

Assessing the Potential Impact of an Electronic Grade System to the School Environment

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Keywords: internet, modelling, electronic grade system

Received: February 7, 2003

Nowadays the tempo of modern life is very fast which prevents parents from their regular contact with schools. We have developed an application, more precisely, an electronic grade (e-grade) book which enables the parents to monitor and control their child's education. By entering the username and password the parents would have an insight into their child's grades, inexcusable absence, test dates, cultural, sport days, natural science days, teachers' notes to the parents and so on. This paper shows an example of an e-grade book on the internet as well as the advantages and disadvantages a possible introduction of an e-grade in primary schools might bring about. Teachers' and parents' response to a possible introduction of an e-grade book is also presented.

1 Introduction

The age of computer technology is directed toward a simplification of everyday work. With the help of computer-communication technology, which has a significant social and economic impact in the last 20 years (Adams and Warf, 1997), we administer the information on the basis of which we decide and look for solutions of different problems which we encounter every day. We want to avoid the unnecessary paper work, which is possible through different informational systems directed towards automation of bureaucracy. And the education sector has not been immune to the impact of these developments as well (Mitchell and Hope, 2002).

A current question in Slovenia is how to improve the management at schools from the point of view of the informatization as well as from the point of view of the so called 'upgrading' of a classic grade book with an e-grade book. To get the best possible results a number of projects is being carried out by different performers.

We have decided to elaborate an information system for monitoring primary school pupils' results – an e-grade book on the internet. We have also carried out a survey (among parents and teachers) in four primary schools in Gorenjska, which momentarily do not use such an informational system. The main aim was to find out how familiar they are with it and what their relation towards the new technology is.

2 A Design Of Informational System For Monitoring Primary School Pupils' Results - An E-Grade Book

Informational system for monitoring primary school pupils' results is entirely written for the internet

surrounding in programme languages HTML (HyperText Markup Language), JavaScript, VBScript, Active Server Pages (ASP), Active Database Objects (ADO) (see Sussman and Homer, 1998), and takes the data from MS SQL data base, version 2000 (more about see Schofield, 1994; Reisman, 1994; Cooper, 1997; Šalomon, 1998).

The web application E-grade book consists of four parts. The first one is designed for entering look-up tables as well as data compiling which is only accessible for the administrator of the system. The last thing we would want is the data to be updated by the people who are not qualified to do this work. The next part is an e-grade book itself that is divided into two parts: the first one is designed for teachers only, namely for entering the grades, notes to the parents; the second part is designed for the parents' insight into their child's grades. The third part comprises of notes for the parents that is the same for the entire class. The last, fourth part enables the other teachers the insight into the e-grade book.

The first page of the application includes the title of the application and a primary school logo. Below are also two connections to the look-up tables and to the e-grade book itself.

After entering the username and password and clicking the 'Confirm' button the application first checks the database for the existence of the entered username. Then it enciphers the password on the system code 'MD5', compares it to the one in the data base and finally checks if the entered group containing also the user has the access to the required page (Papa et al., 1999). If all the conditions are accomplished the user can continue, otherwise the system prevents him/ her from doing so. The application in use is also going to be protected on the level of internet with the help of a certificate and key

code (e.g. Verisign – coding of the internet page with a help of a public and personal key).

3 The Operation Of An E-Grade Book

3.1 A Part Of An E-Grade Book Designed For Teachers

The first part of an e-grade book is designed for teachers' use only. Anyone having an access to the e-grade book must have his/her username and password that are both appropriately protected against possible breaks into a computer system. Before its use the teacher must register through the registry screen.

If the username or the password has been entered incorrectly three times in a row we are notified about it and the application returns to the basic choice. The second or main part of the application which includes modules for both entering the grades as well as the parents' insight into their child's grades, identifies itself on the basis of the entered username and password whether the user is a teacher or a parent and the application then shows the appropriate screens. After the registration the teacher has to choose the class and the subject for which he/she will enter the grades. He/she can only choose among the classes and subjects he/she teaches which has to be previously defined by the administrator of the system in the look-up table.

After choosing the appropriate elements the teacher has to decide which pupil will receive a grade. The procedure stays the same when the teacher wants to mediate a notice, a comment on an individual pupil to his/her parents. The choice of an individual pupil (as well as a class and a subject on a previous screen) follows the same drop down menu lists, which can be evident from the screen pictures.

The teacher has thus reached the main screen of an e-grade book. In the upper part of the copy he/ she can follow the previous success in a particular subject, but he/she also has a choice to enter a new grade or a note for the parents (see Figure 1). It should be mentioned that it is impossible to correct or delete the previous grades for safety reasons. This can only be done later with the mediation of the administrator (more about see Amundsen, 1999).

An e-grade book has been designed in such a way that a teacher can perform all the transactions already in the classroom provided that classrooms all have the appropriate computer equipment.

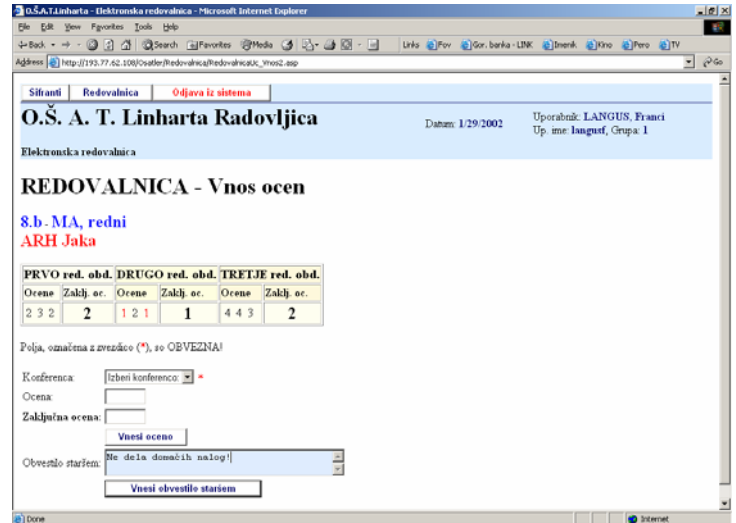


Figure 1: Entering grades or notes for the parents

3.2 A Part Of An E-Grade Book Designed For Parents

A parent with the acquired data on username and password can link to the school web page, register him-/herself to the system and choose a child whose e-grade book he/she would like to see. It needs to be mentioned that in a drop down menu list there is only a child or children of parents who registered in the system.

The next screen shown to the parents is an e-grade book of a chosen child. Here the parents can obtain all the grades with final grades for all the subjects and at the same time follow the teacher's notes (see Figure 2). Every note includes a name of the teacher (in brackets) who wrote it. Notes are written in different colours (red- more important, blue- less important) and for the sake of easier inspection negative grades are also written with a different colour (red).

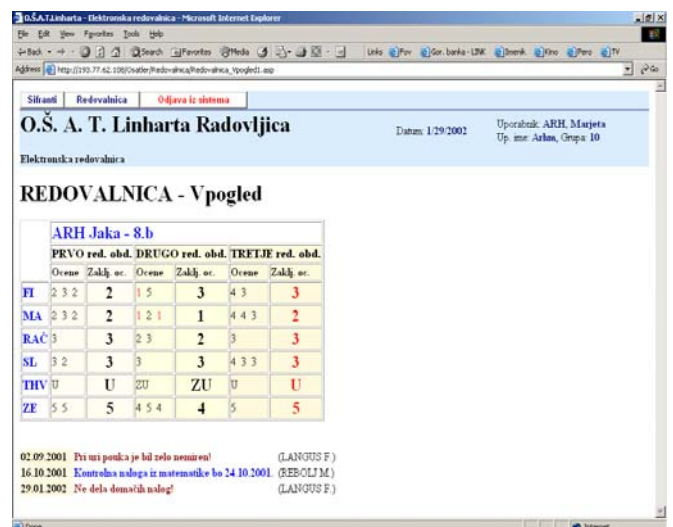


Figure 2: Insight into an e-grade book of an individual pupil

The same applies for the copy of an e-grade book for the entire class that is only intended for the teachers. A teacher first selects the appropriate class and after a click on the button the entire e-grade book is presented.

3.3 A Part Of An E-Grade Book Designed For The Administrator

Let's stop also at the part of an e-grade book designed for the administrator of the system. Before the application is used a look-up table and a database have to be completed with teachers, pupils, classes, parents and so on. This part of the application is of the utmost importance and a special caution is needed for the entire system of an e-grade book not to collapse with the inappropriate data (see Figure 3).

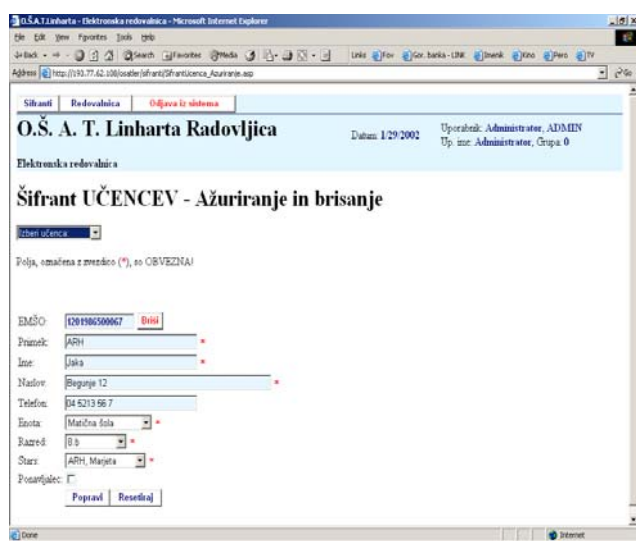


Figure 3: Picture of one of the look-up table – a look-up table of a pupil

4 Responses To A Possible Introduction Of An E-Grade Book In Primary Schools in Slovenia

To get the information on the opinions and views of possible introduction of an e-grade book of both primary school teachers and parents we have carried out a survey and discussed some problems accompanying a possible introduction. A survey has been carried out in A. T. Linhart Primary School Radovljica, Fran Saleški Finžgar Primary School Lesce, Primary School Gorje and Primary School Žirovnica. 92 teachers and 290 parents participated in a survey. The questionnaire for parents (see Appendix A) has been distributed between the pupils from 1st to 8th grade and the classes have been chosen randomly. In the introduction the questionnaire included the very purpose of the survey and a short description of an e-grade book on the internet. The questionnaire for teachers is shown in Appendix B.

4.1 Teachers' Response

Less than half of the teachers were inclined to possible introduction of an e-grade book (43%). The majority was against it with the explanation of the e-grade book being only an additional work for the teacher and a loss of time (33%), another 22% explained that nothing has to be modernised. And some of them did not even know what the question was all about (2%). The teachers' inclination towards the introduction of an e-grade book is shown in Figure 4.

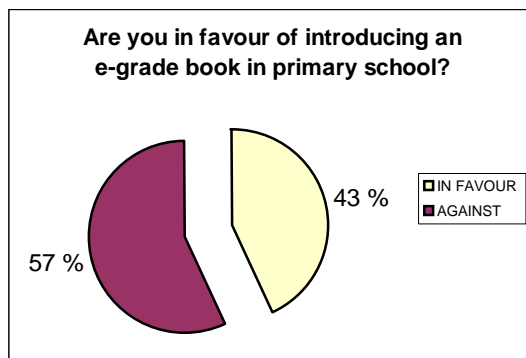


Figure 4: Review of teachers' inclination towards introduction of an e-grade book

With a possible introduction of an e-grade book a relatively small percentage of teachers (21%) was of an opinion that there would be no problems with operating with the programme with a preliminary seminar on how to use the programme. Some teachers (40%) thought that possible introduction of an e-grade book might negatively affect the relation between teachers and parents because a personal contact would no longer be needed. Some also worry about the programme to be too complicated (29%), and the minority (10%) thinks that numerical grades are not enough an information.

The majority of teachers (43%) think that in a case of a possible introduction of an e-grade book parents would come to school on less frequent basis than now (all the information could be obtainable on the internet), some (37%) think that their visits would be as frequent as they are now, and just a few (20%) claim that because of the current information on the student's success their visits to school would be even more frequent (Figure 5).

Only some teachers (32%) would be willing to voluntarily participate in a test version of the programme. 29% would not participate, and 39% only if the management directed to.

In general, less than half of the teachers (43%) is in favour of an e-grade book. The result might be due to an age structure of the teachers.

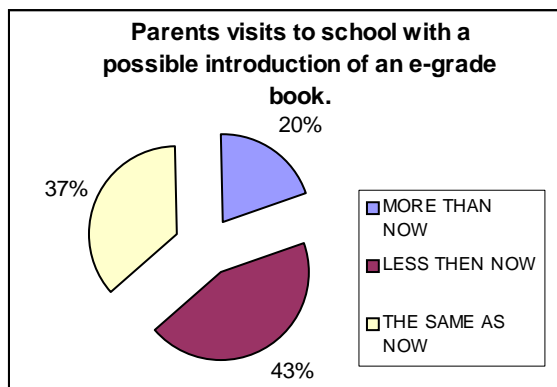


Figure 5: Teachers' opinions on parents' visits to school with a possible introduction of an e-grade book

4.2 Parents' Response

The majority of parents (67%) have already heard of an e-grade book, while the rest (33%) have never heard of it (Figure 6).

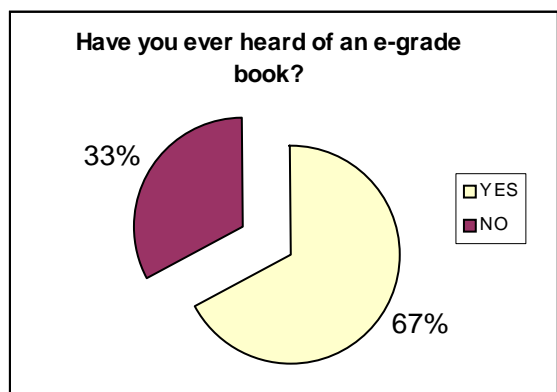


Figure 6: Parents' acquaintance with an e-grade book

Only a minority of parents (3%) are poorly familiar with their child's school success, the majority (53%) are well familiar with their success, some parents (44%) are extremely well familiar with their child's success.

Some parents (32%) get information on a child's results besides parents' meetings and parent-teacher interviews also extra, but majority (68%) do not.

Majority of parents is in favour of introducing an e-grade book (71%) some of them having doubts only about the security of information (see Figure 7). Minority is against (29%) and has the following opinions on the introduction of an e-grade book:

- It will encroach upon children's rights.
- We find an e-grade book unnecessary.
- 'Non-electronic' and 'non-internet' achievements and aids are more important for a child's success at school and in life.
- It would be a burden for a child.

- School success must not be dependent on the internet but on a child.
- I am interested in my child's grades and not my neighbour's child.
- In general I think the computer age has expanded too much for the children will not be able to read and talk.
- This leads to loneliness, which will soon become a big problem.

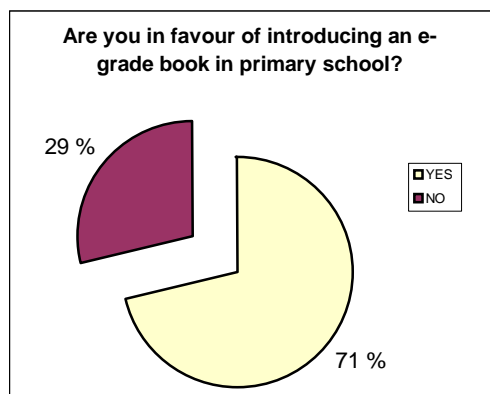


Figure 7: Parents' inclination towards introduction of an e-grade book

Most parents (85%) think that the success of their child after the introduction of an e-grade book would stay at the same level. Some (14%) think that it would be better or even a lot better, but there are also parents (1%) who think that the introduction of an e-grade book would deteriorate their child's success.

If monthly subscription for the use of an e-grade book was involved, the minority of parents (1%) would be prepared to pay 10 EUR, (9%) 5 EUR, (16%) less than 5 EUR. The majority (74%) thinks that the use should be free of charge.

We were also interested in the percentage of parents who have a computer either at home or at work, and if and how they are connected with the internet. The results were as follows: the majority of parents (84%) have a computer (at home or at work, Figure 8), out of these a little more than a half (51%) have a connection with the internet. Most of them have a connection with the internet over a cable connection (40%), a little less over ordinary telephone line (32%), and 28% over a telephone line ISDN.

Parents with a computer and internet connection are absolutely in favour of introducing an e-grade book (50%). 31% agree with it but have some doubts about the information security, 15% don't agree and 4% are not interested in such form of a grade book (Figure 9).

23% of parents without a computer are absolutely in favour of introducing it, 41% are conditionally in favour since they have some doubts about the information

security. 16% are against the introduction of an e-grade book, and 20% of parents are not interested.

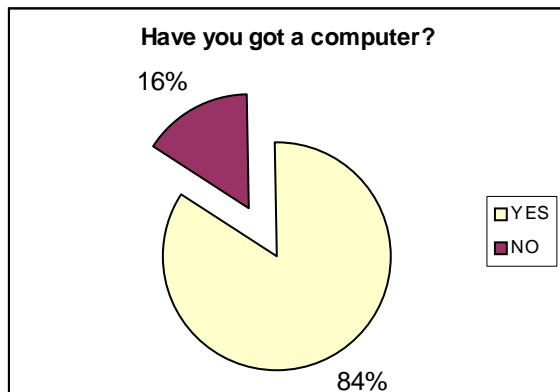


Figure 8: Parents equipment with computer either at home or at work

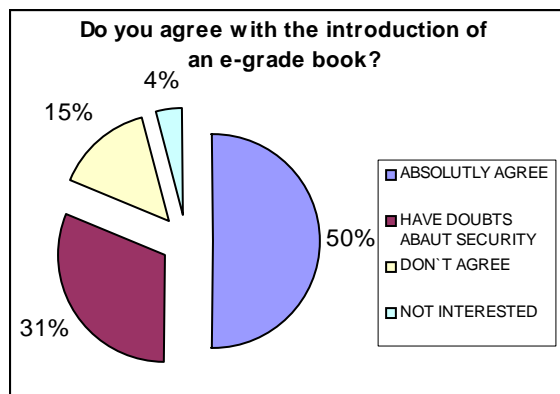


Figure 9: Parents' opinions that have a computer and internet connection about the introduction of an e-grade book

4.3 Responses Of Headmasters, Psychologists And Social Workers

The following conclusions have been reached after talking to other employees in primary schools. In schools where the management is in favour of informational technology and follows its progress, the subordinates accept new technology and changes that follow its introduction much easier. Psychologists and social workers still have their own opinion about the new informational system (personal communication and personal relations between pupils – parents – teachers are more important), but a slight change in favour of introduction of an e-grade book is evident. This of course leads to easier and faster changes with the introduction of new business informational system (Jereb E. and Jereb J., 2000; Jereb, 2002).

The situation in schools where the management does not follow the informational technology and does not approve of the introduction of business informational system is just reverse. Here the management transfers its

views to the subordinates who do not have many chances for success even if they agree or want changes about informational technology (Jereb E. and Jereb J, 2000). Such school are only few in numbers.

5 Discussion

Although the study only involved a small sample of potential users, it did demonstrate that the majority of parents having their children in primary schools are in favour of the introduction of an e-grade book. That is because parents will have access to their child's grades whenever they want to and children will not be able to keep their grades a secret. They will have access to information on knowledge checks, natural science days, cultural and sport days. And also access to teachers' notes to parents on their child's behaviour in class. The e-grade is also a good solution in a case parents cannot attend parent-teacher interviews or parents' meetings.

When the parents are not equipped with the knowledge or technology to access the before mentioned information, a problem may occur. It can also happen that due to an e-grade book parents will no longer have a direct contact with a class teacher and other teachers at school, which is also not so good.

A lot of teachers were also interested in introducing an e-grade book in primary schools. Since parents will be able to check their child's grades over the Internet and will be able to get all the necessary information that way, the teachers will not have to call parents home so often or visit them (due to bad grades, inexcusable absence, inappropriate behaviour).

Maybe the reason why more of them have not shown the interest is because teachers who are not familiar with the use of information communication technology will have to take more time to learn how to use the programme than those who are. Some of them might even dislike the new technology. It can also happen that they will not have a direct contact with all the parents any more. And teachers might need some extra time for registration of grades and other information.

Using an e-grade book instead of a classical form of a grade book enables an easier managing of the data since it is written in electronic form (can be printed in different forms, can be distributed over e-mail, can be transferred into other programmes, etc.). That also enables an easier statistical supervision.

What we are worried about is the security and protection of the system and a possible loss of data (human factor, machine failure).

6 Conclusion

Informatization in primary schools is expanding therefore an introduction of an e-grade book is to be expected in the near future. The technology of an e-grade

book offers the parents as well as teachers new possibilities. School management will have to consider the best possible way to use these possibilities and get with the progress. An e-grade book on the internet is an application which enables the parents to learn about their child's grades anytime and anywhere as long as they have connection with the internet as well as the password for their child's grades. An e-grade book must not be viewed as a substitution for parents' visits to school. We are still of the opinion that a personal contact is of the utmost importance. This application should serve as an addition for the parents to use in order to have some extra information on their child's grades, but the circumstances prevent them from doing so (either the class teacher cannot be reached or they cannot participate in parent-teacher interview). We believe the e-grade book will have a positive effect on a pupil-parent-teacher relation since the parents will have a current information on their child's grades which will also serve as a stimulation for their frequent visits to school for the interview with a class teacher.

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Appendix A

QUESTIONNAIRE -PARENTS

Electronic grade book on the internet

Every grade the learner gets in the school is written in the e-grade book, just as by classic grading book. Only that hereby also the parents will have the insight into their child's grades, access to teacher's notes to the parents, their child's behavior etc. To help us introduce the advantages and problems which introducing of an e-grade book might bring alone, we ask you to fill in this questionnaire. Thank you.

1. **Have you ever heard of an e-grade book?**
Yes No
2. **Are you familiar with your child's success in school?**
a) poorly
b) good
c) very good
d) do not know at all
3. **Would you be interested in constant overlook over your child's grades?**
Yes No
4. **Besides attending regular parent-teacher interview do you ever extra ask about your child's success in school?**
Yes No
5. **Are you interested in introducing an e-grade book, which enables to track your child's grades, behavior, teacher's notes, anytime you want to?**
a) Yes, off course.
b) Conditionally, I am worried about data security.
c) No (why not?) _____
d) Not interested in such an grade book.
6. **Do you think that introducing an e-grade book would change your child's success in school?**
a) Yes to worse.
b) It would not.
c) Yes it would be better.
d) I think it would be much better.
7. **Are you prepared to pay for using such a grade book?**
a) No
b) less than 5 EUR
c) 5 EUR
d) 10 EUR
e) up to 20 EUR
8. **Do you have a computer (at home, at work)?**
Yes No

9. If you do, are you connected to the internet?

Yes _____ No _____

10. If yes, how is your connection?

- a) cable TV
- b) ISDN
- c) classic telephone line

Appendix B**QUESTIONNAIRE -TEACHERS****Electronic grade book on the internet**

Every grade the learner gets in the school is written in the e-grade book, just as by classic grading book. Only that hereby also the parents will have the insight into their child's grades, access to teacher's notes to the parents, their child's behavior etc. To help us introduce the advantages and problems which introducing of an e-grade book might bring alone, we ask you to fill in this questionnaire. Thank you.

1. What do you think of an e-grade book?

- a.) Something new, I think it would be useful, worth trying.

- b.) Only additional work for the teachers, waste of time. I am not interested.
- c.) Do not know what you are asking about.
- d.) Else _____

2. Your concern in case of introducing an e-grade book into primary schools.

- a.) I am not concerned. I would just have to learn entering the grades.
- b.) We would lose personal contact with parents.
- c.) The e-grade system sounds to complicated for me.
- d.) Else _____

3. Do you think parents would still come to school?

- a.) More than now.
- b.) Less.
- c.) The same.

4. Would you collaborate in testing the pilot version of the e-grade system?

- a.) Yes.
- b.) No.
- c.) Only if really necessary (management's directive).