Interdisciplinary
LINKSCIENCEPLACE
Scientific Journal
ISSN: 2358-8411
DOI: 10.17115
Interdisciplinary Scientific Journal. ISSN: 2358-8411
Volume 11, Article nº 01, January/December 2024
D.O.I: http://dx.doi.org/10.17115/2358-8411/v11a1
Accepted: 01/03/2024 Published: 19/09/2024

ANALYSIS OF AN INFORMATION ARCHITECTURE MODEL FOR TRAINING HIGH PERFORMANCE PROFESSIONALS

Tomás Roberto Orlandi
Doutorado em Ciências da Informação pela Universidade de Brasília
tomasroberto@gmail.com

Abstract: This research presents a proposal for applying concepts of Information Organization, Information Architecture, Informational Spaces, Multimodality, Relevance Theory and Gamification to meet the informational needs of high-performance professionals. The proposition of this research is that an Information Architecture model, supported by Multimodality, can significantly help in the training of high-performance professionals, when associated with the concepts of Information Organization and Gamification. Information Architecture can provide an effective flow of information in informational environments. Multimodality, in turn, contributes to the diversity of semiotic learning objects arranged in informational spaces. As an applied exploratory research methodology, many questionnaires were submitted to students (the proposed model's users) and to their immediate managers, who evaluated their performance. Evaluations show that the model has been well accepted. Despite the limited sample, the research is representative since it includes several professionals.

Keywords: Information Architecture, Informational Spaces, Gamification, Multimodality, Information Organization

1 INTRODUCTION

We entrust our lives to higher education professionals, such as doctors and other health specialists, we entrust our homes to engineers and architects, our education and that of our children to teachers. Society is habituated to believe that the result of the work performed by these professionals will be fully reliable and will meet our needs.

According to Oliveira (2012), a possible definition of Informational Space is "the clipping of a web of organizational information that generates relationships between individuals with information necessary to reach their goals", meeting the information needs of people in their companies.

Lyra (2012) proposes that one of the goals of Information Architecture (IA) is to promote an effective flow of information through “design of informational environments”. Another author, Macedo (2005), argues that IA is a “design methodology” applied to informational environments, which are spaces located within a context, consisting of flowing content, that serves a given community.

As defined by Wurman (2000), informational spaces must be structurally designed by information architects, aiming to meet their users' specific informational needs, sorting out indispensable and relevant information from an excessive amount of available information.

Buckland (1991) defines 'information as a thing', since it is an informative object and it deals with worked information in an approach to things, in the sense that these things can inform us about something. For the author, the concept of a document is: physical informational resources, worked from the perspective of models designed to represent ideas and objects such as works of art, texts, images, audios and videos.

Wurman (2005) considers that the information architect’s greatest challenge, starting from the use of information architecture, is to deal with informational spaces and design them structurally, aiming to meet a specific objective, that is to make an adequate cut to the user's needs, from a large amount of information, delimiting those that are indispensable. For the author, the IA's concern should be to raise the information needs as well as to comprehend content and challenges of organizing information, where "the true architects of information give clarity to what is complex, transforming the data into information that is comprehensible to other human beings” (WURMAN, 2005, p. 23).

2 JUSTIFICATION

To provide the information needs of high-performance professionals in their training, this research presents an evaluation of an organization model of multimodal informational spaces, designed to provide semiotic learning objects (texts, sounds, images and videos) in an organized fashion, to significantly facilitate the learning process of these professionals.

The Information Architecture is not present neither in websites or in professional development and training portals that present informational spaces with various learning objects without established criteria. In this context, we have that the use of an Information Architecture that meets the information needs of users within specific situations is essential, as stated by Lima Marques and Macedo (2006):

> "The creation of a well-defined, coherently designed and managed Information Architecture allows all parties involved in an organization to speak the same language and use the information to make meaningful decisions. Thus, the model and methodologies on which Information Architecture is based on systematically seek to document all important data sources in an organization (such as customers, products, employees...) and the relationships between the data." (LIMA-MARQUES and MACEDO, 2006, p.3).

Monteiro (2013) states that Learning Object (LO) is a structured resource to provide content for teaching-learning, suitable for developing content for Distance Education (DE), which essentially are training courses formed by learning objects organized in Virtual Learning Environments – VLEs.

3 THE THEORETICAL FRAMEWORK

3.1 THE INFORMATION'S MEANINGS

For Buckland (1991, p. 351), information has three distinct meanings: "Information-as-process"; "information-as-knowledge"; and "information-as-thing", the latter being given to the word "information" in the sense of "things understood as informative". The various types of "information-as-thing" include data, text, documents, objects and events. From this point of view, "information" includes communication, but it goes even further, according to the author, information storage and retrieval systems need "information-as-thing".

The author defines that the information worked as 'things' can inform us about something. For Buckland (1991), the concept of document is a physical informational resource that represents ideas and objects (works of art, books, as well as texts) in addition to presenting information as a measurable, tangible, treatable and quantifiable element.

3.2 INFORMATION AND KNOWLEDGE

Brookes (1980) researched the study of information's scientific foundations and presented a formula that describes the change in the state of knowledge in order to incorporate information received from a communication process into a person's body of knowledge. Brookes (1980) proposes the formula: $K[S] + \Delta I = K [S + \Delta S]$. In the formula $K[S]$ is the original knowledge; ΔI is the variation of information assimilated by an individual; thus $K [S + \Delta S]$ results in the transformed individual's knowledge. The ΔS represents the modification effect on the individual's part. This model highlights interactions between people, information, and knowledge.

The Organization of Knowledge, according to Dahlberg (2006), is the science that systematically structures and organizes units of knowledge according to the characteristics of its elements and their application to objects and subjects. For Dahlberg (2006) there are two applications for knowledge organization:

a) the construction of conceptual systems.

b) the unit correlation of this conceptual system with objects from reality.

3.3 CONCEPTS USED IN THE PROPOSED MODEL

For Rosenfeld, Morville and Arango (2015, p. 24) Information Architecture is:

1) a structural design of shared informational environments;

2) the synthesis of organization, labeling, search and navigation systems;

3) the art and science of shaping information products and experiences;

4) a discipline focused on bringing design and architecture principles into the digital landscape. According to the authors, IA promotes the effective flow of information through the design of defined informational environments.

Sperber and Wilson (1986) define in Relevance Theory an inferential approach to pragmatics, based on two established principles:

a) The cognitive principle, in which human cognition is aimed at 'maximizing relevance';

b) communicative principle, in which utterances create 'optimal relevance expectations'.

Kress and Van Leeuwen (2001) define by Multimodality: “the use of various semiotic modes in the design of a semiotic product or event”, and also “it is the common terminology for all semiotic data”.

Kapp (2012) defines Gamification as “the use of mechanisms, appearance and game thinking to promote the active participation of professionals, motivating actions, promoting knowledge and problem solving”.

3.4 CULTURE AND ORGANIZATIONAL CULTURE

For Schein (2017), 'Organizational Culture' is the learning process produced by the common experience of a group, making the perspective that there may be several different cultures in an organization possible.

Corroborating Schein's view of various cultures within an organization, Buckland (2017, pg.58) also says that our knowledge, ways of communicating and of reasoning are culturally situated in our 'small personal worlds', and that the smallest

of these worlds is still complex. He also argues that no individual can know everyone else in the world, every place, every institution, every building, or every event.

The purpose of this work is to contribute to the improvement of culture within organizations, promoting greater access to training for high-performance professionals, who, due to their personal and professional characteristics, will spread their acquired knowledge to the organizations in which they work, and to their peers, contributing to a significant improvement in the institutions' organizational culture.

3.5 HIGH PERFORMANCE PROFESSIONALS

High Performance Professionals - HPP, members of high-performance teams, are professionals who always perform their activities well and cooperate for the professional growth of those involved. These professionals must master a wide range of disciplines. Mazurkiewicz (2010) defines a High Performance Professional as follows:

> “Since its inception, IBM has focused on developing the world's best business and technology professionals. With this, the company gained a competitive advantage by creating and cultivating a unique type of thinker and worker: the “IBMer”. Over the past 15 years, that dedication has meant researching specific characteristics demonstrated by the behavior of the best IBMers—characteristics they call competencies. These competencies are systematically integrated into a broad set of development processes, since they recognize that they need to evolve as both business needs and the world change. Reflecting this significant shift in today's business, IBM has identified and validated a new set of nine characteristics – the IBM Competencies – that describe and define the modern IBMer’s expectations – how he or she needs to behave to ensure that IBM is in its best form. When an IBMer is at his best, he:
>
> 1. Faces challenges
> 2. Partners for a client's success
> 3. Collaborates globally
> 4. Acts in a systemic perspective
> 5. Builds mutual trust
> 6. Influences through expertise
> 7. Works for continuous transformation
> 8. Communicates for impact
> 9. Help IBMers succeed
>
> These updated competencies reflect the very real way in which both the world and businesses are changing. This new approach to leadership elevates and unites all of IBM's existing career development programs, providing IBMers worldwide with a clearer picture of overall leadership knowledge, skills and

> behaviors needed to succeed in today's marketplace." (Mazurkiewicz, 2010 p. 6)

By its own definition, the performance of a high-performance professional is highlighted and distinguished from other professionals', since he assumes challenges, always collaborating with others, sharing information and positively influencing colleagues, aiming to obtain better results for the organizations in which he works and for society.

3.6 KNOWLEDGE AND INFORMATION ORGANIZATION

For Svenonius (2000), the act of organizing information establishes a connection with the constructs disposition logic that will form an understanding of the data and information represented, revealing itself as a particular type of language use.

For Hjørland (2008), Information Organization's function is helping users navigate through information spaces, to: retrieve documents, make decisions in search activities, and have an overall view of information resources.

According to Sousa (2015), knowledge organization can be perceived through several basic functions: functions to facilitate searches through information retrieval, to provide document information through notes or summaries, to help find the document or even the ordering of an informational set. Still for this author, the knowledge organization's systematization must consider that knowledge can be found in two formats: tacit knowledge (an users' perception, intellect, thoughts, or memory), and explicit knowledge (in notes, inscriptions or supports). So, for Sousa (2015. p.26) "the information and knowledge organization and its tools prove to be necessary and present in studies related to informational objects, especially in this digital age".

Metadata, which is data that describes data, helps users that need information about data to do their jobs. Metadata allows informing interested parties of the existence of a specific set of data, referring to their information needs. Almeida (1998) defines metadata as “data that completely describe the data they represent, allowing the user to decide on the use of this data in the best way possible”.

3.7 INFORMATION ARCHITECTURE

Compatible with this research's objectives, Information Architecture (IA) presents the following definitions in Rosenfield, Morville and Arango (2015, p. 24): IA can be

understood as a “structural project of informational environments”, “a synthesis of organization, labeling, search and navigation systems in digital, physical and hybrid ecosystems", "the art and science of shaping informational products and experiences in support to usability, 'findability' and information comprehension" and "both an emerging discipline and a practical community focused on the principles of design and the digital landscape’s architecture”.

In Rosenfeld, Morville and Arango (2015, p. 32) the model proposed to represent Information Architecture is Information Ecology, which is presented as an intersection of three pillars: Context, Content and Users. For Dos Santos (2013), the definition of these authors is applied in informational environment projects, in which the Contexts are defined by the culture and policies of organizations, as well as their business objectives; Contents are the structures, volumes and formats of information present in organizations; and from Users, their habits, needs, processes and behavior must be understood.

Organizations' information architectures must be unique, corresponding to their context. Both the vocabulary and structure of your website and intranet are important components of your business' relationship with your customers and employees and influence how they view your products and services. The Information Architecture of an organization's website provides perhaps the most tangible snapshot of its mission, vision, values, strategy and culture, and can be a communication tool of what to expect from your organization in the future, inviting or limiting the interaction between customers and employees, thus representing their context.

In Information Architecture, content is broadly understood to include the documents, applications, services, and metadata that people need to use or find on your site. As a communication tool, the Internet is implemented over words, phrases and objects that convey meaning. It is also a tool for tasks and transactions, a flexible technology platform that supports buying and selling, calculation and configuration, classifications, and simulations. On the websites of contemporary organizations, the following facets can be observed, as distinct factors of each ecology of information present in organizations (ROSENFELD; MORVILLE; ARANGO, 2015).

Differences in user preferences and behaviors within the physical world translate into different information needs and information seeking behaviors in the virtual world, considering the context of organizations' websites and their intranets. For example, senior executives may need to find some documents on a particular topic very quickly; research analysts may need to find all the relevant documents from their

research and may be willing to spend hours searching; managers may have a high level of industry knowledge but a low one on information browsing and research. These are examples of active users of an Information Ecology.

3.8 RELEVANCE THEORY

The Relevance Theory - RT proposed by Sperber and Wilson (1986) - can be identified as one of the most influential research programs regarding the interface between communication and cognition in recent decades. The theory seeks an inferential approach centered on human cognition as an alternative to the rigid models of previous codes, and it considers all the ingredients of an ambitious theoretical systematization. Based on two foundation principles, or pillars: the Cognitive Principle of Relevance, in which human cognition is aimed at maximizing relevance; and the Communicative Principle of Relevance, in which statements create expectations of optimal relevance.

The cognitive principle is based on the precepts of cognitive psychology, which sees the human reasoning process not as a structure but considers it to be something dynamic and linked to factors such as attention, memory, and conceptual representation, which will be fundamental for the processing of deductions. The logical principle is based on the molds of formal logic for the construction of interpretive hypotheses (formulating and confirming these hypotheses), that is, from logical forms (statements) they build premises and conclusions like the formal model.

Sperber and Wilson (1986) argue that human cognition has a tendency towards relevance. Thus, they propose the 'principle of relevance', which explains the predisposition of an individual to a certain communicative act taking precedence over another. According to the 'relevance principle', the brain and mind always go in the direction of what is most relevant for a given individual.

On the communicative principle, Sperber and Wilson (1986) state that utterances generate expectations of relevance. Thus, an issuer, when exposing an idea, orally or in writing, will create an expectation of 'optimal relevance' by the fact of addressing someone. A statement has its best relevance when it is relevant enough to be processed. The authors present that human communication can be considered 'ostentatious' by the information sender and 'inferential' by the receiver, the one who hears or reads the information who, depending on their inferences, will generate their own knowledge.

3.9 MULTIMODALITY

The main authors of Multimodality, Kress, and Van Leeuwen (2001) define it as: “the use of various semiotic modes in the design of a product or semiotic event”. For these authors, the origin of multimodality is the Semiotic Theory, which studies the text seeking to explain what it says and how it says it (BARROS, 2005).

According to Bateman (2008) the 'multimodal document' is a multimodal artifact that contains a variety of modes based on the visual component and that organize themselves simultaneously to fulfill an orchestrated collection of interconnected communicative objectives.

For Steinmetz, Duque, and Costa (2013), “multimodality refers to the use of various communicative modes during an interaction between subjects or between subjects and documents”. Internet pages are an example of these definitions: they use the descriptive mode, images and even sound to represent discursive genres.

Steinmetz (2015, p. 39) considers in his work the Multimodal Sociosemiotic Analysis which, according to the author, is associated with the meaning, production, and reception of messages from both the author and the reader of a given interpretive community. In the works of Kress and Van Leeuwen (2001) that deal with the interpretation of the context's meaning, this approach focuses on the analysis of meanings in the interaction between people, which do involve both the producer, the information’s author, and the observer, the information's reader. Regarding Visual Grammar in multimodal documents, Kress, and Van Leeuwen (2001) found that society is increasingly based on 'visual patterns', and that multimodality makes possible, through studies on Visual Grammar, the understanding of its relationship and the ways in which images represent relationships between people, places, and objects. The authors state that there are three principles of image composition visualized by the reader: information value, salience, and frame. These compositional principles can be applied not only to isolated visual elements, but also to full multimodal texts.

Multimodal Interactional Analysis addresses issues associated with direct interaction (face-to-face) between individuals in everyday life, at the specific moment it happens, which are ways to represent reality: gestures, gaze, body, and layout movement as well as other modes. According to Norris (2004):

> "The multimodal interactional approach’s main objective is the analysis, description and understanding of what happens between a communicative event, with emphasis on the expressions and reactions performed by individuals in specific

> situations, in which an ongoing interaction is always co-constructed".

According to Duque (2011, p. 156), a characteristic of software-based presentations, as opposed to traditional lectures, is the joint presence of different communication elements, such as: spoken and written language, a presenter's gestures and facial expressions, various previews in projected slides, movies and audio. Because of these combinations of different elements of communicative forms, scientific presentations can be described as multimodal. According to Lobin (2009), in presentations, multimodality unfolds into three modalities for the various modes of communication, combined and synchronized when presentations are made: linguistic (in the sense of spoken language), visual, and performative modality.

3.10 GAMIFICATION

In today's world, gaming is a constant in our society. Everyday several players of different ages make use of games for fun and learning. To Huizinga (2000), game is an inherent human activity to relate with, have fun with and prepare for complex activities that will happen in the future. Currently, there are several practical applications of the concept of gamification, such as in commerce, sales in medicine and in companies' workplaces, aimed at training skills, serving the public, among other activities. Clementi (2014) reminds us that the business world makes itself known in gamification, with various educational applications. For Navarro (2013) the game's role in the context of gamification has a new meaning since it acts in the player's psychomotricity development. Papert (1994) also highlights the importance of games in education, citing that they can help in the training of participants.

In the work of Fardo (2013), a framework for Gamification is presented which, in this research, was adapted to the proposal, guiding it to meet the information needs of high-performance professionals, according to the five pillars of this stage described below.

- Game Project: games must start from a first document, which describes the steps for their creation. Whenever there is a need for the game's application, the document must be updated;
- Experimenting with Fast Feedback: mistakes are a part of an individuals' learning process; providing the possibility of working with experiments without punishing the participant, or rather, encouraging him to stay in the game and learn quickly from the mistakes made is this pillar's objective;

- Tasks Adaptation: to make gamification attractive to student players, different skill and complexity levels must be put to the test, which is an important requirement for gamification;
- Rewarding Success: for each step achieved, a reward must be attributed, which can range from mere knowledge to a significant advantage for completing the challenge. In gamification, the student's constant stimulation is essential;
- Having Fun Experimenting Roles: during the game's narrative, the information architect can create context for student players to experience different roles in the learning process, being able to assume any role within a gamification application, as well as taking different roles in the games they are playing.

Nowadays, games are a form of entertainment that trigger learning in a pleasurable way for those who venture out and interact with them. For McGonigal (2012), the point is not to trivialize these teaching and learning processes, but to take advantage of the so-called "productive well-being", in which players manifest the ideal 'learning pattern' in games.

4. THE ASSESSED INFORMATION ARCHITECTURE MODEL

According to Orlandi et al. (2019) informational spaces should, preferably, be designed by information architects to meet their users' needs, helping in the most relevant and indispensable information's selection. Currently, there are many training sites and portals created without the support of an IA model that directly guides information architects to build solutions aimed at meeting the information needs of these spaces' professional users. This research's Information Architecture model presents a way of organizing informational spaces for training HPPs.

The model proposed by Orlandi et al. (2019) is established in five steps which guide the information architect in the construction of informational spaces, aiming at the permanent qualification of high-performance professionals:

Step 1 - Information Organization. According to Dahlberg (2006), it concerns the organization of learning objects in an informational space, using definitions of information, knowledge and metadata organization, building conceptual themes and correlating the objects;

Step 2 – Use of Information Architecture Models. Rosenfeld, Morville and Arango (2015) propose the application of information architecture models that deal with instructional design to allow the flow of information through the constructed multimodal informational space;

Step 3 – Use of Relevance Theory. This theory is based on the work of Spelberg and Wilson (1985) and aims to select learning objects that are relevant to high-performance professionals. The information architect, in charge of building the informational space, must choose the most relevant content according to the information needs presented.

Step 4 – Incorporation of Multimodality. According to Kress and Van Leeuwen (2001), multimodal learning objects such as texts, videos, audio and presentations should be incorporated as regular teaching material, being essential for the training of high-performance professionals, exploring the various semiotic modes and going beyond the traditional texts and presentations that tend to be routinely presented.

Step 5 – Gamification. According to (KAPP, 2012), online educational learning games are a means of promoting greater engagement and awakening students' interest in the content made available in the informational space. The application of games aimed at objective learning promotes a student's "awakening" and greater engagement in the discipline presented in the informational space.

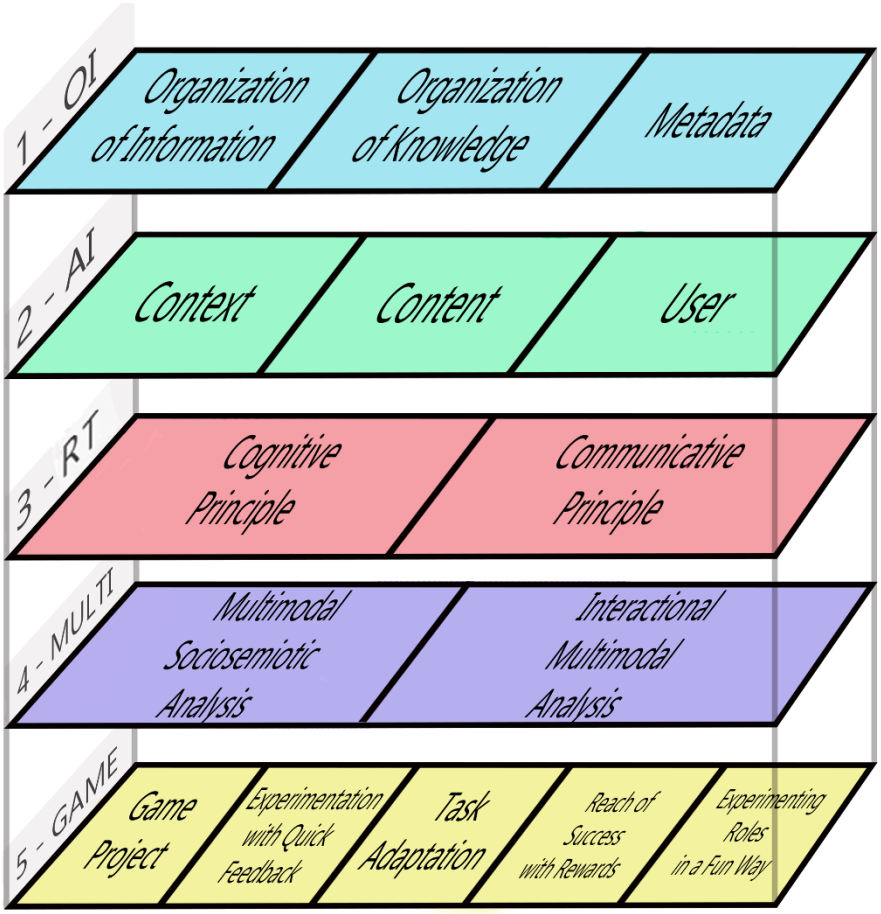


Image 1: Information Architecture Model.

Source: elaborated by the authors

The IAAM model - Information Architecture Associated with Multimodality was used in experiments in professional training courses. It is, essentially, a model conceived to guide the planning and construction of informational spaces for training HPPs, and it is the information architect's work, whether he is a professor of a discipline or some other auxiliary professional. One of this research's results is the presentation of a proposal that can contribute to future definitions of Information Architecture frameworks aimed at professional training.

5 RESEARCH METHODOLOGY

In relation to the objectives, the problem and its nature, this research is classified according to the following criteria: area, nature and technical procedure. This research's area of study is Information Science - Information Organization - Information Architecture. For Gil (2011), the nature of this research can be classified as applied research, because it generates knowledge for practical application aimed at solving specific problems. Exploratory research, from the objectives' point of view, because it aims to provide familiarity with the problem in order to make it more explicit, using a bibliographic survey, interviews with people who have had practical experiences with the researched problem, aiming to provide an 'overview' of a particular fact. (GIL, 2011).

For Lakatos and Marconi (2009), a questionnaire is a data collection instrument, made with an ordered series of questions that require answers without the researcher's presence. Usually, the researcher sends a questionnaire to the respondent by mail (postal or electronic) or by a carrier. After filling it out, the respondent sends it back in the same way. Along with the questionnaire, a note or explanatory text must be presented, containing the research's nature, its importance and the actual need for its answers, in order to arouse the respondent's interest, aiming to complete and return the questionnaire within a viable time period to evaluate the data and carry out the research. The research results were obtained through questionnaires applied to HPPs, students of a discipline in a postgraduate course, in which the IAAM Model was implemented in its entirety.

5.1 RESEARCH INSTRUMENTS

The first Questionnaire - High Performance Professional Assessment on the Information Architecture Model, applied in the Project Management discipline,

presents the Information Architecture Model Supported by Multimodality's 5 (five) stages and the 15 (fifteen) pillars. The objective of this survey questionnaire was to assess the perception of high-performance professionals, whether or not each of the model's components significantly helped their learning. This questionnaire was composed by the following questions:

1. In terms of Information Organization, did the order of available texts, presentations, audio and videos help your learning process?
2. In terms of Knowledge Organization, did the correlation of available texts, presentations, audio and videos, help your learning process?
3. Did the metadata of available texts, presentations, audio and videos help your learning process?
4. Did the context of available texts, presentations, audio and videos help your learning process?
5. Did the available content help your learning?
6. Did the discipline meet your information needs and preferences?
7. Considering the Cognitive Principle's definition, were the available texts, presentations, videos and audio relevant to your learning?
8. Did the provided texts, presentations, audio and videos, as well as the video lessons with the teachers, attract your attention?
9. Did the available texts, presentations, audio, online classes and videos help your learning?
10. Were the video classes effective in making the content available, aiding in your learning?
11. Was the Kahoot Game Project effective in helping you learn?
12. Did playing Kahoot with quick feedback help your learning process?
13. While playing, did the task adaptation in Kahoot help your learning process?
14. Did the achievement of rewarded success, such as in the disclosure of the first placed players in Kahoot, help your learning process?
15. Did playing in different roles while having fun in Kahoot help your learning process?
16. Did the IAAM Model, applied in the Project Management discipline, fully meet the discipline's required information needs, and did it help your learning process?

The second Questionnaire – High Performance Professional manager's Perceptions about their professional profile, after their training in the postgraduate course in Business Management, followed the definitions of Mazurkiewicz (2010 p. 6) about HPPs' characteristics. This research instrument was designed to certify the professional capacity of newly graduated students: if they were only high-performance students during the course, or if they present HPP characteristics after their formation. The following questions were part of this questionnaire:

1. Does the High-Performance Professional under your management face the challenges that are asked of him/her?
2. Is the High-Performance Professional under your management a partner in the clients' success, that is, does he participate in the actions that lead to the clients' success?
3. Does the High-Performance Professional under your management, whenever requested, collaborate globally, that is, throughout the Company?
4. Does the High-Performance Professional under your management act in a systemic perspective?
5. Does the High-Performance Professional under your management build mutual trust?
6. Does the High-Performance Professional under your management influence through their expertise?
7. Does the High-Performance Professional under your management work for continuous transformation?
8. Does the High-Performance Professional under your management communicate in order to have an impact, that is, putting themselves in the recipient's side, in the communication process?
9. Does the High-Performance Professional under your management help Colleagues to succeed?

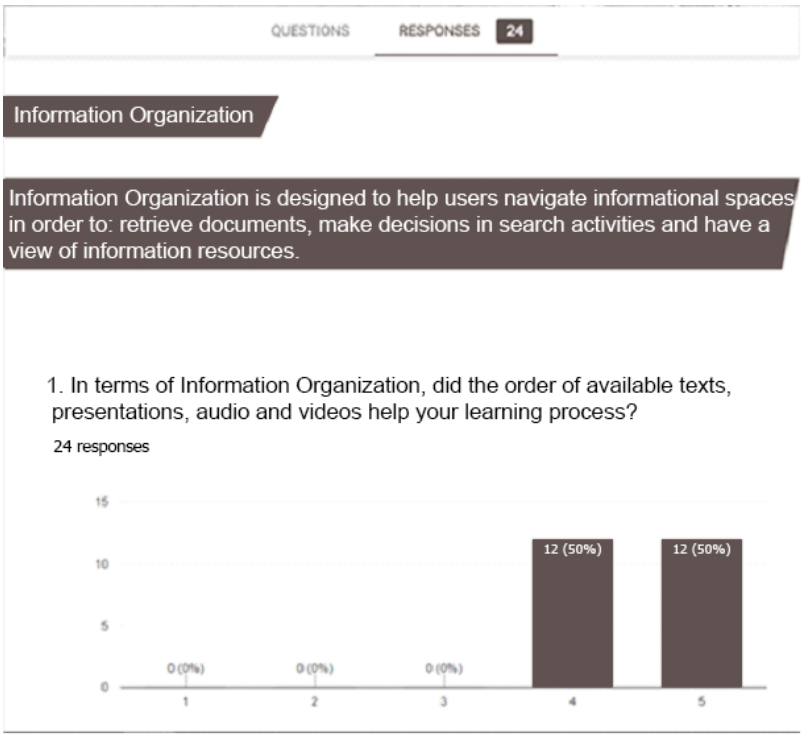
5. 2 RESEARCH HIGHLIGHTS

The questionnaires, evaluative instruments for this section, were elaborated and answered in the Google Forms tool and, as shown in the figures below, some answers were highlighted by the researcher. All responses were direct, with the options presented on a 5-point Likert scale: from 1- Strongly Disagree to 5 – Strongly Agree.

The answers highlighted in this survey in Questionnaire 1 were as follows:

• Answer 1: a higher concentration was observed in the answers of values 4 and 5 (Image 2), presenting the students' good evaluation and understanding about the first stage of the IAAM model: Information Organization.

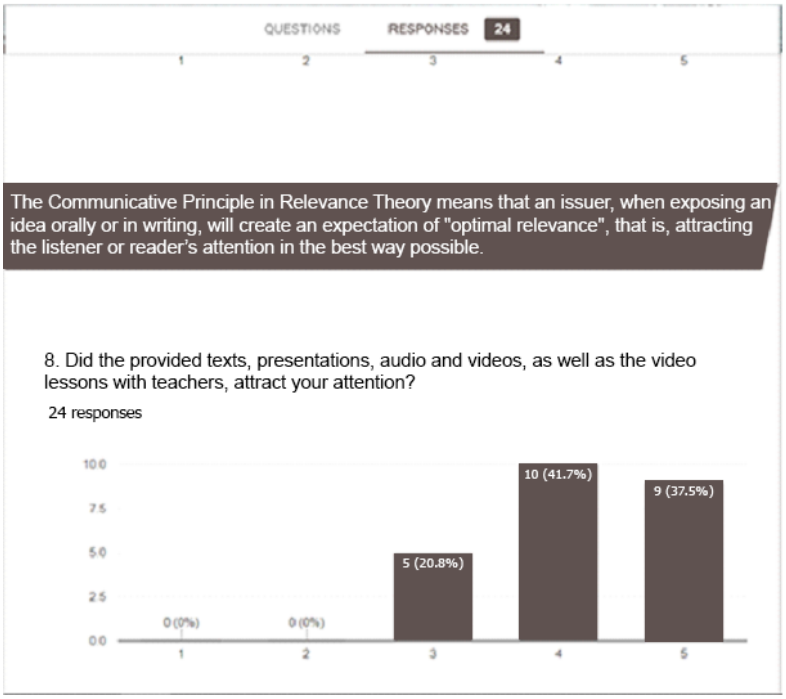
Image 2: Answers to Question 1



Source: elaborated by the authors on Google Forms

• Answer 8: there is a greater distribution in answers 3, 4 and 5 (Image 3), due to the Relevance Theory Communicative Principle's concept complexity.

Image 3: Answers to Question 8

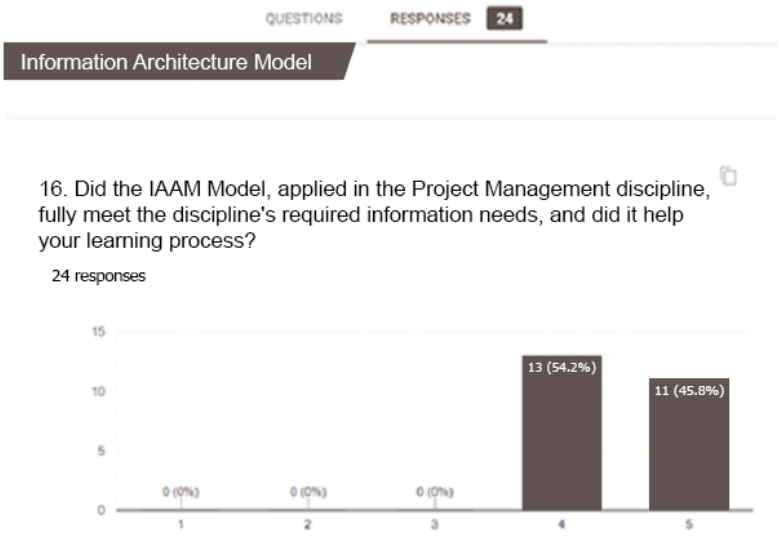


Source: elaborated by the authors on Google Forms

•Answer 16: a high concentration was again observed in answers 4 and 5 (Image 4). The answers to this question indicate that, despite the research's limitations, the

IAAM model was very well evaluated by the high-performance professional students participating in this research.

Image 4: Answers to Question 16

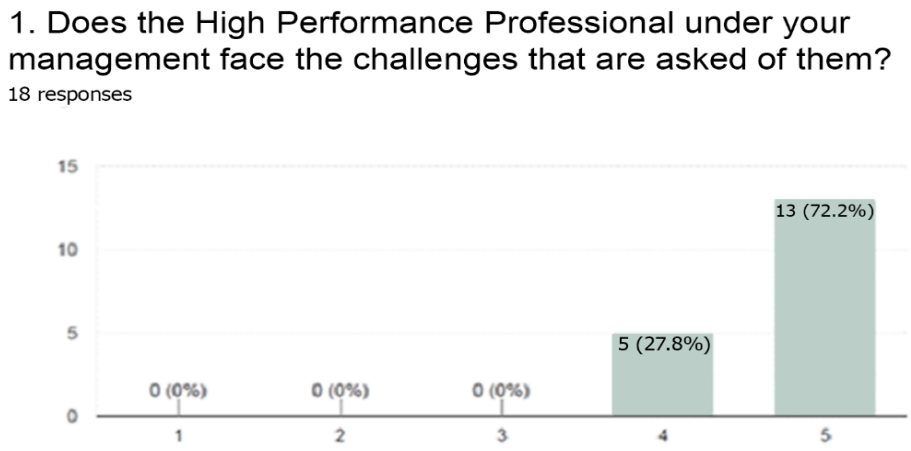


Source: elaborated by the authors on Google Forms

For the second Questionnaire, the answers highlighted in this research were as follows:

• Answer 1: a high concentration is observed in answers 4 and 5 (Image 5). These responses indicate that, in their immediate managers' view, high-performance professionals face the required challenges, which according to Mazurkiewicz (2010) is one of the main characteristics of HPPs.

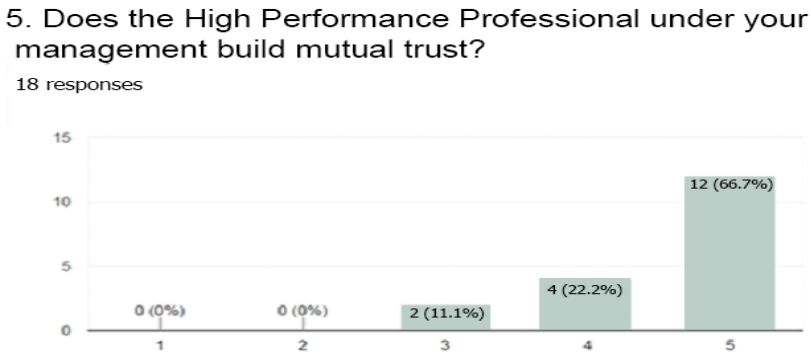
Image 6: Answers to Question 5



Source: elaborated by the authors on Google Forms

• Answer 5: In this question, there is a greater distribution between answers 3, 4 and 5 (Image 6), which may be a specific question of the sample of high-performance professionals in this surveyed population.

Image 6: Answers to Question 5



Source: elaborated by the authors on Google Forms

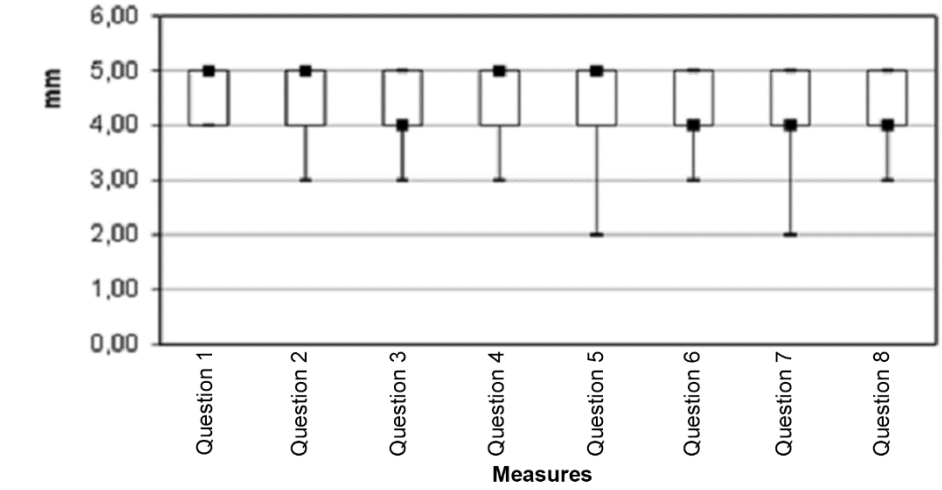
5.2 STATISTICAL RESULTS AND ANALYSIS

The total population of responding HPPs was 100 participants. The 16 questions were answered by 42 student HPPs in the Project Management discipline, from the 'lato sensu' graduate course in Business Management.

In order to demonstrate the statistical description of this research, the ‘BOXPLOT’ graph model was chosen. This model is composed of a graph based on the summary of five numbers: a) Minimum value, b) First quartile (Q1); c) Median (second quartile Q2); d) Third quartile (Q3); and e) Maximum value. The graph is formed by a box built parallel to the data scale axis (it can be horizontal or vertical). The box shown goes from the first quartile to the third quartile, and in it a line is drawn at the median’s position. The box describes the central 50% of the distribution and is common to all Boxplot variants. This graphical representation model was chosen because it represents in a single graph the research's significant result.

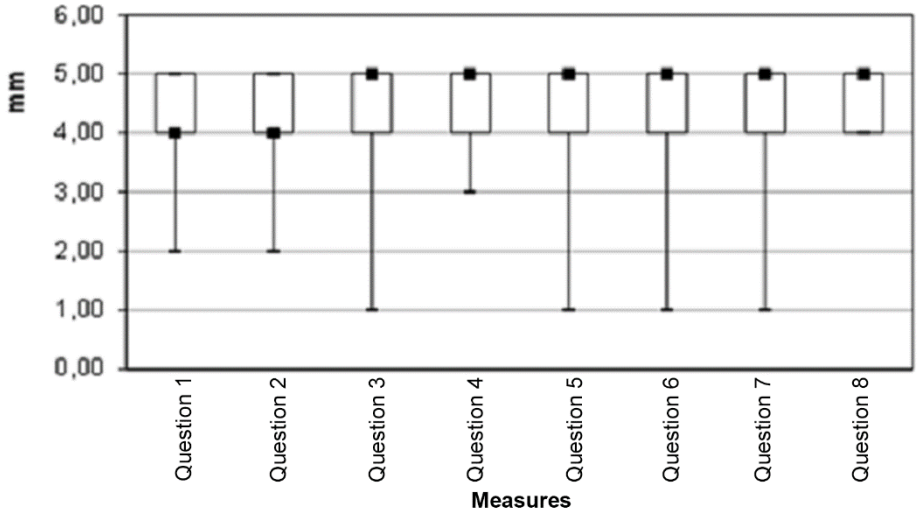
According to Graphs 3 and 4, there was a large concentration of evaluations between 4 and 5 in all questions in the first Questionnaire. The highlight should be observed in relation to the medians (points in Boxplot), with a value of 5 in questions 1, 2, 4, 5 and 11 to 16, and the value 4 in the other questions.

Graph 1: First Questionnaire - Questions 1 to 8



Source: elaborated by the authors

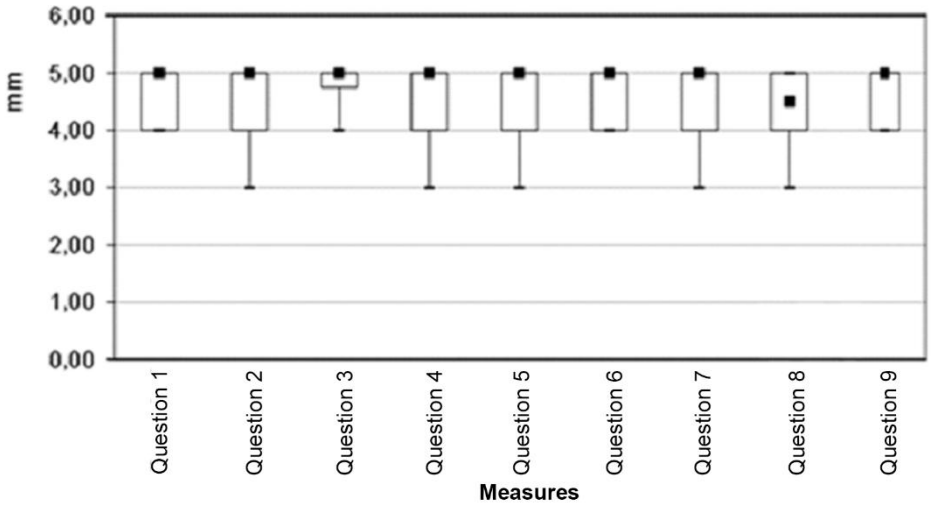
Graph 2: First Questionnaire - Questions 9 to 16



Source: elaborated by the authors

Regarding the second Questionnaire's responses - The High-Performance Professional's manager's perceptions about their professional profile, after training in the postgraduate course in Business Management - of the 24 managers indicated, 18 responded, representing a percentage of 75% of valid answers. Graph 3 also shows a concentration of medians with a value of 5 for all questions, except for Question 8, with a value of 4.5 for the median, demonstrating that high performance professionals graduated in the Business Management course were well evaluated by their immediate managers, according to Mazurkiewicz's criteria (2010).

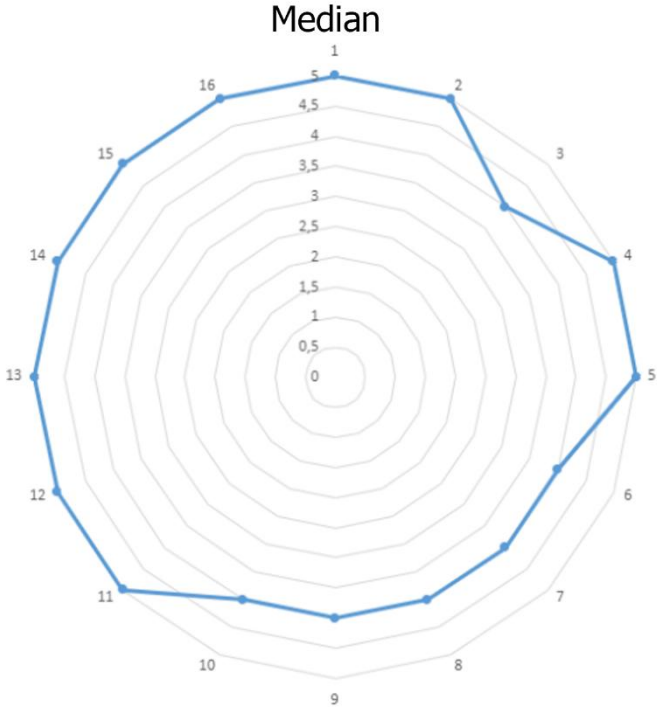
Graph 3: Second Questionnaire - Questions 1 to 9



Source: elaborated by the authors

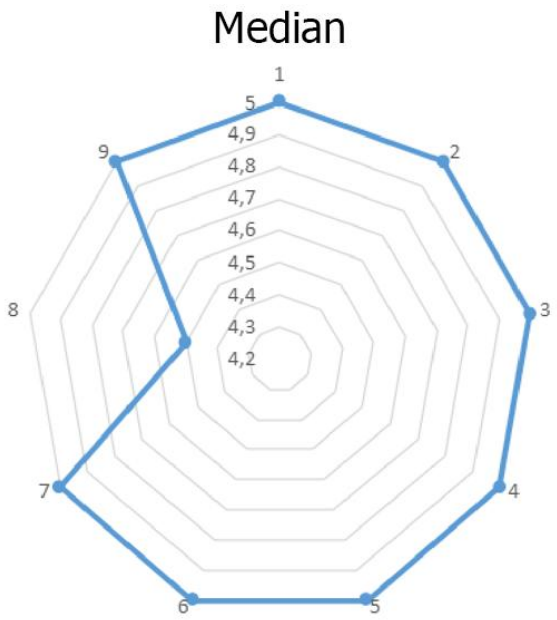
A low dispersion of the medians can also be observed in both Radar 4 and 5 graphs which, in this researcher's understanding, considering the research's various limitations described below, demonstrate the model's great acceptance, because, despite the limited sample, the research is representative for contemplating students dispersed in several Brazilian states, with different backgrounds and views, who had the same access to informational spaces, and their opinions were not influenced by other research participants.

Graph 4: Median Distribution in the first Questionnaire



Source: elaborated by the authors

Graph 5: Median Distribution in the second Questionnaire



Source: elaborated by the authors

6 CONCLUSION

Qualifying high-performance professionals so that they can perform their activities with the rigorous quality expected by society is a constant challenge. This research proposed an Information Organization model, applied to informational spaces, aiming to significantly support the training of these professionals, applying concepts of Information Architecture, Multimodality, Relevance Theory and Gamification. The proposed model was well evaluated by the participants.

The greatest limitations of this research were quantitative, since the Information Architecture Associated with Multimodality - IAAM proposed here, was fully implemented only in a controlled environment, in a corporate educational unit, in an MBA class, postgraduate ('lato sensu').

As mentioned in the research, information has three distinct meanings for Buckland (1991, p. 351): “Information-as-process”, “information-as-knowledge” and “information-as-thing”. This research focuses on the concept of Information-as-thing, made available in informational learning spaces so that Information-as-Process meets the information needs of high-performance professionals seeking training, allowing Information-as-knowledge to provide a change in the “state of knowledge” of

these professionals, advocated by Brookes (1980), and expressed in the formula $K[S] + \Delta I = K [S + \Delta S]$.

The survey results demonstrate that the informational space constructed received a positive evaluation from most high performance professionals participating in the survey, as well as from their immediate managers, who evaluated them right after the completion of the training that used the proposed IAAM model.

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