

TRANSFORMATION OF STUDENT CHEATING IN WEB 2.0

By Katerina Zdravkova

University Sts Cyril and Methodius

Faculty of Computer Science and Engineering, Skopje, Macedonia

Abstract

Many students don't choose the rightful means to pass their exams. Their main goal is to successfully finish the assignments with a minimum possible effort. New technologies that implement social media and interactive collaboration have triggered the remodelling of frauds and tricks students implement. Such remodelled cheating activities are more concealed, thus more difficult to discover. This paper presents the most common traditional student frauds contrasted with the transformed techniques emerged from the introduction of e-Learning 2.0. The measures applied to detect the existence of various kinds of cheating and recommendations how to reduce them are introduced together with the limits set by interactive techniques and teacher's activities to prove the suspected scam. The estimation of the frequency of the different types of cheating is presented in parallel with the results of an anonymous questionnaire revealing student impression about fraudulent behaviour of their colleagues and themselves. The paper proves that without a proactive implementation of protection measures to prevent cheating, many students will resort to different kinds of dishonesty in order to accomplish their ultimate goal to pass the exam with no remorse.

Keywords

Ghostwriting, External and internal plagiarism, Identity swap, Sharing using messages or private files, Vandalizing of wikis

1. Introduction

When I was a student, a professor said: "The ultimate goal of most students is to 'liquidate' the exam, not to learn". His statement upset those who really strived to study more. Few cheaters in the class simply smiled. Most managed to pass the exam using different naïve, but very effective tricks.

Many educationalists claim that the academic dishonesty in the e-Learning environments during online assessment is growing (Hard, 2006; Watson, 2010; Raines, 2010). Hard and Watson insist that the academic misconduct has increased, while at the same time faculties often don't undertake anything to prevent the cheating (Hard, 2006). The study of 635 undergraduate and graduate students "showed that cheating in on-line courses is no more rampant than cheating in live classes" (Watson, 2010). Raines and her associates (Raines, 2011) have an impression that "the growth in online learning opportunities has intensified the concerns about cheating in online courses." In their research they tried to understand cheating from students' point of view. Based on the results of a feedback done over a sample of 1028 students, they concluded that more than 60% of the responses demonstrated three evident themes: breaking the rules, dishonesty, and not using the brain (Raines, 2011). After an exhaustive detective work,

physics teachers from MIT discovered that the amount of real cheating exceeded about 50 percent the amount students admitted during anonymous surveys (Palazzo, 2010). They noticed three sources of copied homework: answers done by friends, collaborative preparation, and preparation done by logging into a friend's account.

Students who prefer to copy rather than prepare their homework can also use many free collections of textbook solutions available on the Web (Young, 2010). Free collections with prepared solutions are only a drop in the ocean in comparison to the amount of valuable information available from the Internet. Therefore, plagiarism dramatically increased reaching "epidemic" proportions (McCabe, 2006). Apart from cheating and plagiarism during preparation of homework, online assessments also increased the concerns about academic dishonesty (Rogers, 2006). After completing his study, Rogers discovered that many faculties had an impression that cheating during online assessment existed, but very few proactively implemented measures to prevent it. Yang and Gaskill examined the relationship between digital cheating and the use of online assessment and proposed strategies to minimize cheating (Yang, 2011).

New Web 2.0 technologies use various forms of social interaction and offer collaborative content creation. As Olsen and Horgen noticed, they are highly motivating and represent a great potential for engaging students (Olsen, 2012). As a result, the learning outcome improves. The potential of social media and interactive collaboration was implemented for the assessment too (Emory, 2007). Instead of traditional homework, the evaluation of student outcomes is done through short and frequent sessions. They create an informal and relaxed setting where students express themselves more freely.

Our first impression of the implementation of computer-supported collaborative learning was that the necessity of frequent instantaneous reaction would decrease the possibility to cheat. Unfortunately, after thorough inspection of students' contributions, it appeared that cheating has not declined. On a contrary, e-Learning 2.0 has brought some new forms of scams. It appeared that student cheating has always existed, and it will probably exist in the future. The only difference is that without the distinctive metadata that documents contain, the cheating is sometimes more difficult to detect.

This paper presents the most common student frauds experienced in the last several years, the methods implemented to discover them, the limits set by Web 2.0, and teacher's activity to prove the scam. The second section presents the five most obvious swindles students used in the computer ethics courses and the solutions implemented to prevent the scams from reoccurring again. The methodology to identify the fraud is associated with teacher's strategy to prove the unfair behaviour. The third section is dedicated to frequency of detected scams. Then, the results of an anonymous student questionnaire are presented. They reveal the impressions about fraudulent behaviour demonstrated by their colleagues and themselves. The paper concludes with the recommendations how to diminish the presence of cheating with a moderate effort.

2. Five typical cheating scenarios in Web 2.0

My long time experience as an educator, who came across with thousands of students, has proved that students don't choose the methods how to easily 'liquidate' the exam, without an intensive use of the brain. During traditional student assessment, I have witnessed many student scams that enabled students to successfully pass the exam, without putting an effort to learn at least the course essentials. Scams have not declined in the new learning management environments, but only transformed to fit to new conditions.

2.1 Ghostwriting

For decades, students have hired mates, relatives, or even professional paper/project writers to prepare their assignments. Professional writers are numerous. They either work in the so called paper mills (Morgan, 2010), or work as freelancers (Barkat, 2010). Ghostwriting was accidentally discovered in earlier computer ethics courses due to few specific phrases appearing in several student essays (Zdravkova, 2011). Since the essays were handled as separate files, in many occasions even a simple inspection of document metadata revealed that the author was not the real student, or that the document was created before it was defined. In Web 2.0, project delivery is usually interactive in a form of a discussion forum post, blog entry or a wiki article. Therefore, it has no metadata to reveal the author, and the creation details, making it more difficult to detect.

Although there are many online plagiarism detection tools, none of them were capable to fully detect ghostwriting (Petronzio, 2012). The cheating can be anticipated using text mining and style checker techniques. These NLP methods can effectively locate the prospective ghostwriter, particularly when he/she is an actual or a former student at the same course, or when the same person prepares the assignments for several students.

In the past, we created a small autonomous system that compares the information extracted from the learning management system (times of accessing the tasks, time of upload and views) combined with the document records (metadata, references, fonts, spelling errors and typographic style) appearing in text collections (Zdravkova, 2011). It managed to confirm the suspected scams. Unfortunately, the preparation time needed to manually feed the system with all the information about short posts and particularly for wikis made it ineffective. The intention to incorporate text mining and style checking modules into Web 2.0 learning environment is language dependent, making it unfeasible. Therefore, the comparison is still manually made in workbooks. Fig. 1 presents the clusters of identity data distributed according to similarity of references, IP addresses and time between first access and upload. The highest similarities are in the dark zone.

	C	D	E	F	G	H	I	J	K	L	M	N	O
1	time before upload	time after upload	last view	views	views before upload	number of uploads	views after upload	task	version	editing time	REFERENCES	Interval(ference)	
2	3.46	0.00		56	54	1	1	1	3	3	0.55	0.3	
3	204.56	1.95		8	5	1	2	1	2	0	1.12	0.6	
4	223.27	1075.16		10	7	1	2	0	2	111	1.61	0.8	
5	155.41	1310.86		12	6	2	3	2	3	404	1.60	0.8	
6	206.74	1990.42		10	6	2	2	0	2	1	1.35	0.7	
7	220.22	1042.86		9	5	1	3	2	2	32	1.66	0.8	
8	194.86	2982.42	17018.90	9	3	1	5	1	9	542	0.60	0.3	
9	194.44	0.00		6	4	1	1	1	4	4	0.85	0.4	
10	215.13	0.01		9	7	1	1	4	0	1	0.35	0.2	
11	211.87	1989.09		10	6	1	3	3	38	137	0.26	0.1	
12	225.48	1075.47	17486.27	24	12	2	9	1	10	19	1.03	0.5	
13	102.47	1026.22		7	4	1	2	1	2	1	1.07	0.5	
14	211.28	0.04		11	8	1	2	3	0	0	1.00	0.5	
15	213.15	71.22		7	4	1	2	2	4	212	0.75	0.4	
16	165.21	2034.95		13	6	1	6	1	31	101	1.33	0.7	
17	243.97	1024.70		23	16	1	6	3	10	37	1.04	0.5	
18	184.64	1155.89		13	10	1	2	3	8	63	0.55	0.3	
19	52.95	1958.45		11	5	1	5	0	0	0	0.69	0.3	
20	247.78	1083.14		9	6	1	2	3	1	252			
21	145.98	0.00		15	9	3	1	2	14	217	1.06	0.5	
22	222.50	106.74		9	5	1	3	2	1	117	1.32	0.8	
23	240.58	0.00		10	8	1	1	0	2	0	1.65	0.8	
24	53.75	1487.44	26918.47	30	8	1	21	3	53	329	0.51	0.3	
25	220.23	21.96		7	5	1	2	0	2	0	1.33	0.7	
26	221.36	1021.52		9	6	1	2	3	7	294	0.64	0.3	
27	147.73	228.62		11	7	1	3	2	2	7	0.88	0.4	
28	248.94	11.94		11	8	1	2	0	2	10	0.70	0.3	
29	246.53	1027.85		21	8	2	10	2	0	0	1.24	0.6	
30	241.62	1137.68		10	4	1	5	0	5	171	1.38	0.7	
31	230.68	1008.64		10	7	1	2	1	0	0	0.83	0.4	
32	244.65	1007.13		13	9	1	3	4	3	49	0.54	0.3	
33	245.28	1008.22		11	8	1	2	3	2	1	0.67	0.3	
34	226.47	0.01		8	6	0	1	4	2	0	0.45	0.2	
35	171.74	1190.31		18	9	1	8	3	7	324	1.47	0.7	
36	94.91	60.77		11	7	1	3	2	26	170	0.94	0.5	

Figure 1. Extraction of a workbook intended to strengthen the suspicion of guest authorship

Even when the correlation between several interactive contributions was high, there was not a justifiable proof, or a possibility to discover who the real author had been. Whenever the teacher intuitively suspected that ghostwriting occurred, the best proof was to invite the student to present ones own contribution.

The majority of suspected borrowers didn't know what they posted or couldn't present the project. Few couldn't even remember which topic they had selected to analyse. The crucial reason was that they didn't upload the ordered essay, but simply gave their user name and password to ghostwriters. This is the second common scam students resort to.

2.2 Identity swap

Giving the identity to another person could be called an identity swap or identity substitution. Such frauds existed before, and they still exist at regular exams. In Web 2.0, the identity swap seems to be frequent (Watson, 2010). This attitude was noticed while comparing IP address extracted from learning environment log reports (Fig. 1.). It appeared that few groups consisting of two or more students uploaded their contributions using the same IP address.

The best way to discover the identity swap is to check the IP addresses along with the reference lists. We currently perform it manually (Fig. 2.). Such a module can easily be added to learning environments. However, there are students who use the same computer to prepare their assignments, either in the student dormitory, or in the faculty labs. They are usually not substituting their identities. But, whenever the concurrent use of the same computer appears during the same time interval, the suspicion of identity swap is very high. It is very probable that the same student is logged in as two or more students using different browsers.

The suspected identity swap can never be automatically proved, but oral presentation of own contribution worked well so far, discovering most of the students who gave their identity to others, usually for the whole course.

1	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
2	REFERENCES													SAME IP ADDRESS						
3	12260	12205	11610	11640	8966	10480	10570	9956	11594	11563	11519			11118	10955	10480	8966			
4	12265	12212	11660	10955	10433	11543	12191	11118	11630	11648	12224			11547	12247	12252	8928			
5	12400	12213	12251	11505	10906	11893	12225	11503	12189	12198	12257			11594	12312	12255	9956			
6	12837	12220	12255	12208	11522	12196	12233	12193	12249	12234	12368			11610	12379	12273	10433			
7		12285	12280	12228	11547	12202	12242	12195	12254	12258	12434			12212	12394	12278	10570			
8		12377	12302	12241	11621	12207	12262	12209	12288	12264	12462			12222	12428	12358	10906			
9		13022	12370	12245	12210	12221	12263	12214	12292	12283	12782			12224	12485		11133			
10		13038	12482	12256	12219	12222	12270	12246	12299	12398	12793			12234	13113		11141			
11		13071	12607	12310	12250	12236	12278	12282	12313	12437	12793			12246			11503			
12			13010	12356	12273	12237	12296	12296	12316		12795			12251			11505			
13			13035	12415	12279	12238	12311	12312	12369		13034			12256			11519			
14			13046	12415	12298	12252	12351	12323	12384		13049			12257			11522			
15				12430	12306	12268	12371	12325	12393					12270			11543			
16				12811	12315	12277	12388	12343	12394					12263			11563			
17				13016	12427	12317	12416	12360	12409					12317			11589			
18				13025	12459	12350	12422	12433	12420					12323			11621			
19				13040	12480	12358	12461	12435	12438					12325			11630			
20				13085	12816	12376	12586	12481	12439					12377			11640			
21				13188	13028	12428	12805	12484	12463					12782			11648			
22					13047	12432	12806	12485	12833					12805			11650			
23						13111	12773	13039	12813	13056				13038			11893			
24						13113	13032	13087	13057	13094				13049			12189			
25						13128	13054	13088	13101	13109						12191				
26								13102	13107	13134						12193				
27									13131							12195				
28									13176							12196				
29																12198				
30																12202				
31																12205				
32																12206				
33																12207				
34	10955	11563	12195	11505	11503	12837	11630	13016	10906	10433	8928									
35	12222	12254	12228	11893	11519	12219	12202	8966	11610	10480	9956									
36	12250	12633	12280	12210	12207	12236	12213	12193	11621	11118	10570									

Figure 2. Extraction of workbook intended to strengthen the suspicion of identity swap

2.3 External vs. internal plagiarism

Plagiarism is a frequent student scam (McCabe, 2006; Petronzio, 2012; Yang, 2011). It usually means that the appropriated work has already been published outside the course, so it can be called an external plagiarism (Zechner, 2009). Literal copying of other sources, poor paraphrasing of other sources particularly translated sources using Google translate and fair translation of other sources are frequent (Zdravkova, 2011).

Plagiarism checkers can be included in the Web 2.0 learning environments. Unfortunately, they are not useful whenever the plagiarism is a result of a literal translation of a published text in another language because none of the commercial or free plagiarism checkers possesses multilingual translation capabilities (Petronzio, 2012). However, simple search using search engines powered by translation with Google or Bing translate is effective and very persuasive.

Interactive and overt contents in e-Learning 2.0 initiated a new plagiarism, called an internal plagiarism (Kimler, 2003). It is particularly frequent in the discussion forums and blogs. Inspired by previous contributions, some students create compilations of existing posts to create own work. When the earlier posts are a motivation to do own research, the quality of new post can exceed the value of original post.

The automated tool to search for internal plagiarism in learning management systems can be made. It should be based on information retrieval techniques, text mining and style checking done over a historical report of the posts, but the extension is complex. Undoubtedly, such a tool will immediately discover the identical parts existing in several posts. In such case, only the first input will be accepted as a legal post. But, whenever next posts are a result of a sincere and profound research one question arises: "Is it a real cheating or not?". Our viewpoint is that it is a decent activity, so the student whose new contribution is superior to the original should be awarded.

2.4 Deliberate destruction of wiki articles

Wikis are regular parts of the recent learning management systems (Garrison, 2011; Komlenov, 2013; Zdravkova, 2012). They initiated an innovative scam: deliberate destruction of wiki articles. Four activities have been noticed in the computer ethics courses: pushing aside of already prepared articles, replacement of the position of existing articles, copying parts of existing articles and pretend reediting.

2.4.1 Destruction of earlier articles

Wikis are open for editing to all users and they can be directly modified in the browser. This freedom can cause an anxiety, particularly for new users. It was noticed that at least two students each year thoroughly delete all the previous content before adding their article. Consequently, previous version no longer exists. After noticing the problem, they immediately inform the teacher to return back the old article. However, few scammers deliberately destroyed articles either because they wanted to influence the final score of a colleague they didn't like, or to later appropriate someone's article as their own.

2.4.2 Replacement of the position of existing articles

Some students try to appropriate the contribution added in the wiki by moving parts of earlier content to a new position within the same or a different article, while sometimes they create a completely new article and move earlier content there. In many occasions, original authors reacted that their articles had been obliterated. Whenever they did so, the scam was proved by tracing the history of all the articles.

2.4.3 Copying parts of existing articles

Less harmful students simply copy existing articles and paste them within the same article or more frequently, they create their own articles with a verbatim copy of smaller fragments they found in the same task. Amazingly, the original authors have almost never noticed the scam. A tool for internal plagiarism based on language modelling will immediately solve the problem (Federico, 2011). However, careful reading of the final material seems to be the most valuable.

2.4.4 Pretend reediting

Instead of creating own articles, some students simply reedit the existing material. They replace words and phrases with synonymous words or multi-word expressions, change the order of words or sentences, add subtitles, and polish the references. They frequently store new versions, and their name appears hundreds of times in the history of wiki articles. The scam is noticed by comparing their first and last contribution to same article, usually showing that the difference was miniscule.

The engineers responsible for the maintenance of our learning management system proposed a module that collects the records and performs a step by step comparison of the wiki history. But, the deliberate vandalising and false content creation are not so frequent, so there is not a particular reason to create a tool for their inspection. Bearing in mind that the grade is formed according to the quality of submitted texts, thus all the texts should be carefully read, the existence of such a module is not worthwhile.

2.5 Exchanging solutions using chat or private area files

Solution sharing during exams has always existed. In the past it was done by copying from the colleague in the vicinity (Teodorescu, 2009), using the solution prepared by a friend who is taking the same exam, and more frequently by preparing the solution crib/cheat notes (McCabe, 2005), which are also called cheat sheets (De Raadt, 2012). Copying from a colleague is considered the most serious fault by more than 90% of the students and faculty who rated “the behaviour as moderate or serious cheating versus choices of not cheating or trivial cheating” (McCabe, 2005). Such academic dishonesty is very obvious to peers. Even 85% of the students in Romania said “they have seen their colleagues copying during an examination” (Teodorescu, 2009). But, recent study revealed that cheat sheets can result in better student performance (De Raadt, 2012), particularly when they were created by the student.

Technology enabled many new ways to cheat, starting with copying from a mobile phone or calculator (which is usually detected) and ending with various Bluetooth spy earpieces (wikiHow, 2014).

Web 2.0 scam is more sophisticated. Whenever possible, students activate a chat session to send messages with the solution (Moodle, 2013a). Although they are aware of the fact that teachers can notice the existence of chat sessions during the ongoing exam, they usually believe that nobody inspects chat activities. More often, peers rely on solution sharing using private files area within learning management systems (Moodle, 2013b). If the repository sharing amongst users is enabled, then all other students can access it. This facility is predominantly used for exchanging larger solutions or files.

When the assessment is done using e-testing with multiple choice answers, one student is passing the questions and answers, while the other returns back only the correct answer. Students know well that whenever they log off, private file repositories are cleaned, leaving no tangible evidence of cheating.

If the assessment is a quiz with small answers where all students have the same questions, after finishing own assignments, the more skilled student leaves the answers in the private area of the peer and leaves. The naïve students literally copy the solution, endangering themselves and the generous colleague. But, smarter students reorder the sentences, paraphrase them, or replace words with synonyms obtaining a version which is not identical to the source message.

No tool for comparing the versions is necessary, because the scam can be easily proved by examining the activity report during the e-assessment.

3. How frequently students cheated in the computer ethics courses?

Since academic 2001/02, computer ethics courses have been thought to students at the former Institute of Informatics within the Faculty of Natural Sciences, nowadays the Faculty of Computer Science and Engineering (Zdravkova, 2012).

The table below represents the estimated cheating of students for all five scams discussed in the previous sections since academic 2009/10, when Web 2.0 activities have been first introduced. In the academic 2009/10, the course was attended by 197 students from the third year of undergraduate studies. The grading was manually done by the teacher, so in spite of the extreme effort to chase the cheaters it is very probable that the amount of academic dishonesty was more serious than it seems to be. Bearing in mind that at least 15 students who managed to finish the course have not completed their undergraduate studies yet, it is quite certain that the cheating was far more severe than the numbers show. Data from this academic year are still incomplete, because the majority of students from the third year of undergraduate studies enrolled the course in the summer semester. In addition, many students who have not passed the exam will soon complete their additional assignments, and it is expected that the current success rate of 45.45% will significantly increase, reaching at least the average value of 67.19% from previous years. Most of the discovered fraudsters didn't use one technique only. Ghostwriting was suspected whenever the comparison of learning environment reports and the data content showed that students belonged to the dark zone (see Fig. 1.). Similar comparison based mainly on IP addresses and the period of simultaneous accessing the course was done to detect the identity swaps (see Fig. 2.). In only two out of 86 such insincere activities they were performed by the same students, and the percentage of both suspected scam reached 14.89%.

The students suspected for uploading materials prepared by others, or for giving their accounts to online ghostwriters were invited to orally present their contribution during teacher's tutorials. Even 57.45% of them were not able to say anything about the topic they submitted, proving that 9.22% of all the students didn't prepare the content themselves. The excuse was either that they had prepared it long time ago and they forgot what they had written, or that the material was done as a result of collaboration with other schoolmates, so exactly that part had been prepared by the colleague.

Although the plagiarism is divided into copying and literal translation, less than 120 students out of 564 in total, or 21.28% students plagiarised. Plagiarism was also found in the content prepared by offline and online ghostwriters. However, at least one third of all the students demonstrated an unethical behaviour during a course in which the main objective is to teach ethics and stimulate the decent behaviour.

Academic year	2009/10	2010/11	2011/12	2012/13	2013/14	Total
Number of students	197	91	127	94	55	564
Successful students	131	52	94	65	25	367
Suspected ghostwriting	12	5	11	11	8	47
Proved ghostwriting	5	3	7	7	5	27
Suspected identity swap	16	6	5	9	3	39
Proved identity swap	9	4	3	7	2	25
Detected copying	24	12	23	24	7	90
Detected translation	41	17	14	15	12	99
Wiki destruction	3	5	2	0	1	11
Detected solution exchange	9	4	no tests	no tests	no tests	13

Table 1. Estimated cheating of students in absolute numbers

Plagiarism was the most frequently implemented, or at least, the most easily detected dishonesty. Most of the students who literally translated vast amounts of already published materials, mainly from English, Serbo-Croatian or Bulgarian language didn't hesitate to copy from Macedonian professional blogs or Wikipedia. Some of them complained about the grade, but whenever they were confronted with the teacher's remarks containing the online sources, they admitted the scam. Since the detection was manually done using Google search and Google Translate only whenever the phrases looked too professional or too recognizable, the teacher has an impression that the percentage of 21.28% of externally plagiarised material is much higher. Unfortunately, there are no detecting tools capable of dealing with the internal plagiarism. The own system is useful for the individual essays only because it can't extract the online content, and it doesn't comprise the crucial information, the moment of publication.

The destruction of Wiki articles created by other colleagues was mainly revealed by the victims. The deliberate obliteration, content replacement, creation of multiple copies and pretend reediting were discovered by the teacher after thorough inspection of the Wiki history. The destroyers claimed that their main goal was to aesthetically or grammatically improve the articles. Such an excuse was accepted but not awarded.

E-testing was inherited from previous years, and it has been completely abandoned after the migration of the learning environment into new Web 2.0 version. The statistical data from two academic years show that 2.30% chose this method. The cheating was proved after the report of activities carried out in the labs during e-testing was checked, and all the students were punished. The percentage of similar solution exchange on other courses is much higher, particularly when students exchange the solution code.

4. Student impressions about their own cheating

To compare teacher's impressions about student's cheating and their own opinion, a small survey was done. An anonymous questionnaire was given to students who have successfully finished the course since 2009. The responses from 66 students who completed the survey revealed that more than more than 15% of all the students collaboratively prepared the discussions and wiki articles. Three students admitted the help of ghostwriters. The percentage of ghostwriting of others was four times as much. One student admitted the identity swap, but students had an impression that the real amount of this scam was 12.12%. Even 15.45% of all students admitted that they plagiarised at least once and 30% of this dishonesty remained unnoticed by the teacher. Interestingly, their personal feeling was that in general, the amount of plagiarism done by others was 74.24%, that 13.64% was unnoticed by the teacher, 21.21% was noticed but unpunished, and 57.58% was noticed and punished less than it should be. Although nobody confirmed own wiki destruction and solution exchange, these activities were noticed to be done by other colleagues, with 4.55% and 3.03% for each fraud.

Student's impression	own cheating	cheating of others	Teacher's impression
Ghostwriting	4,55%	18,18%	4,79%
Identity swap	1,52%	12,12%	4,43%
Plagiarism	15,15%	74,24%	21,28%
Wiki destruction	0,00%	4,55%	1,95%
Exchange of solutions	0,00%	3,03%	2,30%

Table 2. Comparison of student's and teacher's impression about cheating

Asked about the reason of all five scams, students had an opinion about the plagiarism only. While only 4.55% of all students hoped that their appropriation of other's work will not be discovered, 10.61% said that the occasional copying and literal translation from external sources was the only way to fulfil the obligations. All of them knew that they were dishonest and after being warned, most of them stopped the cheating. The two students who admitted the same routine said that they were proficiently hiding themselves after being punished. Noticed plagiarism of other colleagues was not a problem for 42.42% of students, 19.70% were seriously disturbed, and 12.12% warned the cheaters to stop. The comparison of student's and teacher's impression shows that students underestimated their own cheating and overestimated the cheating of their mates. The main reason is that the survey was completed by the most successful students who honestly finished their obligation, and they were very rigorous about the others, including those who failed mainly due to their cheating.

5. Conclusion and recommendations how to avoid cheating

Student assessment has always been a cat-and-mouse game. Students cheat, teachers make an effort to chase them. Teachers want to believe they discovered all the fraudsters, but students manage to accomplish their goal without being noticed. Student - teacher success ratio in this game is known to students only. New Web 2.0 doesn't reduce the academic dishonesty. It only transforms it, usually in a form that can be identified harder than previously. And, apart from the five more frequent frauds presented in this paper, the list is inevitably much longer.

In order to disable the violation of the rules against cheating, teachers should carefully read the online content. Very useful method to notice all frauds is the creation of individual student reports. It means that after completing all online activities during a particular assignment, students should submit a final version with their full contribution in a document format. These documents reveal the ghostwriting and identity swap much better, due to the metadata the documents contain. The detection of external plagiarism is also easier with own tools, or with the online tools (Petronzio, 2012), including Grammarly for an annual subscription of \$139.95. The internal plagiarism and the appropriation of wiki articles are also easier to detect, particularly with the systems based on language modelling (Federico, 2011). And finally, the golden solution: encourage oral presentations as much possible remembering that "one of the best ways to learn something is, after all, to teach it to others" (Brown, 2008) . After all, knowledge acquisition is the major objective of each course.

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