ADAPTIVE MATCHING IN PEER ASSESSMENT
“SMARTCO” AN INTER-COLLEGE APPROACH

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Dedications

I would like to dedicate this thesis to my family, Juliana and Katerina.
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I would especially like to thank my supervisor Professor Dr. Anastasios Economides for his trust and valuable guidance.

Besides, I would like to thank MSc Filippos Kolovos and Oxoouzoglou Leonidas for their technical advice.

Finally, I would like to thank the first-year students of MIS for their active participation in the proposed activity.
Abstract

Peer Assessment (PA) is considered to be an innovative learning process where a student assesses other students. A brief presentation of PA background, designing issues and the PA tools takes place. A review of adaptive PA studies and a categorization relative to the varying designing factor is presented. The study proposes an inter-college approach for PA applied to scientific essay writing. Emphasis is given to the designing factors, the reviewing criteria and the matching algorithm. The method for validating the proposed algorithm is described with emphasis on the procedure design, the implementation of the online supporting information system and the questionnaire that students filled at the end of the process. Empirical results follow with some interesting suggestions regarding the human factor. Results referring to the students’ improvement are not clear because further actions need to be taken to validate them. The results from the survey, that measure students’ attitude toward PA, were more promising and proved that students accepted the PA activity. Finally, the conclusions and further extensions are presented.
Contents

Dedications .......................................................................................................................... 1
Acknowledgements .............................................................................................................. 2
Abstract ................................................................................................................................. 3
Contents .................................................................................................................................. 4
Contents of Tables ................................................................................................................... 6
Contents of Figures .................................................................................................................. 7
Introduction .............................................................................................................................. 8

1 Literature Review ............................................................................................................... 9
   1.1 Background of Peer Assessment ................................................................................... 9
   1.2 Designing Issues of Peer Assessment .......................................................................... 10
   1.3 Web-Tools for Peer Assessment .................................................................................. 12

TABLE 1. GENERIC Peer ASSESSMENT TOOLS (LUXTON-REILLY, 2009, P. 213) ........... 13
TABLE 2. DOMAIN-SPECIFIC Peer ASSESSMENT TOOLS (LUXTON-REILLY, 2009, P. 217) ... 14
TABLE 3. CONTEXT-SPECIFIC Peer ASSESSMENT TOOLS (LUXTON-REILLY, 2009, P. 217) .. 14
   1.4 Review of Adaptive Peer Assessment .......................................................................... 14

TABLE 4. SUMMARY OF STUDIES IN ADAPTIVE Peer-ASSESSMENT ............................... 17

2 The proposed Inter-college Peer Assessment Approach “SmartCo” ................................ 18
   2.1 Objectives of the proposed PA activity ........................................................................ 18
   2.2 Designing Issues of SmartCo ..................................................................................... 19
   2.3 Criteria for Peer Assessment ....................................................................................... 21
   2.4 The proposed Adaptive Matching Algorithm ................................................................ 22

TABLE 5. SEOW’S AND Sim’S MODEL (2008, P. 1115) ...................................................... 26

3 Methodology ....................................................................................................................... 27
   3.1 Participants ................................................................................................................... 27

TABLE 6. STUDENTS’ GENDER AND SCIENTIFIC PROFILE ........................................... 27
   3.2 Design of the Applied Activity .................................................................................... 27

3.3 SmartCo Information System ......................................................................................... 30
   3.3 Students’ Attitudes Towards PA .................................................................................. 33

4 Results ................................................................................................................................. 34
4.1 Empirical Results ............................................................................................................ 34

4.2 SmartCo’s Results ......................................................................................................... 35

4.3 Students’ Attitude’s Results ......................................................................................... 37

Conclusions and Further Extensions .................................................................................. 41

References .......................................................................................................................... 44

APPENDIX .......................................................................................................................... 48
Contents of Tables

TABLE 1. GENERIC PEER ASSESSMENT TOOLS ................................................................. 13
TABLE 2. DOMAIN-SPECIFIC PEER ASSESSMENT TOOLS ........................................ 14
TABLE 3. CONTEXT-SPECIFIC PEER ASSESSMENT TOOLS ...................................... 14
TABLE 4. SUMMARY OF STUDIES IN ADAPTIVE PEER-ASSESSMENT ...................... 17
TABLE 5. SEOW’S AND SIM’S MODEL ........................................................................... 26
TABLE 6. STUDENTS’ GENDER AND SCIENTIFIC PROFILE ..................................... 27
TABLE 7. STUDENTS’ PARTICIPATION IN SMARTCo ................................................ 34
TABLE 8. MEANS OF AUTHORING GRADES FOR ALL MILESTONES ....................... 35
TABLE 9. MEANS OF REVIEWING GRADES FOR ALL MILESTONES ......................... 35
TABLE 10. PAIRWISE COMPARISON OF THE MEANS VALUES OF AUTHORING GRADES USING REPEATED MEASURES ANOVA ...................................................... 36
TABLE 11. CORRELATION BETWEEN AUTHOR GRADES AND REVIEW GRADES ........ 37
TABLE 12. MEANS OF Q6 AND Q10 ............................................................................... 37
TABLE 13. WILCOXON COMPARE MEANS RESULTS ............................................... 37
TABLE 14. SUMMATIVE ACCEPTANCE OF PA .............................................................. 38
TABLE 15. SMARTCo ACCEPTANCE MEANS CATEGORIZED BY AGE GROUP .......... 38
TABLE 16. CORRELATION BETWEEN ACCEPTANCE OF PA AND SMARTCo ACCEPTANCE ...... 39
TABLE 17. MEAN AND STD. DEVIATIONS OF VARIOUS ITEMS ............................... 41
Contents of Figures

Figure 1 The use of peer profiles by the FFNN technique .................................................. 17
Figure 2. The stages of PA’s episode .................................................................................... 20
Figure 3. The episodes of PA ........................................................................................... 21
Figure 4. The slider rating tool .......................................................................................... 22
Figure 6. Data flow architecture ....................................................................................... 26
Figure 7. The revised timetable ......................................................................................... 29
Figure 8. Essay submission ............................................................................................... 30
Figure 9. Choosing an author-essay for reviewing ............................................................. 31
Figure 10. Choosing a reviewer for reviewing his comments ............................................ 31
Figure 11. Downloading, rating and providing feedback .................................................. 32
Figure 12. Viewing and rating reviewer’s feedback ............................................................ 32
Figure 13. Boxplot of usefulness of comments categorized by age groups ...................... 40
Introduction

Living in the Era of Information Revolution and the huge growth of the Internet, it seems to be too easy to reach valuable information. Although it seems easy, it is not sure that everyone can find the desirable data on the endless ocean of information. This phenomenon, called information overload (Eppler and Mengis, 2004), means that someone is congested by the acquired information. It is very important for a learner to develop high-level of critical thinking in order to cope with the monster of information overload. In other words, it is crucial for a learner to develop higher-levels knowledge skills (e.g. knowledge, comprehension, application, analysis, synthesis and evaluation) (Krathwohl, 2002). Because of the nature of the internet, not a robust structure, information all over it seems to have the same characteristics, anarchy of information in other words unstructured information. This means that the learner must also have the ability to construct his/her own knowledge. Fact that highlights the importance of the constructivism pedagogy, a pedagogy that enables and motivates a learner to acquire and construct his/her own knowledge (Larochelle, Bednarz, and Garrison, 1998).

On the other hand, information and telecommunication technologies, including internet, can boost collaborative activities among students (Sing, Ying, Jeong and Mun, 2011). One of the parameters that regulates and preserves smooth collaboration, in my opinion the most important, is that of evaluation. One relatively novel form of evaluation is peer assessment; peers assess the work of their peers (Berg et al., 2006). Divaharan and Atputhasamy (2002) claimed that peer assessment encourages students to participate in collaborative learning activities and aid students to acquire critical thinking skills. But living in the epoch of social media who are really our peers? Meaning that, with the help of ICT, a learner can assess or can be assessed from a peer who lives thousands miles far from him/her and has different culture, preferences, abilities and skills. So, having a wider team of peers all around the world, which is the best recipe for matching them in a peer assessment activity? Does it follow the dynamic nature of learning?

This thesis proposes a framework and an adaptive algorithm for peer assessment matching that considers the issues of resource exploitation, students’ preferences, dynamic changes, distant learners. In the first chapter, some basic issues of peer assessment are described. The different typologies of PA follow and some of the tools for online PA are discussed. Also a review of the literature on adaptive peer assessment takes place. In the second chapter, the proposed inter-college approach, the assessment criteria and the adaptive algorithm are presented. In chapter 3 the methodology is described with emphasis on the
information system that was developed to validate the adaptive algorithm. The results follow in chapter 4. Finally, this thesis ends with the conclusions and suggests further extensions.

1 Literature Review

1.1 Background of Peer Assessment

Peer Assessment (PA) has been utilized in higher education and many universities, in various courses, tried to embed this new kind of evaluation. In PA, students rate their peers according to relevant criteria and at the same time they provide them with feedback (Berg et al., 2006). Another definition for PA is that of Topping (1998, p. 250) «PA is an arrangement in which individuals consider the amount, level, value, worth, quality or success of the products or outcomes of learning of peers of similar status». Moreover, Sung, Chang, Chiou and Hou (2005) believe that PA is a learning process where learners with the same background assess the works of their peers.

Summarizing and matching the above definitions and according to Topping (1998), it is obvious that PA can be used as “summative” or “formative” assessment. Strijbos (2011, p.59) drafted the following definitions «Summative assessment (also referred to as “assessment of learning”) is decontextualized and individualistic, it is isolated from the learning process, and it takes place only at the end of a course to judge how well a student has performed. Summative assessment focuses strongly on the cognitive aspects of learning, often applies a single performance score, and it is designed and conducted by the teacher. Formative assessment (also referred to as “assessment for learning”) is contextualized and aims to build a comprehensive picture of learners’ characteristics. It is an integral part of learning process and takes place several times during a course rather than only at the end. Formative assessment focuses on cognitive, social, and motivational aspects of learning, often applies a multi-method approach and it leads to a profile instead of a single score». So, PA can be used for evaluating the results of the learning process and also can be an active part of it. Another interesting view of PA is that of Chen, Wei, Wu and Uden (2009) who showed in their study that learner’s reflection, which leads to improvement, can be achieved with the use of online PA.

Concluding, PA is a challenge for an educator to use it in a learning course and achieve better results. Specifically, the main advantages of PA are the following:

- Students learn from assessing and providing feedback to their peers (Topping, 1998).
• In PA learners exchange ideas and knowledge (Divaharan and Atputhasamy, 2002).

• When students mark their peers they can recognize mistakes that have been made in their own assignments (Lan, Graf, Lai and Kinshuk, 2011).

• Students boost their thinking skills while instructors perceive in a better way the students’ conceptual framework of the course (Topping, 1998; Chen and Chai, 2009).

• Students enhance their critical skills, acquire a better reflection and the ability to analyze (Alexander, 2000).

• Students improve their own work by exploiting the comments from their peers (Trivedi, Dulal, Patterson and McNeill, 2003).

• Students having to mark peers on specific criteria obtain a better perception of the standards and requirements of the assignments (Hanrahan and Isaacs, 2001).

• Through the activities of PA the students become autonomous learners. (Woolhouse, 1999).

However, some issues must be taken into consideration before applying PA to a learning course. These are:

• Academic instructors are not experienced with this type of assessment (Ballantyne, Hughes and Mylonas, 2002).

• PA requires extra time from the instructors for administrative tasks (Ballantyne, Hughes and Mylonas, 2002).

• Approximately, one third of students’ comments were not sufficient (Robinson, 2002).

• Peers’ marks may include bias due to friendship or enmity or negligence or indolence (Ballantyne, Hughes and Mylonas, 2002).

• Students do not trust their peers in the evaluation process and prefer the instructors’ evaluation (Searby and Ewers, 1997).

1.2 Designing Issues of Peer Assessment

Every learning process has dynamic and multidimensional characteristics. So PA, as a learning process, requires several parameters-factors to be taken into account in order to reach its goals. Topping (1998) surveyed the literature for articles relative with PA that were dated from 1980 to 1996. His main goal was to examine the variations of the
implementation of PA in various higher Institutions and Universities and to define the variables that determine the PA. So, he named these variables “typology”. These variables are (Topping, 1998, p. 252):

1. «Curriculum area/subject.
2. Objectives. Of staff and/or students? Time saving or cognitive/affecting gains?
3. Focus. Quantitative/ Summative or qualitative/ formative or both?
4. Product/ output. Test/ marks/ grades/ or writing or oral presentations or other skilled behaviors?
5. Relation to staff assessment. Substitutional or supplementary?
6. Official weight. Contributing to assessee final official grade or not?
7. Directionality. One-way, reciprocal, mutual?
8. Privacy. Anonymous/ confidential/ public?
9. Contact. Distance or face-to-face?
10. Year. Same or cross year of study?
11. Ability. Same or cross ability?
12. Constellation assessors. Individuals or pairs or groups?
13. Constellation assessed. Individuals or pairs or groups?
14. Place. In/ out of class?
15. Time. Class time/ free time/ informally?
16. Requirement. Compulsory or voluntary for assessors/ assesses?
17. Reward. Course credit or other incentives or reinforcement for participation»

From the above it is obvious that there are not standard designing models for implementing PA. For online PA, variables such as place and time are eliminated because PA can take place anytime and everywhere with the use of ICT (Information Communication Technology), provided that the variable contact is set to distance. All of the mentioned variables are important, but according to my opinion, the most important are the “objectives” related to students’ learning gains, the “focus” related to formative, product/output and the “privacy” related to anonymity for creating an objective environment for assessment.

Van de Berg, Admiraal and Pilot (2006) categorized the Topping’s Typology variables in the following four clusters:

- Cluster I. Includes Topping’s variables 1-6.
- Cluster II. Includes Topping’s variables 7-9.
• Cluster III. Includes Topping’s variables 10-13.
• Cluster IV. Includes Topping’s variables 14-17.

Their primary target was to find the optimal combination of PA’s designing characteristics. For that reason they made the above clustering in order to search for patterns of designing variables in a given situation (cluster). They applied PA in seven courses so as to find the optimal combination of Topping’s variables. According to their results the optimal combination is, variable 5 (Relation to staff assessment), variable 7 (Directionality oriented to reciprocal), variable 12 (Constellation assessors) and variable 13 (Constellation assessed) oriented to size of three of feedback. Nevertheless, the seven experiments had specific subject and specific students’ backgrounds, amplifying my belief that the above results must be considered as a valuable indication and not a rule.

Examining the literature, it is clear that many relative articles make reference to the Topping’s study, fact that proves the value and the importance of Topping’s contribution to PA. But as it was mentioned earlier Topping’s study was based on literature review from 1980 to 1996. Gielen, Dochy and Ongena (2010) made a review on the literature from 1996 to 2006. Their findings lead them to form a new “inventory of peer assessment diversity”. In my opinion it is a very useful study and introduces the important variable of “matching” assesses with assessors.

1.3 Web-Tools for Peer Assessment

According to the previous section, the first action that must be done in order to apply a web-based PA activity is to set the learning goals and according to them define the PA’s designing variables. The choice of a web-tool, that will implement the designed activity, follows. Several online Learning Management Systems have been developed to support e-learning activities, such as Moodle, Edmodo, Blackboard and others. Moodle seems to have been adopted by many schools, universities and other educational organizations. One of its modules named ‘Moodle Workshop ‘ supports PA’s activities (file submission, flexible marking, multiple deadlines) but it has not been maintained well and Moodle community does not use it often (Raadt, Lai and Watson, 2007).

Other alternative tools for supporting online learning processes are Wikis. Many instructors have adopted them in their courses because of their ease of use and implementation. Pusey and Meiselwitz (2011) wrote a survey with regard to Wikis and Assessment activities. They mention that Wikis still need much effort from the instructor so as to implement online assessment activities. Furthermore, they highlight the lack of an
integrated rating tool and that the comment tool cannot support targeted (to specific student) feedback. It is obvious that setting the variable “privacy” to anonymous is not an easy task with Wikis.

Last but not least, an alternative for implementing an online PA for a specific course, with specific students and teachers, as well as specific design issues is to create a web-based PA information system from scratch. Luxton-Reilly (2009) wrote an excellent survey that presents on-line tools that supports PA excluding Wikis and e-mail forums because, according to him, they provide different reviewing quality. He categorized these tools into the following categories.

- Generic systems that can support various PA designs.
- Domain-specific tools that support a specific domain such as essays, programs.
- Context-specific tools that support a specific context such as Computer Science, Mathematics, Marketing.

The following three tables present these categories. In the column of rubric criteria b stands for boolean criteria, d stands for discrete choices criteria, n for numeric scales criteria and t for textual comments. Each of the following tables summarizes the attributes of online PA such as year, rubric design, rubric criteria, discuss, backward feedback, flexible workflow and evaluation.

<table>
<thead>
<tr>
<th>Name</th>
<th>Year</th>
<th>Rubric design</th>
<th>Rubric criteria</th>
<th>Discuss</th>
<th>Backward feedback</th>
<th>Flexible workflow</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>PeerGrader</td>
<td>2000</td>
<td>Flexible</td>
<td>b,d,n,t</td>
<td>Shared page</td>
<td>Student</td>
<td>No</td>
<td>Student survey, validity</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>performance improvement</td>
</tr>
<tr>
<td>Web-SPA</td>
<td>2001</td>
<td>Flexible</td>
<td>d,n,t</td>
<td>Public comments</td>
<td>None</td>
<td>Fixed</td>
<td>Student survey, performance improvement</td>
</tr>
<tr>
<td>OPAS</td>
<td>2004</td>
<td>Flexible</td>
<td>b,d,n,t</td>
<td>Debrief</td>
<td>None</td>
<td>Script</td>
<td>Student survey, validity</td>
</tr>
<tr>
<td>CeLS</td>
<td>2005</td>
<td>Flexible</td>
<td>b,d,n,t</td>
<td>Peers instructor</td>
<td>Unknown</td>
<td>Script</td>
<td>Student survey, usage statistics</td>
</tr>
<tr>
<td>PRAISE</td>
<td>2005</td>
<td>Flexible</td>
<td>b,t</td>
<td>None</td>
<td>None</td>
<td>Fixed</td>
<td>Student survey, staff interview</td>
</tr>
<tr>
<td>Aropā</td>
<td>2007</td>
<td>Flexible</td>
<td>b,d,n,t</td>
<td>None</td>
<td>Student</td>
<td>Limited</td>
<td>Student survey, staff interview</td>
</tr>
</tbody>
</table>

**Table 1. Generic peer assessment tools (Luxton-Reilly, 2009, p. 213).**
From the above, I believe that, even in generic tools, changes must be made in order to reach the specific needs of a learning design. That is why custom software must be developed in order to satisfy the demands of an innovative learning activity.

1.4 Review of Adaptive Peer Assessment

The concept of adaption relates to diversity and change. Learning, whether in class or on the web, is a continuously evolving process. Thus, various adaptive algorithms have been adopted by several e-learning systems, oriented to on-line testing. Furthermore, adaptive mechanisms have been recently used in computer-supported collaborative learning (Magnisalis, Demetriadis and Karakostas, 2011). Unfortunately, not many studies concerning the application of intelligent adaptive mechanisms in the activity of PA can be...
found in the related literature although, in theory, adaption can be used in PA’s designing variables.

Choi and Kang (2012) proposed a method that brings learners together in order to exchange feedback for a learning subject. They use Location-Based social networks for tracking the accurate position of learners and inform them about the availability of learners that attend the same or similar courses and live next to them. Additionally, it uses semantic user-modeling to keep track of learners’ structured data. The adaption in this study applies to variable “place”.

Wen, Graf, Lan, Anderson, Kinshuk and Dickson (2007) proposed a method that aggregates peer marks considering learning styles (active/reflective, sensing/intuitive, visual/verbal and sequential/global) combined with the assessment criteria of the assignment. During the PA activity, learners submit their work, are assigned with projects to access, rate peers’ work, fill out a survey relative with learning styles. Then their learning styles are classified and their ratings are aggregated with relation to their learning styles (each type of criteria has a specific weight for a specific learning type). The adaption in this study applies to variable “product/output”.

Lan, Graf, Lai and Kinshuk (2007) improved the previous study by the use of agent-negotiation based on fuzzy constraints. “Students’ assessments are represented as fuzzy constraints with two dimensions: scores and satisfaction degrees” (Lan, Graf, Lai and Kinshuk, 2007, p. 37). According to agent negotiation algorithm, an agent represents a student and takes into account the student’s personal characteristics. All the agents, with the aid of “iterative message passing, explore other agents’ information and find a global solution, not knowing precisely the state of others” (Lan, Graf, Lai and Kinshuk, 2007, p. 38). In other words, agents interact with each other to reach a consensus for the peers’ marks. The adaption in this study applies to variable “product/output”.

Crespo, Pardo and Kloos (2004) suggested that PA may be effective when proper matching between authors and reviewers is achieved. They proposed the following steps for the PA procedure:

1. “An author or a group work on a given task and submit the resulting document.
2. Each submission is assigned to a set of reviewers, based on previously stored user profiles.
3. Each reviewer, individually or in groups, produces a set of remarks sent back to the author.
4. The author evaluates the usefulness and the level of agreement with the received remarks.
5. *Based on the received data, both author and reviewer profiles are updated.*

(Crespo, Pardo and Kloos, 2004, p. 9)

They also proposed the following discrete matching cases (prototypes).

- Low author’s level – Low Reviewer’s level. (Not interesting)
- Low author’s level – High Reviewer’s level. (Low interest)
- High author’s level – Low Reviewer’s level. (Interesting)
- High author’s level – High Reviewer’s level. (Interesting)

Each prototype is given a weight depending on the criteria used for matching (either the reliability of the marks or pedagogical ones). Fuzzy classification and genetic algorithm are used to select the best pairing from alternatives. Experimentally, they matched each author with three different reviewers using different criteria. Finally the results showed a significant correlation ($\rho=0.68$) between the level of a work and how much students learn reviewing it. The adaption in this study applies to variable “matching” that Gielen at al. (2010) introduced.

Giannoukos, Lykourentzou, Mpardis, Nikolopoulos, Loumos and Kayfas (2010) also suggested a different adaptive mechanism for author-reviewer matching. They highlighted the importance of the creation of students’ authoring and reviewing profile. The author’s profile is consisted of the following parameters:

- Level of proficiency in the field (past academic performance).
- Average reviewing grading (grades received by peers).

The reviewer’s profile is made up of the following parameters:

- Level of proficiency in the field.
- Average strictness (average rating to authors).
- Average usefulness rate (authors’ rating on their feedback).
- Willingness to participate in the procedure (numbers of completed reviews).

Both author’s profile parameters and reviewers’ profile parameters comprise the criteria that are taken into account for the matching procedure. They proposed Fast Forward Neural Networks FFNN for the pairing algorithm. This is illustrated in Figure 1.
In their experiment, 16 students participated and 152 reviews were done. The overall results showed 49%, 54%, 72%, 75% and 76% of accuracy correspondingly, for the five criteria—students profiles. The adaption in this study applies to variable “matching” that Gielen at al. (2010) introduced.

All the above studies are summarized in Table 4.

<table>
<thead>
<tr>
<th>Study</th>
<th>Designing Variable</th>
<th>Scientific Tool/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crespo et al. (2004)</td>
<td>Matching</td>
<td>Fuzzy Classification</td>
</tr>
<tr>
<td>Wen et al. (2007)</td>
<td>Product/Output</td>
<td>Weighting factors</td>
</tr>
<tr>
<td>Lan et al. (2007)</td>
<td>Product/Output</td>
<td>Fuzzy constraints and agent negotiation</td>
</tr>
<tr>
<td>Giannoukos et al. (2010)</td>
<td>Matching</td>
<td>FFNN</td>
</tr>
<tr>
<td>Chois et al. (2012)</td>
<td>Place</td>
<td>Location-based social networks and semantic user-modelling</td>
</tr>
</tbody>
</table>

Table 4. Summary of Studies in Adaptive Peer-Assessment

In my opinion, the point of applying PA is to exploit in an optimal way the learning resources that exist in a learning group. For this reason I believe that the most suitable variable for adaption is that of “matching”.

Figure 1 The use of peer profiles by the FFNN technique. (Giannoukos et al. (2010, p. 118))
2 The proposed Inter-college Peer Assessment Approach “SmartCo”

2.1 Objectives of the proposed PA activity

Excellent scientific essay writing is considered to be one of the most important and valuable skills and capacities that a student or a scientist must qualify so as to be able to diffuse the products of his work to the public. The international nature of science imposes that a researcher should write in an international-understandable way. For this reason, I believe that Peer Assessment can be used for helping students and future researchers improve their “international” writing skills provided that students from different countries, with different culture and same scientific interests participate in the “virtual” assessment team. Whatley, Bell, Shaylor, Zaitseva, and Zakrewska (2005) conducted an educational experiment in which they involved university students form different countries in a peer evaluation activity. Their results were very interesting suggesting that “international” peer evaluation has clear benefits for students in higher education. Despite the important results, the pairing among assessors and assesses wasn’t specified and students provided only feedback to their peers. I believe that the above activity can be boosted with a proper and beneficial matching between assessors and assesses.

In the previous section, only two studies were briefly presented that suggested methods for adaptive matching. Crespo et al. (2004) proposed only two levels for authors’ and reviewers’ capacity (LOW – HIGH) to their prototypes for matching. I believe that intermediate profiles have their unique role and can contribute in their own way to the whole process. On the other hand, Giannoukos et al. (2010) proposed an adaption mechanism that is based on criteria that refer to the whole assessed product and don’t take into account special abilities and skills oriented to criteria of both reviewers and authors. Also, it is not clear if the algorithm of FFNN can be used in a distributed way and can be adapted to rapidly varying data.

In addition to the above, Luxton-Reilly (2009) highlights the need for future peer assessment tools to support multiple institutions.

The objectives of this thesis are:

- To propose the designing issues of an international-virtual Peer Assessment activity with the regards to scientific essay writing.
- To propose an algorithm-mechanism for an optimal exploitation of “international resources”. The term “resources” refers to the peers’ capacity
for providing suitable and valuable feedback. The term “international” refers to fact that students study in different universities and countries.

- To implement an online information system that supports the previous algorithm.
- To get the information system in use with a pilot sample so as to rate its usability and features.
- To measure Greek students’ attitudes towards peer assessment.

2.2 Designing Issues of SmartCo

As it is obvious from the title, the whole activity was named SmartCo from the words Smart and Collaboration. Although this thesis refers to peer assessment I preferred the word collaboration suggesting that the pedagogical role of PA and its contribution to learning are more important than its evaluating role. The main objective of this study is to aid students improve their scientific writing skills. For this reason the designing variable “focus” was mainly set to formative/qualitative for the proposed activity. As long as the proposed system preserves its adaptive character to the dynamic changes of the learner’s profile, the need for summative/quantitative assessment emerges. So, except from its formative focus the proposed activity also has a partial summative focus. In other words, SmartCo’s primary mission is to provide feedback to students from other students and to update students’ profile according to students’ assessments. These assessments are used only for the system’s adaption and they do not contribute to the formal rating of a student. So the “official weight” parameter was set to zero and the variable “relation to staff assessment” was set to none. As it was mentioned earlier the system should be able to exploit “resources”- reviewing ability optimally. For this reason the authors must rate the reviewers’ feedback. So the designing variable “directionality” was set to reciprocal. According to SmartCo’s “international” character it is obvious that the variable “contact” was set to distance and the variable “place” was set outside of class and on the web. Assuming that every student at his will can participate and offer and take “help” variable “year” was set to cross year, “ability” to cross ability and “requirement” was set to voluntary. Provided that “international” PA takes place, a new designing variable may be introduced and named “Origin”, a designing parameter that refers to the ethnicity and the culture of a student.

Several studies imply that a major factor that guarantees objective peer assessments is that of anonymity (Trivedi et al., 2003; Pusey et al., 2011; Derntl, 2006; Sitthiworachart et al., 2004). I agree with the pre-mentioned studies and also propose anonymity not only to
the student’s name but also to his/her origin so as to avoid the impact that national and cultural collisions may have on the objective character of PA.

Variable “time” is set to anytime, meaning that students are free to complete their PA tasks whenever they want provided that they conform to the arranged deadlines. It is obvious that PA is a complicated process and need careful timeline design. Studies propose several variations for the stages of PA (Miao and Koper, 2007; Trahasch, 2004; Miao et al., 2008; Crespo et al., 2004). I believe that Crespo’s et al. is the most complete variation. Taking into account the above, the proposed timeline for each step of PA is shown in Figure 2.

![Figure 2. The stages of PA’s episode.](image)

According to Figure 2 the basic stages of the proposed activity are:

- Assignment Submission. At this stage the students submit their assignment or they make a reservation for participating in the PA activity.
- Assignment Assessment and providing Feedback. At this stage, students as reviewers assess and provide feedback to their peers’ work (the matching author-reviewer will be discussed later).
- Feedback assessment. At this stage, students as authors receive feedback from their peers and rate its usefulness.

Soller and Lesgold (2000) introduced the term “Knowledge sharing episode” that refers to a phase that students share new knowledge. Crespo et al. (2004) used three sequential episodes for their experiment. I adopt the use of sequential episodes because I believe that they can record the dynamic changes of a learner’s profile. Figure 2 show the stages of a simple episode while Figure 3 illustrates the use of multiple episodes in the proposed PA activity. The maximum number of episodes n is set by the college that administer the PA activity. Various educators and colleges can set and administer an inter-college PA activity.
2.3 Criteria for Peer Assessment

The formulation of clear and understandable criteria for PA is very important for the whole process (Berg et al., 2006; Lan et al., 2011). Examining the literature, it is very difficult to find general-purpose criteria for scientific essay writing because most studies focus to the scientific subject. For this reason, criteria from various web-pages (referring to scientific prizes for young scientist, practical guides for scientific writing from universities) were gathered and categorized (NuWrite, 2010; NewScientistprize, 2012; Wilmington University, unknown date). Taking into account the categorization of criteria, I suggest the following four general-purpose criteria for judging scientific essay writing.

1. Understandable content (K1). This criterion includes the issues of vocabulary and syntax usage, avoidance of long sentences, precise and adequate usage of language, targeted usage of tables, figures and diagrams.

2. Content organization (K2). This criterion includes the issues of content unity, cohesion, clarity of structure, sequence of ideas, brief writing ability.

3. Usage-Analysis of literature (K3). This criterion includes the issues of range of references, proper usage of APA style and utilization and combination of literature in the subject.

4. Scientific Level (K4). This criterion includes the issues of scientific thinking and comprehension, completeness in the covered subject, innovative character.

In my opinion, the above criteria are easily understandable from the students and can be utilized in every scientific essay regardless of the subject and the orientation of an essay. Another aspect that must be considered for an inter-college PA activity is that of rating range. Many universities use different kinds of rating ranges (1-10, A-B-C-D-E-F, 0-100). Berners-Lee (2009) proposed a star-metaphor rating system for linked-data in websites. I
assume that a metaphor must be used for a rating scale in PA so as students not to feel guilty when rating negatively. Thus, I propose the metaphor of slider without numbers for the grading tool, which is shown in Figure 4.

<table>
<thead>
<tr>
<th>Κριτήρια</th>
<th>Μπάρα Αξιολόγησης</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Βαθμολογήστε την επίδοση της εργασίας σε κάθε κριτήριο</td>
</tr>
<tr>
<td></td>
<td>Χαμηλή…………Μέτρια…………Υψηλή</td>
</tr>
<tr>
<td>Κατανοητό</td>
<td></td>
</tr>
<tr>
<td>Περιεχόμενο</td>
<td></td>
</tr>
<tr>
<td>Οργάνωση</td>
<td></td>
</tr>
<tr>
<td>Περιεχομένου</td>
<td></td>
</tr>
</tbody>
</table>

Figure 4. The slider rating tool

2.4 The proposed Adaptive Matching Algorithm

Trying to find and formulate an algorithm that satisfies the above framework I make the assumption that the pairing between authors-reviewers must be done in a way that “resources” must be optimally exploited in a given team. With the term “resources” I refer to every skill and ability that students may have so as to help others (reviewing profile). On the other hand, the term “consumers” refers to every student as author and his need for improvement (authoring profile). These profiles are illustrated in Figure 5.
The reviewing profile is consisted of the following parameters:

- **Rev_K1.** The ability of a reviewer to provide valuable feedback for criterion K1 (Understandable content).
- **Rev_K2.** The ability of a reviewer to provide valuable feedback for criterion K2 (Content organization).
- **Rev_K3.** The ability of a reviewer to provide valuable feedback for criterion K3 (Usage-Analysis of literature).
- **Rev_K4.** The ability of a reviewer to provide valuable feedback for criterion K4 (Scientific Level).
- **English Level.** Knowledge of English language.
- **Scientific Background.** This parameter is explained later.

The authoring profile is consisted of the following parameters:

- **Wri_K1.** The ability of an author to perform for criterion K1 (Understandable content).
- **Wri_K2.** The ability of an author to perform for criterion K2 (Content organization).
- **Wri_K3.** The ability of an author to perform for criterion K3 (Usage-Analysis of literature).
- **Wri_K4.** The ability of an author to perform for criterion K4 (Scientific Level).
- English Level. Knowledge of English language.
- Scientific Background. This parameter is explained later

The scientific background is consisted of the following parameters:

- Official Grades. This parameter refers to the grades that a student has been rated for a specific course or group of courses.
- Tests. This parameter refers to tests’ results that a student has given in the current semester.
- Publications. The number of a student’s possible publications and his contribution to science.

Making the assumption that the proposed activity can help students to improve their scientific writing skills I consider the gain of student 1 (author) when he is matched with student 2 (writer) as calculated from the formula (1).

\[
Gain_{12} = (Rev2_{K1} - Wri1_{K1}) \times 0.2 + (Rev2_{K2} - Wri1_{K2}) \times 0.2 + (Rev2_{K3} - Wri1_{K3}) \times 0.2 + (Sc_{Level2} - Sc_{Level1}) \times 0.2
\] (1)

Where \( Rev2_{K1}, Rev2_{K2}, Rev2_{K3}, Rev2_{K4}, Sc_{Level2} \) are the reviewing ability of student 2 to the according criteria \( K1, K2, K3, K4 \) and \( Sc_{Level2} \) is the science level of student 2. And \( Wri1_{K1}, Wri1_{K2}, Wri1_{K3}, Wri1_{K4}, Sc_{Level1} \) are the performing ability of student 2 to the according criteria \( K1, K2, K3, K4 \) and \( Sc_{Level1} \) is the science level of student 1. English level was omitted from formula (1) for simplicity and because it was not used in the experiment that will be described later. It must be noted that all the considered factors were assumed to have the same significance in formula (1) that is why I used the coefficient of 0.2 for the five matching parameters. These coefficients make formula (1) flexible to students’ and instructors’ preferences. Meaning that the gain for a student X matched to any other student can be adapted to his preferences by just altering the coefficients without affecting other students’ preferences.

Peer Assessment is considered to be a collaborative and social activity among students. Having computed all the possible gains of matching choices for every student, which is the best choice for matching so as PA preserves its collaborative and fair character? I believe that the overall gain (gains for all students) of a group must be taken into consideration so as to decide the matching of authors-reviewers. The assignment problem «usually described the problem is to find a one-to-one matching between n tasks and n agents, the objective being to minimize the total cost of the assignments» (Pentico, 2007, p.775) resembles the problem of matching authors-reviewers, where agents (the persons who provide feedback) are related to reviewers and tasks (persons that needs feedback) are related to authors with the difference that in stand of having a minimizing objective function
we have a maximizing function of gain as were described above. In formula (2) the objective function is given.

$$\text{Maximize } \sum_{i=1}^{n} \sum_{j=1}^{n} c_{ij}g_{ij} \quad (2)$$

For example $g_{12}$ represents the gain for student 1 when he is reviewed from student 2 and $c_{12}$ may value 0 or 1 and determines if students 2 will be used to review student 1. Also formulas (3) and (4) denote the restrictions for student 1 that he will be reviewed only from one person and not himself. These restrictions apply to all students respectively.

$$c_{12} + c_{13} + c_{14} + \ldots + c_{1n} = 1 \quad (3)$$

$$c_{11} = 0 \quad (4)$$

Several methods have been used for solving the assignment problem such as linear programming models from operational research. Most of them demand the availability of data (gains or costs) in one computer. It seems difficult for an information system to store and keep track of the changes in the learning profiles of students all around the world. In other words, it is not easy to track the results of a test or the grade of an essay or project of each student or learner in the world. Consequently, in my opinion, the most difficult part for a system is to track all the changes in the learning process. Seow and Sim (2008) proposed a new method for solving the assignment problem. They claimed that their method «admits a logical or physical distribution of information and processing» (Seow and Sim, 2008, p. 1111). For this reason I choose their algorithm in order to solve the author-reviewer matching-assignment problem for multinational students in a distributive way. There is no need to store the data of all the students provided there is another way to retrieve them. In their algorithm the entities of the arbitration agent and the collaborative agent (in our case the author agent) exist. Combining their entities to PA domain the proposed data-flow architecture is illustrated in Figure 6.
The role of the Arbitration Agent is to inform Authors agents about the state of others and to coordinate their collaboration. The Author Agent has a double role. Firstly, it seeks for an optimal resource (reviewer), allocates it and negotiates with other agents for a possible exchange of resources. Its second role is to retrieve information of a student, both authoring and reviewing profile, from a local database and use it in the distributive architecture. It is clear from the Figure 6 that agents cooperate and communicate directly with each other. The model of Seow and Sim (2008, p.1115) is shown in Table 5.

**Figure 6. Data flow architecture**

«MA3: Collaborative (task) agent
(1) If agent believes that there are alternative resource selections which may lead to increase in total AQoS, it would, based on its (local) beliefs, generate the desired exchange options or desires, from which the best option will be chosen as its intention.
(2) Agent submits its intention (or the lack thereof) to the arbitration agent.
(3) Concurrent with Steps 1 and 2, it responds to any requesting task agent whose beliefs it accepts, by sending to the requesting agent the A-QoS values as required for computing the requesting agent’s desire.
(4) Agent changes its resource selection (and then acknowledges it), proceeds to next round of negotiation or quit, as decided by the arbitration agent.

MA3: Arbitration agent
(1) Agent first receives the intentions (or the lack thereof) of all the task agents.
(2) If agent sees that all task agents have no intention to exchange, it terminates the negotiation by informing all task agents to quit.
(3) Otherwise, it
(a) selects an intention with the highest exchange gain and instructs the two agents concerned to proceed with the resource exchange;
(b) receives acknowledgement of resource exchange made as instructed (from the two agents concerned), before informing all task agents to proceed to next round of negotiation.»

**Table 5. Seow’s and Sim’s model (2008, p. 1115).**
In the algorithm every collaborative agent believes that all the others have better resources. And according to the writers of the study the AQos refers to the total gain of the group while the exchange gain between two agents with resource r2 and t1 with resource r1 is defined as:

\[ -d[t_0, r_2] + d[t_0, r_1] - d[t_1, r_1] + d[t_1, r_2] \] (5)

Where:

- \( d[t_0, r_2] \) is the gain that agent t0 has from r2
- \( d[t_0, r_1] \) is the gain that agent t0 has from r1
- \( d[t_1, r_1] \) is the gain that agent t1 has from r1
- \( d[t_1, r_2] \) is the gain that agent t1 has from r2

Seow and Sim (2008, p. 1116)

In our case the gain for author 1 having reviewer 2 as resource is defined in formula (1).

3 Methodology

3.1 Participants

The proposed Peer Assessment activity was applied to 23 students of the first year of MIS (Master in Information Systems) of University of Macedonia during the course of Computer Networks. Each student had to write a scientific review on a field relative to Computer Networks in order to pass the course. Table 6 shows the gender and the scientific profiles (according to their first degree) of the students.

<table>
<thead>
<tr>
<th>Male</th>
<th>Female</th>
<th>Computer Science</th>
<th>Economics</th>
<th>Pedagogical</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>12</td>
<td>8</td>
<td>12</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>23</td>
<td></td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Table 6. Students' gender and scientific profile

The above group of students had been chosen because, as it is clear from Table 6, it consists of students with different backgrounds. So I consider that this sample may resemble the different backgrounds in an inter-college PA activity. It was clear that the results of PA would not count for their official grades but their active participation would be a plus.

3.2 Design of the Applied Activity

The students after signing in the information systems named “SmartCo” reserved a subject for their scientific essay electronically. This was done so as to avoid collisions among students for a specific subject. The scientific review that students had to write had been divided into five segments. Each segment (without referring the name-anonymity) was
uploaded by every student on the information system at a predefined deadline. After each submission every student had to download, assess and provide feedback to five peers’ scientific essays according to the four criteria. In the next phase students had to view the comments (according to the four criteria) from their five peers and rate their usefulness. The above procedures comprise an episode which was named milestone. Therefore, the students participated in five milestones and each one referred to the corresponding essay segment. The number of five reviewers per author was chosen because the more feedback for a student, the more likely to improve (Chen and Tsai, 2009) and hence because it would be easier to calibrate the marks (Hamer, Ma and Kwong, 2005). In parallel with the above activities, five online tests were planned to be given to students so as to keep track of their progress in the scientific level.

The pre-mentioned algorithm was used for the author-reviewers matching. For each milestone the algorithm was executed five times to find the five reviewers for each author with the constraint that a reviewer is assigned to an essay once. Also for the matching criteria I assumed, for example, that the reviewing or authoring ability to K1 is computed 60% from the later milestone and 40% from history (previous milestones). This was decided, in order to avoid “spikes” in the human factor (such as bad mood, interpersonal problems, period of disease or overrating from their peers).

Written instructions were given to students about the tests dates, the milestones dates, the required work for each milestone and the criteria used to rate the milestone’s work. The instructions were available and downloadable from the information system and can be viewed in the Appendix. The timetable for the whole activity was available and downloadable from the information system. After the first milestone the students complained that the whole activity was time-consuming and for this reason the timetable was revised. So the dates were moved and the online tests, which are available in the Appendix (test2, test3), were reduced from five to three. The revised timetable is shown in Figure 7.
Τίτλοι Ενότητας

TEST 1. 11/10

TEST 2. 25/10

Ανακοίνωση Θεματικών Ενοτήτων. 19/10

Παράδοση Μilestone 1. 4/11

Συνεργατική Βαθμολόγηση 1. 9/11

Βαθμολόγηση Κριτών 1. 12/11

Παράδοση Μilestone 2. 18/11

Συνεργατική Βαθμολόγηση 2. 21/11

Βαθμολόγηση Κριτών 2. 22/11

Παράδοση Μilestone 3. 02/12

Συνεργατική Βαθμολόγηση 3. 06/12

Βαθμολόγηση Κριτών 3. 07/12

Παράδοση Μilestone 4. 16/12

Συνεργατική Βαθμολόγηση 4. 20/12

Βαθμολόγηση Κριτών 4. 21/12

Παράδοση Μilestone 5. 30/12

Συνεργατική Βαθμολόγηση 5. 5/01

Βαθμολόγηση Κριτών 5. 06/01

TEST 3. 15/11

Εφόσον και όταν ζητηθεί από εσάς

Παράδοση Μilestone 3. 02/12

Συνεργατική Βαθμολόγηση 3. 06/12

Βαθμολόγηση Κριτών 3. 07/12

Παράδοση Μilestone 4. 16/12

Συνεργατική Βαθμολόγηση 4. 20/12

Βαθμολόγηση Κριτών 4. 21/12

Παράδοση Μilestone 5. 30/12

Συνεργατική Βαθμολόγηση 5. 5/01

Βαθμολόγηση Κριτών 5. 06/01

TEST 4. 15/11

Εφόσον και όταν ζητηθεί από εσάς

Παράδοση Μilestone 3. 02/12

Συνεργατική Βαθμολόγηση 3. 06/12

Βαθμολόγηση Κριτών 3. 07/12

Παράδοση Μilestone 4. 16/12

Συνεργατική Βαθμολόγηση 4. 20/12

Βαθμολόγηση Κριτών 4. 21/12

Παράδοση Μilestone 5. 30/12

Συνεργατική Βαθμολόγηση 5. 5/01

Βαθμολόγηση Κριτών 5. 06/01

Σημείωση: Στοιχεία της τετελεσμένης ημερομηνίας ή μεθοδολογικά σημεία

Figure 7. The revised timetable
3.3 SmartCo Information System

In a way, the choice of designing and implementing an online information system from scratch was one-way and necessary solution. None of the ready-to-use tools could support the demands of the proposed activity (such as varying levels of privacy, sliders without numbers for rating and reconfigurable matching modules). For this reason the SmartCo Information System has been developed to support the PA activity with the use of mysql (database platform) and php (scripting language). The architecture of the system is the well-known client-server (client- the student’s web browser and server- the web-server that hosts the system). I did not implement the distributive architecture, as mentioned before, because it was out of the scope of this study. Emphasis was given in the matching representation data so as the system to be able to test and other matching algorithm for further experiments. Thus the matching script was executed and put the resulted pairs in the matching tables of the database. For the user interface emphasis was given to simplicity and to similar screens. Additionally, the user manual was created and was available and downloadable from the system (Appendix).

The students with the aid of SmarCo could:

- Signup in the system.
- Login in the system.
- Reserve a subject.
- Give online multiple-choice tests and retrieve their results.
- Submit his/her essay according to the current milestone (Figure 8).
- Choose an author (from the five) to review (Figure 9).
- Download author’s essay, rate it and provide feedback according to the criteria.
- Choose a reviewer (from the five) to review his/her comments (Figure 10).
- View and rate the usefulness of the reviewer’s comments (Figure 11).

![Figure 8. Essay submission](image-url)
Figure 9. Choosing an author-essay for reviewing

Figure 10. Choosing a reviewer for reviewing his comments
Figure 11. Downloading, rating and providing feedback

Figure 12. Viewing and rating reviewer’s feedback

It is obvious from the above that similar screens were used so as users not to be confused with the user interface.
3.3 Students’ Attitudes Towards PA

Several studies in the literature attempted to measure the students’ attitudes towards PA with different scopes, different methods, different samples and different PA methodologies. Most of these studies were oriented to the students acceptance of PA before the process, the students acceptance of PA and students acceptance of PA on line tool (Wen et al., 2006; AL-Smadi et al., 2010; Pombo et al., 2010; Venables et al., 2003; Raadt et al., 2008). More specifically Wen et al. (2006) measured the above factors with reliability (Cronbach’s alpha values of two groups of questions referring to the acceptance of PA and the acceptance of the online PA).

Taking into account the above studies and the SmartCo’s design issues a questionnaire (consisted of 50 questions) was created. The questionnaire can be found in the Appendix. Excluding items related to demographic data, all the other five-point Likert-scale items were designed to:

- Measure the acceptance of PA as a general concept.
- Measure the acceptance of the specific PA activity (including design issues and the SmartCo tool).
- Measure the possible difference in the PA acceptance before and after the activity.
- Measure the levels of reflection.
- Measure deterrent factors for participating in a PA activity.
- Measure the anonymity acceptance.
- Measure the degree of usefulness of peers’ feedback.
- Measure the degree of difficulty of reviewing.
- Measure the desire to participate in an inter-college PA activity.

Twenty students from the pre-mentioned sample participated in the survey (three were absent).
4 Results

4.1 Empirical Results
Most of the students participated in the process of PA actively. Table 7 proves their active participation.

<table>
<thead>
<tr>
<th></th>
<th>Essay Segments’ Submissions</th>
<th>Essay Segments’ Reviews</th>
<th>Feedbacks’ Reviews</th>
</tr>
</thead>
<tbody>
<tr>
<td>On Time</td>
<td>108</td>
<td>549</td>
<td>515</td>
</tr>
<tr>
<td>Delayed</td>
<td>6</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Not Completed</td>
<td>1</td>
<td>16</td>
<td>50</td>
</tr>
<tr>
<td>Total</td>
<td>115</td>
<td>575</td>
<td>575</td>
</tr>
</tbody>
</table>

Table 7. Students’ participation in SmartCo

In the collaborative framework of PA, students at their will decided or not to review a delayed submitted essay or delayed submitted feedback. Only one of them decided not to review a delayed essay. The number of not completed feedback is greater than that of not completed essay segments’ reviews because the second depends on the first (students could not rate a feedback that does not exist). About five students complained that the number of reviews for each milestone was too big (five) and time-consuming. That’s why the numbers of not completed essay segments’ reviews (0.9%) was greater than that of essay segments’ submissions (2.9%) at a percentage base. About two students on a regular base (all the milestones) provided the same feedback to the five authors with the “copy-paste” method and also they rated them with the same mark (usually 9 or 10). One student said that «...A party of students made a closed team on Facebook and announced their subjects with their names so as to overcome the anonymity barrier». Looking at the students’ ratings (mostly in the first milestone), there is a hint that a group of students tried to “overrate” each other but there is not a clear indication since this is not observed in other milestones. The phenomenon of the “No comments” feedback was observed for about 11% of the reviews. In the first milestone, a student mentioned that the system had a bug with storing the feedback. Although the system was tested for two weeks (after the report) no bug was found and the process continued normally without a problem. It was observed that all students in the first milestone had been awarded outstanding marks. This phenomenon did not continue because it was clarified to them that PA’s rating would not count for the official results. It is obvious from the results that very few marks are below 5. During the process of PA I replied
to 37 helpdesk e-mails relative with the process, the essay’s subject and mistakes. Although it seems as an administrative overload, most of the e-mails were sent at the start of the procedure and few of them in the end. A student stated that the procedure was very helpful while another one mentioned that emphasis should be given in training the students to assess correctly before the beginning of the process. Finally, a student (with high reviewing profile) reported, at milestone 4, that the algorithm had assigned him low-level essays, hint, that the algorithm adapted him, as a good resource, to students needing improvement.

4.2 SmartCo’s Results

In this part several methods were used (progress graphs, statistics tests) to prove the improvement of students’ performance using the peers’ ratings from all the milestones. The most worth-mentioned are presented.

![Descriptive Statistics Table](image)

**Table 8. Means of Authoring Grades for all milestones**

In Table 8 the mean values of Authoring Grades for each milestone are presented. Excluding milestone 1, there is a very small positive difference between the second and fifth milestone.

![Descriptive Statistics Table](image)

**Table 9. Means of Reviewing Grades for all milestones**
In Table 9 the mean values of Reviewing Grades for each milestone are presented. Excluding milestone 1 and milestone 5, there is a very small positive difference between the second and forth milestone.

### Table 10. Pairwise Comparison of the Means Values of Authoring Grades Using Repeated Measures ANOVA

#### Pairwise Comparisons

<table>
<thead>
<tr>
<th>Measure:MEASURE_1</th>
<th>Mean Difference (I-J)</th>
<th>Std. Error</th>
<th>Sig.</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
<th>95% Confidence Interval for Difference^a</th>
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<tbody>
<tr>
<td>(I)</td>
<td>(J)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>1</td>
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<td>1.000</td>
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</tr>
<tr>
<td>4</td>
<td>-2.39</td>
<td>1.833</td>
<td>1.000</td>
<td>-5.986</td>
<td>5.508</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>-1.508</td>
<td>1.676</td>
<td>1.000</td>
<td>-6.763</td>
<td>3.748</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>-2.557</td>
<td>2.261</td>
<td>1.000</td>
<td>-9.647</td>
<td>4.533</td>
</tr>
<tr>
<td>2</td>
<td>-.875</td>
<td>2.854</td>
<td>1.000</td>
<td>-9.823</td>
<td>8.073</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>-.239</td>
<td>1.833</td>
<td>1.000</td>
<td>-5.508</td>
<td>5.986</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>-1.269</td>
<td>1.978</td>
<td>1.000</td>
<td>-7.472</td>
<td>4.934</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>-1.288</td>
<td>1.845</td>
<td>1.000</td>
<td>-7.071</td>
<td>4.495</td>
</tr>
<tr>
<td>2</td>
<td>.394</td>
<td>2.676</td>
<td>1.000</td>
<td>-7.997</td>
<td>8.785</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1.508</td>
<td>1.676</td>
<td>1.000</td>
<td>-3.748</td>
<td>6.763</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>1.269</td>
<td>1.978</td>
<td>1.000</td>
<td>-4.934</td>
<td>7.472</td>
<td></td>
</tr>
</tbody>
</table>

Based on estimated marginal means

^a Adjustment for multiple comparisons: Bonferroni.
Pairwise comparison of the mean values of Authoring Grades is presented in Table 10. The differences (positive or negative) were not statistical significant. The same method was applied to the Reviewing Grades with same results.

<table>
<thead>
<tr>
<th>Correlations</th>
<th>Average Author Score</th>
<th>Average Reviewer Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Author Score</td>
<td>Pearson Correlation</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.807**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N</td>
</tr>
<tr>
<td></td>
<td></td>
<td>23</td>
</tr>
<tr>
<td>Average Reviewer Score</td>
<td>Pearson Correlation</td>
<td>.807**</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N</td>
</tr>
<tr>
<td></td>
<td></td>
<td>23</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.01 level (2-tailed).

**Table 11. Correlation between Author grades and Review grades**

The correlation between Authoring grades and Reviewing grades is presented in Table 10. The correlation is positive and statistically significant at the level of 0.01.

### 4.3 Students’ Attitude’s Results

In this part all the items were explored statistically. The most interesting results are presented.

Q6 and Q10 items were designed to measure the students’ attitudes’ before and after the SmartCo activity respectively.

<table>
<thead>
<tr>
<th>Descriptive Statistics</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q6</td>
<td>20</td>
<td>2.85</td>
<td>.988</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Q10</td>
<td>20</td>
<td>3.30</td>
<td>.979</td>
<td>1</td>
<td>5</td>
</tr>
</tbody>
</table>

**Table 12. Means of Q6 and Q10**

<table>
<thead>
<tr>
<th>Test Statistics(^b)</th>
<th>Q10 - Q6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z</td>
<td>-2.000*</td>
</tr>
<tr>
<td>Asymp. Sig. (2-tailed)</td>
<td>.046</td>
</tr>
</tbody>
</table>

\(^a\) Based on negative ranks.

\(^b\) Wilcoxon Signed Ranks Test

**Table 13. Wilcoxon compare means results**
Table 12 presents the means of Q6 and Q10. Because of lack of normality, Wilcoxon’s test (Table 13) was used and the result was significant at the 0.05 level. So the students’ attitude towards PA had positively changed after finishing the procedure.

Items Q10, Q13, Q14 and Q15 were designed to measure students’ acceptance of PA as general concept (after finishing the procedure) with reliability.

<table>
<thead>
<tr>
<th>Reliability Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cronbach’s Alpha</td>
</tr>
<tr>
<td>0.767</td>
</tr>
</tbody>
</table>

Table 13. Cronbach’s Alpha for Q10, Q13, Q14 and Q15

<table>
<thead>
<tr>
<th>Descriptive Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
</tr>
<tr>
<td>Acceptance of PA</td>
</tr>
<tr>
<td>Acceptance of SmartCo</td>
</tr>
</tbody>
</table>

Table 14. Summative Acceptance of PA

From Cronbach’s Alpha value 0.767 (>0.65) it is concluded that students answered in a reliable way and from the summative mean value 14.55 it is concluded that students accepted PA in a positive way.

Items Q12, Q39, Q40, Q41, Q42 and Q43 were designed to measure students’ acceptance of SmartCo as a tool (after finishing the procedure) with reliability. Students replied reliably with Cronbach’s Alpha value 0.783 (>0.65) and from the summative mean value 23.4, arises the conclusion that students accepted SmartCo tool in a positive way. No difference was found between genders but students under 25 seemed to have accepted more the SmartCo tool than others (Table 15).

<table>
<thead>
<tr>
<th>Age Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 25</td>
</tr>
<tr>
<td>Mean</td>
</tr>
</tbody>
</table>

| SmartCo Acceptance | 24.38 | 4.138 | 22.75 | 3.934 |

Table 15. SmartCo acceptance means categorized by Age Group
A significant correlation between the Acceptance of PA as general concept and the Acceptance of the SmartCo tool at 0.01 level, is evident (Table 16).

<table>
<thead>
<tr>
<th></th>
<th>Acceptance of PA</th>
<th>SmartCo Acceptance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceptance of PA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>1</td>
<td>.684***</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td></td>
<td>.001</td>
</tr>
<tr>
<td>N</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>SmartCo Acceptance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>.684***</td>
<td>1</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.001</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>20</td>
<td>20</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.01 level (2-tailed).

**TABLE 16. CORRELATION BETWEEN ACCEPTANCE OF PA AND SMARTCO ACCEPTANCE**

Items Q26, Q27, Q28 and Q29 were designed to measure the usefulness of peers’ feedback (after finishing the procedure) with reliability. Students replied reliably with Cronbach’s Alpha value 0.822 (>0.65) and from the summative mean value 14.7 it is concluded that students seemed to have taken a slight advantage of their peers’ feedback. The results were better for students under 25, and are presented in Figure 13.
Figure 13. Boxplot of usefulness of comments categorized by age groups

Items Q35, Q36, Q37 and Q38 were designed to measure the difficulty levels of students to rate and provide feedback (after finishing the procedure) with reliability. Students replied reliably with Cronbach’s Alpha value 0.87 (>0.65) and from the summative mean value 12.05, it is apparent that the results were neutral. Males (mean 13.9091 standard error 0.96723) seemed to have more difficulties than females (mean 9.7778 standard error 1.32054).

Item 25 was designed to measure the improvements of feedback through milestones. A significant difference at 0.05 level was found between students under 25 and students over 25, who believed that the comments showed an improvement from milestone to milestone.
Table 17 presents the mean and the std. deviation of some other items.

<table>
<thead>
<tr>
<th>Item</th>
<th>Design purpose</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q21</td>
<td>Reflection levels</td>
<td>3.90</td>
<td>0.968</td>
</tr>
<tr>
<td>Q33</td>
<td>Reflection levels</td>
<td>3.75</td>
<td>0.851</td>
</tr>
<tr>
<td>Q24</td>
<td>Reviewers’ anonymity</td>
<td>4.75</td>
<td>0.716</td>
</tr>
<tr>
<td>Q34</td>
<td>Writers’ anonymity</td>
<td>4.53</td>
<td>0.772</td>
</tr>
<tr>
<td>Q31</td>
<td>Objective reviewing</td>
<td>4.45</td>
<td>0.759</td>
</tr>
<tr>
<td>Q32</td>
<td>Slider’s objective character</td>
<td>3.3</td>
<td>1.174</td>
</tr>
<tr>
<td>Q48</td>
<td>Assessor’s training importance</td>
<td>3.79</td>
<td>0.855</td>
</tr>
<tr>
<td>Q50</td>
<td>Future participation in inter-college PA</td>
<td>3.75</td>
<td>0.967</td>
</tr>
<tr>
<td>Q22</td>
<td>Positively reviewing positive comments</td>
<td>4.00</td>
<td>0.795</td>
</tr>
<tr>
<td>Q23</td>
<td>Positively reviewing negative comments</td>
<td>4.00</td>
<td>0.795</td>
</tr>
<tr>
<td>Q17</td>
<td>Time as deterrent factor</td>
<td>3.95</td>
<td>0.999</td>
</tr>
<tr>
<td>Q18</td>
<td>Not beneficial comment as deterrent factor</td>
<td>3.05</td>
<td>1.099</td>
</tr>
<tr>
<td>Q19</td>
<td>Subjective reviewing as deterrent factor</td>
<td>3.05</td>
<td>1.395</td>
</tr>
<tr>
<td>Q16</td>
<td>Benefits against time requirements</td>
<td>3.00</td>
<td>0.918</td>
</tr>
<tr>
<td>Q20</td>
<td>PA as formal assessment</td>
<td>3.00</td>
<td>1.124</td>
</tr>
</tbody>
</table>

**Table 17.** Mean and Std. Deviations of various items

From Table 17 is evident that students agree with the anonymity design factor. Likewise, they share the belief that time is the most deterrent factor. According to students answers it seems that sliders’ metaphor is neutral in relation with objectiveness. A sufficient percentage of students are willing to participate in a future inter-college PA. Students rate positively both negative and positive comments.

## 5 Conclusions and Further Extensions

Throughout this thesis the basic background, the design issues of peer assessment have been described. Simultaneously, a brief review of the studies that examined adaption in PA took place. Examining the literature, I reached the conclusion that only few studies focus on the adaptive matching of authors-reviewers and they used quite different matching criteria and different matching algorithms. Moreover, most of the PA experiments were performed from students from the same college-university and the same course and year. What's more, the vast majority of PA experiments refer to higher-education students and not to secondary education ones. Numerous studies implied that the correctness of peers’ marks
is affected by interpersonal relationships such as friendship-enmity and few studies proposed methods for peers’ grade correction and calibration. The vast majority of studies reported the concept of a learner profile and most of them in a quite different way.

I assumed that an inter-college approach of PA could reduce interpersonal bias and could promote the exchange of ideas. For this reason I proposed an adaptive-distributive algorithm for the matching of authors-reviewers. In order to test this algorithm a group of students from blended background but from the same course was chosen. The results from the SmartCo information system do not show a significant difference, negative or positive, in students’ performance (authoring and reviewing). At this point it must be mentioned that the peers’ grades have not been correlated with expert’s grades yet, although this is done in the majority of studies. Hence it is not sure if and to what extent their grades are reliable. At this point it is vital to mention that testing the algorithm would be more reliable, if students’ progress from milestone 2 to milestone 5, could be measured by an expert. These actions will be taken and presented in a later study. The positive and significant correlation between the authoring and reviewing profiles (reflection phenomenon), which is mentioned in the literature, proves that the whole activity resembles with other PA activities and although they may overrated their peers they almost kept the spirit of justice. From the empirical results, the fact that the authoring mean from milestone 5 was slightly higher than that of milestone 2 and the questionnaire results (item referred to feedback improvement through milestones) maybe there is a hint but not a clear indication that the algorithm adapted to their authoring needs.

The results from the questionnaire were more promising. Students change their attitudes towards peer assessment positively after they completed the process. It was proved reliably that they accepted PA as a concept and they accepted the PA SmartCo tool as well. A positive and significant correlation was proved between the acceptance of PA as a concept and the SmartCo acceptance. It is concluded that proper design of the learning activity, custom tool oriented to the needs of an activity with simple user-interface, clear written instructions and direct support are required so as students to accept a peer assessment activity. It must be mentioned that although high administration load was required in the beginning of the process it was reduced during the process. Fact that proves, that students become more familiar with the PA activity. Judging from the results, student under the age of 25 accepted more the SmartCo tool possibly due to the fact that the youth is more familiar with technology. Furthermore, from the results is apparent that students under the age of 25 reclaimed the peers’ feedback more than others. Fact that hints, that older students were more critical to peers’ feedback. Males seemed to have difficulties in reviewing compared
with females. From the other results I concluded that the slider’s metaphor did not accomplish his mission, students despite the empirical results, seemed to agree with the anonymity factor (conflict with the empirical results). I believe that there was a hysteresis for the students to adapt and accept the whole process. They needed time to understand the benefits of peer assessment.

In a novel field such as Peer Assessment several challenges emerge that need further investigation. Having conducted this thesis I believe that the most important extensions are:

- A generic-learning profile model must be invented so as a common frame of reference to be created.
- Generic matching criteria for PA must be invented so as a common frame of reference to be created and adaption algorithms to be compared.
- Learning profiles data protocols must be invented so as learning data to be transferred with a distributive way.
- PA experiments should be conducted to secondary education.
- The proposed algorithm (and others with distributive character) must be tested with a sample from many colleges and nations.
- Emphasis must be given to the correction of peers’ grade. Smart algorithms that detects and corrects the phenomena of “copy-paste”, of “same comments-grades to all authors” and of “lobbying” must me invented.
- Emphasis must be given to the pre-training phase. Students need to be trained as assessors before they start the PA activity.
- A new grading metaphor tool needs to be invented so as students all around the word to be able to judge others objectively.
6 References


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Wilmington University, “Criteria for Judging Good Writing”.

Available at: http://www.wilmu.edu/learningresources/documents/criteriaforjudgingwriting.pdf


Yang, Y.-F., and Tsai, C.-C. (2009), “Conceptions of and approaches to learning through online peer assessment”, *Learning and Instruction*. Vol. 20, Issue 1, 72-83.
7 APPENDIX
Παραδοτέα Milestones – Κριτήρια αξιολόγησης

Milestone 1 (4/11/2012)

Δομή-Περιεχόμενα.

Για αυτό το Milestone πρέπει αρχικά να ερευνήσετε την σχετική βιβλιογραφία. Πρέπει να παραδώσετε την δομή-περιεχόμενα της εργασίας σας. Αφού δώσετε τον δικό σας τίτλο στην εργασία, θα κάνετε το εξώφυλλο και τα περιεχόμενα. Όσον αφορά τις ενότητες του κυρίου μέρους της εργασίας, θα γράψετε μια περίληψη (1-2 παράγραφοι) για κάθε ενότητα. Η περίληψη θα αναφέρεται στο τι πραγματεύεται η κάθε ενότητα (χωρίς βιβλιογραφικές αναφορές). Οι περιλήψεις αυτές δεν είναι δεσμευτικές για την τελική μορφή της εργασίας σας.

Το Milestone 1 θα βαθμολογηθεί με τα παρακάτω κριτήρια:

1. Κατανοητό περιεχόμενο.

Σύμφωνα με αυτό το κριτήριο, αξιολογείτε το πόσο εύκολα διαβάζεται η εργασία και το πόσο κατανοητή είναι σε εσάς. Προς διευκόλυνσή σας δίνονται τα παρακάτω υπο-κριτήρια.

- Χρήση ορθού λεξιλογίου και σύνταξης.
- Μη χρήση κουραστικών μακροσκελών προτάσεων.
- Ακρίβεια και επάρκεια στην χρήση της γλώσσας.
- Σαφήνεια διατύπωσης του θέματος προς διερεύνηση.

2. Οργάνωση περιεχομένου

Σύμφωνα με το αυτό το κριτήριο, ελέγχετε το κατά πόσο καλά έχει δομηθεί οργανωθεί η εργασία. Προς διευκόλυνσή σας δίνονται τα παρακάτω υπο-κριτήρια.

- Ενότητα περιεχομένου.
- Συνοχή.
- Σαφήνεια δομής του θέματος.
Milestone 2 (11/11/2012)

Εισαγωγή.

Για αυτό το Milestone πρέπει να παραδώσετε την εισαγωγή & παρουσίαση θέματός της εργασίας σας και την βιβλιογραφία που χρησιμοποιείτε σε αυτό το κομμάτι.

Το Milestone 2 θα βαθμολογηθεί με τα παρακάτω κριτήρια:

1. Κατανοητό περιεχόμενο.

Σύμφωνα με αυτό το κριτήριο, αξιολογείτε το πόσο εύκολα διαβάζεται η εργασία και το πόσο κατανοητή είναι σε εσάς. Προς διευκόλυνσή σας δίνονται τα παρακάτω υποκριτήρια.

- Χρήση ορθού λεξιλογίου και σύνταξης.
- Μη χρήση κουραστικών μακροσκελών προτάσεων.
- Ακρίβεια και επάρκεια στην χρήση της γλώσσας.
- Ορθή και εύστοχη χρήση πινάκων-διαγραμμάτων-σχημάτων

2. Οργάνωση περιεχομένου

Σύμφωνα με το αυτό το κριτήριο, ελέγχετε το κατά πόσο καλά έχει δομηθεί-οργανωθεί η εργασία. Προς διευκόλυνσή σας δίνονται τα παρακάτω υποκριτήρια.

- Ενότητα περιεχομένου.
- Συνοχή.
- Αλληλουχία ιδεών-υποενότητων.

3. Ανάλυση – Χρήση βιβλιογραφίας.

Σύμφωνα με αυτό το κριτήριο, ελέγχετε το πόσο καλά χρησιμοποιείται και αναλύεται η σχετική βιβλιογραφία. Προς διευκόλυνσή σας δίνονται τα παρακάτω υποκριτήρια.
• Εύρος βιβλιογραφικών αναφορών.
• Ορθή εφαρμογή του APA Style.
• Αξιοποίηση βιβλιογραφικής επισκόπησης στο αναλυόμενο θέμα.

4. Επιστημονικό Επίπεδο.
Σύμφωνα με αυτό το κριτήριο, αξιολογείτε το επιστημονικό επίπεδο που παρουσιάζει η εργασία. Προς διευκόλυνσή σας δίνονται τα παρακάτω υποκριτήρια.

• Πληρότητα κάλυψης θέματος.
• Επιστημονική σκέψη και κατανόηση

Milestone 3 (25/11/2012)

Κύριο μέρος Α
Για αυτό το Milestone πρέπει να παραδώσετε το πρώτο κομμάτι από το κύριο μέρος της εργασίας σας και την βιβλιογραφία που χρησιμοποιείτε σε αυτό.

Το Milestone 3 θα βαθμολογηθεί με τα παρακάτω κριτήρια:

1. Κατανοητό περιεχόμενο.
Σύμφωνα με αυτό το κριτήριο, αξιολογείτε το πόσο εύκολα διαβάζεται η εργασία και το πόσο κατανοητή είναι σε εσάς. Προς διευκόλυνσή σας δίνονται τα παρακάτω υποκριτήρια.

• Χρήση ορθού λεξιλογίου και σύνταξης.
• Μη χρήση κουραστικών μακροσκελών προτάσεων.
• Ακρίβεια και επάρκεια στην χρήση της γλώσσας.
• Ορθή και εύστοχη χρήση πινάκων-διαγραμμάτων-σχημάτων

2. Οργάνωση περιεχομένου
Σύμφωνα με το αυτό το κριτήριο, ελέγχετε το κατά πόσο καλά έχει δομηθεί-οργανωθεί η εργασία. Προς διευκόλυνσή σας δίνονται τα παρακάτω υπο-κριτήρια.

- Ενότητα περιεχομένου.
- Συνοχή.
- Αλληλουχία ιδεών-υποενότητων.

3. Ανάλυση – Χρήση βιβλιογραφίας.

Σύμφωνα με αυτό το κριτήριο, ελέγχετε το πόσο καλά χρησιμοποιείται και αναλύεται η σχετική βιβλιογραφία. Προς διευκόλυνσή σας δίνονται τα παρακάτω υποκριτήρια.

- Εύρος βιβλιογραφικών αναφορών.
- Ορθή εφαρμογή του APA Style.
- Αξιοποίηση βιβλιογραφικής επισκόπησης στο αναλυόμενο θέμα.

4. Επιστημονικό Επίπεδο.

Σύμφωνα με αυτό το κριτήριο, αξιολογείτε το επιστημονικό επίπεδο που παρουσιάζει η εργασία. Προς διευκόλυνσή σας δίνονται τα παρακάτω υποκριτήρια.

- Πληρότητα κάλυψης θέματος.
- Επιστημονική σκέψη και κατανόηση.

Milestone 4 (09/12/2012)

Κύριο Μέρος Β

Για αυτό το Milestone πρέπει να παραδώσετε το δεύτερο κομμάτι από το κύριο μέρος της εργασίας σας και την βιβλιογραφία που χρησιμοποιείτε σε αυτό.

Το Milestone 3 θα βαθμολογηθεί με τα παρακάτω κριτήρια:
1. Κατανοητό περιεχόμενο.
Σύμφωνα με αυτό το κριτήριο, αξιολογείτε το πόσο εύκολα διαβάζεται η εργασία και το πόσο κατανοητή είναι σε εσάς. Προς διευκόλυνσή σας δίνονται τα παρακάτω υπο-κριτήρια.

- Χρήση ορθού λεξιλογίου και σύνταξης.
- Μη χρήση κουραστικών μακροσκελών προτάσεων.
- Ακρίβεια και επάρκεια στην χρήση της γλώσσας.
- Ορθή και εύστοχη χρήση πινάκων-διαγραμμάτων-σχημάτων

2. Οργάνωση περιεχομένου
Σύμφωνα με το αυτό το κριτήριο, ελέγχετε το κατά πόσο καλά έχει δομηθεί-οργανωθεί η εργασία. Προς διευκόλυνσή σας δίνονται τα παρακάτω υπο-κριτήρια.

- Ενότητα περιεχομένου.
- Συνοχή.
- Αλληλουχία ιδεών-υποενότητων.

3. Ανάλυση – Χρήση βιβλιογραφίας.
Σύμφωνα με αυτό το κριτήριο, ελέγχετε το πόσο καλά χρησιμοποιείται και αναλύεται η σχετική βιβλιογραφία. Προς διευκόλυνσή σας δίνονται τα παρακάτω υπο-κριτήρια.

- Εύρος βιβλιογραφικών αναφορών.
- Ορθή εφαρμογή του APA Style.
- Αξιοποίηση βιβλιογραφικής επισκόπησης στο αναλυόμενο θέμα.
4. Επιστημονικό Επίπεδο.

Σύμφωνα με αυτό το κριτήριο, αξιολογείτε το επιστημονικό επίπεδο που παρουσιάζει η εργασία. Προς διευκόλυνσή σας δίνονται τα παρακάτω υποκριτήρια.

- Πληρότητα κάλυψης θέματος.
- Επιστημονική σκέψη και κατανόηση.

Milestone 5 (16/12/2012)

Περίληψη-Συμπεράσματα-Προτάσεις

Για αυτό το Milestone πρέπει να παραδώσετε την περίληψη, τα συμπεράσματα και τις προτάσεις για μελλοντική έρευνα.

Το Milestone 3 θα βαθμολογηθεί με τα παρακάτω κριτήρια:

1. Κατανοητό περιεχόμενο.

Σύμφωνα με αυτό το κριτήριο, αξιολογείτε το πόσο εύκολα διαβάζεται η εργασία και το πόσο κατανοητή είναι σε εσάς. Προς διευκόλυνσή σας δίνονται τα παρακάτω υποκριτήρια.

- Χρήση ορθού λεξιλογίου και σύνταξης.
- Μη χρήση κουραστικών μακροσκελών προτάσεων.
- Ακρίβεια και επάρκεια στην χρήση της γλώσσας.

2. Οργάνωση περιεχομένου

Σύμφωνα με το αυτό το κριτήριο, ελέγχετε το κατά πόσο καλά έχει δομηθεί-οργανωθεί η εργασία. Προς διευκόλυνσή σας δίνονται τα παρακάτω υποκριτήρια.

- Ενότητα περιεχομένου.
- Συνοχή.
- Ικανότητα περιληπτικής παρουσίασης.
3. Επιστημονικό Επίπεδο.

Σύμφωνα με αυτό το κριτήριο, αξιολογείτε το επιστημονικό επίπεδο που παρουσιάζει η εργασία. Προς διευκόλυνση σας δίνονται τα παρακάτω υποκριτήρια.

- Πληρότητα κάλυψης θέματος.
- Επιστημονική σκέψη και κατανόηση.
- Σύγκριση συμπερασμάτων με την αντίστοιχη βιβλιογραφία.
- Ποιότητα και καινοτομία προτάσεων σε σχέση με το θέμα.

Παρατηρήσεις

1. Την μορφοποίηση που ζητεί το APA Style μπορείτε εάν το επιθυμείτε, να την κάνετε στο τέλος.

2. Το υπο-κριτήριο «αξιοποίηση βιβλιογραφικής επισκόπησης στο αναλυόμενο θέμα» αναφέρετε στο πως χρησιμοποιείτε και συνδυάζετε διαφορετικές πηγές για να υποστηρίξετε αυτά που γράφετε. Για παράδειγμα, σύμφωνα με την πηγή 1 ισχύει το Α γεγονός που επιβεβαιώνεται και από την πηγή 2. Παρόλα αυτά η πηγή 3 εισάγει νέα δεδομένα στον εν λόγω τομέα για αυτό και η επιστημονική έρευνα ακολουθεί αυτήν την διαφοροποιημένη κατεύθυνση.

Το παραπάνω παράδειγμα δεν είναι δεσμευτικό, απλά αποτελεί μια ένδειξη για το πώς μπορείτε να συνδυάσετε και να αναλύσετε την βιβλιογραφία.

3. Από τους υπολογιστές του εργαστηρίου MIS έχετε πρόσβαση σε πρόσβαση σε επιστημονικά άρθρα. Αν θέλετε να αποκτήσετε πρόσβαση και από άλλους υπολογιστές εκτός πανεπιστημίου μπορείτε να ακολουθήσετε τις οδηγίες του παρακάτω συνδέσμου.

http://www.lib.uom.gr/content/blogcategory/83/67/lang.iso8859-7/
ΤΕΣΤ 2

1. Τα βασικά στοιχεία του Δικτύου Η/Υ είναι:
   - Καλώδιο-Κάρτα Δικτύου-Switch-Router
   - Μήνυμα-Σταθμός-Μέσο-Πρωτόκολλο
   - Αναμεταδότης-Οπτική ίνα-Internet
   - TCP-IP-OSI-UDP

2. Η απόδοση ενός δικτύου εξαρτάται από:
   - Το πόσο εύκολα επεκτείνεται.
   - Ασφάλεια-Αναβαθμισιμότητα-Αξιοπιστία
   - Ακρίβεια παράδοσης-Αξιοπιστία-Ταχύτητα Παράδοσης
   - Ταχύτητα επεξεργασίας-Πρωτόκολλα

3. Ανάλογα με την γεωγραφική τους κατανομή τα δίκτυα δεδομένων χωρίζονται σε:
   - FDDI-Frame Relay-ISDN
   - ISDN-ADSL-ATM
   - LAN-MAN-WAN
   - CAN-BAN-BSN

4. Η αξιοπιστία εξαρτάται από το πόσο επιρρεπές είναι ένα σύστημα σε καταστροφές και σε σφάλματα.
   - Σωστό
   - Λάθος

5. Το ακρωνύμιο ISO σημαίνει:
   - Internet Standards Organization
   - International Organization for Standardization
   - Internet System Operation
   - International Open Standards

6. Τα πρότυπα de facto αναπτύσσονται από επίσημους φορείς σε επίσημα επιστημονικά γεγονότα (facts).
   - Σωστό
   - Λάθος

7. Ποια είναι η σωστή σειρά των επίπεδων στο OSI;
• Φυσικό - Σύνδεση δεδομένων - Μεταφοράς-Δικτύου –Συνόδου – Παρουσίασης- Εφαρμογών.
• Φυσικό - Σύνδεση δεδομένων -Δικτύου – Συνόδου - Μεταφοράς – Παρουσίασης- Εφαρμογών.
• Φυσικό - Σύνδεση δεδομένων -Δικτύου – Μεταφοράς –Συνόδου –Παρουσίασης- Εφαρμογών

8. Στο επίπεδο δικτύου επιλέγεται η διαδρομή που θα ακολουθήσει το πακέτο (δρομολόγηση).
• Σωστό
• Λάθος

9. Στην αρχιτεκτονική πελάτης-εξυπηρετητής οι όροι αναφέρονται:
• Στο πρόγραμμα που χρησιμοποιεί ο κάθε σταθμός
• Στους ίδιους τους σταθμούς

10. Οι διευθύνσεις στο επίπεδο δικτύου είναι μοναδικές για έναν συγκεκριμένο υπολογιστή και δεσμεύονται και μετά την λήξη της επικοινωνίας.
• Σωστό
• Λάθος

11. Εάν θα θέλατε να μεταφέρете μεγάλο όγκο δεδομένων χωρίς ιδιαίτερες απαιτήσεις σε αξιοπιστία, ποιο πρωτόκολλο θα επιλέγατε;
• UDP
• TCP

12. Η διεύθυνση IP που έχει ένας Η/Υ είναι μοναδική σε όλο το δίκτυο που ανήκει.
• Σωστό
• Λάθος

13. Οι δικτυακές τεχνολογίες θα πρέπει:
• Να ενσωματώνονται κατά περίπτωση.
• Να ενσωματώνονται περιστασιακά.
• Να αποτελούν στρατηγικό κομμάτι της επιχείρησης.

14. Κατά την αναδιοργάνωση λειτουργιών σε μια εταιρεία
• Γίνεται ο εταίρικος ανασχηματισμός και έπεται η εισαγωγή της τεχνολογίας.
• Ο εταιρικός ανασχηματισμός και η εισαγωγή της τεχνολογίας γίνονται παράλληλα και ταυτόχρονα.
• Γίνεται η εισαγωγή της τεχνολογίας και έπεται ο εταιρικός ανασχηματισμός.

**Ολα τα παραπάνω είναι πιθανά.**

15. Η λήψη δύο όμοιων μηνυμάτων στον παραλήπτη οφείλεται σε απώλεια του μηνύματος επιβεβαίωσης.

- Σωστό
- Λάθος
ΤΕΣΤ 3

16. Στα καθοδηγούμενα (guided) μέσα μετάδοσης δεν ανήκουν οι οπτικές ίνες:
   - Σωστό
   - Λάθος

17. Στην κατηγορία 4 του συνεστραμμένου ζεύγους καλωδίου η ταχύτητα μετάδοσης δεδομένων μπορεί να φτάσει μέχρι:
   - 4 Mbps
   - 10 Mbps
   - 16 Mbps
   - 100 Mbps

18. Τα είδη ομοαξονικού καλωδίου είναι:
   - RG-9, RG-10, RG-11, RG-100
   - RG-8, RG-9, RG-11, RG-58, RG-59
   - RG-8, RG-9, RG-11, RG-60, RG-80
   - RG-4, RG-8, RG16, RG-100

19. Όσο μικρότερη έλεγχος της οπτικής ίνας τόσο μεγαλύτερη είναι και η απόσβεση του σήματος:
   - Σωστό
   - Λάθος

20. Ποιο από τα παρακάτω δεν αποτελεί πλεονέκτημα των οπτικών ινών:
   - Εύρος ζώνης
   - Διασύνδεση
   - Παροχή ασφάλειας
   - Αντίσταση στον θόρυβο

21. Η παράλληλη μετάδοση δεδομένων χρησιμοποιείται κυρίως σε μεγάλες αποστάσεις:
   - Σωστό
   - Λάθος
22. Ποια από τις παρακάτω τεχνικές δεν αποτελεί τεχνική πολυπλεξίας;
   • TDM.
   • FDM
   • WDM
   • PCM

23. Στην αντίστροφη πολυπλεξία τα δεδομένα από μια γραμμή διανέμονται σε n γραμμές.
   • Σωστό
   • Λάθος

24. Τι από τα παρακάτω ισχύει στην σύγχρονη μετάδοση:
   • Απαιτείται συντονισμός μεταξύ αποστολέα και παραλήπτη.
   • Υπάρχουν κανόνες επικοινωνίας.
   • Υπάρχουν bit εκκίνησης και τερματισμού.
   • Όλα τα παραπάνω.

25. Κατά την ημιαμφίδρομη (Halfduplex) κατεύθυνση πληροφορίας
   • Ο κάθε σταθμός μπορεί να παραλαμβάνει και να στέλνει πληροφορία ταυτόχρονα.
   • Μόνο ο ένας σταθμός κάθε φορά μπορεί να στείλει πληροφορία.
   • Ο κάθε σταθμός έχει διακριτό ρόλο (μόνο πομπός ή δέκτης).
   • Τίποτα από τα παραπάνω

26. Ποια από τα παρακάτω δεν αποτελεί αρμοδιότητα του επιπέδου σύνδεσης δεδομένων;
   • Μεταφορά hop-to-hop
   • Διευθυνσιοδότηση
   • Έλεγχος πρόσβασης μέσου
   • Δρομολόγηση

27. Η δημιουργία πακέτων στο επίπεδο σύνδεσης δεδομένων ονομάζεται.
   • Πακετοποίηση (Packing)
   • Πλαισιοποίηση (Framing)
   • Τμηματοποίηση (Segmentation)

28. Η διεύθυνση στο επίπεδο σύνδεσης δεδομένων ονομάζεται.
   • E-mail address.
   • IP address
• MAC address.
• Τίποτα από τα παραπάνω.

29. Ποια από τα παρακάτω αποτελούν είδη σφαλμάτων;
• Σφάλμα ενός ψηφίου
• Σφάλμα πολλαπλών στοιχείων.
• Όλα τα παραπάνω.

30. Σύμφωνα με το CSMA/CD
• Δεν γίνεται ανίχνευση συγκρούσεων
• Γίνεται ανίχνευση συγκρούσεων.
• Γίνεται ανίχνευση και αποφυγή συγκρούσεων.
• Τίποτα από τα παραπάνω.

31. Ποιο από τα παρακάτω δεν αποτελεί αρμοδιότητα του επιπέδου δικτύου;
• Δρομολόγηση
• Κατακερματισμός
• Εντοπισμός σφαλμάτων
• Δημιουργία πακέτων

32. Οι διευθύνσεις στο επίπεδο δικτύου πρέπει να είναι:
• Εξαρτημένες από το υλικό διασύνδεσης δικτύου
• Μοναδικές για κάθε δικτυακή εφαρμογή
• Μοναδικές και καθολικές
• Όλα τα παραπάνω

33. Σύμφωνα με το CSMA/CA.
• Δεν γίνεται ανίχνευση συγκρούσεων
• Γίνεται ανίχνευση συγκρούσεων.
• Γίνεται ανίχνευση και αποφυγή συγκρούσεων.
• Τίποτα από τα παραπάνω.

34. Ποια πρέπει να είναι η μάσκα δικτύου, για ένα δίκτυο με διευθύνσεις τριών επιπέδων (class C), έτσι ώστε να συνδέονται τουλάχιστον 10 Η/Υ;
• 255.255.255.240
• 255.255.255.248
35. Κατά το πρωτόκολλο δρομολόγησης OSPF (Open Shortest Path First) η ανταλλαγή πληροφοριών με την διαδικασία flooding
   - Γίνεται ανά τακτά χρονικά διαστήματα.
   - Γίνεται όταν υπάρχει αλλαγή στο δίκτυο.
   - Όλα τα παραπάνω ανάλογα την περίπτωση.
   - Τίποτα από τα παραπάνω.

36. Η παροχή αξιόπιστης υπηρεσίας αποτελεί αρμοδιότητα του επιπέδου μεταφοράς.
   - Σωστό.
   - Λάθος.

37. Στο επίπεδο μεταφοράς, κατά την δημιουργία πακέτων
   - Γίνεται προσθήκη επικεφαλίδας
   - Γίνεται τμηματοποίηση μεγάλων μηνυμάτων.
   - Όλα τα παραπάνω.

38. Εάν θα θέλατε να μεταφέρετε μεγάλο όγκο δεδομένων χωρίς ιδιαίτερες απαιτήσεις σε αξιοπιστία, ποιο πρωτόκολλο θα επιλέγατε;
   - UDP
   - TCP

39. Η διεύθυνση στο επίπεδο μεταφοράς ονομάζεται;
   - Αριθμός Θύρας (port number)
   - IP address
   - Mac Address
   - Τίποτα από τα παραπάνω
40. Κατά το πρωτόκολλο UDP, σε περίπτωση που ο αποστολέας παραλάβει εσφαλμένο πακέτο το απορρίπτει και ενημερώνει τον αποστολέα.
- Σωστό
- Λάθος

41. Το επίπεδο εφαρμογών είναι το πιο κοντινό στο χρήστη.
- Σωστό
- Λάθος

42. Η διεύθυνση στο επίπεδο εφαρμογών
- Ονομάζεται IP address
- Ονομάζεται Port Number
- Ονομάζεται Mac Address
- Καθορίζεται από την εφαρμογή

43. Ποιο από τα παρακάτω αποτελεί πρωτόκολλο πρόσβασης ηλεκτρονικού ταχυδρομείου;
- POP3
- MTA
- SMTP
- MIME

44. Ο παγκόσμιος ιστός ακολουθεί την αρχιτεκτονική client-server.
- Σωστό
- Λάθος

45. Στο TFTP υπάρχει η σύνδεση ελέγχου και η σύνδεση μεταφοράς δεδομένων.
- Σωστό
- Λάθος

46. Τα επίπεδα του μοντέλου OSI συμπίπτουν με τα επίπεδα του μοντέλου Internet.
- Σωστό
- Λάθος

47. Ποια είναι η σωστή σειρά των επιπέδων στο OSI;
Φυσικό - Σύνδεση δεδομένων - Μεταφοράς - Δικτύου - Συνόδου - Εφαρμογών.
Φυσικό - Σύνδεση δεδομένων - Μεταφοράς - Δικτύου - Παρουσίασης - Συνόδου - Εφαρμογών.
Φυσικό - Σύνδεση δεδομένων - Δικτύου - Συνόδου - Μεταφοράς - Παρουσίασης - Εφαρμογών.

48. Ποιο από τα παρακάτω δεν αποτελεί κριτήριο αξιολόγησης δικτύων;
- Απόδοση
- Κόστος
- Προσαρμογή
- Ασφάλεια

49. Τα βασικά στοιχεία του Δικτύου Η/Υ είναι:
- Καλώδιο - Κάρτα Δικτύου - Switch - Router
- Μήνυμα - Σταθμός - Μέσο - Πρωτόκολλο
- Αναμεταδότης - Οπτική ίνα - Internet
- TCP - IP - OSI - UDP

50. Ανάλογα με την γεωγραφική τους κατανομή τα δίκτυα δεδομένων χωρίζονται σε:
- FDDI - Frame Relay - ISDN
- ISDN - ADSL - ATM
- LAN - MAN - WAN
- CAN - BAN - BSN

51. Η αξιοπιστία εξαρτάται από το πόσο επιρρεπές είναι ένα σύστημα σε καταστροφές και σε σφάλματα.
- Σωστό
- Λάθος

52. Το ακρωνύμιο ISO σημαίνει:
- Internet Standards Organization
- International Organization for Standardization
- Internet System Operation
- International Open Standards
53. Τα πρότυπα de Jure προκύπτουν μετά από δικαστικές διαμάχες εταιρειών υψηλής τεχνολογίας.

- Σωστό
- Λάθος

54. Οι δικτυακές τεχνολογίες θα πρέπει:

- Να ενσωματώνονται κατά περίπτωση.
- Να ενσωματώνονται περιστασιακά.
- Να αποτελούν στρατηγικό κομμάτι της επιχείρησης.

55. Κατά την αναδιοργάνωση λειτουργιών σε μια εταιρεία

- Γίνεται ο εταιρικός ανασχηματισμός και έπεται η εισαγωγή της τεχνολογίας.
- Ο εταιρικός ανασχηματισμός και η εισαγωγή της τεχνολογίας γίνονται παράλληλα και ταυτόχρονα.
- Γίνεται η εισαγωγή της τεχνολογίας και έπεται ο εταιρικός ανασχηματισμός.
- Όλα τα παραπάνω είναι πιθανά.
Οδηγίες Χρήσης Πλατφόρμας SmartCo

Υποβολή Εργασίας

Για να υποβάλλετε την εργασία σας κάνετε είσοδο στο πληροφοριακό σύστημα. Επιλέγοντας ΟΙ ΕΡΓΑΣΙΕΣ ΜΟΥ --> MILESTONE 1 εμφανίζεται η οθόνη που φαίνεται στο Σχήμα 1.

Σχήμα 1.

Πατώντας Επιλογή Αρχείου επιλέγετε το αρχείο της εργασίας σας. Κατόπιν πατάτε Υποβολή για να ανεβάσετε το αρχείο στον WEB SERVER. Μπορείτε να υποβάλλετε πολλές φορές την εργασία σας, αλλά το σύστημα αποθηκεύει το αρχείο που υποβάλλατε την τελευταία φορά. Δεν πρέπει το όνομα σας να φαίνεται μέσα στο κείμενο της εργασίας σας (κανόνας κρίσης για δημοσιεύσεις σε πολλά περιοδικά και συνέδρια).

Προσοχή. Λόγω ότι η εφαρμογή βρίσκεται σε πιλοτική χρήση και επειδή πρέπει να γίνουν ρυθμίσεις στον WEB SERVER για αυτήν την λειτουργία, την
εργασία σας για το Milestone 1 θα την στείλετε με e-mail στο staurid@gmail.com, αναφέροντας στο κείμενο του e-mail το ονοματεπώνυμό σας. Όταν θα ενεργοποιηθεί η παραπάνω λειτουργία θα ενημερωθείτε σχετικά για να την χρησιμοποιήσετε.

Αξιολόγηση Εργασιών

Για να αξιολογήσετε τις εργασίες άλλων συναδέλφων, αφού κάνετε είσοδο στο σύστημα, επιλέγετε ΟΙ ΑΞΙΟΛΟΓΗΣΕΙΣ ΜΟΥ → MILESTONE 1 και εμφανίζεται η οθόνη που φαίνεται στο Σχήμα 2.

Σχήμα 2.

Η ροζ μπάρα δείχνει την πρόοδο της διαδικασίας αξιολόγησης. Εάν εμφανίζεται το μήνυμα «Έγινε» σημαίνει ότι έχετε αξιολογήσει την αντίστοιχη εργασία ενώ αν εμφανίζεται το μήνυμα «εκκρεμεί» σημαίνει πως δεν την έχετε αξιολογήσει. Μπορείτε πολλές φορές να αξιολογήσετε μια εργασία μέχρι το deadline του Milestone, αποθηκεύοντας όμως τα δεδομένα της τελευταίας φοράς. Πατώντας ΑΞΙΟΛΟΓΗΣΗ πηγαίνετε στην οθόνη αξιολόγησης της αντίστοιχης εργασίας Σχήμα 3.
Πατώντας Εργασία X (Όπου X ο αριθμός της εργασίας) κατεβάζετε την αντίστοιχη εργασία. Αφού την κατεβάσετε καλό θα ήταν να την μετονομάσετε ανάλογα (το σύστημα δίνει τυχαία ονόματα στα αρχεία). Βαθμολογείτε την εργασία σε κάθε κριτήριο χρησιμοποιώντας την μπάρα κύλισης. Όπως θα καταλάβετε, η μπάρα κύλισης δεν έχει μόνο τις 3 διαβαθμίσεις που φαίνονται, αλλά παραπάνω. Καλό θα είναι να τις εκμεταλλευτείτε. Εισάγετε τα σχόλια βελτίωσης για κάθε κριτήριο και πατάτε Αποθήκευση. Για να επιστρέψετε σε προηγούμενα μενού επιλέξτε τους σχετικούς συνδέσμους στο κάτω μέρος της οθόνης.

Αξιολόγηση Κριτών
Για να αξιολογήσετε τα σχόλια βελτίωσης των κριτών, αφού κάνετε είσοδο στο σύστημα, επιλέξτε ΟΙ ΕΡΓΑΣΙΕΣ ΜΟΥ → MILESTONE 1 και εμφανίζεται η οθόνη που φαίνεται στο Σχήμα 4.
Σχήμα 4.
Η ροζ μπάρα δείχνει την πρόοδο της διαδικασίας αξιολόγησης κριτών. Εάν εμφανίζεται το μήνυμα «Έγινε» σημαίνει ότι έχετε αξιολογήσει τον αντίστοιχο κριτή ενώ αν εμφανίζεται το μήνυμα «εκκρεμεί» σημαίνει πως δεν τον έχετε αξιολογήσει. Μπορείτε πολλές φορές να αξιολογήσετε ένα κριτή μέχρι το deadline του Milestone, αποθηκεύοντας όμως τα δεδομένα της τελευταίας φοράς. Πατώντας Αξιολόγηση πηγαίνετε στην οθόνη αξιολόγησης του αντίστοιχου κριτή Σχήμα 5.

Σχήμα 5.
Βαθμολογείτε τα σχόλια σε κάθε κριτήριο χρησιμοποιώντας την μπάρα κύλισης. Όπως θα καταλάβετε η μπάρα κύλισης δεν έχει μόνο τις 3 διαβαθμίσεις που φαίνονται αλλά παραπάνω. Καλό θα είναι να τις εκμεταλλευτείτε. Πατάται Αποθήκευση για να αποθηκεύσετε τις βαθμολογίες. Για να επιστρέψετε σε προηγούμενα μενού επιλέξτε τους σχετικούς συνδέσμους στο κάτω μέρος της οθόνης.
Ερωτηματολόγιο Αξιολόγησης
Πληροφοριακό Σύστημα Ομότιμης Αξιολόγησης
SmartCo

Αντιλήψεις Φοιτητών

Δημιουργικά στοιχεία.

1. Φύλο:
   - Αγόρι □
   - Κορίτσι □

2. Ηλικιακή ομάδα:
   - 20-25 □
   - 26-30 □
   - 31-35 □
   - 36-40 □
   - 41 και πάνω □

3. Βασικό πτυχίο:
   - Κατ/νση πληροφορικής □
   - οικονομικής κατ/νσης □
   - παιδαγωγικής □
   - άλλο □

4. Μέσος όρος προηγούμενου εξαμήνου:
   - 5-5.9 □
   - 6-6.9 □
   - 7-7.9 □
   - 8-8.9 □
   - 9-10 □

Αντιλήψεις πριν από την εφαρμογή του SmartCo.
Ομότιμη αξιολόγηση

5. Πριν από την εφαρμογή του SmarCo πόσο εξοικειωμένος/η ήσουν με την έννοια της ομότιμης αξιολόγησης;
   - Καθόλου □
   - 1 □
   - 2 □
   - 3 □
   - 4 □
   - 5 □

6. Θεωρούσες ότι η ομότιμη αξιολόγηση είναι μια δίκαιη και αντικειμενική μορφή αξιολόγησης;
   - Καθόλου □
   - 1 □
   - 2 □
   - 3 □
   - 4 □
   - 5 □

7. Γνώριζες πως εφαρμόζεται η ομότιμη αξιολόγηση;
   - Καθόλου □
   - 1 □
   - 2 □
   - 3 □
   - 4 □
   - 5 □

8. Έχεις στο παρελθόν ενασχοληθεί με την ομότιμη αξιολόγηση (αξιολόγηση μεταξύ ισών) στην εκπαίδευση ή εργασία χρησιμοποιώντας συγκεκριμένα κριτήρια;
   - Καθόλου □
   - 1 □
   - 2 □
   - 3 □
   - 4 □
   - 5 □

9. Πριν από την έναρξη της διαδικασίας πόσο θετική γνώμη είχες για την ομότιμη αξιολόγηση;
   - Καθόλου □
   - 1 □
   - 2 □
   - 3 □
   - 4 □
   - 5 □

Αντιλήψεις μετά από την εφαρμογή του SmartCo.
Ομότιμη αξιολόγηση
Γενικά

10. Μετά το πέρας της διαδικασίας, πιστεύεις ότι η ομότιμη αξιολόγηση είναι μια δίκαιη και αντικειμενική μορφή αξιολόγησης;
   - Καθόλου □
   - 1 □
   - 2 □
   - 3 □
   - 4 □
   - 5 □

11. Θεωρείς ότι η ομότιμη αξιολόγηση αποτελεί εκπαιδευτική καινοτομία και προωθεί την συνεργασία μεταξύ των φοιτητών;
   - Καθόλου □
   - 1 □
   - 2 □
   - 3 □
   - 4 □
   - 5 □

12. Η εκπαιδευτική διαδικασία της ομότιμης αξιολόγησης ήταν κατάλληλα σχεδιασμένη για τους σκοπούς της εργασίας σου;
13. Μετά το πέρας της διαδικασίας πόσο θετική γνώμη έχεις για την ομότιμη αξιολόγηση; 

14. Συμμετείχες ενεργά στην διαδικασία; 

15. Θα επαθυμούσες να συμμετέχεις ξανά σε παρόμοια διαδικασία; 

16. Ο χρόνος που διέθεσες σε σχέση με αυτά που αποκόμισες άξιζε τον κόπο; 

17. Ο παράγοντας χρόνος πόσο θα απέτρεπε την συμμετοχή σου σε παρόμοια διαδικασία; 

18. Η ακαταλληλότητα των σχολίων βελτίωσης πόσο θα απέτρεπε την συμμετοχή σου σε παρόμοια διαδικασία. 

19. Ο πιθανός υποκειμενικός χαρακτήρας των αξιολογήσεων πόσο θα απέτρεπε την συμμετοχή σου σε παρόμοια διαδικασία. 

20. Πιστεύεις ότι η ομότιμη αξιολόγηση θα μπορούσε να χρησιμοποιηθεί ολικώς ή μερικώς στην επίσημη αξιολόγηση μιας εργασίας; 

Συγγραφικό προφίλ. 

21. Σύγκρινες την εργασίας σου με τις εργασίες των συναδέλφων; 

22. Πόσο θετικά βαθμολόγησες θετικά σχόλια; 

23. Πόσο θετικά βαθμολόγησες αρνητικά σχόλια; 

24. Σωζόμενες με την ανωνυμία των κριτών; 

25. Τα σχόλια των κριτών παρουσίασαν βελτίωση από milestone σε milestone; 

26. Πόσο αξιοποίησες τα σχόλια των κριτών για το Κριτήριο 1 (Κατανοητό Περιεχόμενο); 

27. Πόσο αξιοποίησες τα σχόλια των κριτών για το Κριτήριο 2 (Οργάνωση Περιεχομένου); 

28. Πόσο αξιοποίησες τα σχόλια των κριτών για το Κριτήριο 3 (Ανάλυση-Χρήση Βιβλιογραφίας); 

29. Πόσο αξιοποίησες τα σχόλια των κριτών για το Κριτήριο 4 (Επιστημονικό Επίπεδο); 

30. Τα σχόλια του 1ου κριτή ήταν καλύτερα από τους υπόλοιπους;
Προφίλ Κριτή

31. Πόσο αντικειμενικά αξιολόγησες τις εργασίες των συναδέλφων σου;
Καθόλου  1  2  3  4  5  Πολύ
32. Το γεγονός ότι αξιολόγησες με μια μπάρα χωρίς αριθμούς σε βοήθησε να αξιολογήσεις αντικειμενικά;
Καθόλου  1  2  3  4  5  Πολύ
33. Αξιολογώντας εργασίες συναδέλφων αναγνώρισες λάθη-παραλείψεις που είχες κάνει και στην δική σου εργασία;
Καθόλου  1  2  3  4  5  Πολύ
34. Συμφωνείς με την ανωνυμία των συγγραφέων;
Καθόλου  1  2  3  4  5  Πολύ
35. Πόσο δυσκολεύτηκες να αξιολογήσεις και να σχολιάσεις εργασίες για το Κριτήριο 1 (Κατανοητό Περιεχόμενο);
Καθόλου  1  2  3  4  5  Πολύ
36. Πόσο δυσκολεύτηκες να αξιολογήσεις και να σχολιάσεις εργασίες για το Κριτήριο 2 (Οργάνωση Περιεχομένου);
Καθόλου  1  2  3  4  5  Πολύ
37. Πόσο δυσκολεύτηκες να αξιολογήσεις και να σχολιάσεις εργασίες για το Κριτήριο 3 (Ανάλυση-Χρήση Βιβλιογραφίας);
Καθόλου  1  2  3  4  5  Πολύ
38. Πόσο δυσκολεύτηκες να αξιολογήσεις και να σχολιάσεις εργασίες για το Κριτήριο 4 (Επιστημονικό Επίπεδο);
Καθόλου  1  2  3  4  5  Πολύ

Πληροφοριακό Σύστημα SmartCo

39. Πόσο εύχρηστο ήταν το περιβάλλον εργασίας του Π.Σ. SmartCo;
Καθόλου  1  2  3  4  5  Πολύ
40. Ήταν το Π.Σ. SmartCo αισθητικά αποδεκτό;
Καθόλου  1  2  3  4  5  Πολύ
41. Αντιμετώπισες τεχνικά προβλήματα στην χρήση του Π.Σ. SmartCo;
Καθόλου  1  2  3  4  5  Πολύ
42. Οι οδηγίες χρήσης του Π.Σ. SmartCo ήταν πλήρεις και κατανοητές;
Καθόλου  1  2  3  4  5  Πολύ
43. Ο υπεύθυνος του Π.Σ. SmartCo σε υποστήριξε αισθητά και ικανοποιητικά;
Καθόλου  1  2  3  4  5  Πολύ

Θέματα εργασιών
44. Το θέμα που επέλεξες ήταν κατανοητό;
Καθόλου  1  2  3  4  5  Πολύ
45. Βρήκες εύκολα τη σχετική βιβλιογραφία;
Καθόλου  1  2  3  4  5  Πολύ
46. Δυσκολεύτηκες να αναλύσεις το θέμα;
Καθόλου  1  2  3  4  5  Πολύ
47. Το θέμα σου σε ενδιέφερε;
Καθόλου  1  2  3  4  5  Πολύ
Μελλοντικές Προτάσεις
48. Πιστεύεις ότι η εκπαίδευση των φοιτητών πάνω σε θέματα αξιολόγησης πριν από την εκκίνηση της διαδικασίας, θα οδηγούσε σε καλύτερα εκπαιδευτικά αποτελέσματα;
Καθόλου 1 2 3 4 5 Πολύ
49. Πιστεύεις ότι η υποστήριξη έτοιμων σχολίων για κάθε κριτήριο από το σύστημα θα βοηθούσε περισσότερο τη διαδικασία;
Καθόλου 1 2 3 4 5 Πολύ
50. Θα επιθυμούσες να λάβεις μέρος σε μια παρόμοια διαδικασία στην οποία θα μετέχουν και φοιτητές από άλλα πανεπιστήμια (εσωτερικού-εξωτερικού);
Καθόλου 1 2 3 4 5 Πολύ

Παρατηρήσεις-Προτάσεις