

# a Coherent LMS for E-Learning within the Care Sector

Lisa KERCKHOF<sup>a1</sup>, Yves SEURYNCK<sup>b</sup>,  
Stefaan HASPESLAGH<sup>c</sup> and Tine VANDERPLANCKE<sup>d</sup>

<sup>a</sup> VIVES University College, Centre of Expertise in Care Innovation & Business management, Belgium,  
*lisa.kerckhof@vives.be*

<sup>b</sup> VIVES University College, Centre of Expertise in Business Management, Belgium,  
*yves.seurynck@vives.be*

<sup>c</sup> VIVES University College, Centre of Expertise in Business Management, Belgium,  
*stefaan.haspeslagh@vives.be*

<sup>d</sup> VIVES University College, Centre of Expertise in Care Innovation, Belgium,  
*tine.vanderplancke@vives.be*

## Abstract

Delivering good and qualitative care is expected within care organizations and for each care giver. Therefore, staff must be continuously trained and updated. A Learning Management System (LMS) which supports the individuals learning path, brings an optimal learning efficiency within care organizations. Such software platforms, however, still have some fundamental flaws when applying them to the care sector. Research into the wanted functionalities provides a broader view on what is needed for an ideal coherent LMS for e-learning within the care sector. This research lead to a list of functionalities concerning e-learning, based on 31 in-depth interviews with care staff, management staff, businesses and experts. Out of all possible functionalities for the care sector, each care organization or care giver needs to decide whether the functionality is a requirement or optional. Some organizations prefer the KISS principle, while others prefer a more elaborate LMS. This research helped to develop an exhaustive list of functionalities for an LMS for e-learning within the care sector. This will help care organizations to move forward and lift the training of staff members to a new level.

**Keywords:** Learning Management System, e-learning, Care, Health, Technology

## 1. INTRODUCTION

Within each care organization and for each caregiver, delivering good and qualitative care is expected. Patient safety is guaranteed and up-to-date professionalizing is provided. To objectively register the quality and patient safety, several Belgian hospitals and care facilities appeal to international institutes whom give accreditation out for qualitative care. The 'Joint Commission International' (JCI) or 'Nederlands Instituut voor Accreditatie in de Zorg' (NIAZ) are two institutes that can augment qualitative care and safety (AZ Groeninge, 2013; Joint Commision International, 2015). Regular training is therefore essential and is often established using e-learning.

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\* Corresponding author.

E-learning can be defined as a form of teaching, using the internet and (communication)technology and has the power to deliver and evaluate standardised content. E-learning efficiently stimulates teaching because knowledge, skills and attitudes are acquired quicker, compared to the traditional form of teaching. The flexibility lies within choosing from an elaborate menu of media options who match your own learning style (Mayer, 2003; Mayer, 2005; Ruiz, Mintzer, & Leipzig, 2006).

Care organizations and companies are convinced that e-learning brings an optimal learning efficiency when good didactical, substantive and technological requirements are met. However, the usage of e-learning remains limited and not all its assets are used. A coherent Learning Management System (LMS) can optimize the use of e-learning. It is a platform which offers support with selecting, attending and providing training. There is a huge variation of Learning Management Systems with different functionalities and applications. Current systems also have some fundamental flaws such as the absence of personal accreditation, which is needed for keeping professional titles such as ER nurse or midwife. Therefore an optimal coherent LMS needs to be found or developed (K.B., 1964).

## **2. THEORY**

Within care organizations in Flanders, there are 36.934 general hospital beds spread across 66 hospitals with 125 campuses, 13.975 psychiatric hospital beds spread across 35 hospitals with 44 campuses and 43.471 beds within elderly care. In addition, there are a lot of patients who are looked after at home by a nurse or other caregiver. This shows that the potential reach for an LMS and its benefits within Flanders is huge (Zorg en gezondheid, 2015).

An LMS is a web-based software platform which gives support when selecting, attending or giving training. It has different e-learning modules and be online or offline. It also helps with planning, implementing and evaluating learning processes and is a tool with whom staff members gather knowledge and take tests. Interactive features such as social media, chat, discussion groups, web/video conferencing can be embedded and everything can be monitored so that extensive reports and learning paths can be obtained. Software platforms like these have not fully been implemented within the Flemish care sector, while being cost-effective in comparison to traditional classes (Mayer, 2005; Yu & et al., 2007; Yu & Yang, 2006; Muilenburg & Zane, 2005).

## **3. METHOD**

The needed functionalities for a coherent LMS within the care sector, are different that those compared to companies. This TETRA-project was set up after discovering a gap in the existing literature on what was needed for an ideal coherent LMS for e-learning within care organisations. Therefore, around 31 in-depth interviews were conducted in Flanders (Belgium) with experts in the field, businesses, independent nurses and staff (nurses, midwives, HR managers, quality managers, directors, ...). An exhaustive list of functionalities was set up based on the information gathered.

The analysis is based on Expertise Management Methodology (EMM) and the Soft Systems Methodology (SSM). Without looking too deep into these complementary methodologies, it is important to indicate that the starting point is system thinking. This means that a system, in this case the care organisations, are made out of entities such as people and groups. These entities are connected to one another and there is a mutual influence. In a well-functioning system, they influence each other in a positive way. The whole is more than the sum of its parts: synergy,  $1 + 1 = 3$ . In a poorly functioning system there is the problem that they don't seem to align with or even sabotage one another. The latter is, of course, undesirable. Using EMM, insight is obtained into everyone's expertise and how that expertise can collectively be used to achieve common goals like setting up the ideal LMS for one's care organisation. Indicators say something about the degree in which people are facilitated in order to achieve this

specific target. It can be said that indicators show the extent to which people are empowered to contribute their expertise to the desired goals of a care organisation.

#### **4. FINDINGS**

This TETRA-project resulted in a broader view on which functionalities are needed for a coherent LMS for e-learning within care organisations. The interviews that took place, showed the following image of a Flemish care organization:

- Willingness to improve
- Strong hierarchy
- Connectivity
- Solidarity
- Limited budget
- Dutch language

It can be concluded that Flemish care organizations have some unique characteristics. Firstly, there is a strong willingness to improve among all staff members within the care organisation. Secondly there is a strong hierarchy which is accepted by all members of staff. Connectivity is also an important aspect here, as staff members within a care organization are well connected with one another. Care organizations are also well connected with other care organizations and exchange important information. Solidarity lives among staff members and can be found whenever shifts need to be swapped or extra help is needed. Care organizations in Flanders have a limited budget. All extra costs need to be grounded and approved by the management committee. Implementing an LMS is therefore not an easy task and has to be a well informed decision. One last finding which characterizes a Flemish care organization is the Dutch language. Because of this, implementing an English LMS which has not yet been translated to Dutch is out of the question.

The exhaustive list of functionalities for a coherent LMS for e-learning within the care sector can be found in table 1 and table 2. It can be seen that there are a lot of functionalities which can be important. When using this list, it is up to the care organization or caregiver to decide whether the functionality is a requirement within their future LMS or an option. Some care organizations prefer the KISS principle, while others would rather have a more complex LMS. This list, together with a list of functionalities concerning competence management, HR management, user-interface and training/education management should be sent out to LMS providers to find the perfect match between the care organization/caregiver and the best suited LMS.

Table 1: Functionalities for an E-Learning module, embedded within an LMS (1)

1 E-LEARNING MODULE part 1			
1.1 Content of an E-Learning Module			
1	Possibility for a variety in posing questions (multiple choice, text entry, drag & drop, photo selection ...)	requirement	option
2	Content can easily be adapted (cfr programming language)	requirement	option
3	Links to documents on other platforms or websites can be made	requirement	option
4	Possibility to question – answer – feedback (both immediately and afterwards (with open questions))	requirement	option
5	The e-learning module can be unlimitedly repeated	requirement	option
6	PowerPoint presentations, pdf documents, word documents ... can be uploaded as content for the module	requirement	option
7	Possibility of interactivity (gamification)	requirement	option
8	Enrichment of the e-learning module with media such as audio, video, applications, hyperlinks, ... is clear and simple	requirement	option
9	The sequences of different types of question scan be determined.	requirement	option
10	Possibility to take the test, both before, during and after the e-learning module, and the ability to adjust it in advance and afterwards.	requirement	option
1.2 Reporting and Follow-up			
1	Follow-up is possible per team as well as per individual	requirement	option
2	The weights assigned to a question adjustable	requirement	option
3	The overview is adjustable (eg percentage per individual / team / service / organisation)	requirement	option
4	The number of times a question was answered incorrectly is reported (to be able to adjust training and questioning)	requirement	option
5	Item analysis is possible (see how much people logged in, received feedback, ...)	requirement	option
6	Individual certificate for a successful module can be delivered	requirement	option
7	Certain content can be targeted for certain audiences (or wards)	requirement	option
8	Possibility to efficiently see who has not started the module, both in percentage as the individual name	requirement	option
9	The answers can be analysed per question, training and group / ward	requirement	option
10	Central feedback on response patterns can be obtained to help modify questions, modify course material	requirement	option
11	Possibility to send manual or automatic reminders individually as well as to a group	requirement	option
12	Simple reporting	requirement	option
13	View on your own learning path	requirement	option
1.3 Management of the E-Learning Module (1)			
1	Own questions or modules can be created	requirement	option
2	Folders can be added or deleted	requirement	option
3	Look and feel of each module can be customized, tailor-made	requirement	option
4	Criteria for passing a module can be set	requirement	option
5	Questions in an e-learning module can be weighed differently when calculating the final result	requirement	option
6	Different owners or admins can be assigned to a module, users can be given different roles	requirement	option
7	Automatic reminders can be set per module (eg when the module will be out-dated or needs a check-up)	requirement	option
8	A preliminary schedule can be made	requirement	option
9	Deadlines can be set, adjusted and communicated smoothly	requirement	option
10	A digital learning path can be set both individually as for a group. The criteria for this can be adjusted per module	requirement	option

Table 2: Functionalities for an E-Learning module, embedded within an LMS (2)

1 E-LEARNING MODULE part 2			
1.3 Management of the E-Learning Module (2)			
11	Different rights can be assigned to one specific folder or module	requirement	option
12	Feedback or tips concerning the content or the question(s) scan be entered	requirement	option
13	Questions can easily be randomised, some questions are always displayed when set up like that	requirement	option
14	Question scan be set as visible or invisible	requirement	option
15	Possibility to check the e-learning modules first, before they can be accessed	requirement	option
16	The score on the test of a module can be given manually as well as automatically	requirement	option
17	The duration of a module (content + test OR only test) can be set in advance	requirement	option
18	Easy to manage	requirement	option
19	Typo's etc. can be modified once the module is already up and running	requirement	option
20	SSO implementation		
21			
1.4 Didactical Aspect of the E-Learning Module			
1	Correcting is done, using a correction key	requirement	option
2	There is feedback possible at question level and general level (final score), the correct answer is shown per question	requirement	option
3	Option from different feedbackoptions	requirement	option
4	Possibility to highlight certain parts of the module (eg when the individual encounters a difficult part)	requirement	option
5	Several digital teaching principles can be applied	requirement	option
6	Visual support, buttons and instructions are clearly visible and clearly defined	requirement	option
7	Video scan be viewed on full screen	requirement	option
1.5 Maintenance and support			
1	The LMS provider provides training for admins and other employees	requirement	option
2	There is a helpdesk for users and admins	requirement	option
3	Easy to maintain	requirement	option
4	Fast training for temporary staff	requirement	option
5	Import/integration of users through connection with HR-software	requirement	option
6	SCORM compliance	requirement	option
7	Dutch language is supported	requirement	option

## 5. DISCUSSION

The findings of this research show that Flemish care organizations have some unique characteristics which have to be taken into account when looking at the functionalities. The language for example is an important aspect within Flemish care organizations.

It has to be mentioned that only one aspect of the full research was highlighted in this article, so the functionalities concerning the e-learning within an LMS are not enough to build an ideal coherent LMS for e-learning within care organizations. Further research is still being performed and will look into extra functionalities such as competence management, HR management, user-interface and training/education management.

The organizational culture within Flemish care organizations is very specific and so the results cannot be transferred to other regions and dwellings outside of Flanders, without looking into other regions' culture.

## 6. CONCLUSIONS AND IMPLICATIONS

This research helped to develop an exhaustive list of functionalities for an LMS for e-learning within the care sector. This will help care organizations to move forward and lift the training of staff members to a new level. Flemish care organizations and caregivers have been reluctant to use new and upcoming technologies such as an LMS, but are starting to catch up. A lot of them are also unaware of the possibilities and benefits an LMS has to offer and are now starting to grasp its full potential.

A suggestion for future research is an economic analysis for the initial cost of an LMS and the cost per user per year. LMS providers have not been transparent towards the care sector concerning the costs of an LMS. Depending on the size of the care organization and its strategic position, prices will vary. However, it is still necessary to map the costs of an LMS so that organizations have an idea of the budget they will need to set aside for the implementation.

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Figure 1: Sponsor logo

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