Higher Education Coordination Training Simulator: a Study with Experts in DISC Methodology

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Abstract. *For a higher education course to be successful, it is necessary to train a Higher Education Course Coordinator to meet the course's political, pedagogical and administrative requirements. A lack of knowledge in one of these skills can lead to several challenges. To this end, CoordSim was created, a Course Coordinator Simulator, which will train and present tasks to the coordinator or candidate for the position, containing situations related to this context. This paper aims to present a study with experts in the DISC Methodology to classify the responses to tasks issued by CoordSim, which allows the Coordinator to have an insight into their behavior in their work environment.*

1. Introduction

The Higher Course Coordinator is a professional who can be a teacher, chosen through election, competitions or other methods to manage your Course temporarily [BARBOSA and MENDONÇA 2016]. The lack of skills and abilities in the political, pedagogical or administrative areas can cause the Coordinator to fail in their tasks, which can lead to several Institutional problems, such as poor quality of teaching or even evasion on the part of students [BIBEAULT et al. 2015]. These professionals, most of the time, do not have any training or knowledge to start in the position, gaining skills and competencies throughout their career [Fernandes et al. 2014].

With this problem in mind, CoordSim was created, a Higher Education Course Coordination Simulator, where professionals can be trained to acquire skills and competencies in the three areas mentioned above. CoordSim is a web system, where coordinator candidates can register for free, carry out a training simulation, as well as pause or start a new one whenever convenient. Furthermore, at the end of the simulation, CoordSim presents data, such as graphs that demonstrate which questions answered are related to the political, pedagogical and administrative areas, in addition to which questions were and were not answered.

The CoordSim questions were designed to assist in the development of skills present in the DISC methodology (Dominance, Influence, Steadiness and Conscientiousness) [CABRAL and ROSA 2021]. In the DISC methodology, the aim is to predict the behavior of individuals within a given situation, showing how each person behaves in relation to the work environment, trends and skills in the development of an organizational climate based on lightness, positivism and productivity. In order for the CoordSim questions to be related to the dimensions of the DISC methodology, a study was carried out with experts and professionals in DISC Methodology from different parts of Brazil. In this evaluation,

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the experts sought to classify the answers to the CoordSim questions in relation to the dimensions of the DISC methodology.

This study, in addition to contributing to the correct classification of CoordSim responses in relation to the dimensions of the DISC methodology, allows the Coordinator candidate to have an insight into their behavior in their work environment. This vision can also help you reflect on your decisions in the face of a situation in the Course Coordination. To this end, CoordSim issues a report on the profile of Course Coordinator candidates. This paper provides a better view of which dimensions have been most evident in his actions, in addition to allowing him to compare his profile with those of other Coordinators.

This paper is organized as follows: Section 2 presents the research background; Section 3 presents CoordSim; Section 4 presents the Study with Experts, Section 5 presents the discussion and the last section presents the Conclusion.

2. Background

The Coordinator's activity goes beyond the competencies of his basic training, and he must have knowledge that goes beyond teaching and his title. Normally, when joining the coordination, the Coordinator does not have a basis or experience in all the areas in which he must work [ARAGÃO et al. 2022]. Given these characteristics, training a Course Coordinator can guarantee efficiency, generating savings for the Higher Education Institution (HEI), as training can reduce problems generated by poor management, avoiding the removal and hiring of a new Coordinator [SAUAIA and ZERRENNER 2009].

A simulated computing environment can promote the development of 21st Century skills and competencies, enabling the Course Coordinator to gain more knowledge about the position he or she should occupy, bringing several benefits, for example, improving dealings with teachers and students, converting learning in a process of building actions, concepts and propositions through interaction with teachers, students and other Coordinators [COSTA and MOREIRA 2001]. In this context, simulations of administrative processes bring certain advantages such as: a) reduction of operational costs; b) exponentially enhance the efficiency and effectiveness of companies; c) the simulator can solve problems anywhere, as long as the necessary equipment is available; and d) for coordinators, it can enable the testing of decision-making hypotheses without the operational cost of these decisions [RAFALSKY 2019].

The main objective of simulators is to guarantee learning, generating skills, with pedagogical aspects, related to the development of skills in certain business areas [SCHLATTER 2016]. In many cases, algorithms can be used that can be responsible for supporting and delegating tasks, managing their complexity, supporting user mobility, adapting to the user and their environment and learning [SILVA and DELGADO 1997].

3. CoordSim

CoordSim is a Higher Course Coordinator simulation system, created so that a Coordinator candidate can simulate situations that normally occur during their profession. Features necessary for the development of CoordSim were established, such as being a web system, easy to access and understand, accessible on different devices, such as computers and mobile devices, in addition to being able to store simulation data, allowing so that the candidate can return and carry out the rest of the tasks when they see fit. The CoordSim tasks or questions were raised based on a survey carried out with Higher Education Course Coordinators from Public and Private Institutions and from different areas, so that we can simulate a real environment.

CoordSim was developed with PHP, HTML, CSS, MySQL database, Javascript libraries such as jSQuery and the CSS Bootstrap Framework was used for design. HTML was used in a semantic and responsive way, so that CoordSim can be rendered on different devices and also provide accessibility for people with some level of visual impairment. PHP was chosen because it is a language widely used on the Web [NIEDERAUER 2017].

To access CoordSim, which is available through the website www.coordsim.com.br, the Coordinator can register to log in to the CoordSim system. After logging in, it will be presented a *Dashboard* with four options: Start new Simulation, Continue Paused simulation, View reports and Watch Video Tutorial. CoordSim has a set of tasks that the Coordinator must perform. The tasks (questions) will be classified as Pedagogical, Administrative or Political, which can be evaluated at each step taken within the simulation. The tasks can help the Coordinator to understand which factors may be most important in the decision process. All CoordSim questions and answers are available at https://www.coordsim.com.br/questoes.pdf. Furthermore, while carrying out the tasks, the Coordinator must reflect on the time taken for each task, and must come to the conclusion whether they completed it successfully or not.

After the learner has logged in CoordSim correctly, the *Dashboard* is presented with the tasks prepared for training. The Coordinator must select which tasks and in what order he wants to perform them. The system should show calls on the screen, with the help of *pop-up* windows, for specific problems that may or may not hinder the progress of other tasks already mapped, demonstrating what the day-to-day life of a course coordinator can be like. New tasks can be offered, even if the user is solving one. This role of assigning more tasks will be done by an algorithm, which will select tasks of different types, just as happens in real life.

CoordSim can be integrated with other systems, such as Moodle, or another learning environment, or direct access through a *web* address. As previously stated, CoordSim should support the development of pedagogical, administrative and political skills. To achieve this, it is necessary for the Coordinator to carry out activities with these focuses, helping the process of acquiring skills and competencies through CoordSim. For evaluation, it is necessary to measure the Coordinator's behavior. Therefore, it was decided that CoordSim would use the DISC Methodology [CABRAL and ROSA 2021]. DISC measures four factors: Dominance, Influence, Steadiness and Conscientiousness.

Dominance measures factors of more dominant, fast, bold and competitive behaviors, oriented towards action and the deadlines involved; Influence measures factors that are more communicative, friendly and relaxed, oriented towards people and tending to influence them; Steadiness measures more stable, patient and conciliatory behaviors, aimed at seeking balance and harmony in relationships and environments; Finally, Conscientiousness measures more cautious, demanding and detail-oriented behaviors, aimed at doing things with precision and quality.

The DISC methodology was chosen because it is the most used to have a more assertive prediction about the behavior of individuals within a given situation, showing how each person behaves in relation to the work environment [CABRAL and ROSA 2021]. This methodology is also used by ETalent [1], one of the largest Human Resources companies in the country [RODRIGUES and SOUZA 2018]. Using CoordSim, Coordinators will be able to compare their results to other Coordinators who participated in other simulations

[1] www.etalent.com.br

and thus know what steps they could have taken to obtain a result more similar to those of the other coordinators.

4. Study with DISC Methodology Specialists

The following study was approved by the Research Ethics Committee (CEP) under the CAAE 73993523.6.0000.0102 [Fernandes et al. 2014].

4.1. Study Planning

The study with Experts in DISC Methodology aimed to verify which CoordSim responses are related to the dimensions of the DISC methodology. In this study, through the relationship between the answers to CoordSim questions and the dimensions of the DISC methodology, we sought to find out more about an individual's behavior, whether they have more Dominance, Influence, Steadiness or Conscientiousness. To this end, the experts were invited, via social media, email or messaging programs, to participate in a meeting with the researcher via the Google Meet platform, where CoordSim was presented and they were instructed to read the CoordSim questions in detail, for as long as was convenient for them.

Out of a total of 50, 20 people accepted the invitation to participate in the research. The Think Aloud method was used at this meeting [LASPERS et al. 2004]. This method consists of an oral report of the contents of short-term memory and represents a trace of the cognitive processes that people present when carrying out a task, verbalizing the classifications and decisions made [Simon and Ericsson 1984].

4.2. Study Execution

When carrying out this study, six experts agreed to participate and signed the Free and Informed Consent Form. Experts were able to either write their classification in a questionnaire containing CoordSim questions and answers, or report their classification aloud. The researchers also left the experts free to present their classification justification.

4.3. Study Results

After execution, the results of the classification of the dimensions of the DISC methodology were analyzed for each of the answers referring to the CoordSim questions, as shown in Table 1. Some answers were characterized in more than one dimension. This is not considered a problem, since a response may contain more than one characteristic and the system must support the registration of more than one dimension of the DISC methodology. In this classification, the DISC characteristics most voted in each answer were considered, that is, if a response obtained more Dominance (D) classifications, it was classified as Dominance (D), as happens in R1 of Q2 (Table 1). Those that obtained a tie were classified according to the dimensions that received the most votes, as is the example of R2 in Q2, which was classified as Dominance (D), Influence (I) and Conscientiousness (C) (Table 1). It is worth mentioning that not all experts provided justification for their classification.

In Q1, according to Table 1, the majority of participants classified R1, R2 and R3 as Influence (I). In this way, responses R1, R2 and R3 were classified as Influence (I) in CoordSim. Regarding response R1, expert P3 commented "I see it as influence" and expert P1 said "This would be more focused on influence".

In Q2, the majority of participants classified answers R1 and R3 as Dominance (D). For example, expert P1 commented "It would be Steadiness" for the answer R1, while P2 said "It seems to be quite straightforward: dominance", P3 commented "Dominance". In R3, P1 commented "It would be dominance", P2 commented "It seems to be dominance

Table 1. CoordSim responses characterized by the DISC Methodology

Q1	D	I	S	C
R1	1	**4**	0	1
R2	0	**3**	1	2
R3	1	**3**	0	2

Q2	D	I	S	C
R1	3	0	2	1
R2	2	2	0	2
R3	5	0	1	0

Q3	D	I	S	C
R1	1	1	2	2
R2	2	1	1	2
R3	2	0	1	3

Q4	D	I	S	C
R1	1	4	1	0
R2	0	1	1	4
R3	3	2	0	1

Q5	D	I	S	C
R1	4	2	0	0
R2	4	2	0	0
R3	1	1	0	4

Q6	D	I	S	C
R1	3	1	1	1
R2	3	0	1	2
R3	2	1	1	2

Q7	D	I	S	C
R1	1	2	1	2
R2	1	1	3	1
R3	0	6	0	0

Q8	D	I	S	C
R1	1	0	2	3
R2	0	3	2	1
R3	2	1	1	2

Q9	D	I	S	C
R1	0	4	2	0
R2	1	2	2	1
R3	3	2	1	0

Q10	D	I	S	C
R1	2	3	1	0
R2	1	1	1	3
R3	3	0	1	2

Q11	D	I	S	C
R1	3	0	2	1
R2	0	3	2	1
R3	2	1	0	3

Q12	D	I	S	C
R1	1	0	3	2
R2	2	1	2	1
R3	2	2	1	1

Q13	D	I	S	C
R1	4	0	0	2
R2	2	3	1	0
R3	4	0	0	2

Q14	D	I	S	C
R1	4	1	1	0
R2	2	0	3	1
R3	3	1	1	1

Q15	D	I	S	C
R1	0	3	2	1
R2	2	2	1	1
R3	1	1	3	1

Q16	D	I	S	C
R1	0	3	2	1
R2	1	1	3	1
R3	2	1	1	2

Q17	D	I	S	C
R1	0	2	1	3
R2	2	4	0	0
R3	0	4	2	0

Q18	D	I	S	C
R1	2	1	1	2
R2	2	3	1	0
R3	0	0	5	1

Q19	D	I	S	C
R1	2	3	0	1
R2	3	1	0	2
R3	1	4	0	1

Q20	D	I	S	C
R1	4	1	1	0
R2	3	0	0	3
R3	1	0	3	2

Q21	D	I	S	C
R1	2	1	2	1
R2	2	2	0	2
R3	0	3	1	2

Q22	D	I	S	C
R1	2	0	2	2
R2	2	0	2	2
R3	1	0	4	1

Q23	D	I	S	C
R1	1	1	3	1
R2	2	0	4	0
R3	1	0	0	5

Q24	D	I	S	C
R1	1	3	1	1
R2	3	3	0	0
R3	1	2	1	2

Q25	D	I	S	C
R1	2	1	1	2
R2	1	4	1	0
R3	1	2	1	2

Q26	D	I	S	C
R1	1	5	0	0
R2	2	2	1	1
R3	2	1	1	2

Q27	D	I	S	C
R1	1	4	1	0
R2	1	3	2	0
R3	2	3	0	1

Q28	D	I	S	C
R1	1	3	1	1
R2	1	2	2	1
R3	0	5	1	0

Q29	D	I	S	C
R1	2	1	1	2
R2	1	4	1	0
R3	1	3	0	1

here", P3 already commented: "Between dominance and influence, but I'm going to put Dominance". In response R2, there was a tie in Dominance (D), Influence (I) and Conscientiousness (C). Therefore, these three dimensions were registered in R2, as can be seen in Figure 1. For example, about R2, P1 commented "That would be Conscientiousness", P2 commented "I think it's influence".

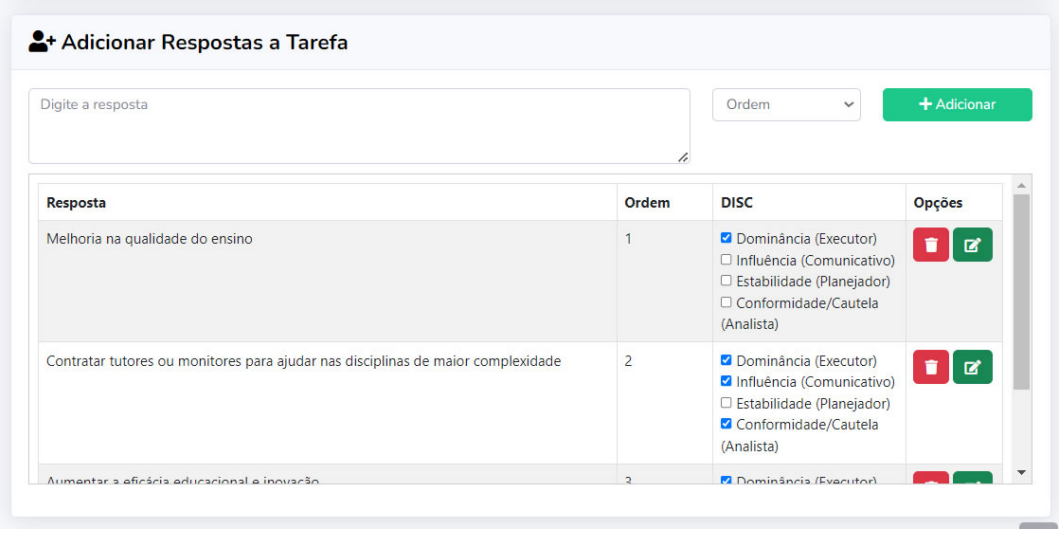

Figure 1. Response Registration Screen in the CoordSim System (in Portuguese)

In Q3, the majority of participants classified R1 as Steadiness (S) or Conscientiousness (C), while R2 had a tie between Dominance (D) and Conscientiousness (C), while R3 was classified as Conscientiousness (C) by the majority of the participants. In R1, for example, P4 commented "I would put Conscientiousness". For R2, P4 commented "I would put Dominance". In Q4, R1 was classified as Influence (I), R2 as Conscientiousness (C) and R3 as Dominance (D). For example, participant P1 commented "This would be more dominance oriented" in relation to R3.

In Q5, R1 and R2 were classified as Dominance (D) and R3 as Conscientiousness (C). For example, P2 commented "I would go with dominance" and P6 commented "Dominance, he is playing the role of boss" to R1. This answer would be "Use communication, which can be in application messaging groups, email or others", where the individual must exercise dominance, with a leadership role in messaging groups. Regarding R3, P5 commented "I'm thinking... but it's Conscientiousness" and P1 commented "This would be Conscientiousness".

In Q6, R1 and R2 were classified as Dominance (D) and R3 was a tie between Dominance D) and Conscientiousness (C). For example, regarding R1, P6 commented "Dominance, it is defined as time management". For R2, P4 commented "It would be dominance". In R3, P2 commented "I think it's dominance" and P1 said "This is dominance too. You just need to be a high performer to say no", this comment to R3 which would be "Temporarily failing to respond to requests that may not be of administrative interest, normally requested by Management and which are not so important at that moment", demonstrates that in addition to having the Dominance characteristic, you must also be courageous or have a high position to be able to do it.

In Q7 there was a tie between Influence (I) and Conscientiousness (C) for R1 and R2 was classified as Steadiness (S). In R3, all participants classified it as Influence (I). Regarding R1, P6 commented "Conscientiousness, a technical issue". In R2, P1

commented ”It would be Steadiness too” and P2 commented, ”It seems stable to me”. In R3 ”Democratization of physical spaces”, P2 commented ”It seems like Influence” and P6 said ”Influence, he wants to convince others to buy that idea”, demonstrating that the person must have a high degree of Influence to make others follow his idea.

In Q8, R1 was classified as Conscientiousness (C), R2 as Influence (I) and R3 had a tie between Dominance (D) and Conscientiousness (C). In R1, P2 commented, ”It seems to me to be cautious, or conformity”. In R3, P2 commented that ”It would be dominance”. In Q9, R1 was classified as Influence (I), R2 had a tie between Influence (I) and Steadiness (S) and R3 was classified as Dominance (D).

In Q10, R1 was classified as Influence (I), R2 as Conscientiousness (C) and R3 as Dominance. In R2, P6 commented ”A question of technique, Conscientiousness”. To R1, P6 commented, ”Dominance, he will exercise his power”. R3 would be ”Encourage the STC (Structuring Teaching Core) to propose changes to the PPC to meet the demands of the labor market”, demonstrating that it must exercise its full degree of dominance to be able to make the NDE adopt this idea.

In Q11, R1 was classified as Dominance (D), R2 as Influence (I) and R3 as Conscientiousness (C). For R2, P6 commented ”Influence, it’s an analysis, so it’s influence”. In Q12, R1 was classified as Steadiness (S), R2 and R3 had a tie, and in R2 Dominance (D) tied with Steadiness (S) and in R3 Dominance (D) had a tie with Influence (I). P1 defined R1 with the comment ”It’s Steadiness” and P3 also said ”Conscientiousness, no, Steadiness, sorry”.

In Q13, R1 was classified as Dominance (D), R2 was classified as Influence (I), and R3 as Dominance (D). Regarding R1 (”Hold calls so that teachers must participate”), P6 commented ”Dominance, it is mandatory”, which defines that the person must exercise their degree of Dominance to force others to participate in meetings, and people with this characteristic are effective in situations that require a quick and decisive call, especially when there is a need to obtain immediate results.

In Q14, R1 was classified as Dominance (D), R2 as Steadiness (S) and R3 as Dominance (D). In Q15, R1 was classified as Influence (I), R2 had a tie between Dominance (D) and Influence (I) and R3 was classified as Steadiness (S). P1 commented ”Yeah, this would be an influence” for R1. In Q16, R1 was classified as Influence (I), R2 as Steadiness (S) and R3 had a tie between Dominance (D) and Conscientiousness (C).

In Q17, R1 was classified as Conscientiousness (C), R2 and R3 as Influence (I). P1 commented ”This is Conscientiousness” to R1 and P1 commented ”This would be Influence” to R2. In question Q18, R1 was classified as Dominance (D) and Conscientiousness (C), R2 was classified as Influence and R3 as Steadiness (S). P1 commented ”This would be Conscientiousness” to R1 and P1 commented ”This would be Influence” to R2. In Q19, R1 and R3 were classified as Influence (I) and R2 as Dominance (D). P3 commented ”Influence” for R3 and P6 commented ”Influence” for R1 and R3.

In Q20, R1 was classified as Dominance (D), R2 tied Dominance (D) with Conscientiousness (C) and R3 was classified as Steadiness (S). In question Q21, R1 was classified as Dominance (D) and Steadiness (S), R2 was classified as Dominance (D), Influence (I) and Conscientiousness (C) and R3 as Influence (I). P6 commented ”If you’re going to present alternatives, it’s influence” on R2. Presenting alternatives is a skill that involves the ability to communicate different options, persuade and influence the decisions of others. Therefore, it is more related to the ”Influence” (I) dimension.

In Q22, R1 and R2 were classified as Dominance (D), Steadiness (S) and Conscientiousness (C), R3 was classified as Steadiness (S). P1 commented ”Hmm, that would be dominance”, to R1. In Q23, R1 and R2 were classified as Steadiness (S) and R3 as Conscientiousness (C). P2 commented ”I understand Steadiness” and P1 commented ”That would be Steadiness” about R1. P6 commented ”Conscientiousness too” about R3.

In Q24, R1 was classified as Influence (I), R2 was classified as Dominance (D) and Influence (I) and R3 as Influence (I) and Conscientiousness (C). P1 commented ”This would be the influence” on R1 and ”This would be the Conscientiousness” on R3. In Q25, R1 was classified as Dominance (D) and Conscientiousness (C), R2 as Influence (I) and R3 as Influence (I) and Conscientiousness (C). P6 commented ”Proposing is dominance” about R1, which emphasizes control, assertiveness, demonstrating high dominance, being direct, focusing on results and proposing ideas in an incisive and decisive way.

In Q26, R1 was classified as Influence (I), R2 as Dominance (D) and Influence (I) and R3 as Influence (I) and Conscientiousness (C). In Q27, both R1, R2 and R3 were classified as Influence (I). P6 commented ”Power of influence” and P1 and P2 commented ”Influence” on R1. In Q28, R1 and R3 were classified as Influence (I) and R2 as Influence (I) and Steadiness (S). P3 commented ”Influence” for R2 and R3. P1 commented ”Influence” for R1 and R3, while P6 commented ”Steadiness” for R2. In Q29, R1 was classified as Dominance (D) and Conscientiousness (C) and R2 and R3 as Influence (I). P6 ate ”Dominance” for R1 and ”Influence” for R3. P1 commented ”Dominance” for R1 and ”I think it would be an influence too” for R3.

5. Discussion

Based on the study results, it can be seen that this helped to better classify each response to the CoordSim task concerning the dimensions of the DISC methodology. It was found that this allows for a better view of where the Coordinator’s actions fit in, an analysis that can be compared to the general analysis of other higher education course coordinators. It was then noted that if an individual is, for example, more dominant in some aspect concerning the other coordinators, and if this individual should be more dominant, influential, stable and conscious. This can lead a coordinator to be better prepared for his/her actions.

It is believed that with this analysis the Coordinator can acquire more skills and competencies in the desired areas, thus being able to help in the routine tasks of course coordination, leading the candidate to be a better coordinator in several aspects. One of the limitations may be the number of tasks present in CoordSim, currently 29, but more tasks can be added to the simulator through its control panel.

6. Conclusion

The study carried out with DISC Methodology Experts helped in classifying the responses to CoordSim tasks, helping with the registration and development of relevant reports, thus being able to demonstrate to those involved in which dimensions of the DISC methodology it best fits. Thus, the candidate for Coordinator will be able to have a more assertive prediction about their behavior within a given situation, showing how they behave concerning the work environment.

CoordSim can help the Coordination candidate to acquire more skills and competencies, as well as more knowledge about the actions and tasks of a Higher Education Coordinator. It can also help the Coordinator in dealing with teachers and students, improving their service to these entities and, consequently, helping with the administrative, political and pedagogical management of the course.

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