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Strategic partnerships for new perspectives on teaching information literacy to students of industrial engineering and management

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Abstract

There is a broad consensus that libraries can be considered to be one of the most important players in the field of teaching information literacy (IL). However, while the necessity of gaining a high level of IL may be evident on the institutional side, it is often not apparent to students. For that reason, librarians have to think of new ways to create innovative and motivating didactic settings for the distribution of IL.
A window of opportunity to pursue this thought in Braunschweig opened during the re-accreditation of the study programs of the Faculty of Mechanical Engineering. In this context, the University Library was requested to create a new study module on IL for future students of Industrial Engineering and Management.
As there usually is a strong congruence of IL contents among libraries, the University Library of Braunschweig launched a cooperation with the University Libraries of the Leibniz University Hannover and the Technical University Clausthal to profit from synergies and experiences.
The objective of the trilocal project is to create a game-based blended learning module on IL that is both motivating for the students, and accessible to other interested institutions through its adaptable, modularized and open-source structure. The technical side of the project will be realized by the Institute of Business Information Systems (Department of Information Management) of the Technical University Braunschweig. Here, students as representatives of the target group will be involved in the creation of the storyboard and development of the ranking criteria for the game in a student innovation project.
This example - in the context of IL - shows how strategic partnerships of University Libraries and external cooperation partners can open up new paths to important working fields of academic libraries.

Keywords:

Information literacy, information literacy teaching, gamification, game-based learning, blended learning, higher education, cooperation

Introduction

In Germany, imparting information literacy can be considered to be one of the central objectives of university libraries.

Two important German bodies, the Commission on the Future of Information Infrastructure (2011) and the German Rectors' Conference (2013), postulate that information literacy should be part of the curriculum nationwide, especially in universities, and that modern teaching materials should be used. They also state that all involved players, like data processing service centers, media centers, libraries and representatives of the study subjects, should network.

The German Library Association (2009) defined the following standards of information literacy for students:

According to them, information literate students should be able to

- "identify and articulate their need for information and determine its' type and extent (…),
- efficiently access the needed information (…),
- evaluate the information and sources they retrieved, and select them according to their needs (…),
- process the retrieved information effectively and convey it tailored to the needs of the target group using appropriate technical tools (…) and
- take on responsibility for their information use and transmission of information (…)" (pp. 3-4, translation S. K.).

However, research shows that the degree to which university libraries follow these standards varies (Franke 2012). That is why I will focus on the conditions in Braunschweig in the following.

The University Library Braunschweig adheres to the standards of the German Library Association and teaches the full range of information literacy topics. The course content depends on the target group (e. g. students, postgraduates, academic staff) and their subject of study or research.

For example, Biology students visit an obligatory two semester course that is part of the Biology curriculum. This course includes the whole range of information literacy topics: a guided tour of the library, an introduction into the catalogue, database and internet research, into copyright law, into the design of academic presentations, into electronic text production, into reading and learning strategies, into academic publishing, into the reference management tool Citavi and a training of presentation skills.

Each course module lasts approximately 90 minutes with some modules being longer or shorter.

A similar format with slight modifications is now planned for students of Industrial Engineering and Management in the Faculty of Mechanical Engineering of the Technical University (TU) Braunschweig, starting in the winter semester 2016/17.

For this purpose, the University Library Braunschweig was considered to be an appropriate project partner, and will create one part on information literacy of a new module for approximately 250 students. After a re-accreditation process, this module is now part of the curriculum. Students will receive a study certificate and two credit points for their obligatory participation.
These facts challenged the members of the project team Information Literacy of the University Library Braunschweig in several ways. So far, no prior experience existed with realizing lectures for such a high number of students. While a lecture for approximately 80 students already exists in the field of Information Seeking and Procurement in Technical Chemistry Studies, we assume that this concept would not be appropriate for 250 students. Furthermore, the project team pursued the objective of creating an innovative and motivating didactic setting as an alternative to the dated lecture format, in order to make information literacy topics more interesting for students. Additionally, this special context opened the window to try something new.
Under these circumstances, the team members looked for a better approach to teach information literacy in large groups. After a review of different methods, it quickly became clear that a blended learning approach would be very suitable. In the following, I will elaborate on the reasons for enriching it with gaming elements.

Why was the gamification approach chosen?

As Luca (2012) shows, the number of potential participants in information literacy courses is on the rise. This indicates that higher numbers of participants, as observed in Braunschweig, will not remain a unique occurence. Consequently, concepts for teaching large groups will be playing an increasingly important role in libraries. However, while didactic concepts for smaller groups already exist, concepts for larger groups can rarely be found. A blended learning approach is a useful tool to meet this didactic challenge.
Blended learning can be characterized by the fact that "(…) a significant portion of the activities occur [sic!] in two areas: in person and online" (Glazer 2012, p. 1). Libraries can profit from this approach in several ways. Especially online sequences support the flexibility of library staff and reduce the amount of time spent with classroom teaching, which usually requires immense human and monetary resources (also see findings on e-learning of Sühl-Strohmenger 2012, p. 138).
Another advantage of choosing a blended learning approach can be found in the fact that this teaching method is time-independent and does not require any room capacities, as a crucial part of learning happens online (Born 2008, p. 7). Furthermore, Glazer (2012) emphasizes the conceptual flexibility of blended learning as it can be combined with other pedagogical approaches like cooperative learning, team-based learning, Just-in-Time Teaching, simulations and others (pp. 3-4).
Doubtlessly, these are reasons why various German universities presently combine elements of gamification with blended learning to make teaching in higher education more interesting and

entertaining to students. Briefly, gamification[1] can be considered to be “the process of transferring elements and procedures which are typical for games into non-game-related contexts, with the intention to modify the behavior and increase the motivation of users. Examples of typical gaming elements are descriptions (of goals, participants, rules, possibilities), points, awards and ranking lists” (Bendel 2015, translation by S. K.; for the definition also see Deterding et al. 2011, p. 3).

According to Watson (2014), gamification can be considered to be one of the key ideas of the future. He puts forward the central characteristics of gamification: “Firstly, users compete with each other or against themselves, secondly, they share knowledge or information, and thirdly, they want to have fun and be rewarded” (p. 76, translation by S. K.).

Fields of the application of gaming can be found in medicine and health (Schouten et al. 2013), in the economy (e. g. in the field of brand management, Stampfl 2013), IT (e. g. Prause 2013), lifestyle (e. g. in sports, Tanaka et al. 2009; Malaka 2014), learning (e. g. Kapp 2012, Meyer 2009, Silva et al. 2014), and others (Ma et al. 2014).

A very popular example of a game-based learning scenario in Germany is “The Legend of Zyren” (Orszullok et al. 2013), developed at Heinrich Heine University Düsseldorf. In this game, students learn how to find appropriate information, to evaluate, to apply and to restructure it. The game is a vehicle for the content of the seminar Knowledge Representation (see press declaration of Meinschäfer 2013).

In Braunschweig, the game-based seminar “Cooperation in E-Business” was developed by the Institute of Business Information Systems (Department of Information Management) of the Technical University. It was outstandingly successful and won an award as an excellent example of higher education teaching voted for by students.

After the success of “Cooperation in E-Business”, we are optimistic that being involved in a game instead of visiting a lecture every week will make the course more attractive. Moreover, we aim to make the seminar a positive experience for our students.

Furthermore, by offering a blended learning gaming scenario, the project will take the media usage habits of students into consideration, by involving the media they already use. This, as Grosch and Gidion (2011) show, is expected by students: Nearly all students ask for a varied media offer and media standards from their universities (p. 4).

The following paragraph will focus on the project structure which is required to realize this teaching approach.

Project structure

After exploratory discussions with decision-makers of the Institute of Business Information Systems, they were immediately willing to share their gaming expertise and to realize the technical side of the project.

[1] The conceptual distinction of gamification and game-based learning is not always clear. For this reason, they will be used as synonyms in the following.

It was also apparent that the information literacy contents of many libraries overlap. That is why the idea came up to look for universities which offer similar subjects of study and are in regional proximity to Braunschweig. Two other University Libraries in the region, Hannover and Clausthal, fulfill these requirements. Thus, a cooperative project was launched.
As the local structures of the participating universities differ, each university appointed experts to deliver the content needed for certain parts of the game. The University of Hannover, for example, has a center for key competences, where workshops like academic writing are offered. Braunschweig, in comparison, does not have such an institution. For this reason, Braunschweig involves an expert for academic writing from the Faculty of Mechanical Engineering. Similar constellations can be found in the other libraries.
Tailoring a study program that will be part of a curriculum requires a close cooperation between librarians and decision-makers of the Faculties. Therefore, involving subject experts is also useful to close the gap between the needs of these decision-makers and the content provided by the librarians. That is why the Assistant of the Dean is an important contact person for all content-related questions in Braunschweig. Further contact persons for these questions are the Subject Librarians of Braunschweig, Hannover and Clausthal, who are also part of the project.
Another important project partner is the Institute of Business Information Systems of the Technical University Braunschweig. In two innovation projects, it involves students as representatives of the target group. The innovation projects form an obligatory module of Business Informatics Studies, but are also visited by other students. Students attending the module will receive five credit points. During the registration period 49 students signed up.
In a first step, these students work in groups and create the storyboard and develop ranking criteria for the game. In a second step, these groups will be divided into even smaller teams. These teams will work with the concepts provided for all topics (research strategies, database research, etc.), and their integration into the game. Appropriate material is provided by the three libraries through a collaborative platform and is distributed by the supervisor, a gaming expert from the Institute of Business Information Systems. Additionally, the students will be supported and counselled by experts from the libraries in Braunschweig, Hannover and Clausthal.
After this design phase, the technical realization for Braunschweig will follow, afterwards adoptions for Hannover and Clausthal will be made.
For the creation of multimedia materials like podcasts and films a media professional was hired. These materials will then be integrated into the game to offer its' players an entertaining and visually appealing gaming environment.

Project objectives

As already mentioned, one of the project objectives of the University Library Braunschweig is to meet the requirements of the Faculty of Mechanical Engineering. The situation in Hannover and Clausthal, however, is different. For this reason, one part of the project will be to ascertain how information literacy can be implemented into the curricula of Mechanical Engineering Studies in

these two locations. The project partners are optimistic that the proactive offer of an innovative and motivating information literacy study program will accelerate its' implementation into the curricula of Mechanical Engineering Studies in Hannover and Clausthal.
Another project objective is to bring together the expertise in teaching information literacy of all locations. In doing so, the content of already existing information literacy teaching concepts will be optimized to the students' benefit.
Additionally, the project outcome will be made accessible to libraries not participating in the project. This will be an enormous advantage for university libraries, which often face the problem that financial and human resources for teaching information literacy are not sufficient (Sühl-Strohmenger 2012, p. 202). Under these problematic circumstances, this working field can only play a small role within the day-to-day routine of librarians. The project contributes to improve this situation in two ways: First, the technical data will be made accessible as an open educational resource. Thus, everyone interested in re-using the project results will get the opportunity to do so. Second, the project content will be transformed into a flexible and modularized structure. That means it will be easily adaptable to the needs of different study subjects and different institutions. This will ensure the sustainability of the project outcome. Hence, the project supports the universities and university libraries in their responsibility to teach information literacy comprehensively.

Summary

To make information literacy part of university curricula is a demand of the Commission on the Future of Information Infrastructure and the German Rectors' Conference. Also, universities face an increasing number of students who are potential participants in information literacy courses. Therefore, universities, university libraries and other players have to open up new ways to impart information literacy. The development of modern didactic concepts for large groups which make information literacy interesting and motivating for students, is a prerequisite of this. To meet these requirements, the gaming approach, as a promising tool, was chosen. For it to be easily adaptable to the needs of other libraries and other target groups, a modularized, game-based blended learning scenario will be developed. It will be accessible to everyone interested in reusing it. The first context in which this innovative course will be held is for the students of Mechanical Engineering at Technical University Braunschweig.
To achieve the aforementioned objectives within the project, various expertise is brought in to profit from synergies and to merge the resources of the three participating locations: the expertise of librarians, of representatives of the study subject, of technical and gaming experts, and of students as representatives of the target group. Consequently, the people and institutions involved make use of networking in order to optimize the project outcome and contribute to improve information literacy teaching in academic libraries.

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