IMPLEMENTATION OF THE "CONSUMER CITIZENSHIP EDUCATION GUIDELINES" IN THE ONLINE-STUDIES OF ENGLISH FOR ENGINEERING STUDENTS

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Introduction

The Consumer Citizenship Network (CCN) brings together international expertise in the fields of citizenship-, environmental- and consumer education to develop valuable and innovative practices for teaching and assessing consumer citizenship education (CCE). '*Consumer Citizenship Education Guidelines Higher Education*' (Thoresen, ed., 2005) emphasize the value of developing quality modules/courses in higher education which support the European Bologna process by enhancing the relevance of European higher education to society's present needs as well as being compatible with the Lisbon strategy by contributing to the adaptability and responsiveness of higher education. By bringing together the various elements which constitute CCE, *the Guidelines* highlight the universal need for common reflection on the implications of "improved quality of life" and of the consequences of present consumption patterns" (ibid., 8). There is no universal way of exercising consumer citizenship, but all of them would require "in-depth, up-to-date understanding and awareness of the constantly changing conditions which create the landscape in which the consumer citizen must function" (ibid. 8). Though it is impossible to find answers to many questions related to consumer citizenship, it is possible to provide students with the basic tools which enable them to make choices, manage resources, solve problems and contribute to the future. It directly refers to providing access and further development of distance education and e-learning, and a wider introduction of the ICT facilities at the tertiary level.

Aims of the study

The present research is aimed at promoting a wider access to the e-studies, specifically – English for Specific Purposes (ESP) for engineering students, by developing a meaningful e-learning content and relevant activities, taking into account some of the principal suggestions of the *'Consumer Citizenship Education Guidelines'* as a strategic document of the CCN project.

The research was done within the thematic *CCN Task Group 1 on 'Inclusion of Consumer Citizenship Education Themes in Existing Courses and Modules'*. The research was carried out at Riga Technical University, Latvia. Within the CCN Task Group 1 another study in teaching foreign languages was undertaken (Karsli, 2008), which was

aimed mainly at developing separate modules on note-taking, reading comprehension, writing, etc., in English on the basis of the suggestions made in the '*The Consumer Citizenship Education Guidelines'*. At the same time a topical issue is how *to integrate the CCE as core elements flexibly and coherently into the existing courses*, as the envisaged number of the courses or the contact hours for one or another course are limited. Such integration cannot and should not be fragmentary, by just adding or eliminating some topics. By integrating CCE into the existing courses, we mean changing the philosophy behind the course, its message and goals. The author of the article has chosen the approach when the CCE basic principles and strategies are interwoven in the e-course – 'Creative Learning of English for Specific Purposes (ESP)', for engineering students, tertiary level.

Aims of the study

1. To analyze the methodological concepts and approaches to consumer citizenship education (CCE) for their implementation in the e-studies of English for Specific Purposes (ESP)
2. To explore the integration of the ICT facilities with creative learning methodology of ESP
3. To develop the methodological approach to designing and delivery of the online ESP course (texts, creative thinking tools and techniques, problem solving situations, tasks and activities, achievement tests)
4. To launch the online course in ESP and analyze the results

Methodology

One of the major goals of e-learning has been to make all education (academic, professional, organisational, commercial training, etc.) more accessible. It provides generally recognized benefits as content individualisation, increased autonomy, multi-sensory delivery of information, flexibility in time, place and tempo of learning. *Creative e-learning is defined as the integration of creative learning methodology with e-learning facilities to promote the creative abilities of the target audience* (Rumpite, Zuga, Ritins, 2007). The present online course delivery project was realized with the support of the Distance Education Centre of Riga Technical University (RTU) - an experienced partner of many international projects. The Blackboard (Blackboard Inc.) software environment served as a medium and tool in the delivery

of the learning material, basic performance assessment, user support, task information, and task feedback (Fig. 1), while advanced team learning systems - *ThinkTank™ (Groupsystems company*) and *Zing (Zing Technologies Pty. Ltd)* software, were used primarily for collaborative problem solving tasks which required creative interaction. In 2006-2007 a total of 43 students but in 2007-2008 – 30 first year students from the Faculty of Electrical and Power Engineering, RTU, took part in the e-course.

Figure 1 *Template of the e-course in ESP*

The research also included the study of the theoretical and empirical theories and approaches to defining and developing creativity in pedagogy, psychology and language teaching practice (Cropley, 2001; de Bono, 1996; Lantolf, 2006; Runco & Pritzker, 1999; Sternberg & Lubart, 1999; Torrance, 1983; Vygotsky, 1978, etc.). Edward de Bono, the originator of lateral thinking and a widely acknowledged international authority in the field of creative thinking, writes that "creativity need no longer be a mystery or a special gift – it is a skill that can be learned and applied" (de Bono, 1996). Torrance (1974) also argued that creativity is not a special, but a common ability, which is based on the constellation of the general intellect, personal features and abilities to think productively.

He pointed out *the following steps that any creative process* consists of:

- perceiving the problem
- looking for a solution
- generating and formulating hypotheses
- verification of the hypotheses
- their modification and finding a solution or a result (Torrance, 1983).

The author of the article follows the definition of creativity suggested by Seltzer and Bentley (1999) '*Creativity is the application of knowledge and skills in new ways to achieve a valued goal'*.

There is a definite interrelation of the conventional intelligence and creativity. According to Cropley: "conventional intelligence is heavily dependent on recognizing, recalling and reapplying, and requires among other things substantial knowledge of facts, effective acquisition of new information, rapid access to the contents of memory, accuracy in finding the best answer to factual questions, and logical application of the already known. *Creativity, on the other hand, involves departing from the facts, finding new ways, making unusual associations, or seeing unexpected solutions"* (Cropley, 2001: 23).

Cropley also mentioned that engineers rated as creative, display *a combination of such characteristics as:* plentiful knowledge, swift recall, accurate application (intelligence) on the one hand; generating possibilities, seeing unexpected connections, introducing novelty (creativity) – on the other (ibid.). He also points out Eysenk's study (Eysenk, 1997 in Cropley: 60) who concluded that to characterize creative people researchers typically emphasize: *autonomy, non-conformity, openness to stimulation, flexibility, tolerance of ambiguity, inner directedness and ego strength.*

The author of the present article would add here also reflective skills as an important stimulus in finding new directions and solutions.

According to Vygotsky, the founder of the cultural-historical activity theory, creativity is considered more in terms of *collaboration and*

interaction. He stressed the social processes in creative endeavors. His approach was further developed by Leont'ev (1978), Davydov, (1999), Galperin (2000), Engestrom (1999), Lompscher (1999), etc. In such an approach the unit of analysis is the activity as a system. To understand why separate actions are meaningful one needs to understand the motive behind the whole activity; activity is guided by the motive. The transforming process depends upon cooperative labour, social interactions, and external and internal tools within the 'zone of proximal development' (Vygotsky, 1978:86).According to this approach any kind of activity has its own definite content, structure, needs, motives, tasks and actions (operations). The activity to be developed is structurally analyzed according to the hierarchy of the underlying actions of which the activity consists in order to estimate the gradual controlled process of skill development.

The online course in ESP was methodologically based on the cultural-historical activity theory, briefly described above. Thus, in selecting the online study content, the existing trends and dynamic changes in the field of power engineering were analyzed. One of the most essential trends is the steadily increasing role of renewable energy sources in the world. The selected online material 'Global Energy Guide', 'Guide to Nuclear Power', 'Solar Power – a Leader in the Making', 'Wind Power Today', 'Clean Coal Technology' (Fig. 2), 'Glendoe Hydro Scheme', 'Compressed Air Vehicles', etc. highlight such topical issues, suggested in the 'Consumer Citizenship Guidelines' as '*consumption and environment'* (ecology, life cycles, ecological balance; energy production and consumption), as well as '*future perspectives'* (sustainable development and sustainable consumption, alternative sources of energy, ecologically friendly transport', etc.).

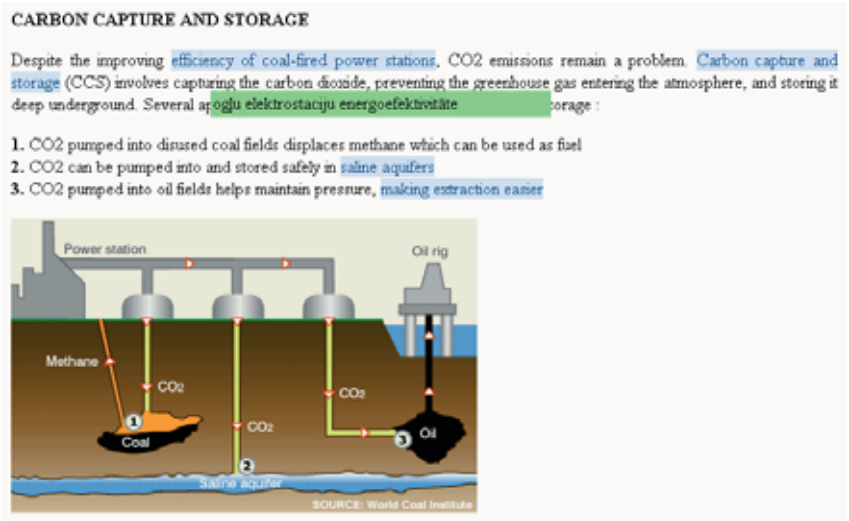

Figure 2 *Template of the Unit 'Clean Coal Technology', online course in ESP*

The e-course developers paid particular attention to the selection and adequate, professional explanation of the terminology by using the *Word Assistant tool* (seen in Fig. 3). The goal was to select such a terminology which would constitute the 'core' terms in power engineering, thus enabling students to move further independently in their academic studies, research and future professional area. Thus, one of the central ideas in selecting the online course material and projecting the learning skills was to make them transferable to the future professional or research area of the students.

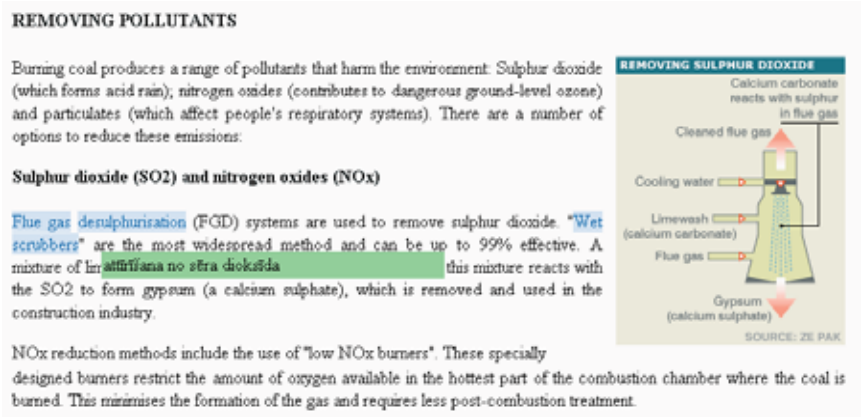

Figure 3 *The use of the Word Assistant tool in mastering terminology online*

The criteria developed for the design and delivery of a creative online course in a foreign language are presented in Table 1 in the Appendix and include such components as: 1) the course content (learning material and visuals); 2) creative process support (creative thinking tools, techniques and software); 3) course administration (selection of the learning content, user support, software environment and assessment techniques).

A significant part of the online course - *Creativity Unit*, comprises 'classical' creative tools and techniques (brainstorming; synectics - metaphors, analogies; attribute listing, etc.); lateral thinking techniques developed by de Bono ('Six Thinking Hats' technique; 'Consider All Factors', 'First Important Priorities', 'Stepping Stone', 'Concept Challenge', etc.); as well as description of the stages in creative problem solving; examples and tasks (Fig. 4).

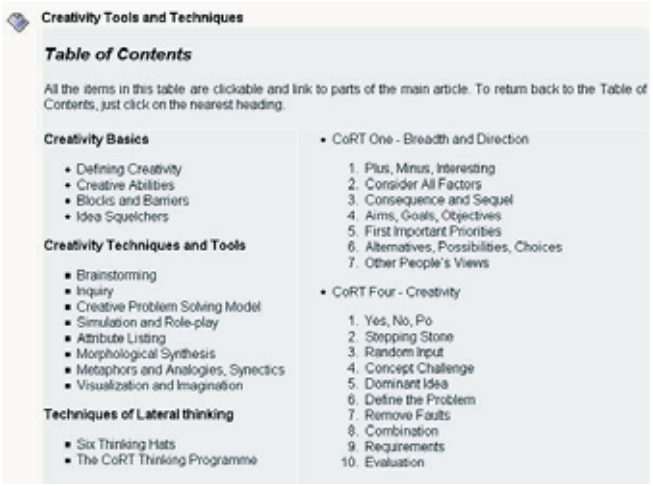

Figure 4 *Creativity development tools and techniques in the e-course*

Assessment techniques in the e-course comprise individual and collaborative problem solving tasks and achievement tests to assess both the student language proficiency and creativity. The online tests parallel to assessing the reading comprehension skill and its subskills (comprehension of the linguistic components, the content of the text and its the semantic meaning), also envisaged both assessing and development of the thinking skills. The tests comprise true/false, multiple choice as well as open-ended tasks, where the answers were evaluated in accordance with the criteria developed before. Practically all the items in the online tests involve creative thinking; most of the items contain some contradiction which has no easy and direct answer. For example, a problem question from the online test on *'Global Energy Guide'*:

While being more expensive to set up, solar power is showing stronger growth than wind power in the UK. What are the reasons behind it? Is this trend likely to continue? Use facts to prove your point of view'.

Or, another example from the test on '*Clean Coal Technology'*:

'*In the near future Latvia is going to build two new power plants. If one of them is a coal fired plant, would you want to use carbon capture and*

storage technologies? Explain your choice. Limit your answer to about 90 words'.

Some answers of the students are given below:

Student A.: 'Actually I doubt if Latvia needs fossil fuel fired plant such as coal and natural gas. However, if coal fired plant is built instead of CCS technologies, it would be reasonable to use integrated Gasification Combined Cycle (IGCC) systems, because they have zero emissions at all. Of course these systems would require much more investments as they are not so widely distributed, but it would cause less usage costs and emissions than CCS technologies. If it is not possible to build IGCC, it should use CCS technologies for sure'.

Student E.: 'If we were building a coal fired plant, then I would say that we should use carbon capture and storage technologies although it is more expensive and it is harder and longer to build that. But it is a big investment in the future – reducing CO2 emissions. But before making that kind of step in future we need to discuss weather this power plant is suitable for nature functions in Latvia'.

Student V.: 'If that would be government's final decision to build one – then yes. But my preference is not to build coal fired plants (the technique is very harmful for the environment and the carbon capture and storage technologies are not yet proven to work. I find them inefficient in comparison to other techniques used in practice. I prefer Combined Heat and Power solution – while producing electricity emitted heat is captured and is used to heat the adjacent homes. Because of the high density of housing in Latvia the solution is far more efficient than coal fired plants'.

Student J.: 'Yes, because I want to live in clean country and breathe clean air. Our health depends on environment where we live'.

Or, another task from the same Unit:
'It is known that the technologies for completely eliminating CO2 emissions from coal fired power plants are already available. So why are modern coal plants built without CO2 capture equipment? Limit your answer to about 60 words'.

Most of the responses of the 1st year students who had just started learning ESP –technical English, showed their understanding and care for the environmental protection in their decisions. We may assume that these would-be power engineers and environmental specialists will make responsible choices in their professional career as well.

Further, four open-ended problem solving tasks were developed for use, specifically, with the advanced collaborative ThinkTank™ software. The tasks focused on different social and economic challenges, taking into account the 'CCE Guidelines':

- purely entrepreneurial – "*New Business Challenge*"
- purely public opinion – "*Public Opinion Challenge*"
- entrepreneur dependant on public opinion – "*Market Sentiment Challenge*"
- social behaviour – "*Lifestyle Challenge*"

The problem solving process was anonymous and consisted of four stages *for every task:*

- *brainstorming* – producing ideas
- *categorizing* – isolating a particular group of ideas
- *voting on various criteria* – finding where the consensus or disagreement lies (Fig. 5)
- *evaluating the results* – this was done at the end of each session and the results were published in the Blackboard™ environment as part of the student portfolio.

Thus, the 'Lifestyle Challenge' focused on social responsibility and encouraged students to explore the dilemma of conspicuous consumption. The arguments speaking against it such as consequential environmental pollution and wasting of precious resources were presented, while, at the same time, recognizing that it has always been human nature to display one's wealth and social status by acquiring expensive commodities. The task was to think of activities motivating people to display their wealth and status by more socially conscious activities such as environmental protection, devotion to social issues etc. (Fig. 5)

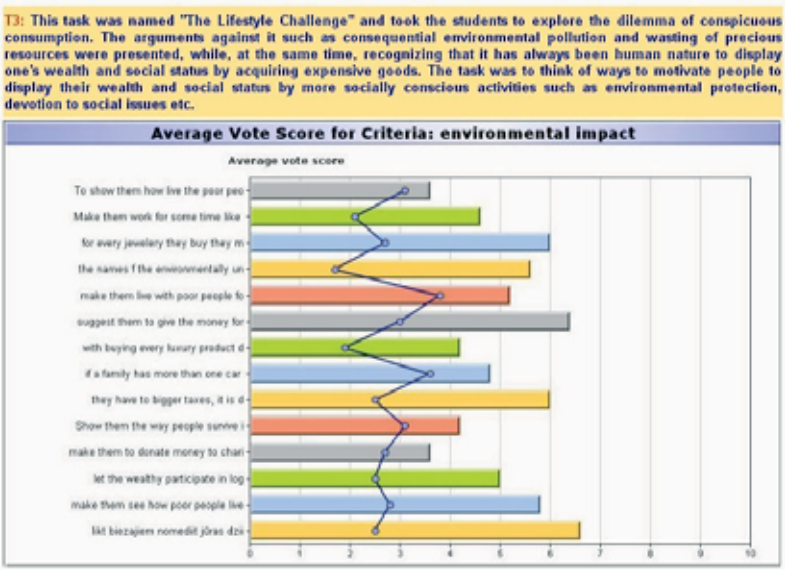

Figure 5 *The criteria totals and the average divergence in solving the task 'Lifestyle Challenge' in the ThinkTank collaborative session*

Creativity of the solutions was later analysed considering the criteria of fluency, flexibility, originality, and elaboration (Torrance, 1974).

The sessions in the 2nd semester with the other sophisticated collaborative problem solving Zing software proceeded in a similar way. During the session everyone was able to contribute ideas to a shared workspace on a computer. The students learned to ask the kinds of questions that experts in the field might ask. They debated, discussed and discovered ideas together. Parallel thinking was implemented on the issues below – similarly as it is in the 'Six Thinking Hats' methodology by de Bono (1997):

- *Facts*: What do we know or need to know?
- *Feelings*: How do we feel about it?
- *Failings*: What could be improved? What are the negatives?
- *Fantasy*: What could we do that is different, new, creative, amazing?
- *Future*: What should we do next?

The procedure of the Zing interactive session, devoted to 'the issue of global warming – what each of us can do about it', *shows also specifics of the interactive 'dialogic inquiry' (Wells, 2002). To start the discussion on* 'Facts: What do we know or need to know*?' a student – facilitator, submitted the following questions, developed by him:*

Facts: *What do we know or need to know?*
Facilitator (student): *What are the main causes of global warming?*
Facilitator: *How does it affect the environment?*
Facilitator: *What will be the consequences of continuing to use more fossil fuels as we seem to be doing now?*
Facilitator: *Is it possible to avoid the worst consequences*?

When considering the issue '*What are the main causes of global warming'* the interactive inquiry proceeded in the following way:

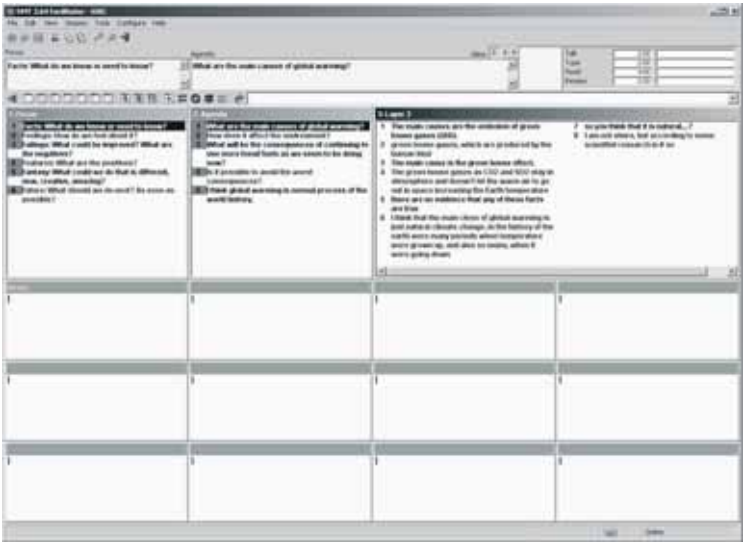

Figure 6 *Screenshot of the Zing collaborative session on the causes of global warming*

What are the main causes of global warming?
Facilitator: *the main causes are the emissions of greenhouse gases (GHG)*
K.: Greenhouse gases which are produced by the humankind

P.: The main cause is the greenhouse effect
Facilitator: The greenhouse gasses as CO2 and SO2 stay in atmosphere and do not let the warm air to go out in space, increasing the earth atmosphere
K.: There is no evidence that any of these facts are true
D.: I think that the main cause of global warming is just natural climate change, in the history of the earth were many periods when temperature were grown up, and also so many when it was going down
Facilitator: So you think it is natural
D.: I am not sure, but according to some scientist research it is so

Thus, the students share and create new knowledge online by building on what they already know, and the emerging ideas are integrated to seek a solution to the problem.

Results and discussion

The '*Consumer Citizenship Education Guidelines'* (Thoresen, ed., 2005) provided valuable ideas and methodology for integrating into the ESP e-course a new, meaningful study material and interpretation of the issues of consumerism, consumption and environment, environmental protection, ecology, energy consumption and production, alternative sources of energy, and, finally – raising the awareness that we are citizens of one world in which the local and global are linked.

A flexible approach to combining face-to-face learning of ESP with its e-studies (or, blended learning) at a technical university is suggested. A poll was conducted which showed that such an e-course in ESP is considerably time-saving and permits the students to assess the study content and perform the assignments from any place and at any time. It is essential not only for developing students' self-organizational and managerial skills, but also for practical reasons – as part of them are combining their studies with work, live in remote areas, etc.

The online tests parallel to assessing the reading comprehension skill and its sub skills also envisaged both assessing and development of the thinking skills. Most of the tasks done by the students in ESP, comprising also open-ended questions, demonstrated more thoughtful, original and novel answers and solutions in comparison to the students' achievement at the beginning of the course. The results of the research

showed that by applying the methodological principles of the cultural historical activity theory in the selection and structuring of the course content (texts, tasks and activities), providing lateral thinking techniques and tools in an encouraging pedagogical environment, it is possible to promote student creative thinking, as well as their English language proficiency. The specific creative and collaborative activities illustrated above and based on real-life situations, can be integrated into other e-learning efforts to improve learners' self organization, foster creativity and decrease course dropout rates.

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Appendix

Diana Rumpite, Gunars Ritins, Bruno Zuga (2007)

Criteria		Practical implementation and delivery
1.	Course content	
1.1	Learning material and visuals	• Modelling authentic communicative situations in the students' professional area, e.g. Power Engineering • Challenging content developed with student motivation and interests in mind • Learning material containing a problem or a contradiction • Sufficient material for thought, transformations and combinations (4-6 page illustrated texts) • Adequate language for linguistic analysis, discussion, elaboration, dialogic inquiry, role plays, etc. • Multifunctional material to develop various communicative skills – reading, writing, speaking, listening • Multimodal way of presenting the material (texts, colourful pictures, diagrams and other visuals) • Linguistic difficulty corresponding to the upper-intermediate level
2.	Creative process support	
2.1	Creative thinking tools, techniques and software	• Learning by teamwork – sharing knowledge and collaborating • Brainstorming • Synectics (metaphors, analogies) • De Bono lateral thinking techniques (de Bono, 1996) • ThinkTank™ and Zing software for generation of ideas and further elaboration to find creative solutions
3.	Course administration	
3.1	Selection of the learning content	• Consulting experts to choose the basic concepts and core knowledge to be acquired with significant value in further studies, e.g. 'Energy Sources', 'Fossil Fuels', 'Renewable Energy'
3.2	User support	• 'Word assistant' tool to show translations, explanations, illustrations, and provide links for further reading – discretely and on demand • Guides, instructions and manuals • Face-to-face consulting during classes
3.3	Software environment	• Blackboard™ software to organize the course materials produced in HTML and to provide basic assessment
3.4	Assessment techniques	• Individual and collaborative problem solving tasks and achievement tests to assess student creativity and acquaintance with the course material