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Identification of Gamification Components in Association with User Experience in the Services of Digital Libraries

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Abstract

The present research has been done with a view to identifying gamification components in association with user`s experience in the services of digital libraries. Typically, the research method has been a developmental and systematic review, and essentially an analytic one. The data collection was carried out based on three major components: gamification, user experience, and digital library services. 164 resources related to the three components have been found. After filtering the resources at three phases, 12 resources at the first phase and 41 resources at the second phase were omitted and the remainder exactly 37 resources which were more closely related to the gamification components in the interaction with user`s experience of digital library services, were identified, ranked and analyzed. The Findings show that gamification elements for digital library services

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include: certificate, achievement, membership law, ranking, digital products, signs, status and position, money, lottery, the Boss game, reward, present, feedback, navigation pages, Avatar, score, badges, narratives, prizes and badges collections and finally the resul the investigation of these components and analysis of the conceptual connection among them, show that the use of gamification elements for any digital library services develop the components "dynamism" and "gamification stimulants" such as competitiveness, attractiveness, excitement, hopefulness, challenge, victory and, etc in the users, and that ultimately leads to the utilization of digital library services and user`s satisfaction.

Keywords: Digital Library, Services, Gamification, User Experience, Systematic Review.

Introduction
Digital libraries are excellent in terms of the reliability of rendered services and their usefulness for users, but the problem is they don't attract users, and that in this information system, the interaction with users is of such poor quality. Today the reliability and usefulness of services alone do not suffice and the designers of information systems are expected to design them, so that they would be attractive to the users, and therefore, users would feel convinced to utilize those services constantly (Tak ,2020).

The term "Gamification" was presented in 2002 for the first time, but it received worldwide attention in 2010 (Jamshidy & Yavary 2013). Gamification attempts to increase the contribution of its users, solve problems or, develop a particular behavior in the target community by applying entertainment and fun elements. Gamification has an advantage over the other techniques of solving problems as it harbors man`s psychological tendency towards contribution and mental preoccupation with games. Given the motivational characteristics of games, using the principles of designing games (such as competition and cooperation) and components (such as challenges, points, and levels) in non-game contexts came to the fore as a widespread and powerful method of developing the behavior of library users. Gamification induces a sense of autonomy and predominance in the individual by increasing the rate of satisfaction with self-conduct, by evoking the sense of successfulness in the achievement of goals, by facilitation of social interactions, and by boosting collective socialization, and it wins more enthusiastic and faithful users by means of entertainment (Bohm & Leimeister,2013). Gamification denotes a set of software and hardware in a non-game contexts using the existing components of the games to increase the motivation of users by engendering entertainment which finally leads to the development of a particular behavior in the user (Zarrin Masule,2018).

The experts of the gamification realm mention three chief components for games and gamification including stimulants (the game mechanism), structures (the game dynamism and elements of the game (comprising faces, signs, steps, scores, score-board, and etc.). Since the game elements are more objective and exposed to the audience and users than structures and stimulants, they would better be implemented in the successful and user-friendly design of services

at the digital library system (Bigdely et al, 2017). Gaming-related stimulants can be used in non-gaming contexts such as digital libraries (Basirian Jahromi, 2017). The stimuli and components of playmaking must be combined with the experiences that users gain while using digital libraries and implemented in the digital library system.. Several researches in Iran and abroad have been done into gamification and user`s experience. Legzian(2015), Salavatyan(2016), Zarrinbal(2016), Karimy & Nikpayam(2016), Spina Carli(2013), Hamari & Sarsa & Koivisto(2014) dealt with gamification; Rajabali Baglu & his colleagues (2016), Baktash & Farajy (2019) worked on the concept of user`s experience; Basirian Jahromy (2016), Bigdely, Heidary, Hajy Yakhchaly, Basiry Jahromy (2017), Khorram & Monfarred (2017), Bigdely (2017), Walsh(2014), Barr & Munro & Hopfgatner(2017), and Barokati(2017) looked into gamification in library services and library websites. Ansary Tady (2017) researched into gamification and its role in the management of user`s experience of computer games, and Lin Hsu (2018) did research entitled" How gamification enhances user`s experience".

given the previous researches, and also the fact that there is still a lot to investigate, it was decided to collect the gamification components in association with user`s experience in digital library services, so that the goals pertaining to this system including user attraction and using services, could be realized in future by applying the components in the digital library context.

The major variables of this research include gamification, user experience, and digital library services. The user while utilizing the digital library services, gains some experiences that can be traced in various articles. Also, the gamification components in many different systems and organizations have been applied in a large number of articles for the progress of organizational goals. In this research the components in question have been collected to enhance user`s experience, so that we will be able to implement gamification based on a conceptual model in the digital library context for any of its services in the future.

Consequently, the present research to identify gamification components in association with user`s experience in a variety of digital library services (including education and learning, news, uploading resources, search, online loan, membership, ask the librarian, ordering documents, and the society of library talks) is intending to answer the following question: What are the gamification components in association with user`s experience in digital library

services?

Methodology

The present research has been a systematic review with an analytic approach. Using this method, the resources pertaining to the research were collected and selected for a more precise survey and finally were reviewed based on a determined and systematic guideline, so that the different aspects and components in question could be identified.

The present research community contains all the researches done into the digital library domain, library software, and information systems. To find the resources in the above-mentioned domain, 97 phrases were selected by using Boolean Operators from the combination of five key-words, crucial to the research, namely, gamification, digital library, user`s experience, digital library services, and library(see the table below).

AND		OR		NEAR
gamification		gamification OR digital libraries		gamification NEAR libraries
gamification+libraries		gamification OR user experience		gamification NEAR/"digital libraries"
gamification+"digital libraries"		gamification OR user experience-digital libraries		gamification NEAR/"digital libraries services"
gamification+"digital libraries services"		gamification OR "digital libraries services"		
gamification+"libraries services"				
gamification+user				
gamification+user-libraries				
gamification+ user experience				
gamification+ user experience + "digital libraries services"				
gamification+ user experience +"digital libraries"				
gamification+user +"digital libraries"				

truncation		NOT		NEAR
بازی وارسازی		"user experience"		gamification "user experience"-game
بازی وارسازی و کتابخانه دیجیتال		"digital libraries services"		gamification "user experience" +"digital libraries"-game
کتابخانه دیجیتال		"digital libraries"		gamification "user experience" + "digital libraries services"-game
تجربه کاربر		gamification elements"		gamification+"libraries services"-game
خدمات کتابخانه دیجیتال		"digital library services"		gamification+"digital libraries services"-game
خدمات کتابخانه		gamification-libraries-game		gamification+"digital libraries"-game
کتابخانه				gamification+"libraries services"-game
				gamification+user experience + "digital libraries services"-game
				gamification+user + "digital libraries services"-game

ADJ		NEXT	
gamification ADJ/libraries		gamification NEXT/ libraries	
gamification ADJ/"digital libraries"		gamification NEXT/"digital libraries"	
gamification ADJ/"digital libraries services"		gamification NEXT/"digital libraries services"	
gamification ADJ/"libraries services"		gamification NEXT/"libraries services"	
gamification ADJ/user		gamification NEXT/" user experience"	
gamification ADJ/user experience			
gamification ADJ/ digital libraries services" ADJ/user			
gamification ADJ/"digital libraries" ADJ/" user experience"			

AND	AND	AND
"digital libraries services"	digital libraries	libraries
"digital libraries services"+user	digital libraries+user	libraries+user
"digital libraries services"+"user experience"	digital libraries+"user experience"	libraries+"user experience"
OR	digital libraries + "libraries services"	libraries + digital services
"digital libraries services" OR user	OR	OR
"digital libraries services" OR "user experience"	digital libraries OR user	libraries OR "user experience"
NEAR	digital libraries OR"user experience"	libraries OR user
"digital libraries services" NEAR/ user	digital libraries OR libraries services	NEAR
"digital libraries services" NEAR/ "user experience"	NEAR	libraries NEAR/ digital services
NEXT	digital libraries NEAR/ user	libraries NEAR/ "user experience"
"digital libraries services" NEXT/ user	digital libraries NEAR/ "user experience"	NEXT
"digital libraries services" NEXT/ "user experience"	digital libraries NEAR/ "libraries services"	libraries NEXT/ digital services
ADJ	digital libraries NEAR/services	libraries NEXT/ "user experience"
"digital libraries services" ADJ/ user	NEXT	ADJ
"digital libraries services" ADJ/ "user experience"	digital libraries NEXT/ user	libraries ADJ/user
	digital libraries NEXT/ "user experience"	libraries ADJ/"user experience"
	ADJ	libraries ADJ/ digital services
	digital libraries ADJ/ user	
	digital libraries ADJ/ "user experience"	
	digital libraries ADJ/ "libraries services"	
	digital libraries ADJ/services	

The resulting 97 phrases were searched at the following websites: Irandoc, Springer, "elmnet.ir", Noormags, Google Scholar, magiran, Science Direct, SID, "ensani.ir", and Allameh Tabataba'i digital library, and 164 resources were found. In the present research, only the resources in the format of articles and books were consulted and research proposals were not considered. In this research, the studied population refers to the thematic domain of the article, i.e. digital library, so in the course of our systematic review the resources dealing with digital library, library software, and information systems were taken into account, and eventually considering these criteria, 53 resources were left out at this phase.

Then the quality of studies was evaluated based on the protocol, and it turned out that through several stages of filtering, 37 resources had the most to do with the major components of the research,

consequently, the present research encompasses 37 specimens that were subjected to data extraction.

Table 1- List of selected resources

No	Selected resources	Author/publication year	No	Selected resources	Author/publication year
۱	Evaluation of digital library indicators	Noruzy 2004	20	Components influencing user`s satisfaction with digital libraries	Noruzy 2004
۲	A survey of digital library services in Iran and the world: introducing suggested services for Iran`s digital libraries	Noruzy 2010	21	General principles of the criteria for measuring user`s experience	Baktash & Farajy , 2019
3	Evaluation and comparison of digital Islamic libraries from user interface`s point of view and search abilities	Azary 2010	22	Digital library services: perceptions and expectations of user communities and librarians in a New zealand academic library	Xia 2003
4	Comparing user interface of Iran`s selected digital libraries with those of the world`s selected digital libraries	Khabbaz Bajestany 2011	23	Assessing digital library services: Approaches, issues, and considerations	Carlo Bertot 2004
5	Evaluation of usability of digital libraries at Tehran`s state universities	Adaby Firoozjah 2011	24	Evaluation of digital libraries: Criteria and problems from users' perspectives	Xie 2006
6	Evaluation of the quality level of digital	Aminy Sartashnizy 2014	25	A User-Centric Evaluation of the Europeana Digital	Dobreva 2007

No	Selected resources	Author/publication year	No	Selected resources	Author/publication year
	library services at Tehran`s state universities based on Digiqual model			Library	
7	Gamification: a newly emerged tool in knowledge management systems	Ziya8ny 2015	26	Upgrading the user experience of digital library	Deng 2008
8	A survey of gamification components in the efficiency of suggested social networks	Legzian 2015	27	Exploring User Experiences with Digital Library Services: A Focus Group Approach	Kiran 2008
9	Familiarity with gamification	Fotuhy 2015	28	User experience in the library: a case study	Sadeh 2008
10	Priorities expected by users from the interface user page of the studied digital library: The organization of Archive and National Library of the Islamic Republic of Iran	Noruzy 2015	29	A Comparative Study of Digital Library Use: Factors, Perceived Influences, and Satisfaction	Liu 2011
11	Design and implementation of gamification software of library website and surveying the influence of its use on the self-	Bigdely 2016	30	Modeling Web-based library service quality	Kaur 2012

No	Selected resources	Author/publication year	No	Selected resources	Author/publication year
	determination components of library users				
12	A survey of gamification influences on behavorial effects	Ziany 2016	31	An evaluation based on the digital library user: an experience with greenstone software	Tramullas 2013
13	Potentialities of gamification in increasing audience`s involvement in media, case study: I.P.T.V of IRIB	Karimy & Salavatyan 2016	32	Gamification in library websites based on motivational theories.	Bigdeli 2016
14	Gamification of library services: a novel concept interacting with users	Basirian Jahromy 2016	33	Factors influencing users' satisfaction and loyalty to digital libraries in Chinese universitie	Xu 2018
15	User`s experience in interaction with the systems of digital library in Iran: shortcomings and expectations	Rajabaly Baglu 2016	34	MEdit4CEP-Gam:A model-driven approach for user-friendlygamification design, monitoring and code generation in CEP-based systems	Calderón 2018
16	Gamification, new technology in the world of business	Salavatyan 2016	35	Information Resource, Interface, and Tasks as User Interaction Components for Digital Library Evaluation	Li 2019
17	Designing the conceptual model for gamification`s	Zarrinbal 2017	36	Gamification: Predicting the effectiveness of variety game design	ChuiWee 2019

No	Selected resources	Author/publication year	No	Selected resources	Author/publication year
	implementation in the registration system of dissertations at the research center of science and technology of Iran`s information			elements to intrinsically motivate users' energy conservation behavior	
18	Application of gamification in the systems of knowledge management	Aghayee 2017	37	Investigating the Effect of Gamification Mechanics on Customer Loyalty in Online Stores	Fathian 2019
19	Bookcase system: The first system of gamificated library in Iran	Bigdely 2017	-		

The collected data have been surveyed analytically. According to this method, the criteria and components collected from selected resources have been analyzed and surveyed, so that the subject categories in question would be retrieved and in analyzing context, the extracted criteria from the previous phase were classified based on the major components of the present research.

Findings
Gamification components in association with the components of user`s experience for any digital library service were identified, assorted, and analyzed. These components in all types of digital library services including (education & learning, the news, downloading, and uploading resources, search, electronic loan, membership, ask the librarian, ordering documents and the society of library talks) are shown in the tables below:

Education & learning

Components of user`s experience for education and learning at digital libraries, which are associated with dynamism components (gamification stimulant) and gamification elements are presented at the table below:

Table 2- the connection between components of user`s experience and gamification components in the process of education & learning

No	Components of user`s experience in connection with education and learning service	Dynamism and gamification stimulant components	Gamification Elements
1	Information presentation level	Progress, enabling	Certificate
2	Possibility of direct interaction between user and website	interaction	Certificate, achievement
3	Helping user with trouble-shooting	Being at the center of attention, enabling	Certificate
4	Number of educational sessions	enabling	Certificate
5	Considering special users	restriction	Membership law, ranking
6	Attraction and maintenance of users in reusing the system	Progress, feeling of being nearly done	Certificate
7	Teaching search skill	Progress, interaction	Certificate

Our findings show that dynamism and gamification stimulant components: progress, enabling, interaction ,being at the center of attention, restriction, and the feeling of being nearly done, are associated with user`s experience components for education & learning service and can be implemented along with the following elements: certificate, achievement, membership law and the ranking of gamification.

The news

The components of the user experience for the service at digital libraries, which are associated with dynamism (gamification stimulant) components and gamification elements, are presented in the table below:

Table 3- connection between the components of user`s experience and those of gamification in the news

No	Components of user`s experience in connection with news service	Dynamism and gamification stimulant components	Gamification elements
1	Digital library website helps the users to remain informed of existing developments in their favorite area of interest	Philanthropy, hopefulness, interaction, unpredictability	Digital products, certificate
2	Attraction and maintenance of users in reusing the system	Philanthropy, hopefulness, interaction	Digital products, certificate
3	Possibility of direct interaction between user and website	Philanthropy, hopefulness, interaction	Digital products, certificate
4	The fact that some of the salient potentialities are not hidden	Philanthropy, hopefulness, interaction	Digital products, certificate
5	User`s awareness of information system services	Philanthropy, hopefulness, interaction	Digital products, certificate
6	Keeping the information presented by information systems up-to-date	interaction	Digital products, certificate
7	Stages of accessing information	Interaction, restriction	Digital products, certificate, membership law
8	Information presentation level	Interaction, restriction	Digital products, certificate, membership law
9	Helping users with trouble-shooting	Philanthropy, restriction	Digital products, certificate, membership law
10	Access to the news	interaction	Digital products ,certificate

According to the findings, dynamism (gamification stimulant) components such as philanthropy, hopefulness, interaction, unpredictability, restriction, and enabling are associated with the components of user`s experience for the news service, which can be implemented along with the following elements: digital products, certificate, membership law, and gamification signs.

Downloading and uploading resources

The components of user`s experience for downloading and uploading services at digital libraries, which are associated with dynamism (gamification stimulant) components and gamification elements, are presented in the table below:

Table 4- connection between components of user`s experience and gamification components in downloading and uploading

No	Components of user`s experience in connection with downloading and uploading service	Dynamism and gamification stimulant components	Gamification elements
1	System`s flexibility given the level of user`s skill	competitiveness	Status, money, ranking , digital products
2	Being free and accessing resources	Progress, interaction, self-importance, philanthropy, enjoyment	Lottery, digital products, Boss game, reward, achievement, ranking
3	Inter-library loan of information resources	Interaction, cooperation	Digital products, achievement, ranking
4	Possibility of downloading and uploading resources	Progress, fame due to achievement, air of winning or losing, feeling of being nearly done, competition	Status and position, money, ranking, digital products, reward, achievement, Boss game, presents, lottery
5	Helping users with trouble-shooting	Interaction, cooperation	Digital products, achievement, ranking
6	Stages of accessing information	Cooperation, hopefulness	Digital products, achievement
7	Considering special users	Competition, restriction, progress	Status and position, money, ranking, digital products
8	Permanent access to the resources themselves	Air of winning or losing, fame due to achievement, progress, competition, enabling	Status and position, money, ranking, digital products
9	Attraction and maintenance of users in reusing the systems	Progress, air of winning or losing	Reward, lottery, digital products, Boss game, ranking, presents
10	Information presentation level	Progress, competition	Status and position, money, ranking, digital products

Our findings show that the dynamism (gamification stimulant) components including competition, progress, interaction, self-importance, philanthropy, enjoyment, interaction, cooperation, fame due to achievements, the air of winning or losing, feeling of being nearly done, hopefulness, restriction, and enabling are associated with user`s experience components in downloading and uploading service, which can be implemented at digital libraries along with the following elements: status and position, money, ranking, digital products, lottery, the Boss game, reward, achievement, and presents.

Search

User`s experience components in search service at digital libraries, which are associated with dynamism (gamification stimulant) components and gamification elements, are presented at the table below:

Table 5- connection between user`s experience components and gamification components in search

No	User`s experience components in connection with search service	Dynamism and gamification stimulant components	Gamification elements
1	Contacting the existing search-engines	Interaction, enabling	Digital products, feedback, navigation pages, signs
2	Helping users with trouble-shooting	Interaction, enabling	Digital products, feedback, navigation pages, signs
3	Filtering based on author, date, language and subject	Interaction, enabling	Signs and digital products
4	Suggesting search words	Interaction, enabling	Digital products, feedback, navigation pages, signs
5	Teaching search skill	Interaction, enabling	Digital products, feedback, navigation pages, signs
6	Reducing users` errors while working with system	Interaction, enabling	Digital products, feedback, navigation pages, signs
7	Possibility of repeating the search on the search results page	Interaction, enabling	Digital products, feedback, navigation pages, signs

No	User`s experience components in connection with search service	Dynamism and gamification stimulant components	Gamification elements
8	Use of search history by users	Interaction	Digital products, feedback, navigation pages, signs
9	Possibility of adjusting and restricting search results	Interaction	Digital products, feedback, navigation pages, signs
10	System`s flexibility given the user`s level of skill	Competition, enabling, interaction, hopefulness, excitement	Ranking, digital products, feedback, navigation pages, signs, Avatar
11	Presence of digital resource tags for better retrieval	Interaction, enabling	Digital products, feedback, navigation pages, signs
12	Limiting search to special libraries	Interaction ,enabling	Digital products, feedback, navigation pages, signs
13	Digital library website helps users to remain informed of existing developments in their favorite area of interest	Interaction, enabling	Digital products, feedback, navigation pages, signs
14	Content indexing by search engine	Interaction, enabling	Digital products, feedback, navigation pages, signs
15	Possibility of controlling search by means of special factors in the stages of search and its progress	Interaction, enabling	Digital products, feedback, navigation pages, signs

According to the findings, dynamism and gamification stimulant components including interaction, enabling, progress, competition, hopefulness, and excitement are associated with the user`s experience components for search service which can be implemented at digital library services along with the following elements: digital products, feedback, navigation pages, signs, and Avatar.

Electronic loan service
User`s experience components in electronic loan service at digital libraries, which are associated with dynamism (gamification stimulant) components and gamification elements, are presented at the

table below:

Table 6- connection between user`s experience components and gamification components in electronic loan

No	User`s experience components in connection with electronic loan service	Dynamism and gamification stimulant components	Gamification elements
1	Considering special users	Competition, enabling, restriction	Score, reward, badge
2	Inter-library loan of information resources	Cooperation, enabling	Achievement, digital products, score, reward, badge
3	Stages of accessing information	Hopefulness, interaction	Achievement, digital products, narratives
4	Attraction and maintenance of users in reusing the systems	Air of winning or losing, enabling	Score, reward, badge
5	System`s flexibility given user`s level of skill	Hopefulness, interaction	achievement
6	Sharing resources	Cooperation, enabling	Achievement, digital products, score ,reward, badge
7	Being free and accessing resources	Interaction, hopefulness	Achievement, digital products, narratives
8	Helping users with trouble-shooting	interaction	Achievement, narratives
9	Information presentation level	Competition, combat	Score, reward

According to the findings, dynamism and gamification stimulant components including competition, enabling, restriction, cooperation, hopefulness, interaction, the air of winning or losing, and combat are associated with user`s experience components for electronic loan service, which can be implemented at digital libraries along with the following elements: score, rewards, badge, achievement, digital products, and narratives.

Membership service
User`s experience components for membership service at digital libraries, which are associated with dynamism (gamification stimulant) components and gamification elements, are presented at the

table below:

Table 7- connection between user`s experience components and those of gamification in membership

No	User`s experience components in connection with membership service	Dynamism and gamification stimulant components	Gamification elements
1	Possibility of establishing a private library	Self-importance, ownership, independence	Avatar, collection of awards and badges
2	Entering as a guest	Philanthropy, interaction	presents
3	Considering special users	enabling	Reward, badge, score
4	Ownership and the sense of belonging to a digital library	Independence, ownership, self-importance	Avatar, collection of awards and badges
5	Use of search history by users	enabling	Reward, badge, score
6	Attraction and maintenance of users in reusing the systems	Reliance on the system, combat, competition, excitement, restriction, enabling	Avatar, status and position, reward, badge, score, lottery
7	Digital library website helps users to remain informed of the existing developments in their favorite area of study	Position, enabling, hopefulness, progress	Collection of awards and badges, reward, score

Our findings show that dynamism and gamification stimulant components including self-importance, ownership, independence, philanthropy, interaction, enabling, reliance on the system, combat, competition, excitement, restriction, and hopefulness are associated with user`s experience components for membership service which can be implemented at digital libraries along with the following elements: Avatar, collection of awards and badges, presents, reward, score, status, and position and lottery.

Ask the librarian services

User`s experience components for ask the librarian service at digital

libraries, which are associated with dynamism gamification stimulant components and gamification elements, are presented in the table below:

Table 8- connection between user`s experience components and gamification components in ask the librarian service

No	User`s experience components in connection with ask the librarian service	Dynamism and gamification stimulant components	Gamification elements
1	Helping users with trouble-shooting	Interaction, enabling	signs
2	System`s flexibility given the user`s level of skill	enabling	signs
3	Bilateral connection with librarians and other users	Interaction, enabling	Signs
4	Simultaneous and interactive communication with reference librarian	Competition , progress, restriction	Signs, money, membership law, ranking
5	Considering special users	Competitiveness, challenge, decoding content and puzzles, philanthropy	signs
6	Stages of accessing information	Interaction, enabling	Signs

Our findings show that dynamism and gamification stimulant components including interaction, enabling, competition, progress, restriction, challenge, decoding, content and puzzles, and philanthropy are associated with user`s experience components for ask the librarian service, which can be implemented with the following elements: signs, money, membership law, and ranking at digital libraries.

Ordering document
User`s experience components for ordering document service at digital libraries, which are associated with dynamism gamification stimulant components and gamification elements, are presented at the table below:

Table 9- connection between user`s experience components and those of gamification in ordering document

No	User`s experience components in connection with ordering document	Dynamism and gamification stimulant components	Gamification elements
1	Inter-library loan of information resources	Cooperation, interaction	Achievement, digital products
2	System`s flexibility given the user`s level of skill	interaction	Digital products
3	Considering special users	restriction	Membership law, ranking
4	Helping users with trouble-shooting	cooperation	Digital products
5	Stages of accessing information	cooperation	Digital products
6	Attraction and maintenance of users in reusing the systems	Enabling, feeling of being nearly done	Digital products, achievement

According to the findings, dynamism and gamification stimulant components including cooperation, interaction, restriction, enabling, and feeling of being nearly done, are associated with user`s experience components for ordering document service, which can be implemented at digital libraries along with the following elements: digital products, membership law, ranking, and achievement.

Online book-reading

User`s experience components in online book-reading service at digital libraries which are associated with dynamism gamification stimulant components and gamification elements, are given at the table below:

Table 10- connection between user`s experience components and those of gamification in online book-reading

No	User`s experience components in connection with on-line book-reading service	Dynamism and gamification stimulant components	Gamification elements
1	Inter-library loan of information resources	cooperation	achievement
2	Information presentation level	Interaction, cooperation	Achievement, digital products, reward
3	Considering special users	Air of winning or	Score, badge, reward

No	User`s experience components in connection with on-line book-reading service	Dynamism and gamification stimulant components	Gamification elements
		losing, enabling	
4	Sharing resources	cooperation	Achievement
5	Possibility of establishing a private library	Progress, interaction	Score, membership law, reward, digital products
6	Virtual reference services	interaction	Achievement, digital products
7	Helping users with trouble-shooting	Cooperation, interaction	Achievement, digital products

Our findings show that dynamism and gamification stimulant components including cooperation, interaction, enabling, the air of winning or losing, and progress are associated with user`s experience components for online book-reading service which can be implemented at digital libraries along with the following elements: achievement, digital products, reward, score, badge, and membership law.

The society of library talks

User`s experience components in society of library talks service at digital libraries, which are associated with dynamism gamification stimulant components and gamification elements, are presented at the table below:

Table 11- connection between user`s experience components and those of gamification in the society of library talks

No	User`s experience components in connection with society of library talks service	Dynamism and gamification stimulant components	Gamification elements
1	Existence of human aid	Show off, cooperation, leverage, philanthropy	Score, feedback, signs
2	Possibility of direct interaction between user and website	Philanthropy, enjoyment, cooperation	Feedback, signs, score
3	Considering special users	restriction	Avatar, membership law, ranking, status and position
4	System`s flexibility given	restriction	Avatar, membership

No	User`s experience components in connection with society of library talks service	Dynamism and gamification stimulant components	Gamification elements
	user`s level of skill		law, ranking, status and position
5	Attraction and maintenance of users in reusing the systems	Enabling, challenge, interaction, philanthropy, self-importance	Feedback, signs, score
6	Common question	interaction	Signs, feedback, score
7	Stages of accessing information	leverage	Signs, score
8	Helping users with trouble-shooting	cooperation	Signs, feedback
9	Communication with existing social networks	Philanthropy, leverage, enjoyment, curiosity, cooperation, show off	Feedback, signs, score

Our findings show that dynamism and gamification stimulant components including show off, cooperation, leverage, philanthropy, enjoyment, restriction, enabling, challenge, interaction, self-importance, and curiosity are associated with user`s experience components for society of library talks service, which can be implemented at digital libraries along with following elements: score, feedback, signs, Avatar, membership law, ranking and status, and position.

Conclusion

Today we can economize on manpower, time and expenses and obtain optimal results by acquiring the required knowledge about some techniques of attracting users and methods of interacting with users. Also, in a digital library by applying the gamification`s effective and practical components and setting up an attractive and stimulant environment for library users, not only can we realize the library`s policies and goals, but also increase the number of digital library users and anticipate a rise in the rate of online reading and the use of digital library in immediate future.

Given a survey of user`s experience components and gamification components at the digital library system, models were designed and

presented in this part. By analyzing them, we have discovered that we can add and replace some services by using gamification components at an information system because some services like simultaneous talk with the librarian are per se attractive and efficient for a researcher, and can induce the sense of direct interaction in the user with the system, but some of the services such as membership are not agreeable to the user and they would rather access all services without doing anything extra. The analysis of data and the models led us to believe that we can use this type of service by implementing a really attractive narrative and scenario, thus, we can see to it that the user gets what he or she wants by playing the tricks in the course of the game and also that his or her sense of ownership and reliance on the system is aroused, which could lead to the return of the user to the information system.

As mentioned earlier, in every game there is the air of winning or losing, therefore, an exclusive service should be considered as the final stage and the Boss game for the digital library too. For example, at a digital library the possibility of downloading and uploading a digital product or having permanent or temporary access to owned (=not free) websites should be considered so that when the user enters such a system, he is motivated to play the game knowing that there is something to gain at the end.

based on the findings of the present research, we can possibly implement a system within a digital library in accordance with the identified elements and compatible with user`s experience and as these findings are ready to be implemented, we venture some suggestions as to how to implement the presented elements.

Provided that we adopt the following gamification elements including score and rewarding system, restriction and enforcement of the law, the possibility of ranking resources and users, the possibility of registering feedback, the possibility of presenting certificates to users, promoting user`s status and the possibility of personalizing services, we will be able to come up with dynamism and gamification stimulant components such as competitiveness, motive, attraction, sense of ownership, excitement, hopefulness, and cooperation. Given the presented results the following operational suggestions are set forth for the enhancement of user`s experience at digital libraries:

-before designing the system of a digital library, users` needs should be surveyed and gamification components implemented.

-the search should be intelligible based on the gamification components so that a large number of users will be attracted by the digital library.

-digital library should be able to register users'feedback.

- users should be ranked and have different positions in the digital library system.

-only if they are members or have achieved a good score, should they be allowed to access some of the library services.

- periodical discounts should be provided for access to owned resources.

- the rewarding system should be implemented at the digital library.

And finally, the digital library users should be enabled to score the resources and to leave comments.

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