

OER for Educational Innovation: How About the Teacher?

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Introduction

To succeed in being prosperous, it is important for any country to be innovative in education. One important scope is to raise the next generation to possess enough digital skills to find their way in databases and learning networks. This puts a demand on schools to reinvent themselves with respect to vision, curriculum and didactics. In the Netherlands more and more schools in secondary education are, therefore, experimenting with educational innovations. There is a tendency to switch from a teacher centered to a learner centered approach wherein teachers adopt a coaching role so as to realize individualized learning. A learner centered approach requires, amongst other things, more flexible educational resources. It is obvious that most current paper-based textbooks are not designed to support these developments, because of their “one size fits all” approach of the learners, thereby hindering individualized learning processes.

The current developments and possibilities should stimulate teachers to create their own learning materials, preferably in a digital format. The Wikiwijs initiative (Schuwer, 2012), initiated by the Dutch Ministry of Education and launched in 2009, supports this idea by offering a platform where teachers can find, share, create and rearrange open educational resources (OER). Important conditions for success are teachers’ skills and motivation to make digital learning materials (DLMs) or to compose them from OER. A considerable part of the population of teachers, however, have little experience and skills in digital processing of such materials and, therefore, need training to gain them.

To learn more about teachers’ knowledge and skills in using, creating and rearranging OER and the motivation and attitude towards these activities, a survey was administered among all teachers in a school for secondary education in a provincial town in the Netherlands. This school – The Blariacum College - has the ambition to have individualized learning implemented in 2016. They initiated a path towards realisation of this goal in 2011. In September 2012, a first year has started using tablets with as much DLMs as possible. These materials were assembled from self-created or existing OER materials or bought from a commercial publisher.

In this paper we first address briefly the Dutch educational system of secondary education. This is followed by a brief characterization of The Blariacum College, the school for which the survey was administered. Then the survey and the results of this survey will be presented. We end with some conclusions and further actions we will undertake based on the results.

The research as described in this paper is in the broader context of DLMs instead of only OER. But OER can result in broader adaptation and use of DLM because of the increase in availability. Adoption of OER therefore can benefit when more is known about motivation for and competences in using and creating DLMs.

Secondary education in The Netherlands

In the Netherlands, the Dutch educational system¹ for secondary education begins at the age of twelve and is compulsory until the age of sixteen. It offers various forms and at different levels. VMBO programmes (four years) combine general and vocational education and prepare students to go on to senior secondary vocational education and training (MBO), lasting one to four years. There are two types of general education that grant admission to higher education: HAVO (five years) and VWO (six years). Students are enrolled according to their ability. The last two years of HAVO and the last three years of VWO are referred to as the 'second phase', or upper secondary education. During these years, students focus on one of four subject clusters (profiles), each of which emphasizes a certain field of study in addition to satisfying the general education requirements. Each cluster is designed to prepare students for study at the tertiary level.

The Blariacum College

The Blariacum College is a school for secondary education (VMBO, HAVO and VWO) in a provincial town in the south-eastern part of the Netherlands. It has 1637 students and 174 teachers. Their mission and vision on education is based on four starting points². The starting point of interest for this project is their aim to give individualized attention to each student. As a consequence, the Blariacum College aims to realize a curriculum based on bespoke education for all students, using DLMs where possible. To that end, they started a project "Maatwerk" (Dutch for "bespoke work") in 2011 aimed at realize this target in 2016. The first activities in this project were mainly meant to provide an adequate technical infrastructure (such as wireless internet, access everywhere), to select a device to use (Blariacum College choosed the Apple Ipad) and to identify teachers who were able and willing to play a role as forerunner in introducing DLMs.

The survey

In 2012, Blariacum College, together with the Open University Netherlands, conducted a study to find answers on the following questions:

1. How can we stimulate teachers to develop and use (open) DLMs suited for individualized learning?
2. Which knowledge and skills are needed for developing and using (open) DLMs?
3. How can teachers develop these skills?
4. What implementation strategy supports the motivation of teachers to work with the aforementioned vision on education?

To get insight into the current skills and motivation for the teachers, a baseline measurement was undertaken, using a survey. This survey was assembled from two existing surveys, one on digital skills and the other on motivation. Both surveys used statements on a 7-point Likert-scale (1 = totally disagree till 7 = totally agree).

The part of the survey on digital knowledge and skills assesses the teachers capacity to create (media rich) digital learning materials such as knowing the various formats of video clips and

¹ Description adapted from NUFFIC factsheet on <http://bit.ly/QbFsyQ>. Accessed 29-09-2012

² Source: Schoolgids 2012-2013 (School Guidebook). Accessed from <http://bit.ly/V9WJeY> on 29-09-2012

selecting appropriate players for these clips. Another example is knowing how and when to use DLMs in the classroom in combination with an iPad and digital whiteboard. The part of the survey on motivation is based on the Self Determination Theory (Ryan & Deci, 2000). In general, this theory distinguishes between extrinsic and intrinsic motivation. Extrinsic motivation is when someone acts to get a reward or avoid punishment, intrinsic motivation is when someone acts for the pleasure derived from the act itself. Intrinsic motivated people get better results and show more perseverance. We measured intrinsic motivation as well as the satisfaction of the basic psychological needs, competence, autonomy and relatedness. The fulfillment of these basic psychological needs are believed to be conditional for people to act in an intrinsically motivated way (Ryan & Deci, 2000). The motivation and the psychological needs were measured separately, both for the development and for the use of digital learning materials personalized for each student.

A total of 170 teachers volunteered to participate in the study. Of them, 94 teachers successfully completed the survey by answering all the questions and 27 teachers partly completed the survey. These 121 teachers are considered the response group, giving a response rate of 71%. Of the 121 teachers, 27 teachers (22%) were involved in the Maatwerk project, 83 teachers (69%) were not involved and 11 teachers (9%) did not answer this question. The results are presented in the next section.

Results

In this section, the main results from this survey are presented. Figure 1 displays a comparison of the intrinsic motivation and basic psychological needs of teachers in either the development or use of DLMs. This comparison concerns all participating teachers.

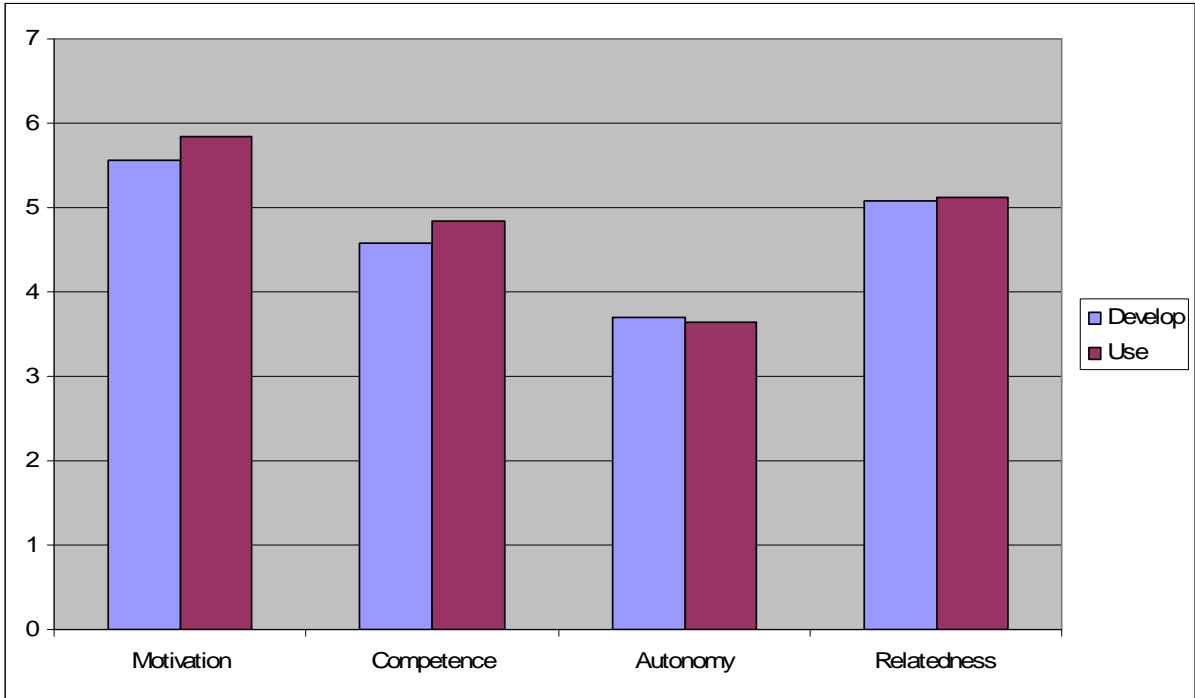


Figure 1. Comparison of intrinsic motivation and basic psychological needs

We performed a within group t-test for differences in motivation regarding development versus use of DLMs. We found a significant difference in the intrinsic motivation. Teachers display higher intrinsic motivation for the use of DLMs ($M = 5,88$, $SE = .08$) than for developing these materials ($M = 5.70$, $SE = .09$), $t(81) = -2.40$, $p < .05$, $r = .07$.

We also examined the difference between teachers participating in the Maatwerk-project and those who are not participating. With $\alpha = .10$, the differences between the two groups were significant. Teachers participating in the Maatwerk-project had a significant higher motivation for developing digital learning materials ($F(1,88) = 3.884$, $p = .052$). For using the materials for bespoke learning the two groups showed no significant difference ($F(1,84) = .590$, $p = .445$).

Also teachers' feelings of competence showed a significant difference between the two groups ($F(1,66) = 3.849$, $p = .054$), with participants of the Maatwerk project feeling more competent. Finally, there was a significant difference in relatedness when developing digital learning materials ($F(1,108) = 3.395$, $p = .068$), again with the group of participants obtaining a higher score. No significant difference, however, was found between the two groups with respect to autonomy.

Some teachers gave a written motivation for their answers on the different questions. Predominantly, they recognized the importance of DLMs for their students but were nevertheless hesitant as they were unsure what this could mean for their workload. As a result, some teachers questioned whether they should make DLMs and suggested that this is a task for the publishers.

With respect to teachers' digital competencies towards the usage of DLMs, table 1 presents the *categories* that were distinguished with an example of each category:

Table 1 Categories for digital competencies

	<i>Knowledge examples</i>	<i>Skills examples</i>
Media literacy	-	Ability in using video capture programs
Information literacy	Judge information sources on relevance for the target group	Ability in using different ways to search for relevant sources in different ways
Creating and remixing	Take into account different learning styles and pre-conceptions of students	Ability to remix a single lesson

DLMs skills were scored on three *dimensions*: attitude (i.e., how important one finds to possess the particular skill), truthiness (i.e., how true it is that one possesses the particular skill), and regularity (i.e., how often one uses the particular skill). All dimensions were scored on a 7-point Likert scale. The various meanings of the scores per dimension were

- attitude: 1 = totally unimportant to 7 = very important;
- truthiness: 1 = totally not true to 7 = completely true;
- regularity: 1 = never to 7 = several times a day.

DLMs knowledge was scored on only two dimensions: attitude (i.e., how important one finds to possess the particular knowledge) and truthiness (i.e., how true it is that one possesses the particular knowledge). To score the two dimensions we used the same 7-point Likert scales as for DLMs skills.

Table 2 presents the results of the survey.

Table 2. Descriptives regarding categories and dimensions of DLMs competences

		N	Mean	S.D.
Media literacy	Attitude toward skills	102	4.04	1.28
	Frequency of skills	102	2.31	1.25
	Truthiness of skills	98	4.34	1.34
Information literacy	Attitude toward knowledge	99	5.88	0.74
	Truthiness of knowledge	99	5.56	0.86
	Attitude toward skills	98	5.33	0.96
	Frequency of skills	98	4.68	1.31
	Truthiness of skills	98	4.34	1.34
Creating and remixing	Attitude toward knowledge	96	5.90	0.66
	Truthiness of knowledge	96	5.61	0.75
	Attitude toward skills	94	4.72	1.17
	Frequency of skills	94	2.49	1.20
	Truthiness of skills	94	3.30	1.44

These results reveal that, regarding the teachers' attitude, teachers find it very important to possess media literacy, information literacy, and the knowledge and skills to create and remix DLMs. Teachers also express that with respect to these literacies they possess high levels of knowledge and modest levels of skills except for information literacy which they rated as high. Yet, they do not often make an appeal to these literacies, only once in a while.

Discussion and further action

The results reveal that teachers consider it important to use DLM's (attitude and motivation), but they lack skills to create and remix learning materials (frequency and skills). Participants on the Maatwerk 2016 project had received training in an easy to use author tool of Wikiwijs and they were less hesitant to creating and using DLM's than the other teachers. This could be explained because this group of teachers were facilitated by the school in getting time to develop DLM's.

The low scores on autonomy can be explained because this project was set up top-down. Although much attention was given to involve the teachers when the project was set up, a top-down approach still has the danger of teachers feeling "surprised" by the project and the demands it puts on them. On the other hand, management involvement is essential in this kind of projects to make sure that sufficient facilitation is provided.

The results of this survey will be used to device training modules for the teachers and to implement other interventions to facilitate the implementation of this innovation, specifically with the intention to stimulate motivation and to support positive attitudes of teachers. Also,

teachers will be observed in both creation and use of DLM's to give them feedback to make or consider improvements

References

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