Learning analytics and academic libraries in Croatia - are we ready for it?

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Abstract - It is not unusual for academic libraries to modify their services around (library-created) data. Data is information, one of the critical inputs among other variables that we can measure in the libraries. Librarians are familiar with the statistical methods and their full potential in library analytics for creating data-informed or data-driven decisions regarding collection management, library catalogue searches, logs to online resources, etc. Learning analytics, on the other hand, is focused on the data about learners and their context for purposes of understanding and optimizing learning and the environment in which it occurs. Academic library as a part of the higher education ecosystem is a natural partner with data sources that can combine with other institutional systems and generate new information about our learners, learning and instruction. Although it is a novelty for libraries, some of them are using learning analytics to evaluate the impact of libraries services, collections and student learning. The literature states that librarian investment in learning assessment to involvement in learning analytics is a natural one - but are we ready for it?

Keywords - Academic library; Learning analytics; Higher education; Assessment; Data-informed decisions

I. INTRODUCTION

In the past few years usage of analytics has been getting considerable interest as one of the principal instruments in the academic libraries. Librarians are becoming more research-based guided and involved in assessment culture. They are aware of the implementation of the evidence-based approach into management for improving library and teaching services. The research-based approach is responsible for the changes that are (on)going in the academic libraries to include more and more different data sources to track changes and needs of their users.

Learning analytics

Learning analytics (LA) is increasingly recognized as a new component in the higher education system worldwide. Learning analytics is the measurement, collection, analysis, and reporting of data about learners and their contexts, for purposes of understanding, and optimizing learning and the environments in which it occurs. It is primarily concerned with improving learner success [1]. The other widely used definition of LA is from EDUCASE [2]: collection and analysis of usage data associated with student learning. Its purpose is to observe and understand learning behaviors in order to enable appropriate interventions – such as tracking and predicting learners’ performance as well as identifying potential problematic issues and students at risk.

LA is also defined by an attribute of the level or object of analysis, where LA is directed toward providing educators, learners, and decision makers with actionable insights to classroom and course level activities. Academic analytics (AA) target higher-level analysis and the needs of senior administrators, policymakers, government officials, and prospective funders [1]. Although it seems that the future is data-based oriented, we must focus on data as one of the key variables in the assessing activities or behavior among students.

Learning analytics and the academic libraries

If we are discussing the isolated view of data and its analysis in the library, then we are talking about library analytics. Collected data in the library can build a more in-depth understanding of the impact of library services and resources. Traditionally, library analytics data is used to drive data-informed decisions in the library.

Some library associations [3], [4] and researchers have reported that learning analytics is currently the top trend in the academic librarianship. It is stated in the “Library Integration in Institutional Learning Analytics (LIILA)” white paper: library involvement with learning analytics represents a natural evolution of library efforts to assess student learning. Librarians have always sought to determine the impact of library services and resources on student learning. (…) The Inclusion of library data in institutional analytics initiatives offers renewed hope that librarians will discover new connections – and perhaps uncover missing links that can inform, enable, and empower libraries to support and generate student learning success [5]. In another paper authors [6] state that faced with different realities, librarians will no doubt select different approaches regarding information literacy assessment. Showers [7] described in the 2014 the LAMP project: “the prototype will deliver a data dashboard enabling libraries to capitalize on the many types of data they capture in day-to-day activities and will support the improvement and development of new services and demonstrate value and impact in new ways across an
institution, in line with the three strategic drivers highlighted above”.

With that enthusiastic view that the libraries can capitalize on many types of data they capture in day-to-day activities we will demonstrate current situation and display the current state of data collection, and the connections of LA and academic libraries in Croatia. So, in that context, the key research question of this study is whether the academic librarians in Croatia are ready for involvement, and implementation of learning analytics?

II. METHODOLOGY

This study was based on an online survey (via GoogleForm) consisted of thirty-nine questions. The survey was inspired by a Spec Kit 360: Learning analytics [8] survey. In our case, the survey was carried out only in the segment regarding the introductory part of learning analytics. The survey was divided into four parts:

(a) The first section was introductory with questions about the institution of the library - consisted of two multiple-choice questions about types of the institution and field of study of the institution. (Q1-Q2)

(b) The second section examined library and user data activities through 14 questions: five multiple-choice, six open and three closed questions. (Q3-Q16)

(c) The third section analyzed the educational activities of the libraries and the engagement of librarians in formal or informal education through 10 questions: two multiple-choice questions, three open and five closed questions. (Q17-Q26)

(d) Finally, the fourth section was focused on learning analytics and consisted of thirteen questions: seven closed and six open questions. (Q27-Q39)

In order to be more open and cooperative with librarians only the two questions in the first section and one regarding the inclusion of library data in learning analytics system (fourth section) were mandatory.

The survey was distributed on February 12, 2019, to the heads of the libraries in higher education institutions in Croatia via e-mail message which contained an invitation to participate in the survey. The survey was closed on February 22, 2019. The direct e-mail contact was selected because it was intended for heads of the library to respond in the name of the library and institution. The survey was anonymous, and fulfillment was optional.

As this study was based on an online survey author collected all contact information about academic libraries from the sources at Ministry of Culture [9], Library Statistic System (via National and University Library) [10], Croatian Bureau of Statistics [11] and libraries web pages. The total number of registered libraries at institutions in higher education in the Republic of Croatia is 118 [9]. Fifty-two librarians completed the survey.

Statistical analysis was performed using Microsoft Excel software.

III. RESULTS

A. Introductory section

The first section of the survey required from respondents to give information about their institution. The first two questions were mandatory for respondents to answer in this part of the survey. (Q1-Q2)

In the first question (Q1 “Your library is part of what type of institution in higher education?”) the majority of those who responded (52) stated that library is a part of Faculty (31), University/University Department (7), Polytechnic (6), College (6), and from Academy of Arts (2).

The second question (Q2 “What field of study in higher education is your library part of?”) accordingly to the type of institution, the type of field of study respondents stated that they are in Social Science (22), Technical sciences (11) Biomedicine and Health (7) and Biotechnical Science (7), Humanities (9), Natural sciences (4), and Arts (3).

B. Data in the library (Library data and the library user activity data) section

The second section of the survey required from the respondents to give information on collecting data in the library, with emphasis on personal and library user activity data in the library. (Q3-Q16)

Q3 “What personal information about users does your library collect?” Using multiple choice question respondents stated that they collect information about: name and surname (52), home address (43), e-mail (private) (30), date of birth (33), sex (30), e-mail address (official) (25), Personal Identification Number (19), Academic Citizen Unique ID Number (8), other minor responses were about phone/mobile number, Identification Card Number.

In the question Q4 “What user activity data does your library collect?” the respondents indicated what user data activity they collect, and whether they collect at the user or group level. The data that libraries collect at the user level is data about bibliometrics analysis (13), interlibrary loan (12), reference service usage (11) and specialized searches (11). At the group level, libraries collect data about library visits (physical visits) (33), circulation statistics (31) and interlibrary loan request (26). At the user and group level, librarians collect most data about scanning or copying on demand (15), circulations statistics (9) and bibliometrics analysis (7). (Table 1.) Q5 was an open question about any other additional user activity data that the library collection. There were no additional responds to that question.

Q6 “How does your library collect and track data about user activity in the library?” Participants stated that they mostly track manually (13). They also stated that they do combination of manual tracking and system that is developed in the institution (11), through system that is developed in library and manual tracking (9), combination of commercial system and manual tracking (7) or through system that is developed within the library (7), and just through commercial system (6). With the dominant
approach of manual tracking, most of the libraries rely on the traditional system of tracking, collecting, and we can say managing the data in the libraries.

Q7 “Does your library provide parent institution information about library user data activity?” Participants stated that 27 of them deliver data to the institution, 13 of them stated that they sometimes do, and 12 stated that they do not provide any information about user activity.

Q8 “State the reasons why library provides user activity data to the parent institution.” Author identified four reasons from the participants' responses: library analytics (15), annual reports (15), reports/analysis to prove library value at the institution (5) and reports on demand (4).

Q9 “Specify how often the library shares data with parent institution.” In this question, only 37 responded. When they were asked to specify the period when they share their data with the institution: the majority responded (25) that they share it once per year, rest of them (11) vary from 1-4 times, and only at the demand (1).

Q10 “Does your library have access to user information from institution’s information system?” Of the 52 participants who responded to this question 27 stated that they do not, 23 stated that they do, and two stated that institution has access in a partial segment. In the follow-up question (Q11 “Name the system(s):”) 21 librarians stated that they use Higher Education Institutions Information System (ISVU) which is intended for informatization of the student’s services at higher education institutions.

Q12 “Does your library share any user data with the other departments of the institution?” This was a closed question where respondents stated that 37 of them do not share user data, 14 stated that they share and only one stated that they share it on demand. In the follow-up question (Q13) participants were asked to name the type of data they share. Only 15 participants indicated that they share data about personal data (7), data about user activity (6), and a combination of personal and user data activity (2).

Q14 “Does your library share any collected data about user activity outside the institution?” When they were asked if the library share any data about user activity outside the institution 43 participants responded. Responses were: no (22), and yes with multiple combinations; a) Library Statistic System (via National and University Library) (5), b) Library Statistic System and Croatian Bureau of Statistics (4), c) Library Statistics System, Croatian Bureau of Statistics and University Statistics (3), d) General statistics reports (3). The rest of the answers were related only to one of the above segments: Croatian Bureau of Statistics (1), general statistics report at national level (1), University Statistics (1), Accreditation (1), and statistics for the National and University Libraries (2) (not for Library Statistic System).

Q15 “Name the purposes of use of library user activity data.” Participants were asked for what purpose library uses user activity data. They stated (48) that they use data for statistics (20), for improvement of services (19), work report (7), and have no answer (2). (Fig. 1.)

![Figure1. Library purpose of tracking user activity data](image)

Q16 “How are user activity data protected in your library?” Respondents were asked to indicate how user data activity is protected in the library. There were 34 responses to the question with the majority of those who responded (17) that the data is protected in the way by limiting access to data only to library staff. The next most efficient way to protect user activity data is regulated by the EU General Data Protection Regulation (GDPR) (7) or a password (4), or the most restrictive way: they do not share data (2). Other data protection measures are: deleting data, physical security protections, limit data retention, and isolated system. One participant stated that
they do not know how they protect user data, and one stated that they do not protect it at all.

C. Education activity of library and librarians section

In the third section regarding the educational activity with the emphasis on information literacy, participants were asked how librarians participate in teaching at their institution. (Q17-Q26)

Q17 “Are librarians from your library included in the formal education courses at the institution?” Of the 52 respondents who responded to this question, more than half (36) indicated that they are not included and only 16 stated that they are included in formal education at the institution.

Q18 “State the librarian participation in education activity.” Librarians stated that they are involved in education activity in different roles as (answers from multiple-choice question): administrative help (1), lecturer as a part of the course (8), lecturer as a part of the course and administrative help (3), lecturer in the stand-alone course (3), lecturer in the stand-alone course, lecturer as a part of the course and administrative help (1).

Q19 “Do you use Learning Management System (LMS) in courses that librarians participate in?” Regarding the activities in formal educational courses and the question about the usage of LMS they responded that they do not use LMS (9), they do use (5), and 3 only stated that some of the courses are in LMS. The sub-question (Q20 “Name of Learning Management System that librarians use in courses that they participate in.”) was formulated for positive responses. Participants needed to state which LMS they use, and the answers were: Moodle (3), Loomen (1) and Merlin (1).

Q21 “What data is collected about students and their activity in Learning Management System?” Participants reported only 4 answers. They collect necessary data (name surname, ID) and student course assignments activity.

Q22 “What data is of exceptional value to you for evaluation of your lecture?” When they needed to specify the importance of data value, participants (5) stated that they use it just for participants’ lessons assessments - commented that they track overall student activity, the completion of course, course survey results, and evaluation of professors and students. There was no mention of any detail data segment that is important for the librarian to track student education activity in the LMS.

Q23 “Does your library offer informal education through library instruction(s)/workshop(s) of information literacy?” Besides formal education, the author also asked participants if they are offering informal education through library workshops. More than half (33) responded that they carry out workshops. The rest of them (19) stated that they do not hold workshops.

Q24 “Where does your library organize instruction(s)/workshop(s) of information literacy?” Of the 33 who responded positively, there was a sub-question regarding the location of the workshops. Physical space is dominantly represented in the workshop (14), of the workshops that are held in the library spaces, or combination in library spaces or institution spaces (10), only in institution space (7). Two participants stated that they cover both physical and virtual spaces, but only one participant stated that they hold workshop only in the virtual environment.

Q25 “Does your library collect information about instruction(s)/workshop(s)?” There were 25 participants who stated that they do, and 9 stated that they do not collect any data.

Q26 “What type of data librarians collect about instruction(s)/workshop(s) of information literacy?” In the sub-question regarding the type of data that they collect about workshops the librarians stated that they collect data about the number of attendees (13), information about attendees (Name Surname, study year, department) (8), Satisfaction survey (7), number of workshops (5), information about topic of workshop (2), pre and post testing of attendees (1).

D. Learning analytics engagement and initiative participation section

The last section of the survey required respondents to give information about learning analytics and the involvement of their institutions in it. In this section, there was an introductory text explaining what learning analytics is and what the difference between learning analytics and academic analytics is. The text intended to inform participants about differences between those analytics, and to remind those who were not sure the specific difference between those two. This section questions were about current participation/initiatives in LA within the library and institution, focusing on participation, and types of collected data. (Q27-Q39) Question Q31 was mandatory question to respond.

Q27 “Are you familiar with the concept of learning analytics?” Responded were asked to answer if they are familiar with the concept of learning analytics. More than half (37) stated that the concept of LA was not familiar to them, 14 of them stated that they are familiar with the concept, and only 1 stated that he/she is partially familiar with the concept. (Fig. 2.)

Figure 2. Librarians familiarity of the concept of learning analytics
Q28 “Where did you hear about learning analytics?”
Those who were familiar stated that they heard about LA in literature and networking at conferences (9), from colleagues at the institution (3), in official documents and this survey (1).

Q29 “Does your institution have a learning analytics system?” There were 46 responses: 31 stated that they do not have, 8 stated that they have, 6 stated that they do not know, and 1 that they have it in a hybrid format (data sources are not connected in one single system). In the follow-up question (Q30) those who responded to previous question affirmative, they needed to name the system(s) that they use. They stated that the system they use is: a homemade system (7), some of them uses a commercial system (2), one stated that they use system developed outside of institution (it is not stated if it is a commercial or any other kind of system), and one respondent does not know.

Q31 “Are library data included in the LA system?” It is interesting that in additional question about library data inclusion in those systems 7 of them responded that they include library data and 4 that they do not include library data.

In the next question, Q32 “Specify how are library user activity data included in institutions learning analytics.” the respondents were asked to describe and specify how the user data activity is included in the intuitions learning analysis system. There were only 3 responses, stating that “the user activity data is included through a system of quality,” “through a program of information literacy in formal courses” and “data of library visits/circulation, literature usage for bachelor and master thesis.”

Also, at Q33 “What is the purpose of user activity data in LA system?” they needed to describe the purpose for which libraries are using user activity data in the LA system, and they stated: “to improve the quality of teaching and quality assurance of teaching programs”, “improving the educational role of the library”, “for statistical purposes”.

Q34 “Describe how does your library connect user activity data in learning analytics systems and information literacy education.” By connecting parts of librarians’ education activity with library user activity data, in this question participants needed to describe how they link user activity data in LA and information literacy education: (in only two response) they stated, “we send our data into the institutions quality system” and “through survey methods”.

Q35 “Is your institution engaged in learning analytics project(s)/initiative(s)?” More than half respondents (41) answered this question: 3 said that they are involved, 29 said that they are not, and 9 do not know if they are involved. For the definite answers, we added sub-question (Q36 “If yes, name the project(s)/initiative(s)!”) to give us the name of the initiative/project that they are involved in, and we received only one answer that stated: ERASMUS.

Q37 “Are there any indications that your institution is interested in learning analytics?” To get further in the institution willingness to include itself in LA we asked a question are there indications that their institution is interested in LA, overall of 38 participants answered: yes (17), no (13), and do not know (8).

Q38 “Does your institution have a program(s)/office(s) that is responsible for learning analytics projects/initiatives?” Of the 34 participants who responded to this question, most of them (26) do not have any program(s)/office(s) responsible for the LA project(s)/initiative(s), rest of them stated that they do not know (1) and only one (1) stated that they do.

Q39 “Name the program(s)/office(s) responsible for LA project(s)/initiative(s) at the institution.” only one stated that they have a program(s)/office(s) responsible for affirmative commenting and that it is the Quality Management Centre/Commission. Another participant stated that he/she does not presumes it is also the Quality management Centre/Commission that is responsible for it.

IV. DISCUSSION

This survey started from the general to common knowledge of usage of library user activity data to specific knowledge of learning analytics. A variety of perspectives about library data and user activity data were expressed with an overall look that most of the libraries still have a traditional way of examining data in the library.

Regarding the collection of user activity data, we can say that we are still in the traditional higher education library environment where the most critical data collected is about circulation, bibliometrics analysis, interlibrary loan requests, and copying or scanning on demand.

When asked about sending data for internal institutional use or for external sharing of data the majority of librarians stated they still uses statistics as a primary tool of proving their value. We can presume that the statistical reports were generated at the basic descriptive statistics level (keeping in mind the type of user activity data they collect, e.g., name and surname, e-mail). A possible explanation for these results may be the lack of visibility of libraries and librarians at the institutions (e.g., Q8 “to prove library value at the institution”). However, it is hard to prove academic library value (and visibility) to the institution, if the librarians still manually track data, if they are not familiar with the potential of the specific data sources or its segments, and if there is a lack of assessment culture in the library. It is visible that the librarians are confusing information about user data (personal data) with user data activity in the library. In question, Q11 it is visible that they do not recognize functionalities of the systems at the institutional or national level. The other potential reason problem could be in the lack of professional librarians in the libraries, or the lack of infrastructural support, and even financial support. Besides the above-stated problems in detecting and assessing data, only a small number of librarians are informed about data protection and the way we need to handle collected data.

Education activities of the librarians in the formal environment are almost at the bare minimum. The problem can be detected in the low inclusion of librarians into formal education (course or modules on information
literacy). With the inclusion of librarians in the educational activity, they will be aware of the potential of user activity data and even find new variables to correlate with other educational activities at the institutional level. Besides the formal education activity, the informal education activity was mentioned because the author wanted to know is there any interest among librarians to share user activity data from the educational activities, e.g., courses, workshops or instructions of information literacy. Similar to the data gathering, physical space is dominantly represented in the informal education environment of the workshops that are held by the librarians. The virtual environment, and respectively, data collecting of user activity in those kinds of informal environments are still not represented.

The previous sections of the survey support the relevance of the answers in the last fourth section. Lack of basic knowledge resulted in some misleading answers in the LA section. The answers from Q32-Q34 are the most apparent findings to emerge from this study. Only one response was consistent with the LA practice (the first answer in all questions). One of the misleading responses from the survey was when the respondents needed to describe and specify how the user data activity is included in the intuitive learning analysis system, they stated that (Q34): “we send our data into the institutions quality system” and “through survey methods”, which means that they are talking about assessment segment, not analytics. In this part, we can see that there is a common misconception about terminology regarding assessment analytics. Library assessment can help libraries to see, improve, communicate and demonstrate data by facilitating the data to data-informed decision-making process, also to identify trends, recommend changes, and demonstrate the library value to the institutions, and beyond that. As Oakleaf [12] states: library assessment that does not lead to a decision, actions, and communications with stakeholders is not worth doing. Librarians must take ownership of the decision-making process concerning what library data is used to support student learning and success.

If we compare answers with the LA segment, then we can see that the librarians are not aware of the difference between learning and academic analytics.

V. CONCLUSION

The practices and thoughts among the librarians in higher education institutions in Croatia about data in the library, educational practice and learning analytics have not been analyzed prior to this research. The survey focused on finding out the level of knowledge, preparedness and actual usage of LA in libraries and parent institutions. Currently, we are not ready for it, and our environment is not ready for it. For the better involvement of library, and data, librarians need to know the potential data and how we can channel them as the indicator(s) in the collaborating system such as learning analytics. There are still disputes whether we are talking about “library analytics” or “library assessment” and where is learning analytics situated among other assessment approaches – even in the literature. To be ready, as librarians, we need to be: more engaged in educational activities, to be the data-informed library community and to promote assessment culture not only to prove the library value but to use analytics as a supplement for constantly tracking and adapting to the new situations. We need to know the nature of user activity data, and only then we can be ready for the inclusion of library data in LA. As librarians, we do not need to stop when we find the “right compulsory” data. Library data and the library user activity data can help manage the activities, services, sources (whatever data we can gather) – but alone they cannot tell us anything about student learning. Local view and local data usage specific for the libraries will be most relevant and exceptional in higher education. As this topic is new, now is the moment for the librarians to explore what data can be useful, what activities can we include/correlate with library user activity data and LA. The crucial segment of being up to date with novelties in higher education librarianship is lifelong learning and positive and motivating examples from practice. However, for the future, we need to be careful that all collected and analyzed data do not become just another part of (learning analytics).

REFERENCES