FOSTERING REFLECTIVE THINKING ABOUT INFORMATION IN 5TH GRADERS WITH BLOGS: HOW HELPFUL ARE LEARNING SUPPORTS?

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ABSTRACT

This study is about fostering media and information literacy and, more precisely, reflective thinking about information in 5th graders. A learning scenario integrating weblogs into a class by providing learning tasks, learning supports and learning resources was elaborated and tested. The class was divided into a test group and a control group, which did not receive learning supports. Over five weeks the pupils´ degree of reflection was measured by analysing their blog entries by means of pre-defined evaluation criteria. We also observed them while blogging and recorded our impressions. The results showed that, against our expectation, the pupils of the test group were less reflexive in their entries than the ones of the control group. However, we observed that the test group pupils verbally expressed many reflections, which they did not write down. This suggests that our learning scenario comprised of learning tasks, resources and supports promoted reflective thinking about information of all the pupils even if this is not recognisable in their entries.

THE NEED FOR NEW COMPETENCIES

In a rapidly changing society, in which information and communication technologies play an undeniable part, we need new competencies to face personal, professional, cultural and social challenges. For this very reason, new concepts of Literacy, such as the concept of Media and Information Literacy (MIL) by the UNESCO (2013), have been developed. Looking at the skills of accessing, understanding, evaluating, using, creating and sharing information, one can see that critical and reflective thinking about information is essential for being a literate of the 21st century. Likewise, the Ministry of Education of Luxembourg defined that media education should not be limited to learning with media, but that it should also comprise learning about media. The ´digital natives´ do however not necessarily use reflective competencies in their everyday use of ICT (Hourigan & Murray, 2010) and, accordingly, fostering the reflective thinking about information in children constitutes a challenge for every teacher.

HOW TO FOSTER REFLECTION ABOUT INFORMATION

Journal writing and peer feedback were identified as effective methods to foster reflective thinking (Xie, Ke & Sharma, 2008). A weblog can be considered to be the modern version of journal-writing, effective at stimulating reflection and allowing to express and share it (potentially) with the world. Therefore, a question addressed in this study was how to integrate blogging in class in a way that would foster reflection about information encountered while blogging. We elaborated a learning scenario based on learning tasks, learning supports and learning resources (Strampel & Oliver, 2008) in order to test its practicality and to derive recommendations regarding future integration of blogs into classroom efforts. The learning scenario had to be adapted to the primary school setting by taking into account the development of the reflective thinking skills of children and by proposing appropriate learning tasks, supports and resources. Beside the question of the effect of the whole scenario on the reflective thinking of the pupils, the helpfulness of the learning supports was analysed by dividing the class into two groups, the control group not receiving any learning supports to encourage their reflection.

ELABORATION OF THE LEARNING SCENARIO

Previous research about fostering MIL was mainly done in secondary schools and at universities, where various learning scenarios and tools have been experimented (Strampel & Oliver, 2008; Wang & Woo, 2010; Xie et al., 2008). They all showed the following main advantages of weblogs: the sharing of ideas and the peer feedback. However, they also showed that peer feedback is not always beneficial. For example, one should have the choice of different partners and there should be a more capable peer in order to stimulate reflections.

Reflection takes place in situations that pose a problem by confronting different perspectives. In such situations one has to review own experiences and consider different perspectives. Critically analysing the perspectives means an even deeper reflection. "Reflection is an effortful action and students find it difficult to engage in it over extended periods of time without external support" (Xie et al., 2008, p.19). After the reflective judgement model of Kitchener & King (1997), 5th graders are to be situated in the second stage of reflective judgement. This stage is characterised by the assumption that every problem can be solved, but that not everyone has the knowledge to do so. Also, the existence of false beliefs is possible, whereas authorities (like teachers or doctors) can procure the right answer.

Finally, in order to adapt the learning scenario to the cognitive development of the pupils, we had to give them space for interaction and different perspectives, as well as give them external support. These aspects are part of constructivist and problem oriented strategies to integrate ICT, as for the learning scenario of Strampel and Oliver (2008), which was elaborated around three structure elements: learning tasks, learning resources and learning supports. We choose these elements as a framework for the development of our learning scenario and ensured that resources and supports were provided for every task (figure 1).
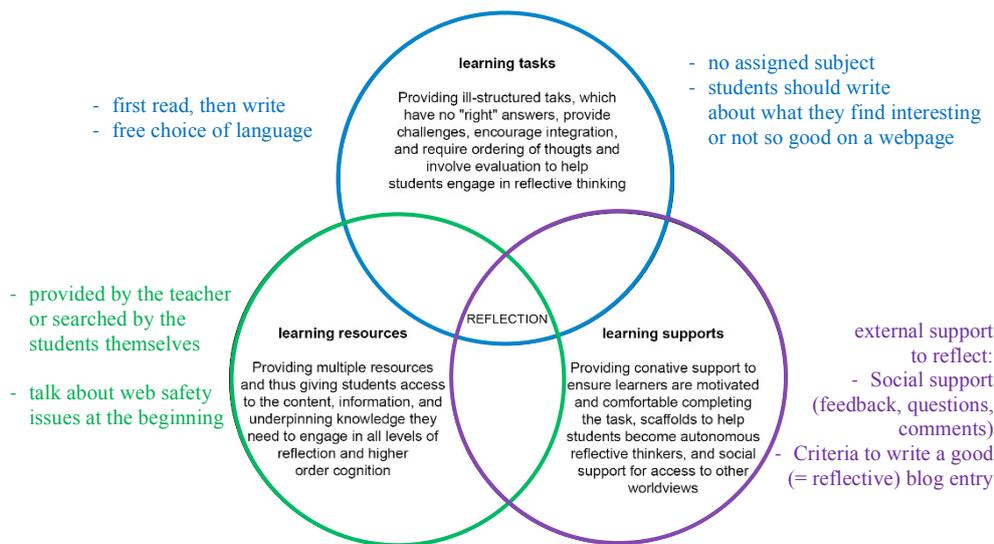

Figure 1: based on the Constituent elements of a learning environment promoting reflection (Strampel & Oliver, 2008)

Currently, there are only a few instruments to evaluate reflective thinking (Kember et al., 2000) and the existing methods are tailored to college and university students. This is why, based on our definitions of reflective thinking and the competencies needed to be media literate, we established our own criteria to analyse and to evaluate the pupils´ blog entries (table 1). The method we used was derived from the five-point-system of Ray and Hocutt (2006), after which an entry can obtain from one to five points. The number of points depends on whether there is a reflection or meta-reflection and on how many examples are given. To obtain one point more, one has to fulfil one additional criterion, which also shows a deeper reflection.

In our study, we however wanted to use more criteria to evaluate the degree of reflection and we wanted to be able to consider every criterion separately. Therefore, every criterion obtained a coefficient, which represents the depth of the reflection. Additionally, for every criterion there are three achievable points. Zero points are assigned if the criterion is not fulfilled, one point if it is fulfilled and two points if it is more than just fulfilled. For example, a pupil who pronounces his uncertainty about a piece of information obtains one point at the criterion "certainty about the information". If the student also explains his statement, he gets two points.

Table 1
Criteria to evaluate the reflection in the blog entries

Criteria	Coefficient	Achievable points		
		0	1	2
Enumeration of information	1			
Link of the resource	2			
Justification of the choice of the resource	3			
Certainty about the information	2			
Argumentation of the accuracy of the information	3			
Personal experiences	2			
Different perspectives	2			
Critical analysis of the perspectives	3			
Personal preferences	2			
Emotions	3			
Organisation / Structuration	2			
Proposition for amelioration	2			
Decision (what one should believe or do)	3			

INTEGRATION OF THE LEARNING SCENARIO

The elaborated learning scenario based on learning tasks, supports and resources, was integrated in a class of thirteen 5th graders aged between ten and twelve years. To further adapt the scenario to the pupils, a questionnaire about their habits with ICT was given to them beforehand. The class was randomly divided into a test group and a control group and we worked one hour per week (always at the same day and the same time) with each group.

At the beginning, we gave every pupil a list with links of school blogs. Their first task consisted in reading them or simply looking at them to see what blogs can look like. After that, they were told that everyone will have his own blog for five weeks and we discussed web safety issues. Even though the blogs were only accessible to the class due to a limitation imposed by the ministry of education, we considered them to be essential in a MIL project. Explanations about how to access a blog and how to write an entry were also given (the pupils got material support in the form of screenshots).

Secondly, the pupils had to choose a blog or a webpage to write about in an entry. To manage this task the test group received as a support a list with formulations to help them express what they find good or not so good.

The third task consisted in continuing blogging by writing entries and commenting the entries of their peers. To accomplish these tasks, learning supports were given. However, the control group did not receive learning supports other than the support of their peers or help with technical or practical issues. In the test group, the criteria of a good blog entry were discussed and handed out. Furthermore, they were given social support from us to stimulate reflections.

As said before, the pupils kept their own blog for five weeks and each week one of their entries was analysed with the help of the criteria measuring the reflection on the information. To complete the data, the entries were analysed by an independent evaluator, a research journal was kept and after the five weeks four pupils were interviewed about their experiences and impressions of the learning scenario.

THE PUPILS´ DEGREE OF REFLECTIVE THINKING

In the questionnaire given to the pupils at the beginning of the study, the majority specified using a computer or laptop at least once a weak and using the Internet several times in a week. Their habits and activities however differed. The pupils of the test group used the Internet more often to look up information or to access social networks. Regarding the entire group, half of the group indicated to access social networks once a week to several times a day, whereas the other half did it every few months or never. Also, the pupils used the computer to look at pictures and homepages or blogs, but they did not keep them. All in all, the pupils estimated themselves as "very good" in using the computer and the Internet, even those who indicated to use it once a month or less.

To evaluate the pupils´ degree of reflective thinking about information while blogging, we calculated the average of the total points received by both evaluators. The score thus obtained by every evaluated blog entry was recorded in the two following tables (table 2 & 3).

Table 2
Evaluation of the test group´s blog entries

Blog entry	P 1	P 4	P 5	P 8	P 9	P 12	P 13	Average TG
Week 1	6,5	16,5	6	5,5	24	9	/	11,25
Week 2	/	5	7	11,5	12,5	5,5	/	8,3
Week 3	6,5	(absent)	7	(absent)	5,5	6,5	7,5	6,6
Week 4	/	5	11	/	6,5	/	6,5	7,25
Week 5	7,5	(absent)	28,5	9,5	13,5	11,5	10	13,42
Average / Pupil	6,83	8,83	11,9	8,83	12,4	8,13	8	~9,32

Table 3
Evaluation of the control group´s blog entries

Blog entry	P 2	P 3	P 6	P 7	P 10	P 11	Average KG
Week 1	/	/	/	/	/	/	/
Week 2	15,5	5,5	14	12	10	12	11,5
Week 3	24,5	14	13	14,5	15,5	15,5	16,17
Week 4	26,5	/	11,5	7	7	13	13
Week 5	12	14	6	8	8	11,5	9,92
Average / Pupil	19,63	11,17	11,13	10,38	10,13	13	~12,61

All in all, forty-four blog entries were written by the test group and thirty-two by the control group. Twenty-six and twenty-three entries were evaluated. The control group did not write any entry in the first week due to the intensity of the discussion about web safety issues. The learning task planned was postponed to the next week and the scenario then was conducted as planned.

The tables show that, on average, the control group´s blog entries manifested a higher degree of reflection. Though, the degree was especially high in the third week and decreased afterwards. At the end of the study, their degree of reflection was lower than it was at the beginning and also lower than the test group´s degree of reflection at the end of the study. The latter achieved the control group´s average score and, in exception of one pupil, everyone had a higher degree of reflection in the last

blog entry than in the first. For the control group this was exactly the opposite: every pupil had a lower score in the end, except one. One could say that the reflection scores over time in both groups were almost mirrored (figure 2).
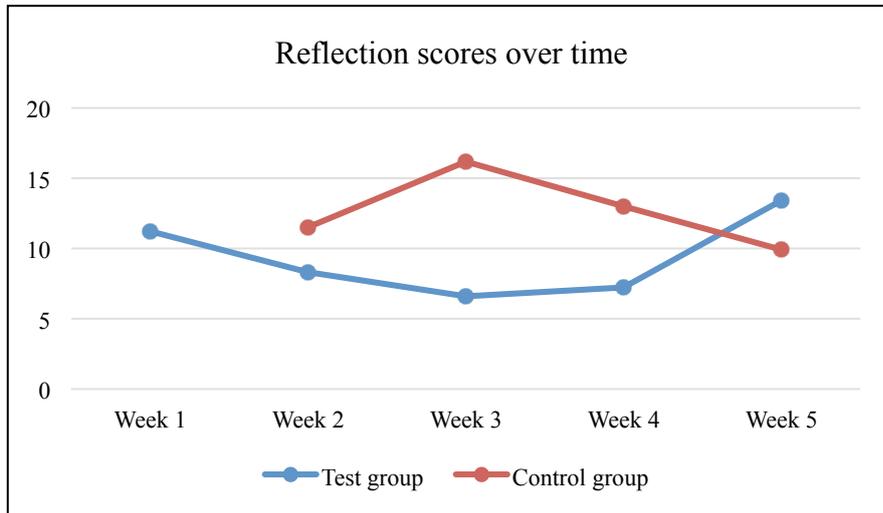

Figure 2: Reflection over time in both groups

Regarding the criteria fulfilled in the blog entries, most entries contained the elements of structuring the entry, of listing information, of linking the source material and of telling personal preferences. Certitude about information, argumentation about their accuracy and critical analysis of different perspectives were rarely given. Accordingly, the pupils´ degree of reflection was reflected in the criteria they fulfilled in their blog entries. Both groups fulfilled mostly the same criteria, but the control group overtook in the third and fourth week by fulfilling more criteria, as well as criteria having higher coefficients.

In addition, the entries featured different and recurrent subjects, as for example the writing about celebrities, chain letter stories and websites. Relating to these dominating subjects in the student´s entries, the research journal highlighted the discussions amongst the pupils and the reflections in them. The pupils talked about what they had seen on the Internet and expressed their opinion, questions and even emotions. Working on the computer at school seemed to be special for them and they were motivated to show what they have found on the Internet to their comrades, as well as to the teacher. Also, they invited their classmates to visit their blog, they read aloud some entries and they called attention to web safety issues. We were able to have an insight in the kids´ reality, to build friendly relations and to use their contributions to excite new reflections. However, only few of those reflections were written down.

While the prevalent need for technical support diminished over time, the pupils kept asking for social supports regarding the form of their entries. Even though they had no assigned subject, they asked what they should write and if their entries were alright, which we related to them meeting school expectations. This showed that the circumstances in which the pupils are asked to reflect play a decisive role. Besides the space to bring in personal ideas and experiences, one has to be aware that reflecting is effortful and adapt the circumstances. The research journal clearly showed that the pupils were less attentive and less reflective after they had written a test. Also, we noticed that they wrote for the audience of their classmates and, according to this, used spoken language and particular contents. In reaction to the answer "Why should I write more? They do know her", we asked ourselves if the

pupil´s reflection would have been higher if their blogs were open to a larger public. In the interview, the four pupils told that they wrote about different subjects, as for example web pages, celebrities or themselves. However, they did not write their own opinion, private information or secrets. Writing their own opinion constituted a difficulty for them because they did not want to hurt anybody. Also, they did not want to write mistakes and all of them encountered difficulties while using the Internet.

During the interview, the comparison between writing on paper and writing on a blog came up spontaneously. One pupil saw the difference in the material and technical aspects, whereas another one explained not to be used to the method of writing down information by means of a computer. Furthermore, the pupils claimed that they visited their classmate´s blogs to eventually find something interesting and to comment their entries. Often they then wrote about the same subjects on their own blog, which is one explanation for the recurrent subjects in the blog entries of both groups. When asked after their personal meaning of blogging, the pupils mentioned writing for other people, looking at blogs, commenting them, as well as receiving comments. Not to disclose personal information and to always insert the link to their resource were aspects retained as being important and they all liked being allowed to choose a subject and to communicate with their friends. Rather negatively experienced have been the difficulties while entering the password and while encountering various pieces of information on web pages, which could not be accurate. Finally, the pupils said they had learned that they should not publish personal information and also how to use blogs. Regarding the learning scenario, they preferred having more time to have fewer difficulties with technical issues and they expressed the idea of blogging with more than one class. One pupil also mentioned the fact that they did not always know what to write about and proposed that the teacher could tell them about a specific subject about which they could write afterwards. Another pupil noticed that some pupils needed a lot of support and requested their autonomy, which illustrates the diversity of their needs.

DISCUSSION ABOUT THE USED METHODS

The questionnaire we used at the beginning of the study to adapt the learning scenario also provided us an insight into the pupils´ habits and skills and so we could already see how divergent their needs were. However, as we took the average answer from every question to adapt the learning scenario, we kind of ignored those pupils needing more or less supports at this stage of the study. In addition, the collected data was very subjective due to their self-assessment indicated in the questionnaire, which did not always match the reality. With the help of the elaborated criteria to evaluate the blog entries we were able to perceive the pupils´ reflection and to trace it over time. Though, the overlapping of some criteria posed problem to the evaluators. It was not always evident if a particular expression was to be classified under a certain criterion or another. So the evaluators had to choose if they count the expression for one or for both criteria. Furthermore, some expressions could be seen as an implicit existence of a criterion. Nevertheless, the criteria measured what they were meant to. Sometimes an entry positively rated at first sight scored poorly after the analysis. Also, the evaluation with the criteria was extensive but not too time-consuming, which is an important aspect with regard to its practicability.

The research journal was useful to capture situations and impressions while blogging in class, thanks to which we gained another view on the learning scenario than the finished product of the blog entries. We gained additional data regarding the pupils´ behaviour, their challenges, their questions and their statements. Unfortunately, those were not recorded and could not be transcribed verbatim.

The semi-structured interviews depended on the pupils participating. Two of them talked a lot spontaneously, the other two interviews could rather be described as a question-answer-dialogue. Yet, in the end, we got to know their personal views of the learning scenario, being conscious that the interpretation of their statements was not always evident and that the latter could be attempts to meet the interviewer´s expectations.

THE ISSUE OF BLOGGING

To evaluate to what degree our learning scenario promoted reflection amongst the pupils, we will address the learning tasks, learning supports and learning resources structuring the whole scenario. The first learning task consisted in looking at different blogs about which the pupils should write afterwards. For this task, we acted on the assumption that reading proceeds writing and that writing about what one likes or not consists a first reflection (Downes, 2004; Richardson, 2011). However, we had the impression that the pupils did not read the blogs, but were rather interested in the pictures and videos on them. Possibly, they were not interested in the other contents or they simply didn´t like reading. Nevertheless, a first reflection occurred when they wrote about what they saw. They enumerated information, justified the choice of their resource, inserted its link, expressed personal preferences and made suggestions for improvement, and all this in a certain form. The pupils also were clearly motivated to work on the computer. Even though we name them "digital natives" (Hourigan & Murray, 2010) and half of the class uses the Internet every day, this reality is sparsely taken into account in school. The pupils use the computer in reward for having finished their exercises, they type their handwritten stories or they print pictures for their presentations. They do not use the Internet to learn and neither can they look at the same contents as they do at home, which however is precisely what promoted reflections in our study.

When planning the lessons, the teacher should therefore be conscious that the pupils are easily distracted and he could eventually use a projection or a direct transmission from one computer to their screens to show them the single steps on a blog. Also, the blogs could be integrated interdisciplinary by working on the topics encountered while blogging in other school subjects or by writing about topics worked on. That way the pupils´ motivation to learn, as well as their ability to reflect, could be enhanced through the collaborative learning and the confrontation with different perspectives. By telling the pupils to visit and to comment their comrade´s blogs, we wanted them to become conscious that the whole class could see their blog and also to be more attentive and reflective when writing. We ensured the accessibility of the blogs by establishing a link list on every blog from where the pupils could access all the blogs of the class. Indeed, they used that list very much, they began to communicate about the blogs and about what they had seen, they told each other to visit their blog, they read some entries aloud and they asked the author if they did not understand something in his entry, which in our opinion wouldn´t have occurred without the link list on the blogs. Due to that exchange in the class, the second week most of the pupils did not write about a webpage or a blog, but they first wanted to personalize their blog by inventing a profile or by presenting their preferred brand or music. They considered the web safety issues and encountered different perspectives of how to build up a blog. Over time, the pupils became a "community of bloggers" (Richardson, 2011, p. 37). They learned from each other and the confrontation with information and their comrade´s reasoning lead them to a deeper reflection (Downes, 2004). Also the choice of the topics the pupils wrote about, as well as their language register, suggested reflections. They addressed their comrades, who are at the same time kids of their age and friends, and from this audience they expected a reaction. They chose contents of which they thought their comrades would be interested in, they used a familiar, spoken language and their entries often began saying "Hallo" or "Hi people", making clear that their audience

was always "potentially in the text" (Myers, 2010, p. 9). The several trends of topics in the two groups were also striking. Some topics evoked different emotions and the narration of experiences, others only resulted in the posting of pictures, which shows that they had an impact on their reflections. As the control group and the test group blogged one after another, they could see what the other group wrote about and often they inspired themselves from their topics. Most of the topics were topics the pupils were confronted with in their every day, outside-of-school life. In the interaction about these subjects over five weeks, the pupils participated in a social construction of knowledge and sense (Huann et al., 2005). Accordingly, we can extend the definition of blogging as writing proceeded by a lecture (Richardson, 2011) to writing proceeded by looking at pictures and videos, hearing information and making personal experiences. This highlights the importance of the multimodality the pupils are confronted with and which they consume. Concerning this matter, one should also be aware that the pupils may look at contents which are inappropriate for their age and even publish entries about or with these contents. For this very reason, one should always check their blogs or use the administrator´s possibility to check the entries before they are published. Also, one could always use such an occasion to discuss and foster more reflections.

The learning supports were divided into three categories: practical or technical supports, supports to foster reflection and the discussion about web safety issues, which could also be classified in the two first categories. To help the pupils to access and use the blog, we went through all the steps from accessing the blog to writing an entry and publishing it. Also, the pupils received a folder with screenshots of the single steps, which they could use at every moment, and they could ask "personal scaffolds" (Roblyer & Doering, 2010, p. 40), meaning a teacher or a comrade. The pupils mostly had difficulties to log in, to insert pictures and to know what to do with popup windows. These difficulties still persisted in the fifth week of blogging. However, at this moment the need for practical and technical support decreased. Thus, there were more pupils who could give a hand and a more relieved teacher who could help those who had bigger difficulties. A realistic time frame to develop blogging skills therefore is necessary to exploit the possibilities of a blog (Hourigan & Murray, 2010). The pupils cannot engage in reflections if they are too occupied with finding out how to use their blog.

The supports to foster reflection were only given to the test group. On one hand we discussed the content of good blog entries and they got a summarizing sheet to help them to write down their reflections. During the discussion, the pupils brought their own experiences in, which we could use to concretise the criteria and to engage them in further reflections. However, some pupils expressed that they would not tell secrets on their blog, nor write their opinion, because they feared to hurt somebody´s feelings. Xie et al. (2008) explain that for some people blogging constitutes an introspective process, which they do not want to externalise. They may be afraid to encounter incomprehension or being laughed on. This shows that the pupils were concerned about the audience and made decisions in function of that audience (Myers, 2010). Teaching the pupils how to give constructive feedback therefore seems to be essential in order to create an environment where they are comfortable and dare to express their reflections. In our study, we detected more reflections in the conversations amongst the pupils than in their blog entries. In addition, the entries about websites were more reflexive than those about celebrities, which is why we assume that the pupils only associated the criteria with the writing about webpages and not necessarily with every piece of information found on the Internet. A supplemental discussion or learning task about celebrities and their influence could be integrated by the teacher if he sees the need to do so. On the other hand, we gave them personal feedback and confronted them with different perspectives to excite reflections. Before they published their entry, the pupils often asked us if it was alright, if they should add something or if they had no mistakes. One possible explanation is that they wanted to meet expectations, even though they knew that their entries would not be taken into account for their evaluation at school. Also, these questions could be reflections regarding the audience. According to Downes (2004), the consciousness about the

blog´s publicity implies that the pupils are more attentive when they write. If they had problems or doubts while writing, they asked our help to solve their problem, which is typical for the second reflective judgement stage. In this stage the right answer can be obtained by an authority figure, as for example a teacher (Kitchener & King, 1997). On the level of the methodology, this raised the question if the pupils of the control group really did not receive any personal supports to help them reflect. We paid attention to not give them feedback regarding the content of their entry, but we cannot ensure that we never did it.

The comments the pupils got from their comrades also represented a learning support to foster their reflection. As the blogs of both groups were accessible to every pupil, they could interact with more and any desired comrades. According to Wang and Woo (2010) this is effective to foster reflection and it should lead to higher attention and motivation. Nevertheless, the pupils´ comments were no constructive feedback and gave no perspectives. They were of a rather social nature, saying "cool" or "I like it, too". Maybe they didn´t want to hurt someone by giving their own opinion and not every pupil who commented a blog was a "more capable peer" (Xie et al., 2008). The study of Xie et al. (2008) also showed that giving constructive feedback is difficult for secondary school students. Therefore, we anticipated that it would also be difficult for our pupils and, as for the test group, we commented their blogs every week.

As learning resource for the first task, the pupils got a list of Internet addresses from blogs kept by school classes. They should get to know what blogs are and they also could use them at a later time. Additionally, they received another list with addresses of appropriate websites, because young bloggers do quickly frustrate when they have to choose a topic to write about and when they have to rely on their own resources (Downes, 2004). The pupils could use these websites, but they didn´t have to. Though, the analysis of the entries showed that the pupils wrote about some of these websites in the third and in the last week and, besides, these entries belonged to the most reflexive ones. The link list on the blogs, already mentioned before, also represeented a learning resource, thanks to which pupils could access their classmates´ blogs without having to enter their entire blog address. This direct linkage is one of the main characteristics of blogging and surely contributed a lot to the pupils´ motivation.

CONCLUSION

The implemented learning scenario did foster the pupils´ reflection on information in a way that it could be recognised in their blog entries and in their conversations. Most of the criteria were fulfilled in their blog entries and those only rarely fulfilled, like the argumentation about the accuracy of the information, were present in their conversations. Beside the directly expressed reflections, the blog entries showed that the pupils addressed a specific audience, their classmates, and adapted their language and the contents to that audience. The learning scenario made the pupils integrate their own experiences and interests, which stimulated reflections and which could also be used for that objective. The degree of reflection depended on the topics the pupils wrote and talked about. However, even if they expressed many reflections in their conversations, they only wrote a few of them down. How precisely the different material and personal supports helped to foster their reflection could not be determined due to the limited time of the study. Considering the several learning tasks, supports and resources, we can say nevertheless that all of them helped more or less to foster reflection and that the elaboration of the learning scenario with these three structure elements was favourable.

Since reflective thinking is an effortful action and the more writing the reflections down, one should probably first exploit the discussions with or amongst the pupils to make them express and become aware of their reflections. The multimodality of the Internet and the consumed contents should be considered and used. Several blogs offer the possibility to publish audio files and videos. So, instead of writing down the reflections, one could record them or create video-blogs, known as vlogs. The basis of blogging, which consists in reading and then writing, is extended to seeing, hearing and speaking, which offers a lot of possibilities to help the pupils to express their reflections. To evaluate these reflections the same criteria, which we used to analyse the written entries, could be used. If the pupils should write down their reflections, one should give them additional supports. Finally, such a problem-oriented approach to blogging not only fosters the reflective thinking skills, but all the MIL competencies. Furthermore, on the curriculum level, the fostering of reflective thinking skills constitutes an interdisciplinary objective and while blogging the "digital natives" could become "digital learning natives" (Hourigan & Murray, 2010, p. 212).

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