

Analysis Project Integrator “Mano Robotica” from Levels Discursive Connection by Systems Engineering Students of Corporacion University Americana

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Abstract: In the Corporacion Universitaria Americana, Engineering Faculty around the middle of 2014, it has been developed a formation strategy based on the construction of semester’s unifying project. In the present project it proposes an integrator project using the discursive analysis’s methodology proposed by M. Bajtin this analysis comes up because of the necessity of doing a monitoring that makes possible the results’s growth typical from the project. In order to analyse properly, the internal dynamic of appropriation of the discursive spheres from the paperwork given by the students. It proposes a three stages compound method: historical description of the project’s objective from the constitutional context, definition of the discursive analysis’s theoretical elements that apply to the project and finally an intertextual relation as a conclusion of the results obtained in the two previous moments. The analysis development allowed to conclude that the synecdoche developed for the students to interpret the supplied questions in the strategy, in the development of this project did not answer to the stablished requirements by the engineering faculty with that advise the necessity of strategy improvement more to the faculty interior. This project belongs to a first analysis stage in a meaningful improvement searching in the assesment accompaniment processes of unifying projects.

Key words: Discursive genres, formation strategy by projects, engineering, electrical prosthesis, synecdoche

INTRODUCTION

The Formation Strategy by Projects (FSP) profiles in the Corporacion Universitaria Americana, Engineering Faculty as a distinguishing factor’s curricular tool that makes possible the continuous interaction and integration between teaching, extension, educational investigation and effects in the community. It originates in the year 2014 in the Industrial Engineering and Computer Engineering University’s programs and its growth has been. As determined by the social, cultural and institutional context every pedagogical experience. They are the processes’s actors whom one or another way become participant of their own formative process and reconfigure all the performative scene of the senses construction and meanings in equipped settings of paradigmatic levels easy come without being advised transcend the discursive spheres creating links that are worthy to be considered.

In this line of thought the purpose of the present project is considering an study case of an unifying project in the (FPE) which has been developed by computer’s engineering four students group. When at

the beginning of the strategy they were doing third semester and currently they expose six semester’s project.

In the project’s detailed study expects to verify the hypothesis that it is possible exposing from a contextual-historical analysis. Some proper elements of the relation of sense between the discursive connection levels’s evolution to different spheres and the discursive genres associated with the project development.

For such effect, first a project’s historical description will be done. Together with the associated information with its evaluation for the 2014 periods second semester, 2015 first semester, 2015 second semester and 2016 first semester and the institutional context upon which it frames as long EFP level as from the faculty.

In second place the discursive analysis’s theoretical elements will be considered they gave space to the analysis unities here suggested and finally by an intertextual analysis that associates information, context and logical relation’s theoretical elements and temporary relations in the discursive connection. It pretends identifying the critical points or by inflexion in the line up of statements chains that in its constitutive characteristics

would allow to explain in a moderately stable way the adaptability level of the student's speech to the discursive sphere proper from the ingenieril field in the faculty.

MATERIALS AND METHODS

The formation strategy in its stage of unifying projects inside the classroom or educative environment profiles as an strategic element for the definition of formative actions and cooperative learning. In this the academic community (including students and teachers) it has as central concept in its inquiry and searching process the reality elements when they are captured or conceptualized in theories, models or prototypes involve to a no direct interaction but dinamic between the project's actors.

This element supports itself in sequential searches, programmed, art's reading, forums, meetings, presentations and systematic reading that tend to a investigative formation in teachers and students. As a result, the application and use of unifying projects are constituted in an approximation point of the university's missionary functions: investigation, teaching, social projection and accordingly expose a convergence point between the different institutional instances looking to promote the investigative and academic unifying.

In the particular case of a mioelectric superior member of unifying development project it analyzes the objectives approach by means of a historical tour and the searching of topic's existing literature in short, medium and long term.

The method to be applied by the students in this unifying project must have accomplished with some times and methodological guidelines that were laid out at the beginning of every semester and being taken by the students as a guide in its investigation it will go achieving fully all the temporary and particular project's objectives.

Throughout 2 year that it goes in execution, in the first and second semester it is implicit in the methodological development the encouraging and/or waking in the student and stronger investigative process based on the associated knowledges with every discipline and transversal subjects and seen in their specific semesters.

The traceable of time of development so far of unifying project has been of four semesters that has been through adaptation stages to the methodology and requirements for the objectives achievement, this was subdivided in deliverables, modeling with a tangible deliverable and what would be quantifiable, qualifiable through a measuring.

At this stage students did case studys that belong to the unifying project's group and that methodologically show different guidelines and approaches to deal specific topics related to the learning as: TIC tools, methodologies to develop software, modeling tools UML and more. The analysis here done is based from the study case (Stake, 1995) where by means of the used interpretation from the hermeneutic associated elements are considered with the textual understanding and its interaction with the environment.

In this way, "Who wants to understand a text always makes a project" as son as appears in the text a first sense, the interpreter projects a sense of everything. Naturally that the sense just expose itself because one is already read the text from different expectations related with some determined sense. The comprehension what is put on the text consists precisely in the manufacture of this previous project, of course it has to be checked constantly based on the new things that are resulting in agreement there is a progress in the sense of penetration". (Gadamer, 1977). The study object's project students were interviewed aimed at conceiving the project's historical context in a more specific way.

The common elements were analized among the interview results the unifying project construction's files (more specifically the project's objectives "Hand prosthesis") for the analyzed periods the FPE specific characteristics from the speech's analysis's perspective and the composition of the statements in the construction of the project's objectives. Bearing in mind that "The composition and overall the statement's style up to a concrete fact: to whom is destined the statement as the speaker (or the writer) perceives and imagine the adresses.

Such is the influence's strenght on the statement. All discursive genre in every discursive communication's sphere has its own adresses's conception which determines it as such (Bajtin, 1982).

RESULTS AND DISCUSSION

Project's historical description: The project's name is "Hand's prosthesis" the preliminary design construction's starts in the second semester 2012 by the student Harold Wilmer Orlas in the investigation subject's, methodology as a requirement to its own approval.

Posterior to the text production the project remains in a suspension stage and restarts, since 2014 second semester. Period in which starts with the formation strategy by projects in the enginnering faculty; from that moment it requires that every faculty's student in a workgroup formulatlean investigation project orientated towards to a solution in the ingenieril field.

That connect all the studied subjects semester by semester based on specific conceptual fields with its respective guided questions and nodals subjects from the perspective CDIO and aiming to the formation in the competence levels laid out by the confirming international ABET. In this text, it proposes considering for the next periods at the 2014 year second semester at the moment an analysis of the following factors:

- Demandings from the strategy for every semester: Nodals subjects, conceptual fields, guided questions and expected competence levels
- Obtained grade: project valuation for the semester in question the scale is from 1.0-5.0 where 1.0 is the lowest grade and 5.0 is the highest grade
- Variability from the general objective's project through semesters

The elements description is considered in the next table. From the engineering faculty point of view the unifying project's historical tour was marked by three essential landmarks:

- Preliminary design construction in the subject "Investigation Methodology"
- EFP's creation and setting in motion in the engineering of faculty
- Consolidation of the EFP with activities and institutional culture
- Everyone of this landmarks imply an strategy "accommodation" to the institutional culture in the knowledge generation. In this regard, Medina *et al.* (2011) they mention the knowledge ontological dimension's important effect of the organizations

"This dimension consider the reaching around the knowledge creation that is the way that knowledge get involved. This will help us to understand the potential impact of knowledge flows. In specific terms the knowledge is just created by the individuals. One organization can not create knowledge without individuals: the organization supports the individual creativity or supply the context in order the individuals generate knowledges.

It is like this like the institutionalized's character in the faculty takes on importance and permeates the discourse to be considered. If Table 1 is analyzed, it can be observed that the guided questions done by the faculty and are shared with the students for the project making. They are focused for the first two levels through physical phenomenon's analysis development that could be understood as the software construction and the last two leves put the software in consideration, from there is observed a correlation of this aspects with the change of project's objective for every semester.

Another remarkable observation is that in the project's current state for the 2016 first semester the students show two deliverables which although are aimed to the same project's development do not have any connection the software making that simulates a Robotic hand's movement and the robotic hand's skeleton (To have a better reference about "Deliverables" refer to this link <https://youtu.be/QIMRDPpedqg>). This considerations will be addressed later.

Discursive analysis's theoretical elements: Following theoretical makings are proposed in the light of discursive genre's problem that were kept in mind for the intertextuality in the unifying project analysis "Robotic Hand".

"The more we domain the discursive genres, the more we take advantage freely and it is better the height and clarity of our personality that it is reflected in this use (When it is necessary), the more plastic and quickly we reproduce the oral communication's unrepeteable situation; in one word, the more is the perfection which we make our discursive free intention" (Bajtin, 1982).

The discursive genre's problem suggested by Bajtin. For the speaker, the discursive genres are not created, they are given, in this sense, the speaker is not free about linguistic forms at all. It is not only an individual act it is also subordinated to the language system as a social phenomenom.

This questions are considered given that the discursive genres importance are not measured it confuses the statement with the sentence what is the conclusion is that the discourse is compound by sentences in which it doesn't matter the quantity or the conclusive character and this would depend on the discursive willing of who is talking.

"The total statement way's notion meaning, the notion about a discursive genre determined is what guide us in the discourse process. The intention of our statement in its totality can, certainly, require for its making, just one sentence but could require much more. It is the chosen genre what is prestablished the sentence's types and the relation between them" (Bajtin, 1982).

In the language life the most important frontiers are the ones that are related with the statement frontiers where the discursive subject's changes are produced. The statement doesn't account for the statement's conclusive character as a true unity of the discursive communication in the environment of the subject change, therefore it lacerates the continuous answer's position that are kept by the communication's participants, additionally, regarding to the communicative intention, it maintains that "The composition and above all the statements style depends

Table 1: Unifying project analysis “nano-robotica”

Periods	Grades	Demandings EFP	Unifying project structure
2014, second term	3.5	Nodal subject Newton’s physics Conceptual fields signals, energy, management, simulation, physical phenomenon Guided question How the physical phenomena make an impact in the technology?	Objective Design an economic bionical prothesis type for inferior and superior members with the intention of life quality’s innovation an improvement to people who have suffered because of the armed conflict in Colombia, congenital malformation, and that way of give them back happiness, the joy living and become active in the personal and working aspect
2015, first term	3.8	Nodal subject Stadistic I Conceptual fields Optimization Decision making Computing solutions Machines Guided question How does it contribute the descriptive models supported in the technology to the organization’s development?	Design an economic bionical prothesis type for inferior and superior members that improve the quality life in people related with the armed conflict in Colombia
2015, second term	4.2	Nodal subject Systems analysis Conceptual fields Software Simulation Information management Communication Guided question How the information analysis system makes an effect in the organization competitiveness?	Design a software prototype for biñonal prothesis superior that improves quality life in people related to violence and congenital malformation
2016, first term	4.2	Nodal subject Software engineering Conceptual fields Software industry Mathematical models Guided question How the software makes an effect in the organization competitiveness?	Design a software for prototype for bionical prothesis superior that improves quality life in people related to violence and congenital malformation

on a concrete fact: to whom is destined the statement like the speaker (or the writer) perceives and imagine the addressees which is the strenght of its influence about the statement. All discursive genre in every sphere of the discursive communication has its own addressee conception which determines such as” (Bajtin, 1982).

It is like this that subjectivities are consolidated that come together in the deliverable of the unifying project. They mold it in view of a defined intentionality because of the sphere in which it enrolls the dialogical but it is not necessary easy to determine and in this construction pile the context reading and the sinechdoche relations make part of the sense construction to aspire to the everything’s appropriation.

In this way afirma, “The individual act which is utilized the language introduces first the announcer as parameter in the necessary conditions for the enunciation (Benveniste, 1977). Before the enunciation, the language is not more than the language’s possibility. After the enunciation, the language completes in a discourse’s

instance that is radiated by an announcer, sounding way that waits an auditor and provoques another enunciation in return”.

In this way is interesting considering the rebellious character’s statement that is step by step that the discourse is being generated in an specific environment, the statement’s proper character allows a continuous feedback according to the answer (or future answer) and the meaning’s reconstruction’s dynamic process from the communicative intention.

Intertextual analysis in the robotic hand in the unifying project: “The language is a free creation process; his laws and principles are fixed but the way in which the generation principles are used is free and infinitely varied. Even the interpretation and the words use imply a free process’s creation.

Just as it is in that free creation process that the learning and the competence adquisition’s levels to a profesional environment because being competent, more

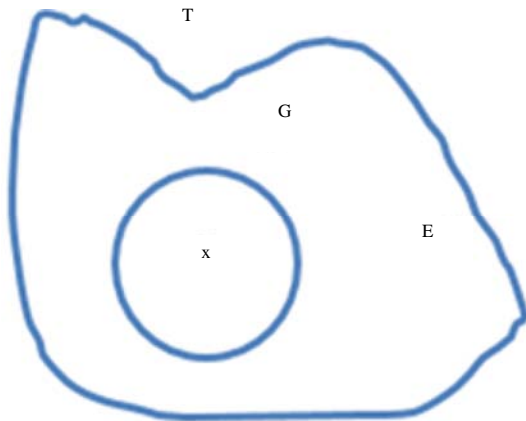


Fig. 1: Analogy between surrounding concept and discursive spheres

than an answering act to a situation, it is an act of creating with consciousness in the context and the suitable discursive sphere.

In this paragraph, the obtained findings will be laid out from the submission of the unifying project's documents in every semester to the problema of the discursive genres previously exposed.

The developed project can be understood using an analogy process from the vicinity concept or topology environment, where every discursive sphere constitute a T topology space, in which if is considered an x meaning's unity (statement) belonging to a discursive G genre, then, the vicinity or E setting will be defined as a discursive significance's combination which x makes par of it. They permit stablish some kind of sense connection between discursive genres (Increasing the circle more and more) and under some surroundings conditions allow to movilize the learning process from the inside already said sphere by means of the x movement in statements chains for different knowledge levels (Fig. 1).

Some discourse's significances do not allow this mobility and it is there where the internal or external factors or strategies could make easier the change, it is exactly there where the richest pedagogical o didactic is gotten from the method's application.

In the unifying project's construction process "Robotic Hand" it exposes the entinema which derive the changes in the logic from the related connectors with the unifying project's general objective.

As in previous paragraphs it has mentioned, the relation between the guided question (Table 1) and the objective is exposed generating adverse effects from the expected for the function which they were defined. In this way, the institutional represented for the faculty gives meaning a big part from the scolar duty. However, this

meaning relation is given from the sinechdoche where it is not taken the institutional itself, just part of this that for the student's group represent that everything, without analyzing maybe the intentionality where the discursive sphere in which is enrolled the project. In this way it can be concluded that the first step in the process CDIO (conceive the unifying project) It is provided fundamentally in the comings and goings between the part and the whole with a high curriculum's institutionality's influence and the project's making guidelines.

This analysis are fundamented from the thought relations and Western language "In a sentence level and the statement establish by means of the connectors use", "especially in the cause/consequence's logic relation on one hand and temporary, on the other hand" (Marti, 2012).

For the cause/consequence logic relations (Table 1) it analyses that in the objectives words like "for", "with the purpose" "and like that", "to improve", "related with" generate the stablishment of an deliberated objective (or the finality relations) that are used to show a purpose even so change the curse to the social the ingenieril result that is wanted from the project and what would get from the procedure that is being done at the moment.

In this case, this words are useful to make connection between two spheres that although they are in cause/consequence relation, change the study object which let glimpse a lack by the students in the thematic knowledge and the ingenieriles fundaments and the project stage for the problem's solution.

In this case, it observes that there was not a conscious analysis about to who is addressed the project and what is the finality of performing it. On the other hand and from the temporary relations point of view is worth considering that "the temporary is always relational, it needs to be expressed from an specific anchor point.

Meanwhile in the independent sentences that shaft is constituted for the enunciation's present in the subordinated propositions the correlations stablish between the predicate's temporary information besides of the verbal time tenses the temporary correlation could be done more explicit even thanks to deictic adverbs that contribute to point out the temporality relations.

The temporary subordinated propositions (some of them for a time connector) stablish relations of previously, simultaneously or posteriority between propositions. However it is important for the interpretation of this relations keeping in mind, also, the mode and time correlations between predicates" (Marti, 2012).

Regarding to the project's objectives it is observed their dependency with the temporary evolution of the

question problema even when the verb is in infinitive and it is the same, this evolution visualizes in the object to design, given that initially is a “bionic prosthesis to superior and inferior members” the next semester was about a “superior and inferior bionic prosthesis prototype”, after of a “software prototype for superior bionic prosthesys”.

These changes in the objective shows the evolution in the orientations from the questions given at the beginning of every semester, also they suggest that although they are developing elements with the same finality, there is not connection between them, fact that was visualized in the deliverable from the proyect which, has for one side one hand prosthesys prototype that moves for a software for the articulations of the fingers in an aleatory way and with few cohesion with the physical process implied in the design and finality of the prosthesys.

CONCLUSION

The discursive connection analysis for the projects formation strategy, allows visualize critical points (like the difficulties of the students in understand the problem to solve in the project) and inflection points (like the changes in the way of looking and analyzing the study objective) as the context and time changes; in this way, this type of analysis is visualized like fundamental support strategies in addressing design of learning and teaching methods and for studying the consequent relation with the counseling process of the projects.

A proyect assessor must be in capacity of recognizing the way in that the construction process of knowledge are configured putting this in every proyect's context so that in this way it is possible to see the totality of technical, methodological and engineering aspects that contribute to students development in technology an science in general.

It is important to consider that here exposed just was for a proyect and only the general objective; in that way there is still so much to say about the movility factor in the topological analogy posed in this work; more research in this sense has to come. Things like cohesion group and totality analysis of proyect has to be studied. In order to solve this, forums and profundity interviews will be made in order to recognize more consequently the construction process of the proyect and contribute in the construction of strategies for the human engineering development.

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REFERENCES

- Bajtín, M.M., 1982. *Estetika Slovesnogo Tvorchestva*. Siglo, Argentina, USA.
- Benveniste, E., 1977. *General Linguist Problems*. Editions Gallimard, Paris, France.
- Gadamer, H.G., 1977. *Truth and Method*. Universidad de Salamanca, Salamanca, Spain.
- Martí, M.E., 2012. *Logical Relations and Temporal Relations in the Discursive Connection*. In: *Rhetoric of Saying: Language, Truth and Belief in Academic Writing*. Pérez, L. and P. Rogieri (Eds.). FDHYA., Rosario, Argentina, Pages: 284.
- Medina, G.V.H., C.J.N. Pérez and A.J.H. Torres, 2011. *Engineering Research*. District University of Bogota, Bogota, Colombia.
- Stake, R.E., 1995. *The Art of Case Study Research*. SAGE Publications, London, England, ISBN:0-8039-5767-X, Pages: 177.