

# Educational Management Information Construction and Management Analysis in the Big Data Era

Yan Gao<sup>1,a</sup>, Yanping Wei<sup>2,b,\*</sup>

<sup>1</sup>Handan Polytechnic College, Handan 056001, Hebei, China

<sup>2</sup>Bank of Hebei Co., Ltd. Handan Branch, Handan 056002, Hebei, China

<sup>a</sup>gaoyan8637@163.com, <sup>b</sup>skyworld2001@163.com

\*Corresponding author

**Abstract:** Informatization teaching of education management (EM) has gradually led to innovation, independence, and irreplaceability of university teaching as a whole. With the continuous development and continuous promotion of education informatization, it is of great significance to the overall school running level of various universities. This article takes the informatization construction and management of EM in 50 colleges and universities(CAU) as the main research body, and conducts informatization teaching environment, informatization education mode, informatization education content, informatization EM system, informatization student management, and network security system. The establishment and implementation of the literature research method was used to collect the concepts, contents and methods of the related issues of the EM information construction; the questionnaire survey method was used for statistical analysis of 96 valid questionnaires from 50 universities; the analysis of several examples was used Use SPSS 20 statistical software to process the relevant data of the valid questionnaire; use the interview method to collect information through interviews with the leaders of the school's information management department, teachers and students. The research results show that CAU with a multimedia classroom configuration rate of 100% are beneficial to the improvement of students' learning task completion rate. Micro-class and MOOC teaching have high-quality resources and popular trends can improve the teaching effect of CAU. Informatization of EM is conducive to the improvement of teachers' teaching tasks and the completion rate of students' learning tasks in CAU, and can promote the educational development of CAU.

**Keywords:** Data age, Education management, Information construction, Statistical method

## 1. Introduction

In the information age, big data is widely used in all walks of life [1]. Nowadays, big data is also included in education and teaching, becoming a part of education and teaching. Big data is the use of science and advanced technology and methods to open up the data to obtain more valuable information. Nowadays, informatization education based on EM has become a trend. In the era of big data, influenced by the educational environment, teaching management in CAU has new characteristics and development trends. In the process of implementing EM informatization in many universities, we focus on establishing a complete EM information system. The system can implement the overall plan and rational operation of education, allow participants to collaborate closely, and reflect the school's educational information strategy.

Sun has conducted research on the information system of higher EM, and improved the completion rate of education goals through innovations in education models. The research results show that the rational use of big data can realize resource sharing, and the increase of information construction in education can further promote the smooth development of university EM [2]. Youhei has conducted research on the information education environment. Through the design and innovation of the teaching environment and the creation of the network environment, teaching content can help teachers use information technology (IT) to complete teaching tasks. Students in information education learning in the environment can prompt students to quickly find their own learning methods, thereby improving the completion rate of learning tasks [3]. Mazzuto researches the application of virtual classrooms, and compares the information-based virtual classrooms with traditional classrooms. The advantages of virtual classrooms are conducive to the smooth completion of teaching by teachers, the absorption of professional knowledge by students [4].

Yoshiaki has conducted research on distributed learning under informatization teaching. Distributed learning is a reasonable teaching mode. Distributed learning is not only suitable for traditional classroom teaching, but also for distance teaching, and can also be used for the creation of virtual classrooms [5]. Rana researched the practice of integrating IT and curriculum in teaching. The learning activities of network inquiry can help teachers complete teaching tasks to students under the condition of using data resources, and can also help students solve knowledge problems and help students improve their learning effects [6]. Yongwan has carried out research on education informatization teaching, expounding its concept, application and related comprehensions. In the construction of education informatization, teachers and students have misunderstandings about it, and carry out correct informatization and constructivism. Learning theory [7]. Among the above-mentioned documents, there are few research documents on the theory of education informatization management and the management of college education informatization.

This article takes the educational management information construction and management of 50 universities as the research object. Carried out a lot of data collection and data investigation. This article adopts the questionnaire method, the literature survey method, the statistical method and the interview method to innovate the education model, the content of EM, the management and training of students, and the management of curriculum teaching. From the perspective of information education and teaching, this article analyzes the establishment of information multimedia classrooms, digital teaching resources, common management systems and information security measures. Through a comprehensive investigation, we found out the shortcomings of traditional EM, using information-based EM to improve teaching, and strengthening the construction of teaching and resource information is conducive to the development of university education.

## **2. The Innovation of Informatization Ideas on Educational Management of CAU**

### ***2.1 Educational Model Innovation***

Traditional university courses are all open teaching. Although non-professional students can participate, the teaching mode is still focused on resource teaching. Teaching resources can only be disseminated in the classroom of the school, and cannot be effectively disseminated with other universities and the society [8-9]. The information age will change the traditional limited and centralized teaching mode. Teachers will carry out information-based online teaching, allowing more students to learn on the Internet; video teaching methods can be used to shoot the lecture videos in advance, and then through the Internet Upload to the Internet, and then let the students to download and watch, you can watch repeatedly, so as to prevent students from not understanding or missed due to distractions during class. The key parts of the knowledge can not be re-learned in time and solved [10].

Online teaching can improve students' learning effects, repeat learning, and deepen the focus of learning. At the same time, online teaching will enable more students to receive teaching and education from teachers in different universities, so as to absorb knowledge in many aspects [11-12]. Education models have been innovated. For example, MOOC teaching methods are added. MOOCs are a more popular teaching mode nowadays. MOOCs have high-quality teaching resources and can allow students of different levels to accept key universities. University education, it has the advantages of online teaching, as well as its own unique advantages. In addition to the above education modes, it also has PPT courseware teaching, case teaching, micro-course teaching and so on. The network teaching model has a huge influence in CAU [13].

### ***2.2 EM Content Innovation***

The primary task of CAU is to cultivate comprehensive professional talents who adapt to the national conditions. The traditional education system focuses on prior education such as theoretical education and practical education of students, and does not pay attention to the cultivation of students' personality [14-15]. At the same time, factors such as the quality of education, the strength of teachers, and the teaching mode of domestic universities are quite different.

Teachers cannot have a deep and comprehensive understanding of the actual situation and status of students in learning [16]. Using IT to research and analyze it, it is found that teachers can systematically and comprehensively understand students in this way, can observe the students' learning process in all directions, and can observe teaching methods and order. Make a timely summary, make reasonable improvements to the existing teaching problems, and implement the rectification plan, so as to provide

students with targeted and personalized teaching services [17-18]. Some scientific innovations can be made in decision-making, which are as follows:

(1) Service object. A complete and extensive service system has been established for teachers and students in CAU to eliminate information island effects and build a complete system data analysis center to serve students and teachers [19]. Build a unified service center, develop an information sharing mechanism through a huge data center, and increase the utilization rate of big data in universities. Use dynamic data methods to conduct data trend research and analysis on the daily life, learning status, student process, education method, education system, internal life, etc. of teachers and students, and provide reliable information for the formulation of management system related content [20-21].

(2) Campus environment. Construct perception terminals on campus to complete the realization of the Internet of Things on campus [21]. The realization of the Internet of Things mainly uses terminal data to facilitate various activities of teachers and students in the school [22]. According to the changing trend of the data, the overall development direction of the campus can be regularly controlled.

(3) Data warehouse. Traditional campus EM is not clear about data. The construction of a data warehouse for CAU can reasonably process and fully analyze the overall data on the campus, which is helpful for campus EM and meets the needs of society [23-24].

### **2.3 Student Management and Training Innovation**

Traditional CAU have adopted the credit system, which is not flexible and rigid, and has certain constraints. This article uses the big data information management model to manage and train students, the specific content is as follows:

(1) Adopt participatory teaching mode in teaching. This teaching mode is a question-based teaching combined with open content to educate students about knowledge. Among them, the answers to the questions are diverse, there are no fixed answers, and there are basically no after-school tasks such as essays and homework. This teaching method can give students a lot of free thinking space and also give students a lot of free learning time [25]. Under normal circumstances, in this way of teaching, students use network technology and computer technology to collect big data, and then find answers. In the process of finding answers to questions, systematic learning of professional knowledge. In this process, students can not only learn about various problems with the help of network data, but also understand the related knowledge of the problems. For different students, the teaching method of teaching students, according to the students' own characteristics, formulate targeted learning plans, so that every student can get a better education.

(2) A practical teaching management system has also been added to the information EM. The teaching environment with insufficient practical teaching and experimental resources can seriously affect the teaching level of teachers. Using big data allows students to study repeatedly and observe knowledge repeatedly until all Learn knowledge proficiently. The virtual laboratory in the information multimedia classroom has the advantage of low cost, which is conducive to students' mastery of professional knowledge [26].

(3) The prerequisite for cultivating all-round talents is to guide students in interdisciplinary learning. The main reason for the emergence of most new disciplines is the intersection of disciplines. The development of disciplines in today's universities is relatively stable, breaking the current discipline system, using information management to establish an interdisciplinary education system and the successful education experience of many scholars [27]. The specific process is as follows:

Draw up a targeted interest plan to help students choose some mandatory interdisciplinary subjects, establish a variety of elective subjects, multiple subjects Different forms of courses allow students to choose and match according to their own interests and hobbies, which can better stimulate the establishment of interdisciplinary courses and be more innovative; schools should actively respond to students' responses and actively and timely adjust programs [28]. Curriculum should actively cooperate with each other to communicate, seize the new growth points of cross-curriculum, carry out more joint teaching work, allocate necessary teachers to form new interdisciplinary teaching, and make full preparations for interdisciplinary education.

## **2.4 Curriculum Teaching Management Innovation**

The mastery of knowledge becomes more and more important. Curriculum teaching management in the era of big data carries out the following innovations: First, the integration of the curriculum system. Conduct in-depth curriculum research among various professional disciplines to improve completion; secondly, the integrity of the curriculum system. Education with a full range of curriculum content, the more types of curriculum, the richer and more diverse the content in the system; thirdly, the sustainable development of the curriculum system. Finally, the balanced structure of the curriculum system. Through the effective combination of curriculum structure, big data informatization, and teaching mode, the structure is balanced and stable [29]. The above is the main content of the innovation. When optimizing the learning system, you also need to pay attention to the following two points:

(1) The update of teaching content should be timely, and the latest scientific research results can be introduced into the curriculum to stimulate students' interest in learning. Classroom teaching is combined with network teaching to improve teaching effect, and network teaching is actively carried out in the teaching process.

(2) In this study of information teaching management, we must pay attention to the mutual penetration of science and liberal arts, and the integration between different disciplines should be paid attention to. The construction of teachers is mainly through a large number of introduction models, and an incentive and competition mechanism is adopted for outstanding teachers.

## **2.5 Management System Innovation**

The adoption of the educational management information system has achieved considerable results. Although universities have invested a lot of experience in the establishment and use of the educational management information system, the relevant supporting systems have not been established in time, so that the information system In the process of using, some problems cannot guarantee the authenticity and validity of the data, and fail to achieve the due purpose of the EM information system. In the future work, the establishment of a complete information system system must be the primary work goal.

The establishment of an information system system must first be improved from the level of IT. Data information coding must ensure its accuracy and uniformity, so as to ensure consistency in data processing, and effectively avoid subsequent follow-ups due to unclear content representation and inconsistent content format. Statistics and analysis of data. Secondly, from the perspective of system operation and management, it is the foundation to establish various teaching systems that cooperate with teaching work.

## **3. Research Methods of Educational Management Information Construction and Management**

### **3.1 Literature Research Method**

On the basis of reading a large number of relevant documents and materials needed for research, this article collects concepts, contents and methods for the related issues of educational management information construction through researching and summarizing the content of the documents. Combining scholars' thoughts and suggestions, conduct reasonable construction research, and then formulate construction and management strategies. This article mainly focuses on the construction of educational management informatization, based on the elaboration, summary and analysis of scholars in the literature, to study and summarize the related content of educational management informatization, so as to improve the content quality of this article.

### **3.2 Questionnaire Survey Method**

This paper adopts questionnaire survey method to 50 schools as the research object, and compares before and after applying the model of EM informationization. A comprehensive survey from all aspects is aimed at understanding the situation before and after the adoption of educational informatization in 50 CAU, as well as the solutions to traditional problems in CAU.

(1) The object of this survey is the actual situation of education informatization construction in 50 CAU. By analyzing the situation before and after the implementation of education informatization in CAU, the problems existing in traditional management education are addressed and the advantages of

informatization education are adopted. To make up for the shortcomings of traditional EM. In order to reduce the differences, 50 universities in the region were selected for investigation and research.

(2) The content of the questionnaire includes the use of informatized teaching resources, the use of informatized environments (multimedia classrooms, etc.), the use and establishment of informatized systems, and the informatized security system. There are a total of 50 questions in the form of single and multiple choice, short answer and fill-in-the-blank questions.

Because there are many schools in the survey, there is a gap in distance between the schools, and it is difficult to conduct face-to-face surveys. Therefore, the survey is conducted in the form of online questionnaires and the questionnaires are in the form of web mailboxes. To issue. Before the release, we will communicate with the person in charge of 50 CAU by telephone, instruct the questionnaire survey precautions and details, and ask the respondents to fill in carefully. The survey finally sent out 100 questionnaires, including 50 informatization supervisors, 30 teachers, and 20 students. As shown in Table 1.

*Table 1: Questionnaire survey of 50 schools*

Group	Number of Questionnaires Issued (Copy)	Number of Questionnaires Returned (Copy)	Questionnaire response rate (%)	Number of Valid Questionnaires (Copy)	Questionnaire Effective rate (%)
Information Supervisor	50	50	100(50/50)	48	96(48/50)
School Teacher	30	30	100(30/30)	29	97(29/30)
School Student	20	20	100(20/20)	19	95(19/20)

It can be seen from Table 1 that out of the 50 questionnaires issued to the leaders of informatization, the response rate of the questionnaire was 100%, and the effective rate of the questionnaire was 96% (48/50); among the 30 questionnaires issued to the teachers The response rate was 100%, and the questionnaire validity rate was 97% (29/30); among the 20 questionnaires distributed to school students, the questionnaire response rate was 100%, and the questionnaire validity rate was 95% (19/20); A total of 100 questionnaires were distributed by the CAU. The response rate of the questionnaire was 100%, and the effective rate of the questionnaire was 96% (96/100). This article makes a statistical analysis of 96 valid questionnaires.

### **3.3 Statistics by Number Cases**

According to the analysis results and the actual situation, problems are found, and targeted improvement measures are made.

### **3.4 Interview Method**

Investigate and understand the implementation of the informatization EM construction plan of 50 CAU, and understand the content including the digital resources of 50 CAU, the application of informatization multimedia classrooms, the establishment and use of informatization management systems, etc. Through real and actual interviews with the leaders of the school's informatization department, teachers, and students, they can understand the most authentic information, so as to better understand the content of informatization EM construction, so as to make up for the deficiencies in the questionnaire.

## **4. Educational Management Information Construction and Management Analysis**

### **4.1 Analysis of Digital Teaching Resources**

Nowadays, teachers generally adopt digital teaching, and their teaching resources are diverse. Including online course teaching, PPT courseware teaching, case teaching, video teaching, micro-class teaching, MOOC teaching, etc. This paper conducts a survey on the use of digital teaching resources, as shown in Table 2.

Table 2: List of commonly used digital teaching resources

Category	PPT Courseware	Online Course Teaching	Micro Course Teaching	MOOC Teaching	Video Teaching	Case Teaching
Usage	38.76%	17.95%	5.80%	8.32%	9.82%	19.35%

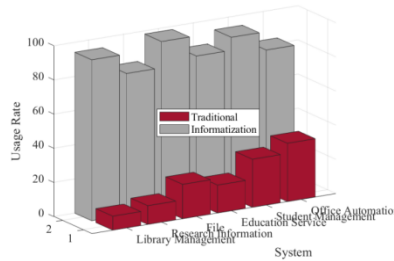


Figure 1: Diagram of Usage of Commonly Used Digital Teaching Resources

It can be seen from Figure 1 that the utilization rate of digital teaching resources in traditional teaching management is significantly lower than that in information-based EM ( $P < 0.05$ ). Among the CAU of information EM, PPT courseware teaching is a commonly used digital teaching method for teachers, and the utilization rate is as high as 38.76%; case teaching and online teaching are the more commonly used digital teaching methods in teacher teaching, and the utilization rates are respectively 19.35% and 17.95%; MOOC teaching, video teaching and micro-teaching were 8.32%, 9.82% and 5.80 % respectively. Compared with PPT courseware teaching, the utilization rate was lower ( $P < 0.05$ ). Micro- and MOOC teaching has high-quality resources and popular trends, but the use rate of teachers in digital teaching is not high. It can be seen that PPT teaching, case teaching and online teaching are still more commonly used digital teaching methods.

#### 4.2 Analysis of Multimedia Classroom Construction

It has been more than 10 years since the development of informatization construction, and the construction of multimedia classrooms has always been a major part of the construction of educational informatization infrastructure. In this study, the utilization rate of multimedia classrooms in traditional EM CAU was significantly lower than that of informationized EM ( $P < 0.05$ ). Among them, 48.91% of CAU that adopt information-based EM have a multimedia classroom configuration rate as high as 100%; 39.77% of CAU have a multimedia classroom configuration rate of 90% to 95%; 11.32% The deployment rate of multimedia classrooms in CAU is less than 90%; there is a significant difference between colleges with a multimedia classroom deployment rate of 100% and colleges with a deployment rate of 90%-95% and less than 90% ( $P < 0.05$ ). As shown in Figure 2.

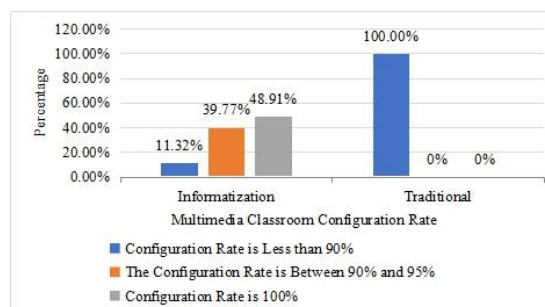


Figure 2: College multimedia classroom configuration diagram

It can be seen from Figure 2 that multimedia classrooms have been built in many CAU, and informatization equipment and multimedia classrooms are important infrastructures in the informatization of EM. Among them, universities with 100% multimedia classrooms have more complete multimedia equipment, including multimedia-related equipment, recording and broadcasting equipment, and classroom information terminal equipment for teaching. The multimedia equipment and recording and broadcasting equipment in 39.77% of the CAU are relatively good, and the information terminal equipment used in the classroom is relatively complete.

#### 4.3 Analysis of Commonly used Management Systems

System construction is the foundation in the construction of EM, and the information management system is the main component of EM. The main manifestation of information management construction is the diversification of system types, the integration of system functions, and the smoothness of system operation. Nowadays, many domestic CAU have specialized management systems for the functions of various departments, including office automation systems, student management systems, educational service systems, file systems, and so on. A survey on the use of the management system in CAU, the survey results are shown in Figure 3.

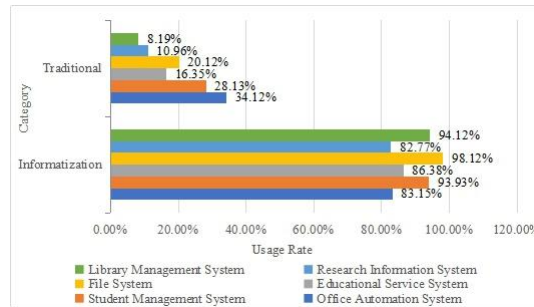


Figure 3: Diagram of Common Management Systems in Universities

It can be seen from Figure 3 that in the surveyed schools, the utilization rate of information-based EM data system is significantly higher than that of traditional EM ( $P < 0.05$ ). Among the CAU that adopt informatization EM, the utilization rate of the file management system is 98.12% compared with other systems ( $P < 0.05$ ); the utilization rate of the library management system is 94.12% and the utilization rate of the student management system is the highest 93.91% are basically the same ( $P > 0.05$ ); the utilization rate of office automation system is 83.15%, the utilization rate of educational service system is 86.38%, and the utilization rate of scientific research information system is 82.77%. The utilization rate of the three systems is above 80%. It can be seen that many CAU have established EM systems that are in line with the school, and their system usage can be used favorably. The key management systems in all CAU are above 80%, which shows that the construction of EM systems is beneficial Educational management in universities.

#### 4.4 Analysis of Information Security Measures

School teachers use information teaching to improve the completion rate of teaching goals, and students use information to achieve learning goals. Network security directly affects the operation of management and education informatization. Therefore, this article has perfected information security measures and adopted targeted campus network management measures. Then a comprehensive investigation was conducted on the implementation of network security measures. As shown in Figure 4.

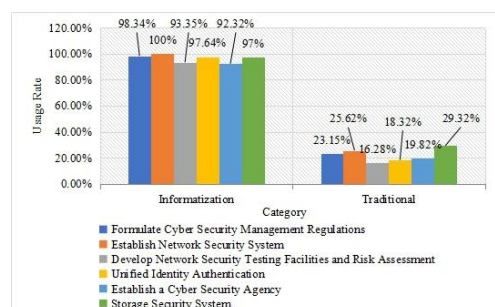


Figure 4: Information security system implementation diagram

It can be seen from Figure 4 that the implementation of network security measures in universities that use information-based EM is significantly better than traditional EM ( $P < 0.05$ ). Among the CAU that adopt information-based EM, all CAU that passed the survey have a network security system and the utilization rate is 100%. Compared with the implementation of other security measures, the difference is obvious ( $P < 0.05$ ); among them, the implementation of the storage security system In terms of 97%, unified identity authentication accounted for 97.64%, and the implementation of network

security management regulations accounted for 98.34%. There was no significant difference between the three ( $P>0.05$ ); the implementation of network security testing facilities and risk assessment systems accounted for 93.35%, The establishment of network security institutions accounted for 92.32%, and the implementation of measures for the establishment of network security institutions was significantly lower than that of other measures ( $P<0.05$ ). The above data shows that the implementation of information security measures in all universities is good, and the implementation of all measures is above 90%. The security measures are effective, which is conducive to the implementation of educational management information construction.

## 5. Conclusions

This article selects the construction of informatization EM of 50 universities as the research object. Although traditional teaching management has a systematic management system in many universities, it has also achieved many teaching effects. Nowadays, although some informatization has been added to traditional teaching management, it is not comprehensive. Students cannot learn comprehensive professional knowledge in traditional classroom teaching, which severely reduces the scope of students' learning. Next, this article makes a brand-new innovation in EM, so that students can effectively combine traditional teaching methods with informatization in the construction of information management education, and can break through the disadvantages of the limitations of traditional teaching resources, so that students can Under the management of informatization education, it can have comprehensive comprehensive capabilities, which can make valuable contributions in future life and work.

This article proposes that the informatization of management education is mainly based on the combination of big data and professional teaching systems. This article is based on teaching management, combined with data information to achieve the purpose of teaching research. Through the collection and analysis of relevant data from the informatization supervisors, teachers and students of 50 schools, comprehensive innovations have been made in education mode, EM, and education environment. First of all, this article uses a questionnaire survey method to collect valid data, uses a number of statistical methods to process the relevant data of this study, and uses a literature research method and interview method to analyze related concepts, content and innovative content models of informatization EM.

This article takes information-based EM as the starting point and elaborates on the student-centered information-based EM model, which makes teachers' teaching resources more diversified. On the basis of EM, the application of data informatization focuses on cultivating students' comprehensive learning ability, so as to cultivate comprehensive professional talents who contribute to the country. This article systematically expresses the content and importance of informatization EM, in order for teachers to better carry out teaching work under informatization EM, and it is also conducive to students' mastery of different professional content. The research results show that the use of information management teaching in CAU is conducive to improving the quality of teaching, improving the completion rate of teaching goals, and helping students learn different professional knowledge in various ways, making a great contribution to the country's training of comprehensive talents.

## References

- [1] Sun Yunchuan, Sh Yufeng, Zhang Zhengjun. *Finance big data: management analysis and applications*. *International Journal of Electronic Commerce* 2019; 23(1):9-11.
- [2] MATSUMOTO Youhei, FUJIHARA Keisuke, MURAKAWA Takehiko. *Construction of an e-learning system for information processing education*. *Joho Chishiki Gakkaishi* 2017; 27(2):155-160.
- [3] Mazzuto G, Ciarapica F E. *A big data analytics approach to quality, reliability and risk management*. *International Journal of Quality & Reliability Management* 2019; 36(1):2-6.
- [4] Ueda Y, Yanagisawa S. *Delineation of nitrogen signaling networks: computational approaches in the big data era*. *Molecular Plant* 2019; 12(2).
- [5] Rana S. *Moving in the realm of big data: using analytics in management research and practices*. *FIIB Business Review* 2019; 8(1):7-8.
- [6] Chun Yongwan, Kwan Mei-Po, Griffith Daniela. *Uncertainty and context in GIS science and geography: challenges in the era of geospatial big data*. *International Journal of Geographical Information Science* 2019; 33(6):1-4.
- [7] Altomare Donato F. *Defining authorship in the era of big data collection and its consequences on*



- the academic career. *International Journal of Colorectal Disease* 2019; 34(5):939---940.
- [8] Leiringer R, Dainty A. Construction management and economics: new directions. *Construction Management and Economics* 2017; 35(1-2):1-3.
- [9] Donati G, Woolston C. Information management: Data domination. *Nature* 2017; 548(7669): 613-614.
- [10] Gonalves Maria Jos é Ang élico, Rocha dvaro, Cota ManuelP érez. Information management model for competencies and learning outcomes in an educational context. *Information Systems Frontiers* 2016; 18(6):1051-1061.
- [11] Park K, Lee S, Ahn Y. Construction management risk system (cmrs) for construction management (cm) firms. *Future Internet* 2017; 9(1):5-.
- [12] Rokoei S, Goedert J D, Najjar L. Enhancing construction project management education by simulation. *Journal of Professional Issues in Engineering Education and Practice* 2017; 143(4): 04017003.
- [13] Dave B. Business process management—a construction case study. *Construction Innovation* 2017; 17(1):50-67.
- [14] Suresh S, Olayinka R, Chinyio E, Renukappa S. Impact of knowledge management on construction projects. *Proceedings of the Institution of Civil Engineers - Management, Procurement and Law* 2017; 170(1): 27-43.
- [15] Kviklys D. Project management for information professionals. *Journal of Business & Finance Librarianship* 2017; 22(2):172-174.
- [16] Rushakoff J A, Kornberg Z, Shah A D, Rushakoff R J. Virtual glucose management service: a novel resident educational tool. *Medical Education* 2017; 51(11):1174-1175.
- [17] Riccardi P, Goletti C. How to build an educational bridge. *Nature Nanotechnology* 2017; 12(11):1104-1104.
- [18] Corvello V, Will A J, Ratta A M La. Routine project scope management in small construction enterprises. *International Journal of Project Organisation and Management* 2017; 9(1):18.
- [19] Demirkesen S, Ozorhon B. Measuring project management performance: case of construction industry. *Engineering Management Journal* 2017; 29(4):258-277.
- [20] HIEKATA K. Advanced information systems for ship design, construction and operation. *Journal of the Japan Society for Precision Engineering* 2017; 83(1):26-29.
- [21] Mu Zhou, Yanmeng Wang, Zengshan Tian, Yinghui Lian, Yong Wang, and Bang Wang. Calibrated Data Simplification for Energy-efficient Location Sensing in Internet of Things. *IEEE Internet of Things Journal*. 2019, 6(4): 6125-6133.
- [22] Barneva R P, Hite P D. Information technology in sport management curricula. *Journal of Educational Technology Systems* 2017; 45(3):326-342.
- [23] Li T, Huang Y, Chen Shu-C, Navlakha J, Iyengar S S, Xie N, Z Chunqiu, Zhou W, Zheng L, Jiang Y, Yang Y, Ha Hsin-Y, Xue W. Data-Driven Techniques in Disaster Information Management. *ACM Computing Surveys* 2017; 50(1):1-45.
- [24] Fenton S H, Low S, Abrams K J, Butler-Henderson K. Health information management: changing with time. *Yearbook of Medical Informatics* 2017; 26(01):72-77.
- [25] Coverdale J, Roberts L, Weiss B, Eugene V, Louie A K, Brenner A M, Balon R. Some potential “pitfalls” in the construction of educational systematic reviews. *Academic Psychiatry* 2017; 41(2):246-250.
- [26] Yan, Zuohao, and Zhihan Lv. "The Influence of Immersive Virtual Reality Systems on Online Social Application." *Applied Sciences* 10, no. 15 (2020): 5058.
- [27] Parada, R., Melia-Segui, J., and Pous, R. 2018. "Anomaly Detection Using Rfid-Based Information Management in an Iot Context," *Journal of Organizational and End User Computing* (30:3), pp. 1-23.
- [28] Cheng, H., & Liu, Y. (2020). An improved RSU-based authentication scheme for VANET. *Journal of Internet Technology*, 21(4)
- [29] Shmakova A P. Information environment of preschool educational institutions. *Interchange* 2016; 47(2):157-168.