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A Scientometric Analysis and Visualization of the Universal Reading Motivation Studies Based on Co-Word and Co-Author

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Abstract

Reading is an intellectual process that everyone for doing it, need to motivation, so that they can interrelate with the concepts of the texts that they read. Reading is the agent of wisdom and knowledge. Today is the age of information. Information is power. People who have internal motivation for reading information resources, are those who have information and change it to knowledge and knowledge is the power of readers who have internal motivation. The aim of present research is to analyze world scientific studies on reading motivation based on Scientometric and benchmarks of centrality in articles of web of science website from 1983 to 2018. This study is a descriptive, analytical, cross-sectional and Scientometric research. The statistical population under study are 267 published articles on the motivations of reading in web of science website from 1983 to 2018. In the present study, the 267 articles are divided into 6 clusters based on reading motivation studies. The USA, Germany, England and Australia have the most numerous articles on reading motivation. People like Guther, Moeller, Schefle, Gutherie and Wigfield have been the most effective in producing articles on reading motivation in youth. Regarding the Scientometric content analysis, the published articles in web of science data center were divided into 6 clusters. Numerous factors have played a role in reading motivation. Regarding the accomplished studies, these factors include external motivation like education, brain electromagnetic induction, teaching students to read accurately and voluntarily during primary school, the role of youth in promotion of reading, competition, sponsoring; and internal motivation like child psychology, having a purpose, personal and intrinsic behaviors, self-regulation, comprehension and articulation.

Keyword: reading motivation, Scientometric methods, visualizing the structure of reading motivation, reading motivation co-author analysis, reading motivation co-word analysis.

Introduction

Reading Study Group (2002, p.11) defined reading as “the process of extracting and constructing meaning through interaction and involvement with written language”. According to them, when people comprehend the reading text that they are interact among their mind and motivation, the text, the activity, and the larger context that they have been placed. In their 1985 report, becoming a Nation of Readers: The Report of the Commission on Reading Anderson, Hiebert, Scott, and Wilkinson defined reading and proposed five principles that guide its successful enactment: (1) reading is a constructive process, (2) reading must be fluent, (3) reading must be strategic, (4) reading requires motivation, and (5) reading is a continuously developing skill (Frankel, 2016). One of this principles is reading motivation. Reading requires motivation and

engagement, but it is also influenced by readers' experiences with reading over time, the norms for reading that shape those experiences, and the reading identities that develop in and through those experiences. Thus, literacy practices and motivations are not only contextualized socially and culturally but also historically (Frankel, 2016).

Reading will help the readers to have a dynamic mind, progress in job conditions, good life, success in social, personal, cultural, economic and political affairs and a man who can compete with others. Ivey and Johnston (2013, 2015) found that that secondary classroom structures and activities that support engaged reading as part of social practices had transformative effects for both teachers and students (Ivey & Johnston, 2015), with students reporting a range of positive outcomes related to reading (e.g., talk about books, knowledge about books), as well as outcomes related to their social, cultural, and emotional lives (Ivey & Johnston, 2013). The nature of, and relationship between, motivation and engagement changes as readers move through school. Self-efficacy, intrinsic motivation, and valuing reading all motivational factors that lead to increased engagement tend to decline as students' transition from elementary to middle school (Guthrie, 2015). Specifically, the perception that reading is difficult and the belief that reading is not beneficial become more salient predictors of reading achievement as students move through middle school. Both beliefs lead to decreased engagement (e.g., avoidance). Moreover, as readers enter middle school, intrinsic motivation becomes more nuanced and contextually dependent and may be different depending on the type of text and context (e.g., literary texts in English versus informational texts in history or science) (Guthrie, 2015).

Reading is an intellectual process that everybody for living in personal, social, cultural, economic, political and totally, in all aspects of his/her life need to it. Reading motivation can be one of the above mentioned aspects. So, researchers in all fields can study reading motivation as their research field. In this research, it is tried to extract the fields that has done the most studies in reading motivation, the authors and the countries, which has done the most in this topic and the concepts centrality during 1983-2017. Co-author analysis, co-word analysis and concepts clustering of reading motivation studies, analyzed by scientometric approach and data mining as new methods which are the results of computer science and new informational and communication technologies. The evolution of topics and fields in every science through history for analyzing concept centrality, author relationship and co-ward analysis was done by different approaches. Today the scientometric approach and data mining have the most application.

The children who read for pleasure are intrinsically more motivated than children who rarely read for pleasure. and children who read from e-books are more intrinsically motivated to read than children who read from traditional print books.

The significance of scientometrics networks which have been used in this study is so high that some researchers used different persian equivalents such as density and compression for this term and consider these networks indicative of knowledge structure (Khazaneha, 2019). In other

words, it can be said that studies on bibliometric and existing approaches within this field are seeking relations between sources and writers, their analysis and interpretation and recognizing sources, people and important factors which can be effective in improvement of research process and a better recognition of the nature of different sceintific areas (Shafiei & Khazaneha, 2018). This is specially embodied in relation to interdisciplinary sciences which are the product of links among several different scientific areas (Baji & Osare, 2015). Studying knowledge generating networks and the evaluation of knowledge for future planning, research programming, conscious decision making and investigating dynamism and science evolution have always been considered, so that the philosophy of science, science, sociology, the history of science and science policy, each with a different approach and viewpoint have been studied as a separate branch of science (Gupta & Bhattacharya, 2004). One of the ways in the development of countries is the time used for studying. Since the habit of studying is formed during childhood and youth, the factors leading to increase in study motivation in these periods has to be regarded as essential. When human beings become aware about the necessity and advantage of an issue, that issue is formed in them and becomes part of their behavior and external factors cannot play any role in modifying that behavior. Psychologists believe that students'motivation to learn school lessons is more related to factors like self-confidence, hardwork, concentration, inclination to continue studying after the class and doing homework (Reeder, 2010).

Studying is one of the most crucial ways of development in our country. The low capitation of studying in Iran and its unknown cause forces us to recognize the factors effective in study motivation in order to institutionalize studying in students. In this research, an attempt is made to analyze reading motivation studies and to draw the scheme of factors affecting the motivation for studying to contribute efficiently to the growth of studying capitation in our country. The results of this research can help the education system to become familiar with universal motivations for studying and use them in decision making and planning to get students motivated and to make the necessary changes to increase students' motivation. The results of this research also show our position in performing research onreading motivation and helps us to become familiar with our weaknesses on studies about reading motivation

Background

Many studies have been done on reading and reading motivation and reading habits, prior to this research. Most of previous studies are qualitative and quantitative. There are not much analytical studies with scientometric and bibliometric approaches in reading motivation.

SaifulFarik et al found the issues in reading habits and reading activities in Malaysia, the pattern and trend of publish materials, the initiatives taken by the government agencies, non-governmental organizations (NGO), private institutions and also academic research that will give maximum impact toward reading habits and to suggest means or methods in nurturing reading habits among Malaysian. They used Bibliometrics study to explore who has written about

reading activities and reading concepts in which literatures, what topics have been discussed, and which research methods applied (SaifulFarik, 2014).

Del Rey Morante and Pino-Juste have done a research on the bibliometric and content analysis regarding scientific work on teacher motivation published from 1970 to 2012 in the international arena. Their results show that the number of publications is higher between the years 2000 and 2012. The journal with the highest number of publications on this subject is the "Journal of Educational Psychology." Most of the articles are signed by a single author and the most common contents correspond to empirical studies relating to teacher motivation.

Najas-Garcia, Carmona and Gómez-Benito) research by scientometric approach, showed that a significant growth in the number of studies, especially in recent decades, with 20.49% of the studies included in this study being published in 2015., North America produces the most reports: the USA and Canada were the countries with the greatest volume of published research over the period studied and authors do not establish sufficient contact with their international colleagues(Najas-Garcia, Carmona and Gómez-Benito, 2018).

Various factors are discussed in many articles for instance found that teaching the method of planning and time management is ineffective on the amount of students' educational development, but it does influence their motivation for development. Also, teaching the method of concentration and memory is effective in educational progress and developing their motivation(Keramati & Vofoori, 2017). In another study , a significant and positive relationship was found between identity styles and development of motivation. Therefore, it seems that to achieve educational development attention to identity styles is essential(Fateme Ghasempoor et al, 2017) and as well as in Guthrie et al's research (2006) reading motivation has been observed as a multi purpose structure with several sub-components. Research on multifold motivation using motivation structures (interest, comprehension control, cooperation, interference, efficiency), generic text, general and common texts, and self ideal resources about other motivations have spread. Students' reading study motivation for narrative texts and information was not closely related; and her own reports and other motivational reports were not heavily dependent, but place motivation and shared place ones were correlated. Interview-based coding predicted the motivation of studying growth, but reading comprehension did notpredict motivational growth and also in a study done, it was found that the combination of class text variables including educational support for choice, importance, cooperation and competency along with cognitive framework for text comprehension in 4-week educational courses for 615 students was 7 degree. This motivational support was performed in a classroom to teach consistent/lesson literacy in instruction of conceptual studying concepts. Studying concepts in comparison with traditional training in experimental scheme increased different comprehensions of education. According to multi-fold regression anaysis, students' comprehension of motivation-supporting interaction with students' inner increase of motivation, value, comprehended competency and increase in positive interaction (committment) in instruction of

studying conceptual concepts has increased compared to traditional tuition. Findings expanded evidence for efficacy of reading conceptual concepts of history and informational issues among guidance school students. Experiential effects in class background shows admitted effects of special experimental studying in literature (Guthrie and Klauda, 2007) also so in studies done by Erilmaz and Aypay (2016), they found that motivational factors which exist for school teachers' learning include school features, trainers, students, lesson classes, and other teachers, educational methods and intimate relations. The results also showed that to facilitate school teacher's and student's learning, there must exist an exercise-based approach. Wigfield et al. (2016) found that teachers with high competency about useful studying strategies are successful in teaching those strategies to students only when the students are motivated to learn and use those studying strategies. In other study found that families'income, getting health insurance, access to kindergardens and preschools and high quality schools are highly influential onreading motivation among students. His results showed that there are 3 environments which can influence students' success in studying by new plans and policies. The first are schools which have the responsibility of teaching reading and studying to children as the first educators. In the second position are families, parents are the first teachers who make children prepared for reading by constant reading and talking, in the third place are governments and local strategies made by local officials which influence educational systems, especially schools Hernandes (2011) and also in other study believed that increasing reading motivation in students cannot occur just by teacher and only in the classroom. Support from student's parents, school association, local associations are needed as well. If parents and teachers fail to provide sources at schools, they had better go to general libraries by Saw (2014). In a study done by Chang et al. (2017), the obtained result in all of the groups showed no significant difference in efficacy evaluation and motivation, however, both groups in terms of pre and post conditions of test on acquired knowledge showed a significant difference. The results showed significant differences for satisfaction level which indicates students enjoyed competitional games more.

The aim of present study is to do an analysis to identify world scientific studies on reading motivations based on Scientometric and bench marks of centrality in articles of web of science from 1983 to 2018.

Research questions

1- What are the keywords in categorizing reading motivation in web of science from 1983 to 2018?
2- Which countries had the most numerous articles on reading motivation from 1983 to 2018?
3- Who are the best authors on reading motivation articles in web of science website from 1983 to 2018?
4- What are the centrality conceptual identifiers in articles on reading motivation in published articles of web of science from 1983 to 2018?

5- What are the vocabulary subject centrality indices of authors of reading motivation in published articles in web of science from 1983 to 2018?
6- What are the author's centrality indices of reading motivation in published studies in web of science from 1983 to 2018?

Research method

Researcher method is content analysis with scientometric approach. reading motivation topic is the target domain of this research for analyzing article contents in this topic. 267 articles which were indexed in web of science during 1983-2017 are selected for content analysis. The search based is reading motivation related terms, which the articles document type is selected for analyzing. Topics were extracted from articles titles and abstracts. Totally search, retrieval and Processing of studied vocabularies can be summarized in 6 phases.

1. Collecting articles which were indexed in WOS in reading motivation by the following search strategy:

TS= (''motvation study'' or ''stimulation study'' or ''motivation studies'' or ''stimulation studies'' or ''read motivation'' or ''read stimulation'') and TS= (school or children or ''high school'' or pupils or teenager or ''high school student'')

2. For collecting articles, Books review and Conference articles were removed and the remained articles have been selected as our sample. After searching and storing, retrieved articles have been extracted in 500 classes in text format and they have been sent to Excel.

3. Integrating vocabularies in Pre Map Raver software and excel; after indexing vocabularies with respect to the large amount of retrieved and natural language problems, it is needed to unify and somehow control vocabularies. So, need to a process was felt which can solve look of consistency in vocabularies and limit these large amount of vocabularies for unifying, based on reading motivation experts and sometime for identifying some concepts and full formats of abbreviation Google search engine was used.

4. Drawing conceptual map of authors and countries, co-operation and related subject area has been done by identifying the most used vocabularies and concepts. Mapping scientific structure was done based on, centrality indicators of information theories subject area and by Net draw, Ucinet, Excel, Vosviewer.

5. Authors group Co-operation rate of articles has been studied and articles based on the number of their authors were ranked**.**

In this retreival, 267 articles were collected and filed. After collection, the Scientometric maps on reading motivation were drawn and by analyzing the related clusters the influencing

factors on learning were obtained. The software used in this analysis was Excel, Netdraw, Unicet, Vosviewer.

Findings

1. **What are the keywords in categorizing reading motivation in web of sciencewebsite from 1983 to 2018?**

In this research paper, 267 articles were divided into 6 clusters, based onreading motivation the most frequent vocabularies in these articles were:

Intrinsic motivation, motivation during childhood,reading motivation which suggest the significance of these cases in reading motivation (Figure 1).

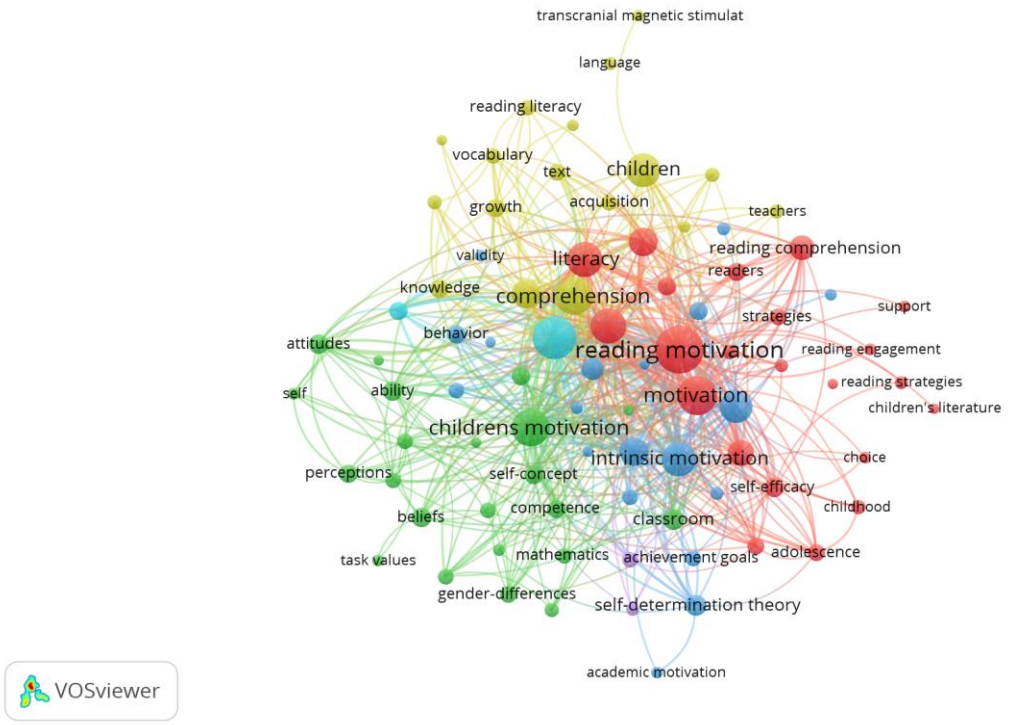

Figure 1: Vocabulary synchronization in investigating reading motivation in web of science from 1983 to 2018

2. **Which countries had the most numerous articles onreading motivation from 1983 to 2018?**

The most numerous articles about reading motivation existed in the USA, Germany, England, and Australia indicating that these countries are the most influential in these kinds of articles.

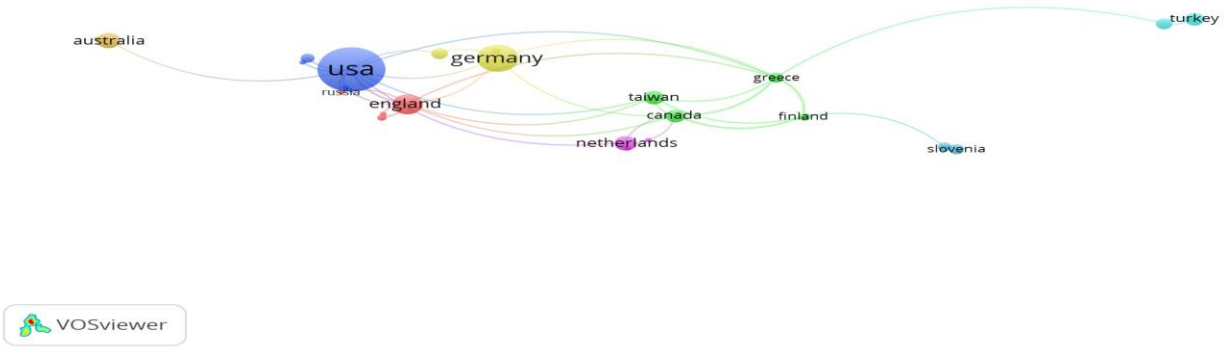

Figure 2: The map of influential countries in reading motivation articles in web of science.

3. Who are the best authors on reading motivation articles in web of science website from 1983 to 2018?

According to findings, people like Schlefele, Gutherie, Wigfield, Guther Moeller were the most influential in producing articles on reading motivation in youths.

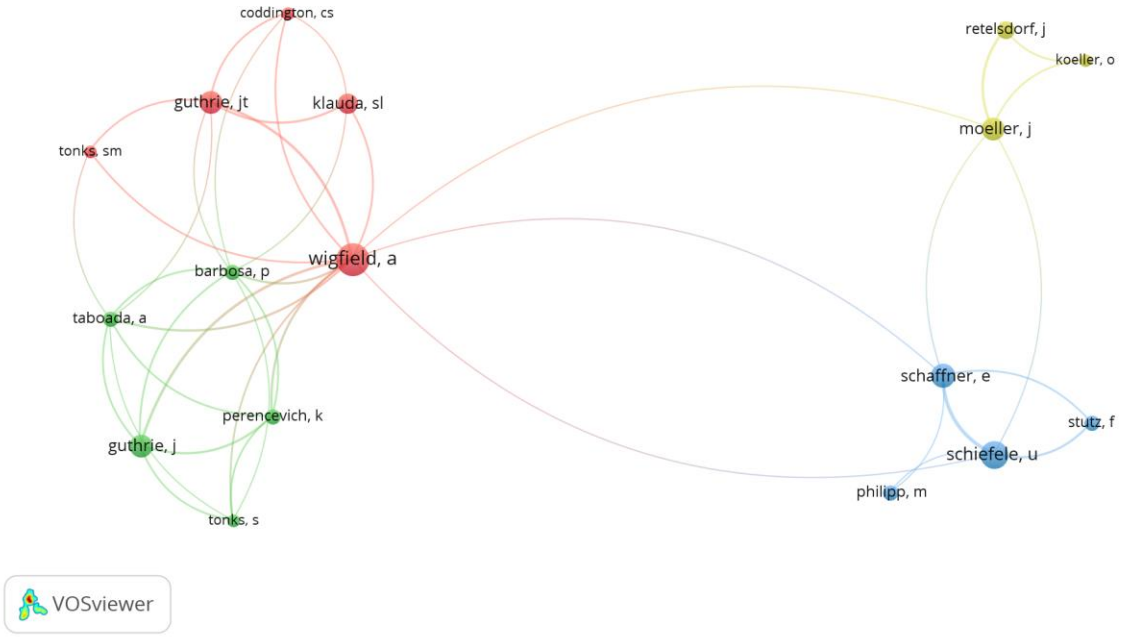

Figure 3: The map of influential authors in articles on reading motivation in web of science

4. What are the centrality conceptual indices in articles onreading motivation in published articles of web of science from 1983 to 2018?

Regarding the centrality indices, the most important are degree index in studies of conceptreading motivation: children's motivation, success, students' comprehension, and literacy had the most effect on motivation for reading. The greatest betweenness is related to success, childrens'motivation, comprehension, literacy and performance. Comprehension and literacy were the most influential inreading motivation.

Table 1: Indicators of vocabulary concepts centrality of authors in reading motivation articles in web of science from 1983 to 2018

No	WC	Degree	Closeness	Eigenvector	Between
1	**Achievement**	490	1493	1	15462.156
2	**Children's motivation**	445	1588	0.824	13679.868
3	**Comprehension**	384	1520	0.656	13859.941
4	**Students**	353	1545	0.623	11363.79
5	**Literacy**	348	1539	0.57	12046.745
6	**Intrinsic motivation**	306	1546	0.445	11685.073
7	**Children**	302	1442	0.159	75498.57
8	**Performance**	261	1529	0.285	24019.643
9	**Engagement**	251	1566	0.392	8663.631
10	**School**	242	1560	0.344	8958.871
11	**Instruction**	207	1621	0.332	7204.776
12	**Motivation**	165	1614	0.211	7173.169
13	**Middle school**	159	1641	0.242	4092.344
14	**Academic-achievement**	125	1759	0.119	3186.98
15	**Classroom**	124	1649	0.14	2781.66
16	**Attitudes**	117	1678	0.185	1766.348
17	**Knowledge**	114	1766	0.137	2464.899
18	**Behavior**	112	1654	0.134	2755.542
19	**Competence**	109	1667	0.148	1643.195
20	**Beliefs**	105	1777	0.124	1264.859

5. **What are the vocabulary subject centrality indicators of authors reading motivation in published articles in web of science from 1983 to 2018?**

In indicators of subject centrality, reading motivation, education and educational researches, science of neurology, pediatrics, linguistics, and psychology are mostly related which indicate their high subject interrelationship withreading motivation. The index of betweenness inreading motivation includes: education and educational research, neourology science, pediatrics, psychology, rehabilitation which have more frequency in reading motivation. Brain induction and neurorehabilitation in subject indicators have an effective role in education and learning during childhood. Most of the investigations on reading motivation have been carried out within areas of education and psychology, pediatrics and linguistics.

Table 2: indicators of subject category centrality of authors of reading motivation in web of science from 1983 to 2018

row	Sc	Degree	2local	Closenes	Eigenvec	Between
1	education & educational research	7	31	164	0.479	74.5
2	neurosciences & neurology	6	24	160	0.181	103.333
3	Pediatrics	6	22	170	0.076	65
4	Linguistics	5	26	167	0.432	9.5
5	Psychology	5	28	160	0.415	76.333
6	Rehabilitation	5	26	167	0.432	9.5
7	Anthropology	4	16	234	0	0
8	audiology & speech-language pathology	4	17	180	0.26	9.667
9	computer science	4	18	178	0.185	24
10	Engineering	4	14	193	0.117	1.5
11	environmental sciences & ecology	4	16	234	0	0
12	Sociology	4	16	234	0	0
13	veterinary sciences	4	16	234	0	0
14	health care sciences & services	3	14	179	0.162	8
15	Hematology	3	12	187	0.028	0
16	information science & library science	3	11	194	0.082	0
17	Oncology	3	12	187	0.028	0
18	Otorhinolaryngology	3	10	180	0.091	4.667
19	Surgery	3	12	174	0.074	11
20	endocrinology & metabolism	2	8	188	0.021	0

6. What are the author's centrality indicators of reading motivation in published studies in web of science from 1983 to 2018?

According to centrality indicators of degree, these people had the highestdegree: Barbosa P, Schiefele U, Aguthrie JT,Wigfield A, Christovao TCL. It shows that these people did the most numerous studies on reading motivation. The betweeness of these studies is by these people: Marinak BA, Wigfield A, Guthrie JT, Schiefele U, Barbosa P.

Table 3: Centrality of authors of reading motivation indicators in web of sceince from 1983 to 2018

No	Authors	Degree	Closeness	Eigenvector	Between
1	Wigfield, A	22	4139	0	461.267
2	Guthrie, JT	19	4156	0	150.35
3	Schiefele, U	13	4150	0	258.5
4	Barbosa, P	12	4163	0	6.6
5	Christovao, TCL	12	4259	0.289	0
6	Correa, JCF	12	4259	0.289	0
7	de Carvalho, PDC	12	4259	0.289	0
8	de oliveira, LVF	12	4259	0.289	0
9	Gambrell, LB	12	4255	0	9
10	Giannasi, LC	12	4259	0.289	0
11	Grecco, LAC	12	4259	0.289	0
12	Kazon, S	12	4259	0.289	0
13	Lucareli, PRG	12	4259	0.289	0
14	Marinak, BA	12	4255	0	9
15	Oliveira, CS	12	4259	0.289	0
16	Pasini, H	12	4259	0.289	0
17	Salgado, ASI	12	4259	0.289	0
18	Sampaio, LMM	12	4259	0.289	0
19	Abe, Y	11	4264	0	0
20	Ayusawa, M	11	4264	0	0

Discussion

There is a connection among learning and educational progress, reading motivation, and new technologies for reading. In this study, by scientometric approach and data-mining, centrality conceptual indicators, co-authors relationships, co-word analysis and co-accurance of words of previous studies in reading motivation field was analyzed, it was recognized that developing motivation and having goals lead to great acheivements in adulthood, and findings suggest that text comprehension in childhood leads to reading increase and writing power in adulthood. Findings show that intrinsic motivation, motivation in childhood, text comprehension are significant in studying motivaton.

Analyzing the reading motivation studies in clarivates analysis during 1983-2017 by scientometric approach and data mining. Above tables and figures show the following conclusions.

The most articles on reading motivation have been done in America, Germany, England, and Australia which indicates that these countries are the most influential in this field. People like Guther, Wigfield, Gutherie, Schlefele, Moeller had the most effect in producing reading motivation articles about youth. According to ranking indicators, the authors like: Wigfield, Aguthrie , Schiefele, Barbosa, Christovao had the highest degree. The authors' central subject indicators of reading motivation, the index of education and educational research, neurological sciences, pediatrics, linguistics, psychology and computer science had the highest subject degree with reading motivation. In concept centrality indicators of articles from author's point of view, children's motivation, education success, comprehension, and literacy had the most effect in these studies.

The findings of this study in main clusters show that reading motivations were divided into 6 clusters. Clusters indicators which are extracted and analyzed by scientometric approach and data mining in reading motivation topic consist of:

1. cluster 1 which is red color in main clustering diagram and is indicative of external motivations and factors which lead to developing motivation during childhood. In this cluster, the emphasis is on adult's role in learning enhancement during childhood. The reason for this probable role of adults is that studying from early childhood starts with the accompaniment of adults like parents, which is the most important factor in developingreading motivation in children. After parents, the tutors in kindergartens are the important factor in developing motivation in chidren, and in the third position are tutors of kindergartens, the role of teachers at schools and librarians in general and school libraries in developing motivation in children which was not seen in any other clusters can be important. The results of Saw (2014) and Hernandes (2011) on adult's role are consistent with our results. Since teachers and parents are the cause of studying in children before they become literate by reading books and introducing the content through pictures, this type of motivation is called external motivation. It is called external because it has not been the will and desire of the child. In this cluster, goal has a relatively important role in developing motivation in children. Goal has a less important role compared to the role of adults because it is an internal and cognitive motivation and includes children who have the power of decision making and are literate and, as a result their, motivation for studying to reach the goal is predetermined. The goal of children for studying can be filling free time, learning for problem solving, education and doing research, raising knowledge level, knowing about different issues, and finding answers to the questions raised in their minds about various issues in life. These goals can be considered among internal motivations since they arise from a child's will and desire. Another external motivation which is taught to chlidren by others is teaching reading.

This instruction could be done by adults whether parents, kindergarten tutors, school teahers and librarians and when children learn how to read and write they become more motivated to read, and here an external motivation changes into an internal one. If children have the ability to read, motivation will develop in them and it can be a stimulus for reading voluntarily as another motivation for children's studying which was seen in cluster 1.

2. Findings in cluster 2 in green color include 22 items. This cluster can be expessed based on developing reading motivation in youth. Findings in this cluster show an increase in studying ability in primary and guidance schools. The reason for this is that children in primary and guidance school are literate and in guidance school besides being literate they have the ability to make decisions which leads to reading based on a goal and the choice for voluntary reading. Another factor which causes an increase in studying ability is that guidance school students have homework to read and write and besides, teachers and librarians who are in charge of teaching reading skills guide them. Motivation based on educational section which starts with education and doing homework is exernal motivation and at the end changes into internal motivation of cognition and sense of accepting responsibility. Since students in the classroom are under the direction and instruction of teachers and are in competition with each other in finding answers to the raised questions and evaluating those answers, it is a factor in developingreading motivation. One of the other factors which is seen in this cluster is using a special strategy for studying which leads to learning to study and to study properly. This can also be a related factor regarding the educational section, teaching studying skill by teachers, evaluation of students by teachers and developing competition and the sense of accepting responsibility. The results of Chang et al. (2017) refer to the competition factor which creates motivation in students and is consistent with the results of this research in cluster 2. On the other hand, students become familiar with study methods and strategies taught to them by teachers and librarians at school and as a result these factors are interrelated. The results of Wigfield et al (2016) on studying strategy are consistent with our results. External motivations like training and internal motivations like institutionalizing special studying strategies by teachers and librarians, having the sense of accepting responsibility can be called important motivation during guidance section. Definitely, when a student knows the methods of studying and proper studying, he can comprehend more and study faster and, as a result, become more motivated to study. In this cluster, the influence of factors like math instruction, geometry and three-dimensional shapes instruction, the power of predicting and forecasting in children in primary school in increasing external study motivation in higher educational levels like learning power, better understanding of teachers' and librarians' instructions and having cognition, especially logical cognition in changing into internal motivations like raising the visualization power in children and also predicting power are seen. Children are in search of information to prove their predictions to admit or reject their mentalities and one of the best ways to achieve this, is

studying. In this cluster, no case about the gender of students was seen. So, gender in studies under investigation in this research was not an influencing factor on reading motivation. It seems that students'self regulation for studying is a cause for developing motivation. Prizing the functions given to students at schools is a factor for developing reading motivation. In this cluster, different factors from general to specific are hierarchically interrelated so that one is not formed without the other.

3. In cluster number 3 which is in blue color, there are 19 items. These items refer to factors like the relationship between educational success and elements like adult's role, education, children's behaviors and computer science. In this cluster, there is a reference to internal motivation which was introduced as a chief motivation in previous clusters and in many cases it is developed as a result of external motivations like instruction and accompaniment by adults like parents, tutors, teachers and librarians. Probably, this motivation, if activated in children will become the best motivation because children study consciously, automatically, independently, purposefully, self regulatory and confidently with their own management. The results obtained from this type of motivation are the best since the person is conscious internally and nothing was imposed from outside, in other words, the educated person has changed his information into knowledge and experience, and studies according to life's requirements and acts according to the knowledge thus achieved. Internal motivation is further confirmed by guidance and primary students. Since these students are under instruction by parents, tutors, teachers and librarians from childhood. These students change the instructions into knowledge by means of the cognitive power they have achieved through education. When information turns into practice and becomes experience, the resulted joy causes the studying to continue and motivation to persist. The results of Ghasempoor et al's research (1396/2017) with a focus on literacy and studying style are consistent with the results of cluster number 3.

4. Cluster number 4 is depicted by yellow color and includes 17 items. These items refer to children's degree of comprehension from a personality point of view, the power of talking, and text comprehension in terms of language and linguistics. The results of this study showed that wherever students had neural, linguistic and talking difficulty in learning and comprehension and any of these difficulties refered to brain and neurons, the medicinal method of electromagnetic induction which is one of the new technologies from computer science field, is used for stimulating of brain neurons and increasing learning and as a result help to better education in schools. The results of Vofoori's research (1396/2017) refers to students' characteristics, the results of Guthrie et al. (2006) on comprehension and the results of Rosenzweig and Wigfield (2016) on childrens' characteristics in comprehension are consistent with the results of present study.

5. In cluster number 5, which appeared in purple color, there are studies whose results show the negative influencing factors on studying in children. The factors introduced in

this cluster as decreasing factors of reading motivation in children consist of: not having internal or intrinsic motivation like not having a goal, not having independence, not having self- regulation and desire for studying. It is probably for this reason that there are many external motivations all over the world at the present time. Motivations like training in family, in kindergardens, at schools and libraries, holding book reading competitions by schools and libraries, the existence of online and traditional sources for the manner of studying in children and the effects of studying in life and the role of information as one of the vital requirements of children which is available to them by different media. Therefore, there are many external motivations for studying. The problem is changing external motivations which are information into internal ones which are cognition, experience, knowledge and operating using the available information. The practice of changing external motivation into internal without the existence of an environment with experts whose duty is teaching how to express the need for information, to use the sources, to search the sources, to access the sources, to evaluate and extract the available sources and to criticize the available information in sources is not possible. This environment can be a digital or traditional library. In studies under investigation, there was no reference in any clusters to traditional or digital libraries and to librarians, the probable reason of this is that the studies are on fields about education, psychology, neurology, and other areas except for library science and computer science. The researchers from computer science, library sceince and librarianship areas did a smaller number of studies. The barriers indicate that schools, kindergarden tutors, families and educational environments are centers for stimulating data need and raising questions in children which is an external motivation so that children feel a need for information. Another external motivation is recognizing information centers and information sources and multimedia and skills of data finding in available electronic and print sources. Today, library and information science and computer science as interdiciplinary fields are responsible for helping users to learn and do the above mentioned skills. Library and information science, In Iran, it is known as knowledge and information science dicipline. In this field, experts are trained to be able to help students find answer to their questions and to change motivation into practice. In fact, teachers teach students how to raise questions to develop creativity and teach them to ask questions. In libraries and information centers, the experts help students find answers to their questions by introducing different types of sources like printed and electronic media, and by teaching them the skills to find information from these sources and media. Teachers develop a hunger sense for finding information in students while librarians teach students how to fish to remove their hunger. Students via several successes in finding answers to questions in the mind, learn the strategy to answer questions and change external motivations into internal and long-life motivations for reading.

6. Cluster 6 in light blue shows the role of loneliness in reading motivation. The probable reason for enumerating loneliness as a motivation in some studies is that children who

become accustomed to reading by their parents find no better partner than the book for removing daily needs, information needs and for consultation. Studying can be a kind of consultation with authors who are not accessible, but talk to the child honestly and solve his poblems. A student identifies loneliness as a motivation when there is an internal motivation and recognizes books and information resources as honest friends and an adviser who can help them in all aspects of life, or the reason could be that students need peace for doing their research and studyings and this peace is provided for them when they are alone. Loneliness can be considered from two points of view in this cluster. One view is when the person is alone and needs a friend to spend time with. The second view is when the person likes studying in solitude and this brings peace for him/her. It needs more investigation to determine to which view the loneliness mentioned in this cluster belongs.

Conclusion

The results of this study showed that the USA, Germany, England, and Austrailia did a larger number of studies on reading motivation than others. The results also indicated that in the authors' main subject identification in reading motivation, the index of education and educational researches, neurological science, pediatrics, linguistics, and psychology had the highest ranking and computer science are the most subjects which have been studied. According to the results, researchers like Moeller, Schlefele, Gutherie, Wigfield, Guther were the most influencial in producingreading motivation articles in youth. According to ranking indicators these people, Wigfield, Aguthrie, Schiefele, Barbosa, Christovao had the highest ranking. Regarding the depicted clusters on reading motivation, it was found that in most studies under investigation reading motivation consist of: adults like parents, kindergarden tutors and teachers, education, comprehension after reading, having a strategy for studying, self independence, self regulation, having purpose and need, literacy and educational section. Totally, the external motivations in these studies dominated the results of researches. The fields like library information science and computer science have not done many studies in reading motivation topic. For this reason they are not hilighted in the clusters.

Suggestions and strategies to create motivation in students

1- Encouraging adults, parents, teachers and kindergarden tutors to study and having in-service training by experts of data finding, data finding behaviors and data literacy skills by use of Brochures and pamphlets.
2- Concentrating on teaching methods of motivations creation in students like concept-oriented reading instructions (CORI) and class-oriented instruction schedule which regarding the carried out studies in this field (18,19,20,21,22) can be a great contribution to increasing students'motivation.
3- Reinforcing educational systems on mathematics, geometry, 3-dimensional shapes in primary section operationally and developing creativity and using them in daily life.

4- The use of modern therapeutic neurology and psychotherapy, psychology methods and use of new technologies like electromagnetic induction.
5- Making classes question-based and studying non-homework sources besides homework sources to find answers to questions.
6- Reinforcing school and general libraries to rebuild source interview of traditional libraries in electronic libraries in online form, especially school libraries and the use of data finding experts and skillful librarians in teaching data finding skills. Institutionalizing literacy frameworks and skills of media literacy in students'educational schedules from primary level to university level.
7- Helping students to change external motivations into internal ones- becoming independent in studying, self regulation, self confidence, which enhances social interaction of students and, as a result, leads to long-life learning and contributes to turning students' information into knowledge. Today, students know the external motivations which are information related to studying and asking, but the problem is operating them. Information and attempts to get answers and the thirst sense is like thirst for water. If this thirst sense arises, external motivations turn into internal and spontaneous motivations.

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Conflicts of interest

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