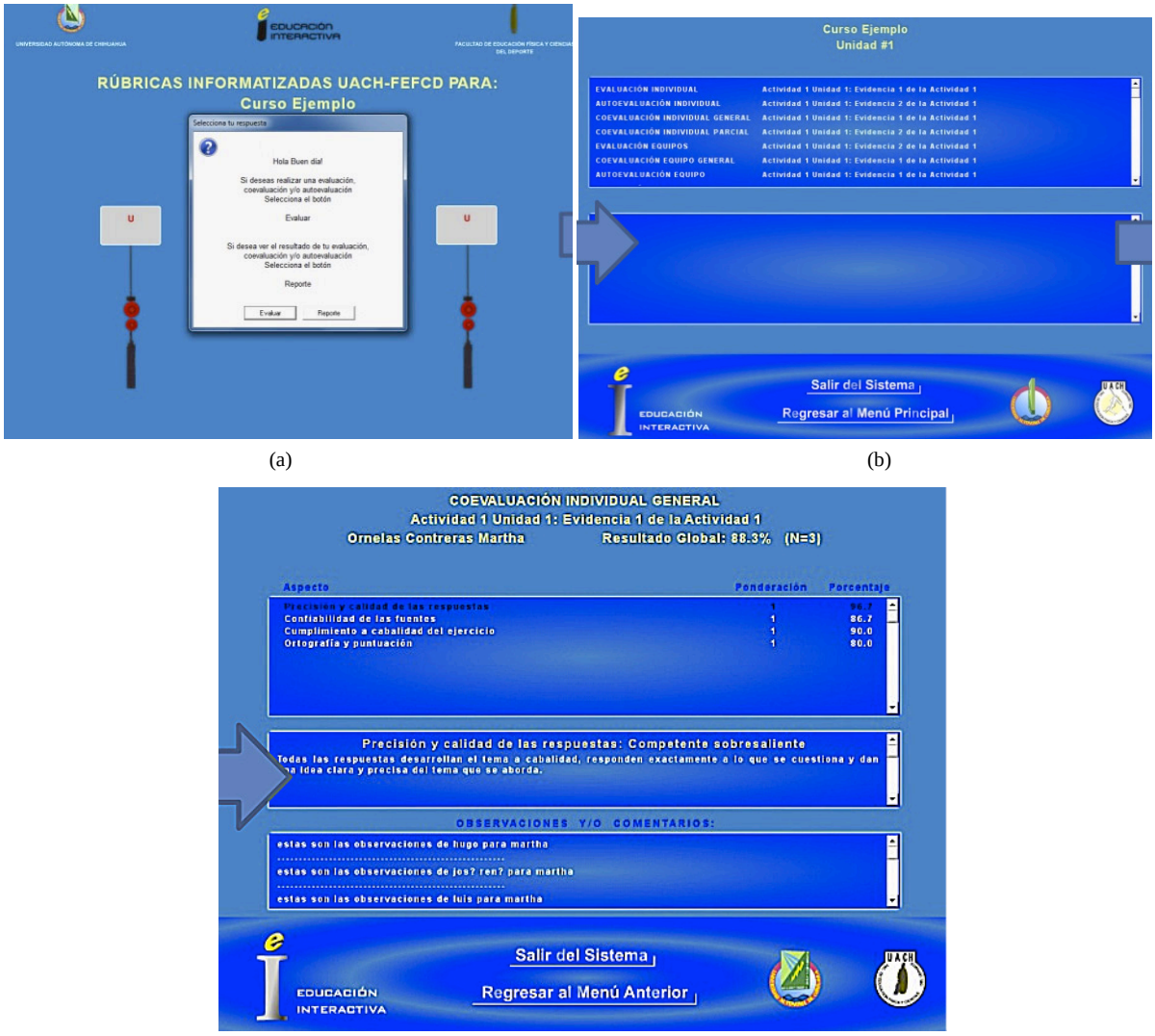


Figure 10. Screens of evaluation reports.

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