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Transference of Efficacy Beliefs and Effects of Self-Efficacy-Performance Spirals at Group
and Individual Levels.

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A Thesis
in
The Department
of
Education

Presented in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy at
Concordia University
Montreal, Quebec, Canada

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ABSTRACT

Transference of Efficacy Beliefs and Effects of Self-Efficacy-Performance Spirals at Group and Individual Levels.

Laura Helena Porrás-Hernández, Ph.D.

Concordia University, 1997

In spite of the large extensive literature reporting the effects of motivational variables on performance, very few studies have focused on the dynamics at the group level. None has empirically tested the transference of perceptions of group efficacy to different teams, nor have these studies taken advantage of computer mediated communications (CMC) as a research tool, where members of a group can interact in a virtual space, thereby suppressing many personal biases. Most of the discussions concerning the relationship of these variables have been held at the theoretical level, thus awaiting empirical testing. These issues seem to be particularly relevant to the new trends in education and human resources practices, which emphasize team collaboration and encourage or require the participation of individuals in multiple and diverse groups.

The purpose of this research is twofold: i) to investigate the effects of efficacy-performance spirals at the individual and group levels, as produced by the manipulation of feedback, and ii) to study the transference of efficacy beliefs (about the self and about the group) to new working groups. Computer-mediated communication will be used as a tool to investigate these issues.

The theoretical framework for this research is based on Bandura's self-efficacy theory, and Lindsley's *et al.* (1995) model of multilevel efficacy-performance spirals. According to this model, feedback, task uncertainty and task experience are factors affecting the generation of efficacy-performance spirals. Since, among several variables, the effect of feedback on self-efficacy-performance spirals at the individual level is well established in the literature, this variable was manipulated. Three research questions were proposed:

- 1) Do the efficacy-performance cycles generated at the group level affect individual perceptions of self-efficacy?

- 2) Do individual members transfer their perceptions of group-efficacy to other groups when faced with similar tasks?
- 3) Do individual members transfer their perceptions of self-efficacy to other groups when faced with similar tasks?

Data was collected from a sample of 86 undergraduate students in a Mexican University. The virtual groups consisted of four to five students. These teams were divided into two conditions: with feedback and without feedback. Participants worked on two activities of collaborative writing, each to be performed with a different group. Various variables which, according to the literature, may affect self-efficacy were measured before, during, and after completion of the tasks. Appropriate multivariate techniques were used for data analyses.

Results indicated a positive relationship between the perceptions at the group and individual levels while testing for transference of efficacy beliefs between both activities ($r=0.58$, $p<.01$ for the individual level, and $r=0.52$, $p<.01$ at the group level), thus suggesting some kind of transference had occurred. However, t-tests yielded significant differences ($t=-3.07$, $p<.05$ at the individual level, and $t=4.2$, $p<.0001$), thus suggesting that these perceptions change positively from one group to the next. The MANCOVA analysis of perceptions while working in the same group seemed to confirm this conclusion. The effect of group efficacy-performance spirals to the individual level indicated no significant results. However, descriptive data suggest differences worthy of further research, and the need to consider other strong variables in the model. Implications for theoretical interpretations, for further research, and for pedagogical practice are discussed.

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INTRODUCTION

Motivation to achieve plays an important role in educational and productive endeavors. Its influence on performance, along with ability, knowledge and regulatory mechanisms has been established both at the theoretical and empirical levels in school and organizational settings.

In spite of the extensive literature reporting the effects of motivational variables on performance, very few studies have focused on the analysis of these variables at the group level, and none has addressed the possibility of transference of group beliefs to different teams. A better understanding of motivation at this level is particularly relevant to new trends in education and human resources practices, which emphasize team collaboration. Furthermore, as new technologies supporting groupwork are developed, there is the need to gain a better understanding of individual and group processes (Hesse & Grantham, 1991). Finally, some new models describing the multilevel effects -- i.e. individual, group and clusters of groups -- of some motivational variables have been advanced (e.g. Lindsley, Brass & Thomas, 1995; Karakowsky & Siegel, 1995); nevertheless, no empirical data have been collected to test the theoretical propositions they contend. The present research attempts to address these lacunae found in the literature. The study described in this dissertation investigates the development of efficacy beliefs at the individual and group levels and, based on the theoretical model suggested by Lindsley *et al.* (1995), their effects on performance while feedback is manipulated, as well as the transference of these beliefs to new working groups.

Rationale

Since one of the goals of education in universities is to release the potential of the learners to become responsible and productive members of society, education is challenged to meet the demands of a changing reality or environment. At the same time, human resources managers face the need to deal with constantly changing group structures, and employees who, besides their knowledge and expertise, also bring with them beliefs and biases which may influence the ultimate performance of the group. Investigating (i) how efficacy beliefs are formed in groups, (ii) how efficacy-performance spirals affect individual perceptions of self-efficacy and future performance, and (iii) to what extent individuals transfer their perceptions of self-efficacy and group efficacy to other groups, seems to be promising and relevant for the characteristics of the present social and economic environments.

Given that CMC (computer mediated communication) is being used both in the workplace and in schools, that it decreases the technological limitations of individualized stand-alone CBT (computer based training) and ITS (intelligent tutoring systems) -- by being closer to human communication -- and that, consistent with the collaborative trends of education and organizational management, it allows for groupwork, CMC represents a potential tool for further research in motivation in both settings. Moreover, by making conversations and group interactions explicit, this technology allows for data collection and observations that would otherwise be impracticable. Within the framework of self-efficacy it may allow a better understanding of group motivation, which is relevant for the present practices in both settings. The present research attempts to answer some of the questions regarding group motivation and the relationship between achievement and performance using CMC as a research tool.

Research Questions

Social-learning theory serves as a framework for analysis in this research which addresses the following questions:

- 1) Do these efficacy-performance cycles affect individual perceptions of self-efficacy?
- 2) Do individual members transfer their perceptions of group efficacy to other groups when faced with similar tasks?
- 3) Do individual members transfer their perceptions of self-efficacy to their participation in other groups when faced with similar tasks?

Scope

In order to ensure a sufficient number of participants, the study was designed to be conducted in an academic environment. In spite of its relevance for both academic and training situations, one should bear in mind that the generalizability to the workplace is limited. Moreover, the tasks undertaken are part of undergraduate university interdisciplinary activities; therefore, task choice is limited.

Participating students are university freshmen enrolled in four sections of Spanish as a first language course, in which they are required to refine their writing skills. This course is required for all programs of study, thus bringing together students from very different disciplines. The course is based on the use of different rhetorical devices that students apply to their written productions. Although peer revision has been implemented in class with students working in pairs, this technique can be time consuming, and sometimes it does not allow enough time for a thorough review. CMC was therefore welcomed as a medium to complete the activities addressed in class beforehand and allow

enough flexibility for better peer comments. The project was presented as a research study, but it was tied to the curriculum of the course. In this way the relevance of the task was ensured.

Another characteristic to consider is that, in contrast with a free situation where individuals would have the choice of engaging or not in the activity and companies would be able to select their workers from a pool of candidates, the groups in this task were matched according to their academic abilities. In a real situation, group composition would be determined by high ability in a competence related to the task, and not necessarily by considering any general performance criteria.

The present study does not take into consideration the different results that might be obtained from multicultural or multi-age groups, factors which according to some theoretical models may affect cohesiveness, perceptions of efficacy, and bias causal attributions for success or failure (Karakowsky & Siegel, 1995). Cultural diversity may be an issue to consider for the design of further and broader research along these lines.

With regards to time frame, the study was conducted within an academic term. The effects in the long run were not assessed as part of the present study. Again, future longitudinal studies may elucidate the "life curve" of the beliefs developed. It is worth mentioning that, from the beginning of the project, students were aware that this was a research study; they signed participation sheets, and their commitment to finish all the stages of the project was required. In case of drop-outs, these were considered as turnovers, and the groups had to renegotiate their distribution of work. Furthermore, so that these effects were not carried over after the project finished, a debriefing session at the end emphasized the separation between self-efficacy and group efficacy, as well as the variables participants should consider when interpreting their own success or failure.

An important limitation of the study is that the units of analysis are individuals alone and individuals in workgroups, not organizations (or clusters of groups). The cross-level propositions suggested in the theory are difficult to test with this limitation; therefore, these propositions will not be considered in as much detail as the other hypotheses. Further research in settings with more hierarchical structures and a larger sample may help to analyze those processes.

Finally, the theory is limited to relationships among factors. No causal relationships are stated, given that this is a descriptive approach to a phenomenon that is being interpreted at the theoretical level and needs empirical support. Even though some quantitative procedures were used, the purpose of the study is mainly a descriptive one.

LITERATURE REVIEW

This section explains the theory, the technology, and the theoretical model used as a framework in the present study. First, self-efficacy, one of the few motivational theories that claims its applicability at group and organizational levels, is presented. This is followed by a discussion of the theoretical model proposed by Lindsley, Brass & Thomas (1995) for the study of self-efficacy beliefs in working groups. Finally, the limitations that the study of motivation has faced when being studied with computer technologies, and the rationale for selecting computer-mediated-communications as the medium for this project, are presented.

Self-efficacy theory and other motivational theories

Definition of motivation.

From its linguistic roots (lat. *motum, movere*), motivation means something that produces movement (Real Academia Española, 1970). One of the broadest definitions of the term is provided by Weiner (1992), who considers it as the reason "why human and subhuman organisms think and behave as they do." The early theories of motivation identified this production of movement with some sort of energy. The main concern of these theorists was to explain where the energy came from, and the answer was found in different types of human needs. Later, and without forgetting the interest in the sources of energy, theories added another concern which was identified with events that could enhance the energy prompting behavior; interest in incentives -- e.g., values attributed to incentives, intrinsic and extrinsic motivation -- increased.

In the 60's Young (cited in Cofer & Appley, 1982) identified two main aspects involved in the definition of motivation: (i) the energetic aspect and (ii) the regulation and direction aspect. With the advent of cognitive theories emphasizing evaluative processes, interest increased in the direction of action -- perceived probabilities of success, judgments about attributing causality to outcomes, perceived control, perceived self-characteristics, and definition of personal and social goals. Within this last tendency Bandura (1991) conceptualizes motivation as a "construct linked to a system of regulatory mechanisms" which in turn have directing and activating functions. Although different theories vary in their explanation of the phenomenon, in general motivation can be understood as the internal energy that arouses, controls and directs organisms to engage and maintain themselves in a particular course of action.

Classification of theories

A rather comprehensive classification is provided by Weiner (1992), one of the main representatives of attribution theory. He uses three different metaphors to classify motivational theories according to their perception of the human being:

(i) machine-like, where behavior is determined by circumstances in the internal or in the external environment of the acting person, and there is no mediation of thought or cognitive processes.

(ii) God-like: all-knowing beings. In contrast to the before mentioned metaphor, these theories consider acting human beings as decision-makers, who are able to know the necessary information so as to compare different courses of action and take the one that is most convenient for their hedonic purposes.

(iii) God-like: humans as judges. Weiner considers two basic characteristics under this category: humans become scientists looking for causes and, based on their results, they establish judgments of themselves and/or of others.

In comparing the historical development of the study of motivation, Weiner provides the following table (only selected theories are presented):

	Biological			Expectancy Value		
	Psycho-analytic	Drive	Gestalt	Achievement	Social Learning	Attribution
Metaphor	Machine	Machine	Machine	Godlike	Godlike	Godlike
Genetic vs. social/learned	Genetic	Genetic	Learned	Learned	Learned	Learned
Homeostasis	Yes	Yes	Yes	No	No	No
Hedonism vs Mastery	Hedonism	Neither	Hedonism	Hedonism	Hedonism	Mastery
Mathematical model	No	Yes	Yes	Yes	Yes	No
Empirical focus and range	Sex, aggression, conflict, neurosis, catharsis	Deprivation, anxiety, conflict, fear, frustration	Task recall and task resumption, conflict and substitution	Task choice	Expectancy skill vs. chance	Achievement behavior, affect, helping

Table 1. Weiner's comparison of motivational theories.

From Weiner's analysis, it can be concluded that in the beginning, motivational theories were strongly influenced by the findings and trends of other sciences -- which held a strong position at the time the theory was developed, e.g., biology and physics.

Nevertheless, by looking at the table above one would also notice a movement towards a more "independent psychological thought". As one advances in the time-line the cognitive and emotional dimensions particular to human beings are emphasized. This statement seems to be supported by the switch from machine-like to Godlike theories. In fact, by including emotions, the last Godlike theory seems to be closer to the human being than the other two. The movement from the emphasis in genetic towards learned and social needs seems as well to be supportive of the previous statement.

The most revealing line to prompt such thoughts is the empirical focus. The kind of research questions addressed by each theory describes a movement from the physical and biological aspects towards the cognitive and emotional fields. It was surprising, however, to find that Weiner does not point out this "independence" when among the suggested characteristics of a general theory of motivation, he compares psychology with the exact results of hard sciences such as chemistry, in which the combination of the same amounts and substances will always produce the same thing under the same circumstances. I would rather compare psychology to the approach in medicine according to the aphorism that says, "there are no illnesses, but ill persons."

Regarding the concept of homeostasis as a key element to explain behavior initiation, it is interesting to notice that, according to Weiner, the last three theories move away from this concept. It is surprising, as well, to compare the hedonism vs. mastery type of goal. One would wonder if mastery is not again seeking some kind of equilibrium, which is different from the biological one of the early theories because it may be interpreted as an emotional or cognitive balance. Furthermore, is not mastery hedonic? How can then the differences in learning engagement among mastery-oriented and helpless students reported by Dweck (1991) be explained?

In spite of these disagreements with Weiner's position, it should be noted that he provides a very comprehensive view of motivational theories, and comparisons which prove useful to understand the different points of view and the valuable contributions that each theory has made us improve our understanding of the complex phenomenon of human motivation.

A different classification is provided by Bandura (1991). He defines three classes of motivators: (i) biological, (ii) social incentives, and (iii) cognitive incentives. Given his own theoretical position as a representative of the socio-cognitivist position, he concentrates on the cognitive motivators analyzing them further into a) those where the anticipatory cognitive motivators are based on forethought, i.e. (i) cognized goals, which he identifies with goal theories, and (ii) outcome expectancies, identified with expectancy-value theories; and

b) those where the anticipatory cognitive motivators are based on retrospective reasoning of perceived causes of success and failure, which he identifies with attribution theory.

Bandura's interest in these theories in particular responds to his premise conceiving self-regulatory mechanisms as the translators of forethought into incentives and action. Thus, "regulatory mechanisms have directing and activating functions" (*ibid*). The role of cognitive processes in the explanation of motivation has also been studied by researchers like Zimmerman, Pintrich & Garcia, and Shutz (as cited in Pintrich et al, 1994). It is also noticeable that, even if all these theories fall into Weiner's Godlike metaphor, the two authors do not agree in the classification of attribution theory: Weiner considers it part of expectancy value theories, whereas Bandura considers it different given the fact that -- as Weiner himself states somewhere else (Weiner, 1991) -- the attribution sequence starts after the outcome of an event. This difference in interpretation shows that different frameworks or points of view can bring up or emphasize different aspects of the same object of analysis in such comparisons.

Bandura does not provide a detailed chart such as Weiner's, however one can draw from his discussion of theories a summary table:

	Attribution	Expectancy-value	Goal theories
Motivators	Perceived causes of success and failure	Outcomes or consequences of action: material, social-reactions, and self-reactions.	Cognized goals or standards, set-up by the acting human being
Motivation process	Affected by retrospective judgments of the causes of one's performance	Activated and directed by anticipated outcomes and by the subjective value assigned to them	Activated and directed through the pursuit of challenging standards
Direction of thought	Retrospective	Prospective	Prospective
Type of judgment	Self-efficacy, according to subjective interpretation and perceived effort, ability, task difficulty and locus of the object. Associated emotions	Subjective value assigned to the desired outcome	Self-efficacy, affective self-evaluation (satisfaction/dissatisf action) adjustment of standards

Self-regulatory processes	Acquisition of information, metacognition, comparison to standards, evaluation	Calculation and mathematical comparison, evaluation	Acquisition of information, comparison of standards, evaluation, adjustments
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Table 2. Interpretation of Bandura's discussion of cognitive theories of motivation.

Even if self-regulatory processes can be associated with motivation as part of the cognitive activities embedded in the decision to undertake a particular course of action, it should be noted that, as explained by Bandura (1991) and Zimmerman (1994), they only deal with cognitive aspects of the individual when explaining motivation. Nevertheless, it is interesting how this explanation comes closer to the social level when Bandura (1991) considers the application of self-regulation in collective endeavors and reports the effects of perceived self-efficacy of group leaders in group performance, as well as the effects of success or failure on perceived self-efficacy. Thus, this position recognizes the effects of jumping to "generalize" from the collective to the individual.

Self-efficacy theory

Among the wide range of competing theories that have been developed to explain motivation in our field, social learning theory has suggested the concept of perceived self-efficacy as a key variable in the arousal, maintenance and direction of efforts in achievement tasks (Bandura, 1991). This belief affects the expectancy for success and attainment of a given outcome (Gist, 1986).

Self-efficacy, as a construct, first appeared in the literature with Bandura's 1977 publication explaining the concept. The same author explains "perceived self-efficacy is concerned with judgments of how well one can execute courses of action required to deal with prospective situations" (Bandura, 1982, p. 122). Driscoll (1986 cited by De Moulin, 1993) defines it in simpler words saying that "efficacy is based on the beliefs that one can have success in the execution of a behavior to reach a given outcome". Bandura has stated that, even though high self-efficacy can enhance performance, the relationship between both is not always equal. Sometimes misconceptions of one's capabilities can lead to over optimistic or too pessimistic perceptions of the self, regardless of the actual capabilities (Bandura, 1982). Hackett and Betz (1989) have found that overestimation is frequently present, thus Pajares (1996) suggests that better strategies to help students make accurate evaluations of their capabilities are needed. Bandura (1982) also offers a note of caution

regarding the need to maintain self-efficacy perceptions a little higher than actual capabilities in order to allow for development, and change.

Bandura (1982) has considered that the main characteristic of human beings is that they can think about themselves, (i.e., they are self-conscious) and develop beliefs of their own capabilities. He has explored empirically three sources of information from which one can develop self-efficacy beliefs: enactive attainments, vicarious experience and verbal persuasion. Experimental results of studies conducted with phobic participants learning to cope with the threatening behavior allowed him to conclude that enactive attainments, i.e., the actual experience of success or failure based on mastery, was the strongest source of information. Participants who had scored low in self-efficacy raised their scores after a sequential treatment of mastering progressive levels of the threatening task, followed by a test of self-efficacy. Results showed strong increments in self-efficacy perceptions and performance, both between groups and within the same participant. In a more detailed analysis he also concluded that self-efficacy "is not merely an isomorphic reflection of past performance [...] self-percepts may exceed, match or remain below enactive attainments, depending on how they are perceived" (p.124).

Similar experiments were conducted for the other sources of information to build self-efficacy concepts. The influence of enactive attainments on perceptions of self-efficacy was followed in strength by vicarious experience. Watching somebody perceived as having the same capabilities finish the task successfully or unsuccessfully allows one to transfer the other's attainments to oneself. The last source of information was verbal persuasion, which proved to be very effective with people who believe they have control of outcomes through their actions (Chambliss & Murray, 1979, as cited in Bandura, 1982). These participants made efforts to succeed while receiving verbal encouragement. In all these findings, it should be noted that while judging capabilities, people also retrieve information from their psychological state (Bandura, 1982), thus emotive and stressful situations can vary one's perceptions. These experiments have been replicated with other participants, tasks, and finer sources of information (e.g., emotive and cognitive modes of influence) by Bandura and others (Bandura, Adams, Hardy & Howells, 1980). Thus one could conclude that self-efficacy is built and "affected by past performance, by modeling, by persuasion, and by autonomic arousal, as well as by cognitive processing" (Locke, Lee, and Bobko, 1984, p.241).

In judging self-efficacy, Bandura (1982) stresses the importance of four variables from which people also draw information to build efficacy perceptions: effort, ability, task difficulty, and chance -- which have been traditionally considered as causal factors of success or failure in attributional studies. Effort has been assessed in different ways (e.g.,

amount of time spent on task, persistence on task in face of difficulties, amount of products). Task difficulty has been considered by different degrees of complexity of a task and by the person's perceived difficulty of the task. Chance, which has been very important in attributional studies plays an important role when interpreting information to build perceptions of the self. In addition, Bandura (*ibid.*) considers that several other factors play a role in these interpretations, such as: physical and emotional state at the time, patterns of success or failure, amount of external aid received, past successes, favorable or unfavorable conditions.

The sources of information from which one develops self-efficacy judgments can be very important when these beliefs need to be modified. This is the case with students who have experienced previous academic failures, for whom aiding strategies, such as modeling, practice, and attributional training can have good effects on self-efficacy, and performance. Schunk (1981) worked with low mathematics achievers receiving effort attribution for success, and either modeling for division operations or didactic instruction, followed by practice. Results showed that the treatment combining cognitive modeling with effort attribution produced the highest match between efficacy judgments and performance. Attribution did not have an effect on performance; both, modeling and didactic instruction increased persistence, perceptions of efficacy, and accuracy. However, modeling produced greater gains in accuracy. The combination of attributions and self-efficacy seems to show some light in explaining some phenomena of motivation and performance.

For the interpretations of studies combining these variables, some cultural differences have been found. It has been stated that fatalistic cultures who attribute success or failure to external factors tend to have lower perceptions of self-efficacy (Ross, C.E., Mirowsky, J., & Cockerham, W.C., 1983). It has also been found that African-American and Latin-American students do not change their perceptions in spite of the presence of actual attainments (Graham, 1994; Lay & Wakstein, 1985). In terms of gender differences, research shows that males have a greater sense of self-efficacy, personal control and mastery than do girls (Block, 1983). In the building of any perception of the self relevant others become important through direct or indirect influences such as affecting the standards used by individuals to judge themselves (Felson, 1993). Bandura (1996) has found that parent's sense of efficacy and aspirations for their children affect children's beliefs of efficacy for learning, social efficacy, and ability to manage peer pressure. It is interesting, however, that in self-efficacy research very little has been investigated in terms of cultural differences, and relevant others, in cross-cultural studies.

A deeper inspection of the construct, beyond its mere definition, offers insight regarding how it affects performance and how efficacy is influenced by other factors.

According to Bandura (1982), self-efficacy beliefs determine behavior (e.g., choosing a course of action, persistence, investing effort in a task), thought patterns (e.g., finding alternative solutions to problems, information processing), and emotional reactions (e.g., of anxiety or stress in the case of undertaking tasks which supersede one's self-efficacy beliefs). Regarding these particular conclusions, it should be noted that most of Bandura's early experiments were conducted with snake phobic subjects, Schunk and others (Schunk, 1981; Schunk & Hanson, 1985, Schunk, 1983) have found that these observations may not always be true in academic environments, suggesting that effort and task choice can be affected highly by teacher intervention.

Regarding the influence of other factors on efficacy, De Moulin (1993) proposes an effectiveness model involving motivation, stress and confidence in a relationship that predicts efficacy, which in turn determines performance quality, while the latter leads to effectiveness. Following this line of thought, he suggests the following formula: $(\text{motivation and self-confidence})/\text{stress} = \text{efficacy}$. According to this equation, a combination of high motivation, high confidence and low stress would result in high efficacy, whereas high motivation, high confidence, and high stress would cause moderate to good efficacy. On the other hand, low motivation, low confidence, and low stress would cause moderate to low efficacy, whereas low motivation, low confidence, and high stress would result in low efficacy.

From these analyses of self-efficacy, one could conclude that it is a belief in one's capabilities to succeed at a task. It is built through self-thought by social comparison with relevant others, obtaining information from different sources: previous attainments, modeling, and verbal persuasion. These judgments are highly influenced by other perceptions of controllability and task difficulty. These are unstable beliefs that fluctuate within ranges, depending on three main factors: motivation, confidence, and stress. Moreover, they can be developed differently as influenced by social variables such as gender and cultural perspectives of life. Regarding the kinds of influences it exerts, self-efficacy can have an important effect on persistence, task-choice, expended effort, and resilience -- although the degree of influence can vary in different settings due to the presence of other factors.

Measurement of self-efficacy

The measurement of self-efficacy has created some controversy, given that Bandura (1982) has explicitly stated the micro-analytic nature of research for this construct. Gecas (1989) reports three different kinds of instruments used while investigating self-efficacy: task specific measures (e.g., for writing), domain specific measures (e.g., health sciences)

and general measures (e.g., general sense of personal efficacy). In the examination of existing self-efficacy scales, he reports that item formats vary from single indicators of degree of certitude -- where students report in percentages or scales their degree of certainty that they are capable of performing a specific task -- to Likert-type scales, to semantic differentials.

The task specific nature of self-efficacy has been supported at the theoretical (Pajares, 1996a; 1996b) and empirical levels (Bandura, 1982), given that its predictivity is considerably reduced as it becomes a more general measure. Most instruments have been developed for specific tasks or domains such as computer use, writing skills, math ability, and self-regulatory strategies (Gecas, 1989). In a more recent review, Pajares (1996b) points out that the specificity of judgment to which a self-efficacy instrument should refer has to be determined by the nature of the criterial task.

According to Bandura (1977 as cited in Gist, 1987) self-efficacy has three dimensions: (i) magnitude, i.e., the degree of task difficulty believed to be achievable, (ii) strength, in other words, the level of confidence or conviction regarding the magnitude, and (iii) generality or the extent to which this belief is generalized across situations. In spite of this detailed definition of the dimensions involved in self-efficacy, most instruments focus on the first one only, and a few others include the second one, too (Locke, Lee & Bobko, 1984). The third dimension has been disregarded in the design of instruments. Given the task specific nature of instruments used for measuring self-efficacy, validation of instruments becomes a cumbersome but necessary step in any research project, in order to ensure that it measures what it is supposed to measure, and that they are reliable. Pajares (1996) cautions researchers in this area to ensure the match is made between the task and the instrument. He also summarizes what Bandura identifies as possible sources of discordance between efficacy judgment and action (Bandura, as cited in Pajares, 1996b):

- (i) Disincentiveness and performance constraints. Students with high self-efficacy and the required skills may choose not to perform well due to a lack of incentives.
- (ii) Temporal disparities. The closer the time of action and measurement the better for establishing causal relationships. If measures and performance are far apart, congruence of self-efficacy perceptions and performance will diminish.
- (iii) Mismatch or partial match of assessed capabilities. When capabilities considered in the self-efficacy tests do not correspond to the ones performed or assessed.
- (iv) Limited scope of self-efficacy assessment. Self-efficacy explains action only partially; other factors are also present, such as emotional and psychological state at the time, task difficulty, cultural differences, gender.

- (v) Faulty assessment of self-efficacy or performance. When too general measures are used instead of a microanalytic approach tailor-made to the domain or the task.
- (vi) Ambiguity of task demands. In order to judge self-efficacy one needs to know what is needed to perform the task, otherwise, mismatch between perceptions and performance may occur.
- (vii) Indefinite aims and deficient performance information. If information sources are absent, judgments cannot be accurate.
- (viii) Consequences of misjudgment. When the consequences of one's behavior cannot clearly be identified, judgments of efficacy may not be accurate.
- (ix) Faulty self-knowledge. Especially in new tasks, knowledge of self-efficacy is limited. Other biases can be created by distortions in self-appraisals and in memory.

Assessing self-efficacy is a task that requires a good match between the behaviors to be tested and the judgments to be assessed. The choice of adequate instruments and making considerations for the kind of factors involved in the situation seem to be important to the sound interpretation of results.

Self-efficacy and related constructs.

Self-efficacy has been used in combination with constructs from other theories, such as goal theory (Locke, Frederick, Lee, & Bobko, 1986; Dweck, 1991), attribution theory, and regulatory strategies (Zimmerman & Risemberg, 1994), to explain the development -- through forethought and retrospective thought -- of anticipatory cognitive motivators that influence performance (Bandura, 1991). As Kick (1992) points out, self-referent thoughts are linked to the dual function of the self: the knower (i.e., the *I*, the one who performs the thinking action), and the object of knowledge (i.e., the *me*), as stated by William James since 1890.

Self-efficacy is a product of the *I* thinking about the *me*. However, the concept is frequently used loosely in the literature, sometimes mixing it with other constructs such as self-concept, self-confidence, and outcome expectations. Reber's Dictionary of Psychology (Reber, 1985) defines self-concept as "one's concept of oneself in as complete and thorough a description as it is possible for one to give" (p.677). In his analysis of the construct, Kick (1992) concludes that

Self concept refers to the perceived experience of an individual's own being, and pertains to an organized cognitive structure of an individual's own perception. Comprised of various beliefs and values, the self-concept cuts across all facets of an individual's experience, including physical,

behavioral, social, and psychological, all in relation to the environment.

(p.19)

The last sentence of this definition is particularly important to distinguish this concept from self-efficacy. As Pajares (1996) states, self-efficacy is a component of self-concept. While self-concept is a more general term that includes all aspects of the self, self-efficacy is domain or task specific. He states further that the literature on self-schemas and possible selves considers four dimensions, one of which is efficacy i.e., "an individual's belief about his/her potentialities" (*ibid.*).

The concept of self-confidence is related to having the knowledge and skills to perform a task (DeMoulin, 1993), as opposed to perceived self-efficacy which can be related either to self-efficacy to learn or to perform learned behaviors (Schunk, 1996b). The difference between these two concepts is less clear than the previous comparison with self-concept. If self-efficacy is understood as a forethought, as Bandura (1991) claims, then in spite of having learned certain behaviors, self-efficacy is related to having the potential to perform a particular action in order to complete a task. Moreover, self-efficacy beliefs are generated from other sources of information besides past performance.

In this framework, self-confidence would then be related always to retrospective thought. Furthermore, according to DeMoulin's definition, it can be interpreted that perceived self-efficacy exists regardless of possessing the knowledge and skills necessary for the task. As he claims, it is related to the perceived potentiality to acquire or apply the necessary knowledge and skills to perform a task successfully.

The difference between outcome expectations and self-efficacy has been explained by Bandura (1982). He affirms that the two can be very close under certain circumstances, but he differentiates between these two when he explains that "extrinsic outcomes are loosely linked to level of quality of performance" (Bandura, 1982, p. 140). One could say then that an expected outcome is the expected result of an action, whereas a perception of self-efficacy is the belief that the necessary actions involved in a certain task can be performed. It can be thus considered that an outcome is product oriented, whereas self-efficacy is process oriented. In order to clarify how both concepts may take diverse values in an action, Bandura (*ibid.*) provides a chart of possible actions depending on the level of self-efficacy judgments and outcome expectations:

- (i) positive self-efficacy and positive outcome expectations= assured, opportune action;
- (ii) positive self-efficacy and negative outcome expectations= protest and social action;
- (iii) negative self-efficacy and positive outcome expectations = self-devaluation, dependency, and;
- (iv) negative self-efficacy and negative outcome expectations = apathy, resignation.

Besides this differentiation with some concepts used wrongly in some texts as interchangeably, the study of self-efficacy has been related to other constructs such as: attributions, amount of invested mental effort, and goals. Bandura (1982) states that those who have extreme perceptions of high self-efficacy, tend to invest less effort in tasks they perceive as easy to achieve. He makes reference to Solomon's (1983) studies with children who had different perceptions of their own ability, and the difficulty of the task, as they learned from different media, namely books (perceived as a difficult medium) and television (perceived as an easy medium). It was found that the three variables influenced the amount of mental effort invested to succeed in the accomplishment of the task.

Research in the area of attribution theory has demonstrated a relationship between attributional style, and motivation and performance mediated by self-efficacy (Schunk, 1991, as cited in Pajares, 1996a). In attributional theory the premise is that individuals ascribe or impute characteristics to oneself or another person after an action is completed by establishing causal relationships. As Weiner (1991) describes this theory, it has at least three proven dimensions of causality (locus, stability over time, and controllability) and two more that have been considered at the theoretical level only (globality and intentionality). Bandura (1991) also clarifies these concepts stating that self-efficacy judgments are forethoughts -- given that they are based on perceived potentialities and can anticipate action -- whereas attributions are always a product of retrospective reasoning -- the sequence is always an action, an outcome, and an interpretation and attribution for the cause of that result -- but they are both cognitive theories of motivation.

Goal theory has also been related to self-efficacy research, since self-established goals are also forethoughts (Bandura, 1991) influencing motivation for action. A goal is a desired state or object, which one hopes to achieve by engaging in a certain course of action. These goals can be internally or externally established. Goal theorists consider that perceptions of efficacy are important predictors of goals and outcomes (Pajares, 1996), and this has been proven empirically. Locke, Frederick, Lee, and Bobko (1986) compared three groups of participants who were asked to write as many uses as they could for a given object. The first group received specific training in brainstorming techniques and alternative thinking. The second group received the instruction on techniques but did not practice, and the third one did not receive any training at all. Among other variables, self-efficacy was measured and participants were asked to establish the goal of how well they wanted to perform in the task. Path analyses showed that perceptions of efficacy and goals were the best predictors of outcomes. It does not only determine the level of desired achievement, but it is also related to the goal orientations individuals have. For a related construct (i.e., confidence in ability), it has been found that conceptions of intelligence and

goal orientations plus level of confidence in ability influence behavior patterns (Dweck, 1991). Studies involving self-efficacy and goal orientation have found interesting results. Schunk and Swartz (1993, in Schunk, 1996 p. 16) report that self-efficacy correlates positively with task orientation (goal of learning) and negatively with ego orientation (goal of performing).

The previous review in this chapter shows that self-efficacy has been tested in classroom settings. Moreover, it has also been studied in simulated working environments with complex decision-making tasks (Wood & Bandura, 1989; Wood, Bandura, & Bailey, 1990). In experiments with management students simulating human resources managers making decisions in a simulated environment presenting several problems, Wood, Bandura and Bailey found that managers with higher perceptions of self-efficacy could think more efficiently and effectively concerning alternative solutions to problems. Participants with lower perceptions of self-efficacy (independently of their actual knowledge and skills), found less solutions and were less efficient in the task. The proven applicability of self-efficacy theory to both environments (in classroom settings and simulated working environments) and its potential to be extended to groups and organizations makes this theory the best suited for the study of motivational variables given the purpose of this present study, where the effects of efficacy beliefs at the individual and group levels are analyzed.

Self-efficacy theory and group endeavors

Another aspect of social-learning theory, particularly relevant for the present study is that, contrary to many of the theories of motivation, which have focused at the individual level only, it can be transferred to social groups as big as nations (Gist, 1987). Bandura (1982) contends that

the strength of groups, organizations, and even nations lies partly in people's sense of collective efficacy that they can solve their problems and improve their lives through concerted effort (p. 143).

He goes on to state that collective efficacy determines collective effort and staying in power. Perceived collective efficacy defined is: "a group's shared belief in its conjoint capabilities to organize and execute the course of action required to produce given levels of attainments" (Bandura, 1997, p.477). In this sense, it is similar to perceptions of self-efficacy, it has "similar sources, serves similar functions, and operates through similar processes. [...] These processes, which shared efficacy beliefs activate, affect how well group members work together and how much they accomplish collectively." (*ibid.*, p.478).

Bandura relates self-efficacy to research studies that have demonstrated that the higher the perceived self-efficacy, the higher the propensity to social activism (Forward & Williams, 1970; Marsh, 1977; Muller, 1972, 1979, cited in Bandura, 1982). At the level of political efficacy, Bandura (1982) has identified four underminers of collective efficacy: (i) dependence on technologies and on technicians, (ii) bureaucratic structures, (iii) disagreement among parties, (iv) lack of mechanisms for reciprocal influence in transnational systems, but the most important of all are internal barriers.

Just as with self-efficacy, collective efficacy is related to similar constructs. In his analysis of group-potency, Guzzo (1993) establishes the difference between these two constructs by defining potency as “a shared belief in a group that it can be effective” (p.90), whereas collective efficacy is an individual’s belief in the group’s ability to complete a group task, which may not necessarily be shared by others. This position appears to be contradicted by other opinions such as Gist’s (1987), who suggests that the measurement of collective efficacy can be made in three ways: (i) aggregated individual perceptions of group efficacy, (ii) the averaged individual perception’s of the efficacy of the group, and (iii) the consensus of the group’s perception of it’s own efficacy. In the first one, every member of the group states her belief in the group’s ability to complete the task together, and the scores of each member are added to produce an efficacy score for the group. The second one also uses individual scores to obtain a measure that represents the group’s efficacy for a task. The difference between these two approaches is that while the first one adds scores, the second one calculates an average. The last measurement is not based on individual measures; it is a single score produced by all members of the group after discussing and arriving to a consensus on the group’s efficacy for a particular task.

Bandura (1997) identifies two approaches in the measurement of collective efficacy. One is to aggregate individual perceptions of self-efficacy to perform the functions they have in the group. The second, consists of “aggregating member’s appraisals of their group capabilities as a whole” (p. 478). He strongly discourages researchers to use consensual measurements given that they can be biased by strong members in the group who may impose or lead others to take the leader’s belief. Bandura (1993) has developed an instrument for the measurement of self-efficacy which would fall in the second category of Gist’s suggested alternatives of measurement, and his own first approach. An example of the items used for this instrument is: “Please indicate your confidence that you can attain the following grade level gains with the students in your class this year”. Confidence is rated in a 0-10 scale (as cited in Pajares, 1996a, p. 548). This kind of item would then be in agreement with Guzzo’s (1993) interpretation of the concept, where the individual belief on the group’s ability is used as the input. This approach, an individual score of the

perceptions of the group's efficacy to complete a group task, was the one used for the present research, however, given the small number of groups participating in the study, and in order to perform statistical analyses, scores were not aggregated, they were kept as individual perceptions of the group's potential to complete the task, in accordance to what Guzzo interprets as collective efficacy.

Guzzo (1993) also reviews other collective perceptions such as group aspirations, which is a group target that has been chosen by consensus, and collective self-esteem, which is defined by Crocker & Luhtanen (1990), as "the extent to which individuals generally evaluate their social group positively". Guzzo emphasizes that this construct is not explicitly related to efficacy and performance.

Although Bandura focuses more on social activism and political action, his work can also be translated to learning and performance environments. Empirical studies of collective efficacy conducted in 1993 with 79 schools of the same district in the United States demonstrated that collective efficacy ($r=.34$) had a direct influence and was a predictor of school achievement mediating the effect of student body composition ($r=.27$) and prior academic achievement ($r=.32$) (Bandura, 1997).

Another study cited in the same book is the one conducted by Prussia and Kinicki (1996, as cited in Bandura, 1997), where 81 groups used brainstorming techniques to produce possible solutions for different types of problems. Feedback was manipulated to make each group believe that their group performed above or below the average. Path analyses resulted in collective beliefs directly influencing group goals ($r=.75$) and group performance ($r=.42$).

The relevance of collective efficacy thus relies in its power to determine achievement of concerted efforts. Since it follows the same rules as individual self-efficacy, it helps to explain the behavior of groups and organizations as a whole. In his latest book, Bandura (1997) reviews research supporting that self-efficacy has an important effect among others in:

- (i) career choice and development. Perceptions of self-efficacy for different tasks and fields, as well for educational demands make people choose options where they perceive themselves as more efficacious. (Betz & Hackett, 1981; Matsui, Ikeda & Ohnishi, 1989, as cited in Bandura, 1997),
- (ii) decision making and fulfillment of occupational roles. The higher self-efficacy, the more alternative solutions to problems are found, thus leading to more options to choose better courses of action (Wood & Bandura, 1989; Wood, Bandura & Bailey, 1990),
- (iii) employability and reemployability. Longitudinal studies following up laid off individuals showed that those who had higher perceptions of self-efficacy for job search

strategies were most likely to find a new employment. Other variables exerted no significant influence in job finding (Kanfer & Hulin, 1985; Cliffor, 1988, as cited in Bandura, 1997),

(iv) mastery of occupational roles, in creative productivity, and in stress and dysfunction.

As Bandura (1997) points out, both levels are important in organizations. By the same token, deriving conclusions from his studies in self-efficacy at the student, teacher, principal, and district levels (after eight years of studying and analyzing results of more than 4,000 participants) and its interrelationship with motivation, confidence and stress, DeMoulin (1993) emphasizes that:

in organizational climates where achievement is encouraged, a sense of efficacy exists which suggests that individuals assume personal responsibility for success (p. 167).

This leads to another important aspect of organizations and group endeavors, that is, the emphasis on individualistic or in collective efforts.

This is particularly relevant for the trends, evident both in education and management, towards collaboration and groupwork. Cognitive and socio-cultural theories of learning have recently focused on the relevance of social interaction for learning, and on the social construction of meaning (Cobb, 1989). This has led to the development of educational strategies that emphasize the benefits of groupwork in the school environment: cooperative learning (Slavin, 1983), for instance. In the field of human resources development, this approach has allowed for the development of concepts such as individual learning through social interactions (Brown & Duguid, 1991), and group learning through the collective construction of meaning and sharing of mental models (Senge, 1990; Fiol & Lyles, 1985; Kim, 1993). Furthermore, changes in contracting and staffing practices which emphasize outsourcing and short contracts, as opposed to in-house expertise, force managers to find new dimensions in motivation and reward systems which are suitable for short term performances (Katzell & Thompson, 1990) and participation in multiple teams.

Despite the claim that social learning theory can be extended to groups, from the previously reviewed studies one can conclude that, there are few empirical studies that have attempted to examine this extension. The studies that have been conducted contribute to the testing of this claim; but they still leave many questions unanswered. Such as transference of beliefs and their roles among different levels in an organizational structure, the effects of individual efficacy beliefs in the group efficacy and vice versa. In their theoretical analysis of obstacles and implications for research in electronically distributed work communities, Hesse and Grantham (1991) have identified the need to study the effects of self-efficacy on

workers' attitudes towards the technology, and on the power/status relationships. Our knowledge of group motivation for performance and achievement is still limited.

Among the few empirical studies that address the extension of social learning theory to groups, the most notable is Wood & Bandura's (1989) research. They have demonstrated the strong direct and indirect efficacy-performance relationship. Observations of management students whose conceptions of ability were manipulated revealed that future performance in identifying alternative solutions to problems and effectively leading the group was severely affected by self-efficacy beliefs' influence on analytic strategies and organizational performance. Self-efficacy beliefs were measured using a multi-item efficacy scale for bringing a group to perform at different levels of productivity (below and above standard production time), goals were set at nine levels of organizational attainments, analytic strategies were measured by the number of attempts made by an individual to make a decision. Analyses of variance and path analyses indicated that even if the person had been efficacious before, the conception of ability as a trait or as a dynamic entity affected, through self-efficacy beliefs, goal setting, and subsequent performance. Moreover, causal attributions of environmental controllability tended to be transferred to the other team members. The findings of this study provide some empirical support for the generalization of self-efficacy theory to the group level; however, more research at the group, organizational and community levels is necessary to gain a better understanding of the phenomenon.

As it stands, collective efficacy is a construct that has received some important efforts to define it. However, there is a lack of empirical support to really consider group-efficacy instead of self-efficacy. The most difficult aspect of conducting research in collective efficacy seems to be the sample, given that considering the group as a unit of analysis increases the need for participants, as Bandura himself states (1982). However, efforts considering individual perceptions of the group's abilities seem to be an alternative, as Guzzo (1993) suggests. The need to conduct further research in this field has been stated by several authors (Bandura, 1982; Gist, 1987; Gecas, 1989).

Theoretical model to be tested

Based on Wood and Bandura's findings, Lindsley, Brass, and Thomas (1995) have proposed that the same efficacy-related phenomena occur in a multilevel fashion in organizations. Therefore, if managers' perceptions of efficacy affected their level of performance independently of their knowledge and skills, then the same would occur at the group and organizational levels. Furthermore, Wood and Bandura (1989) findings indicate a process in which managers with high self-efficacy perceptions are more productive and

creative in problem solving situations. Since previous experience is one source of information to generate perceptions of self-efficacy, their perceptions of self-efficacy increase and their performance is better in the next situation. The same is true for those with low perceptions of their own efficacy. These upward or downward spirals represent what is known as the "self-fulfilling prophecy". However, a problem exists when perceptions do not correspond to actual efficacy, or when people arrive to the limit of their actual capabilities. This is of utter importance for the model proposed by Lindsley *et al.* (1995).

Given the fluctuating and dynamic nature of self-efficacy, as explained before by DeMoulin's (1993) findings, it is important to consider that a spiral exists only when a repetitive behavior is found. Therefore, Lindsley *et al.* define an efficacy-performance spiral as "a pattern of consecutive increases (or decreases) in both perceived efficacy and performance over a minimum of three task attempts." Thus, spirals are deviation-amplifying processes, which can be upwards or downwards and can lead to deleterious effects at certain thresholds. This concept is different from the self-correcting cycle that can also occur in the efficacy-performance cycle, and which would be equivalent to a deviation-limiting loop. Self-corrective cycles ensure an objective evaluation of reality, thus preventing groups from illusory performance, which can either lead to frustration when the mismatch with reality is found, or to unnecessary pessimism and self-fulfilling prophecies caused by downward spirals. In spite of the benefits of self-corrective cycles, it is deviation amplifying processes that allow for innovation and progress, both important in a changing environment.

In order to implement these concepts at different levels in the organization, Lindsley *et al.* (*ibid.*) have defined collective efficacy as "the group's (organization's) collective belief that it can successfully perform a specific task." Supporting their arguments with the results of empirical research of motivation at the individual level (as summarized in table 3), they suggest 10 testable propositions for further research concerning the occurrence, maintenance, and stopping of efficacy-performance spirals. These propositions identify the factors that provoke or trigger a spiral, the ones that maintain perceptions of efficacy and performance increasing or decreasing, and the ones that prevent such spirals from occurring, i.e., the factors that contribute to an objective interpretation of reality.

1. The probability of the occurrence of spirals will be negatively related to the accuracy, specificity, and timeliness of performance feedback about the cause-and-effect task relationship.
2. The probability of occurrence of spirals will be positively related to task uncertainty and complexity.
3. The probability of the occurrence of spirals will be negatively related to task experience.

4. The probability of the continuation of spirals will be positively related to the extent to which internal, stable, and uncontrollable attributions occur.
5. The probability of the continuation of spirals will be positively related to the extent to which automatic information processing occurs.
6. The probability of the continuation of spirals will be positively related to emotional arousal.
7. The probability of the continuation of spirals will be positively related to the extent to which expectations and labels are consistent with performance outcomes and attributions.
8. Redefining success and failure will be positively related to stopping spirals.
9. Subdividing the task to promote small wins and small losses will be positively related to stopping spirals.
10. Major restructuring will be positively related to stopping spirals.

Factor	Testable propositions and their supporting literature, as cited in Lindsley <i>et al.</i> (1995)	Relationship to spiral occurrence
Occurrence Feedback accuracy timeliness specificity	<ul style="list-style-type: none"> • Insufficiency of simple success/failure information for self-correcting adjustment (Weick, 1979) • Groupthink, self-censorship & illusion of unanimity (Janis, 1982) • Organization's decline due to misinterpretation or ignorance of environmental feedback (Daft & Weick, 1984; Zammuto & Cameron, 1985; Weitzel and Jonsson, 1989) 	Negative
Task uncertainty & complexity	<ul style="list-style-type: none"> • Low probability of using feedback when establishing causal links is difficult due to task uncertainty or complexity (Ashford, 1989; Marsuch, 1985) • Complex tasks increase attention and performance compared to routine tasks (Wood, 1986) 	Positive
Task experience	<ul style="list-style-type: none"> • Initial success or failure has strong, persistent effects on individual's beliefs of capabilities (Lepper, Ross, and Lau, 1986) Initial task performance and perceptions of the self filtered subsequent feedback (Ashford, 1989) • In groups, self-fueling spirals occur early in the group's life (Hackman, 1990; Ancona, 1993; Cohen & Denison, 1990) 	Negative

Factor	Supporting literature to derive testable propositions	Relationship to spiral occurrence
Continuation Attributions: internal stable uncontrollable	<ul style="list-style-type: none"> • Individuals (Kelly & Michela, 1980), groups (Crocker & Luhtanen, 1990), and organization (Clapham & Schwenk, 1991; Staw, McKechnie, & Puffer, 1983) tend to attribute success to internal causes and failures to external ones. This inhibits search for accurate information (Ashford, 1989) Insomniacs fall asleep more quickly when allowed to make external attributions (Storms & McCall, 1976) Phobias, depression and anxiety disorders are related to high self-awareness and internal attributions (Bandura, 1977, 1986) • Individuals are less discouraged following performance failure when attributions are variable rather than stable (Anderson, 1983) • Attributions of lack of control lead to frustration, anxiety and helplessness (Mikulincer & Nizan, 1988; Peterson, Maier, & Seligman, 1993). 	Positive
Automatic information processing	<ul style="list-style-type: none"> • Habitual routines in working groups use automatic rather than controlled information processing, seldom checking feedback once established (Gersick & Hackman, 1990; Ginett, 1990) Strategic failures are associated with automatic information processing (Starbuck, 1982) 	Positive
Emotional arousal	<ul style="list-style-type: none"> • Threats, stress and anxiety lead to erratic choices in decision making (Hambrick & D'Aveni, 1992; Sutton, 1990) 	Positive
Expectations and labels to the group by others	<ul style="list-style-type: none"> • Self-fulfilling prophecy. Pygmalion effect on groups (Eden, 1990), confirmed fears by process interventions (Hackman, 1990) 	Positive
Stopping Redefining success & failure in terms of learning or experience acquisition	<ul style="list-style-type: none"> • Informative failure can be viewed as success if information about cause-effect is obtained. Corrective feedback does not necessarily lead to low self-efficacy, if it does not threaten the actor (Ashford, 1989) 	Negative
Small wins & losses as opposed to approaching ambitious tasks	<ul style="list-style-type: none"> • Scaling down tasks can lead to success. (Weick, 1984), Short-term, small scale efforts in familiar domains characterize "intelligent failure" (Sitkin, 1992) 	Negative

Factor	Supporting literature to derive testable propositions	Relationship to spiral occurrence
Major restructuring of the group	<ul style="list-style-type: none"> • Frame-breaking (Tushman, Newman, and Romanelli, 1986) Downward spirals can be stopped by reforming the structure of the group, the organizational context, or the group's external environment (Hackman, 1990) 	Negative

Table 3.

Factors affecting self-efficacy performance spirals.

The authors go beyond the analysis of spirals focused at one level only (be it individual, group or organizational), and suggest that cross-level effects can take place. For instance, performance at the organizational level may affect perceptions of efficacy at the individual level, and vice versa. For these phenomena they suggest five moderators that they translate into testable propositions as well.

(1) Task interdependence: Separating individual performance in strongly interdependent tasks is difficult; therefore, it should foster cross-level spirals.

Such a proposition assumes that if individuals contribute in a task where interdependence is high, individuals may have difficulty in obtaining the necessary information to build individual perceptions of self-efficacy, since the interdependence may not allow for a distinction among individual efforts. In such cases most of the information to build such beliefs are based on the group as a whole.

(2) Task uncertainty and complexity favors individuals relying on group performance. It should strengthen cross-level spirals.

In this proposition it is stated that, in new situations, individuals lack the information of previous experiences or other sources of information applicable to that situation, therefore, since there is a lack of information at the individual level to build beliefs of self-efficacy, shared beliefs may be preferred.

(3) As the group size increases the relationship between higher and lower level spirals decreases.

This is related to the sense of belonging to a group. The bigger the group the more subgroups will be formed, and the more difficult it becomes to have shared beliefs of their

capabilities to act in concerted actions as a whole unit. It is difficult for individuals to obtain information from the group in order to generate collective efficacy beliefs. Therefore, efficacy beliefs tend to remain at the level where they are produced.

(4) Social identification with higher level units will foster relationships across levels

This proposition relates to organizational settings where several levels can be found. If there is a strong interaction among groups belonging to different hierarchical levels, the transference of information may help to develop beliefs that can be adopted across levels.

(5) Involvement or inclusion of lower level units in higher level ones will foster the cross-level effects.

The last statement is a corollary of the fourth proposition, since group projects often include individuals of different hierarchical levels, thus fostering the flow of information from one level to the other.

Even though these propositions take into account collaborative endeavors relevant to the present day characteristics of organizations, they do not consider the cultural diversity in the work force that social and international cooperative processes and ventures have encouraged. Recent theoretical models try to explain the effect of group diversity on members' causal attributions for group success or failure (Karakowsky & Siegel, 1995). Moreover, the multilevel effect of these moderator variables is difficult to study in detail in flat structure settings. Given that the present project is not taking place in an organization with multiple levels, these variables are not manipulated in the design of the study, and cross-level effects are not investigated at all the levels identified by Lindsley *et al.* (1995.)

Computer technologies and the study of motivation.

According to Bandura (1982), the concept of self-efficacy helps to explain human agency. It's internal nature makes one link the concept to intrinsic motivation to act. In the field of media research, Salomon (1983), in his studies with educational television, has pointed out the importance of this variable as part of the beliefs that determine students' self-assessments of their capability to learn from a particular medium, and how, together with the beliefs about the demands of the medium, it will determine the amount of effort individuals invest in the task.

In the field of computer-mediated instruction the study of motivation has faced some disappointing findings which are due, apparently, to the limitations of the

technology. Gist, Schwoerer and Rosen (1989) demonstrated that behavioral modeling had a more positive impact on self-efficacy development and improved performance than computer based-training (CBT). Their assumption was that in the CBT condition participants would not be able to make external causal attributions for their failure, thus reinforcing the deleterious effects on perceived self-efficacy.

In academic settings, Malone (1981), Lepper and Chabay (1985), and Keller and Suzuki (1988) identified some design variables pertaining to intrinsic motivation. Lepper (1985) has equated some of these variables (challenge, curiosity and control) to theories of motivation that perceive the human being in different ways -- as problem-solver, information processor, and actor, respectively. Although these variables seem to affect motivation and performance -- as supported at the theoretical level by several theories, and by the empirical analyses of human teaching and computer-based learning -- some failures have occurred when they have been used purposefully to design intelligent tutoring systems, due to the limitations of human-machine interaction (Del Soldato, 1994). The limitations of bandwidth, contextual interpretations, and use of nonverbal cues, which are characteristics that compensate for the inaccuracy of human communication, seem to be determinant in the case of individualized instruction via these technologies.

As Daft and Lengel (1986) contend, equivocality seems to be a distinguishing characteristic of human social systems. According to their analysis, certain media and structural mechanisms are better suited for reducing equivocality or uncertainty in organizations. The richness (i.e., the ability of information to change understanding within a time interval) and the amount of information media can handle are considered important factors for the reduction of the two conditions. According to their model, the richer and more personal the medium the better it is to reduce equivocality, whereas, less rich and more impersonal media help to reduce uncertainty. Following this line of thought, one would expect stand-alone computer applications to be less rich and less personal than face-to-face interactions.

One of the computer strategies that comes closer to human-human interaction is the use of computer-mediated-communications (CMC). Moreover, this technology allows for groupwork among people situated in different locations. Several studies have tried to show the positive attitude of students to this technology; nevertheless, very few go beyond the liking or disliking of the activity. Moreover, its potential to be used as a tool in the investigation of motivational issues related to learning, has not been fully exploited yet.

Collective tasks in educational environments.

Cooperative and collaborative learning approaches have derived important guidelines for the development of group work in academic environments. As opposed to competitive learning structures where the objectives of participants are negatively correlated, and to individualistic structures where no relationship exists between the achievements of one participant and another, cooperative tasks allow participants to have shared objectives, so that individuals achieve their objectives only if the other members of the group achieve theirs (Castañeda, and Figueroa, 1994). Slavin (1983) establishes three essential features of cooperative learning:

- “1. Students work in small (4-6 member) learning teams that remain stable in composition for many weeks.
2. Students are encouraged to help other group members to learn academic material or perform a group task.
3. In most techniques, students are given rewards based on their group performance. These rewards may range from recognition to tokens or grades.” (p. 343)

Even though not everyone agrees on the last point, it should be emphasized that individual and group accountability are important in cooperative tasks (Abrami *et al.*, 1994). An important issue in group work is the selection of a task that truly needs a group of people in order to complete it. Abrami *et al* (1994), identify different types of tasks:

- additive: every member's input is added together to succeed in the task.
- compensatory : the product is the averaged input of all members in the group.
- disjunctive: the best individual contributions are selected to complete the task.
- conjunctive: every member has an input so that the objective is achieved.

Conjunctive tasks are of multi-skilled nature. Since the collaboration of every member is truly needed in order to complete the learning activity, this structure encourages what is called positive interdependence (Abrami *et al.* 1994), where “one student's success positively influences the chances of other student's success”. It also fosters individual accountability. The latter is very important to avoid social loafing, so common in groupwork.

In the formation of groups, several suggestions have been derived from research. It has been stated in sociological studies that heterogeneous groups are more productive than male only, and these in turn are more productive than female only groups. This is explained as the way males and females traditionally socialize since infancy. Males participate more in group activities -- e.g., soccer, baseball, football, basketball, where sharing, coordinating with others, taking advantage of each member's abilities are important to win -- than

females, who tend to have more individualistic activities; therefore, in collective endeavors, best results are obtained when groups are gender balanced (McCoy, 1990; Sommers, 1992). This seems to indicate that good group composition would take into account the balance in gender, or at least, avoiding any female only groups.

Concerning homogeneous or heterogeneous ability grouping, a meta-analysis conducted by Lou, Abrami, Spence, Poulsen, Chambers and d'Apollonia (1996) concludes that students benefit differently from the two grouping approaches. After analyzing Both, low and high-ability students benefit the most in heterogeneous groups, whereas medium-ability students record higher gains in homogeneous groups. The explanations provided argue that high ability students benefit from tutoring others. Low ability students benefit from the interaction with those high-ability peers that can explain what was not understood; something they cannot get in homogeneous groups. Medium-ability students cannot benefit as much as them, since they do not play an active role in heterogeneous groups; on the contrary they benefit more from discussing with peers of the same ability level.

Another variable that has been important in many projects investigating group learning or performance is cohesion. Carron, Widmeyer, & Brawley (1985) distinguish between two aspects of cohesion: (i) social, defined as: "a general orientation toward developing and maintaining social relationships within the group" (p.248), and (ii) task, understood as "a general orientation toward achieving the group's goals and objectives" (p.248). Even though some degree of cohesion is needed to achieve collective objectives, research has shown that social cohesion can provoke a lack of critical thinking and precipitate poor decision making, -- phenomenon known as groupthink -- whereas task cohesion diminishes this tendency. (Berntal, & Insko, 1993). Tasks designed in ways which force or encourage members to have a task orientation more than a social orientation would then avoid the problem of too much social cohesion, groupthink and poor performance. In the case of structured on-line group learning activities, in which interactions are more task oriented and not so much socially oriented, as has been summarized in the literature (Walther, 1992), this type of social cohesion may not have such a strong impact on groupthink.

It has been shown that, in spite of the influence of some group characteristics -- such as gender, heterogeneous vs. homogeneous ability grouping, and activity cohesion vs. social cohesion -- on the productivity of groups and the quality of group written products, a greater percentage of variance is associated with type of task (production, discussion, or problem solving) than to group characteristics (Hackman, 1968; Kent, and McGrath, 1969). In addition to this percentage explained by the task type, McGrath (1969) found that gender composition affected the action orientation and originality of products.

On the one hand, groups with a female majority were more action oriented; on the other, sexually homogeneous group products were more original than those of heterogeneous groups. These findings have been supported by more recent reviews and trends in the field of management where the focus is on knowledge, skills and abilities rather than on traits of the group members in order to make them effective (Stevens, & Campion, 1994).

Campion, Papper, and Medsker (1996) review prior research in models of work group effectiveness, and find empirical support to conclude that effectiveness is influenced significantly by job design, team members' interdependence, group composition, context, and process variables. In the job design theme, they conclude that the task has to be significant to be motivating, and participation and self-management of the team are important, as well as task variety. Interdependence is addressed as task interdependence, goal interdependence, and interdependent feedback and rewards. This seems to be particularly important in the design of the task itself, and the way it should be rewarded. For group composition they identify the following suggestions: (i) heterogeneity increases group competencies, (ii) flexibility allows for members helping each other, (iii) size should be enough to accomplish the task in an efficient manner, (iv) members preference to work in teams should be considered, and a high collective potency or collective efficacy achieved, so that they feel satisfied working in this format. Concerning context variables, enough support has to be provided to the completion of the task, and this includes training, managerial support and communication channels with other teams. For process variables, they identify potency, social support, workload sharing and communication within the team.

As it seems from the literature, besides group composition variables, the structure of the task -- objectives, skills required, group size, ways and channels for interaction, timing, and rewards, here included -- is of utter importance for the effective performance of the group. With on-line activities, where no face-to-face communication takes place, and where probably no knowledge of the group members exists, task design becomes crucial. As Walther (1992) emphasizes, the lack of nonverbal cues in these kinds of media may be the cause of impersonal and task oriented messages. He also finds that research reports generally have found more positive relational behavior in these media, and that negative effects are due to narrow situations where verbal and textual cues can be interpreted in different ways.

Harasim, L. *et al.* (1995) provide models for the design of learning networks, emphasizing that on-line activities "are most successful when structures and roles are well defined" (p. 125). Among those structures that support group activity tied to the curriculum, she mentions the following:

- Seminars. A topic for discussion is selected and moderated by the teacher; however, it is desirable to move gradually to student moderated discussions, where the teacher becomes a facilitator and observer.
- Small group discussions. Large size classes are divided into small manageable groups (three to four members) with different topics for discussion. Readings are prepared prior to interaction, and messages concern opinions, comments and responses related to the material. Each group has a conference.
- Learning partnerships and dyads. This structure is very useful to provide support, or as first experiences to collaborative work. The most common activities are writing projects, which are then presented to the class. A conference space for each dyad has to be provided.
- Student work groups and learning circles. In this kind of structure students collaborate on a project, solving a problem, or writing a report. It needs good coordination, timelines, and explicit subtasks.
- Team presentations and teaching by the learners. Students present a topic and post questions to elicit participation of their peers. This discussion is moderated for some days until a conclusion is achieved.
- Simulation or role plays. Students play a role in hypothetical scenarios. This structure is very common in multi-user text-based virtual realities such as multiple user dialogues (MUD's), and multi-user simulation environments (MUSE's).
- Debating teams. A controversial topic is selected to be discussed on-line by students divided in groups defending a specific position or point of view.
- Networked classrooms. Classes studying the same topic from different points of view or disciplinary perspectives can exchange their comments and opinions.

In all of these cases Harasim *et al.* (ibid.) suggest that appropriate conference spaces need to be created, plus a space for social interaction, such as a student lounge or cafe, and a mutual help conference needs to be provided.

It has also been reported that too much structure can be bad for group productivity. In Lundgren's (1996) experiments with groups working on-line, she found that best results were obtained when the structure of the group and interaction were balanced, so that a clear structure was given to one, and more freedom was allowed in the other one. In these activities it was found that best productivity was achieved when members were assigned randomly to their working groups, and the moderator's intervention during the accomplishment of the task was low.

By the same token, Lundgren (1996) suggests four important factors to consider in the design of on-line learning activities: (i) the use of extrinsic motivation for initial tasks to

ensure high participation, (ii) the choice of content areas where more than one response is correct, or where several sources of information can be used, (iii) the application of a task design where working together is necessary and encouraged, (iv) the establishment of clear and firm deadlines. Hefzallah (1990) indicates, among several other guidelines for mediated interaction, the importance of: (i) allowing students to understand the purpose of mediated interaction and why it is needed, (ii) providing access to help so that students do not feel “trapped” or lost, and (iii) using strategies to ensure active participation by providing easy instructions on how to use the program, recognizing participation, and providing corrective feedback.

From what has been discussed, collaborative tasks need careful design, keeping in mind a good compromise between teacher structured activities and flexibility; more so in computer-mediated environments, where textual cues are the only source of information to know the person with whom one is working. Choosing appropriate designs for group composition and task structure become even more important when on-line interaction is planned. One point that should be noted is the fact that while the big disadvantage of CMC is its limited bandwidth, it is also true, that such limitations can be an advantage to conduct research where personal prejudices need to be reduced. This was the purpose of using CMC in the present study: as the best tool to avoid contaminating variables provided by some symbols used in a face-to-face interaction.

The literature which has been reviewed in this section is particularly relevant to the present study. Within motivational theories which explain the choice for courses of action and the intensity of those actions, self-efficacy theory provides the concept of collective efficacy. This concept is, at present, of utter importance for organizational and school settings concerned about group endeavors and performance, since it is supposed to follow the same rules as self-efficacy but at the group level. Even though some hard data has been collected to support these ideas (Bandura, 1997), the theoretical contributions made by Lindsley et al. (1995) related to the generation, maintenance and stopping of deleterious or constructive efficacy-performance spirals at different levels in an organization, provide a guide for empirically testing some of their propositions. One of their main premises is that efficacy-performance spirals, which have been described in several studies at the individual level, do happen at the group and organizational levels having a cross-level effect. In order to test if this phenomenon really occurred, one of the questions in this study tried to find out how much of that cross-level effect occurred if performance feedback (one of the variables considered important in the model for the generation of spirals) was manipulated to accelerate the generation of spirals, while all other spiral generative variables in the model were maintained constant. Other variables considered important in the literature

review, an which Bandura (see table 2) directly relates to self-efficacy, were attributional style and goals or expected efficacy.

According to the theoretical model it would be expected that in a collective task, those groups in which efficacy-performance spirals occurred their members would also present efficacy-performance spirals at the individual level. Considering the fluctuations of efficacy and performance, Lindsley *et al.* (1995) suggest an operational definition of a spiral which considers three consecutive increments or decrements in both, perceived efficacy and performance. A collective task was designed with the help of collaborative learning approaches and CMC collaborative working environments design, in order to test this hypothesis. As explained previously, CMC was used as a tool to avoid the presence of possible prejudices about the group member's capabilities that can be generated while working in face-to-face environments.

Another important point in the reviewed literature is the lack of studies addressing the possibility of transferring efficacy beliefs to other working groups. Bandura (1997) even mentions this as a concern in his latest published work. According to previous articles by the same author (Bandura, 1982), past experience provides information to build perceptions of self-efficacy; therefore, it would be expected that perceptions of efficacy in previous groups accomplishing a collective task would be transferred to new working groups engaged in a similar task. Answering such a question would be of particular relevance to present working patterns where outsourcing and free-lance work, have obliged individuals to adjust to a different team in every new project. Bearing in mind that individuals are expected to carry those perceptions of efficacy, the concept of group efficacy provided by Guzzo (1993) was considered the most useful, given that in this concept individual beliefs of the group's efficacy are the ones measured. This approach took the researcher away from using the group as a unit of analysis and brought her to use individuals instead. From these concerns two more research questions were derived: one which addressed the possibility of transferring individual self-efficacy beliefs to new working groups; the second concerns the transfer of individual beliefs of the group's efficacy to complete the task. The next section describes in detail how the research was conducted.

METHOD

Participants

The project was pilot tested with students who belong to the Colleges at the University. A sample of 56 students was selected, but attrition was very high even though students had signed the agreement to participate as the ethics of research require. One of the explanations might be that the activity at the Colleges is not linked to any curricular component. This was confirmed by the messages sent apologizing for not being very active in FirstClass due to their course work. The experience was not very successful, since participation was minimal. This shows how innovative activities have to be relevant and show immediate benefits to those who adopt them (Rogers, 1983). The experience was rich only in the sense that instruments could be pilot-tested and many logistical problems could be identified and corrected for the actual research. Details about the procedure and results of the pilot will be presented later in the chapter.

In consideration of the importance of having multidisciplinary groups in which members can feel that they all can be of value to the successful completion of a collaborative task (Abrami *et al.*, 1994), areas in the University where students from all disciplines converged were selected both for the pilot test and for the actual study. Moreover, bearing in mind what was learned from the pilot study, the sample for the actual project was selected from the courses offered by the Department of Literature at the 100 level (one of the first courses at the bachelor's level) and the on-line activity was linked to the curricular component of the course. Five course sections were randomly selected giving a total of 120 registered students. However, mortality was high during the period of study, thus reducing the sample size to 86 participants. One of the main causes was the decision of a teacher to cancel the type of work that was being accomplished in FirstClass. She asked for permission to ignore that part of the syllabus and concentrate on other aspects of the program due to the needs of that group in particular. The permission was granted by the Coordinator of the area, and this affected the second half of the study. Four course sections were left in the project with very few withdrawals and a few cases that were taken out of the study because of missing data. Figure 1 shows the mortality in the study.

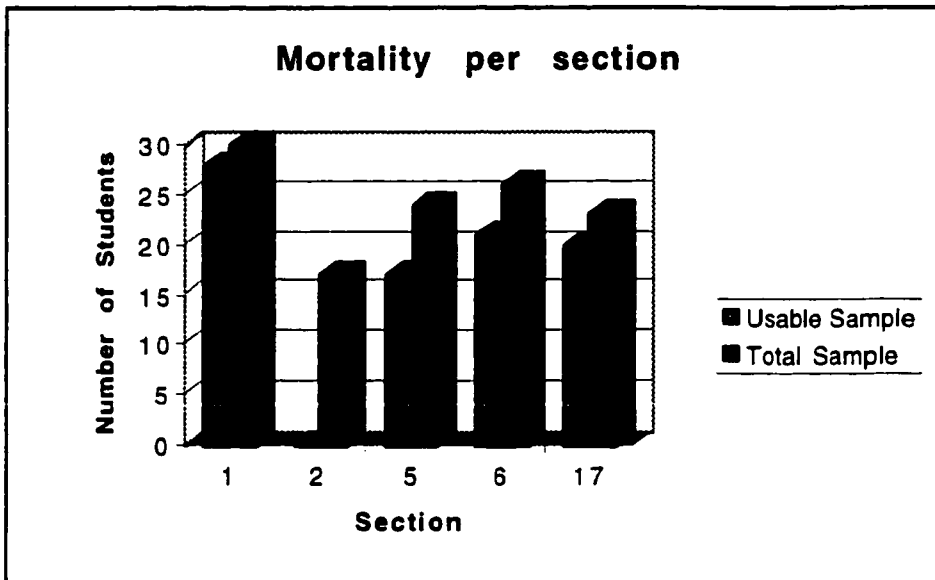


Figure 1. Mortality distribution by course section. From the graph it is evident that the main losses were due to the withdrawal of a whole section.

As discussed in the previous chapter, the study of collective efficacy using the group as a unit of analysis is more demanding in terms of the sample. For the purpose of the present research, the individual was selected as a unit of analysis. The reasons for this decision were the number of participating sections and the objectives of the study, where transference from one group to another can only be tested at the individual level.

The final sample was still representative of the student population as shown in the distributions by gender, by age group, and by school presented in figures 2, 3, and 4. These graphs can be compared to those of the University reports for gender and school (see figures 5 and 6).

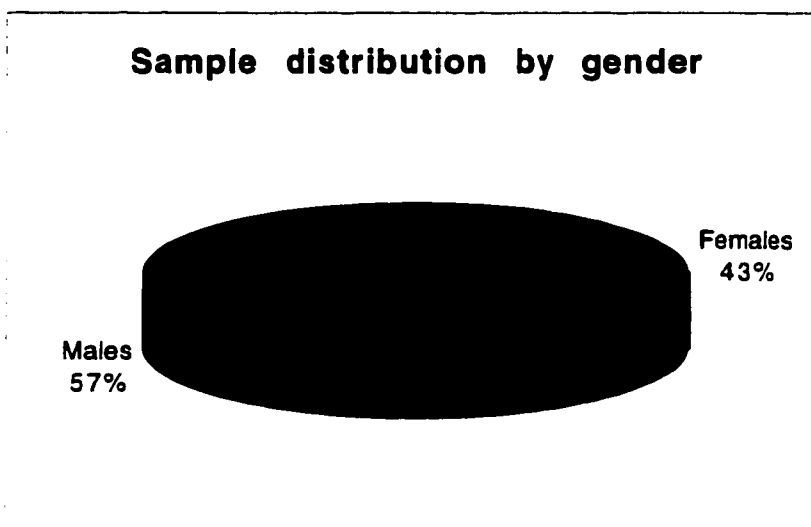


Figure 2. Sample distribution by gender.

The number of males is slightly higher in the sample when compared to the UDLA-P student population.

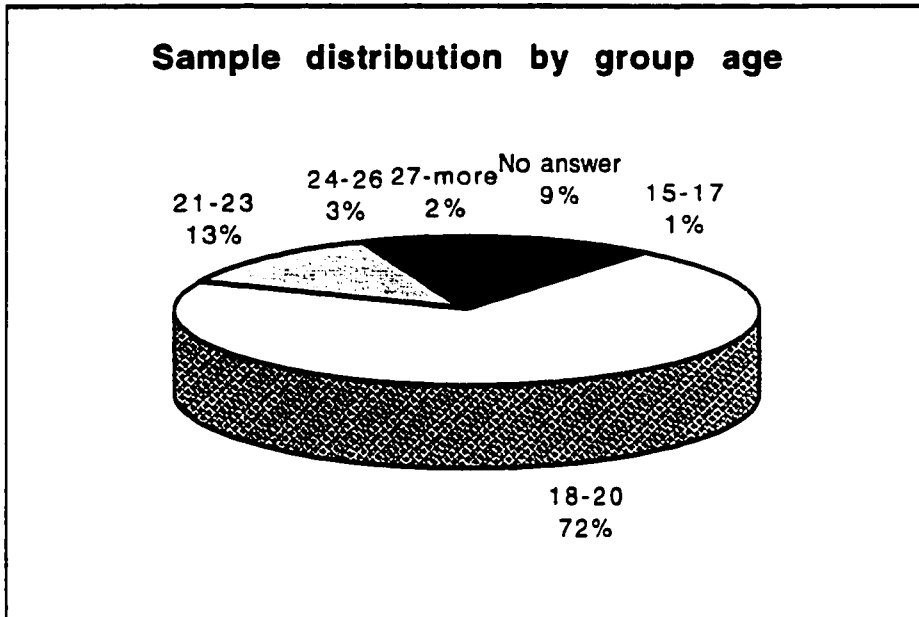


Figure 3. Sample distribution by group age.

The University has a young student population. Since most learners finish their preparatory studies at the age of 18 years old, and this was an introductory course of the bachelor's level, most participants fell in the 18-20 category.

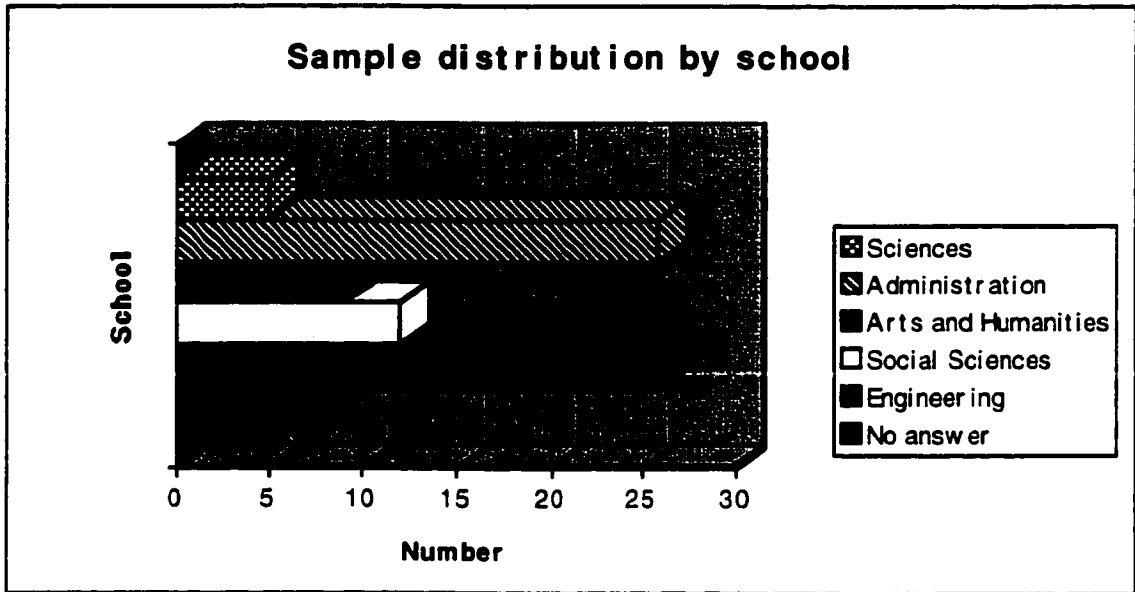


Figure 4. Sample distribution by school.

All five schools were represented in proportions congruent with those registered at the University Statistics Bureau. The schools of engineering and administration have the highest enrollment records.

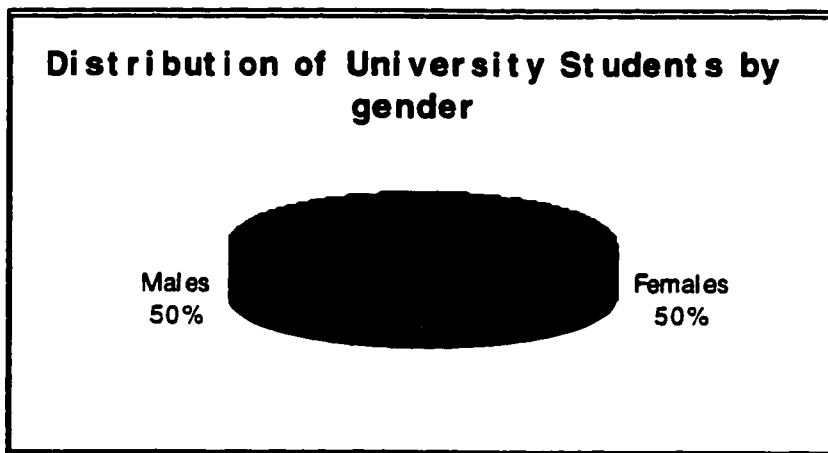


Figure 5. Distribution of University students by gender.

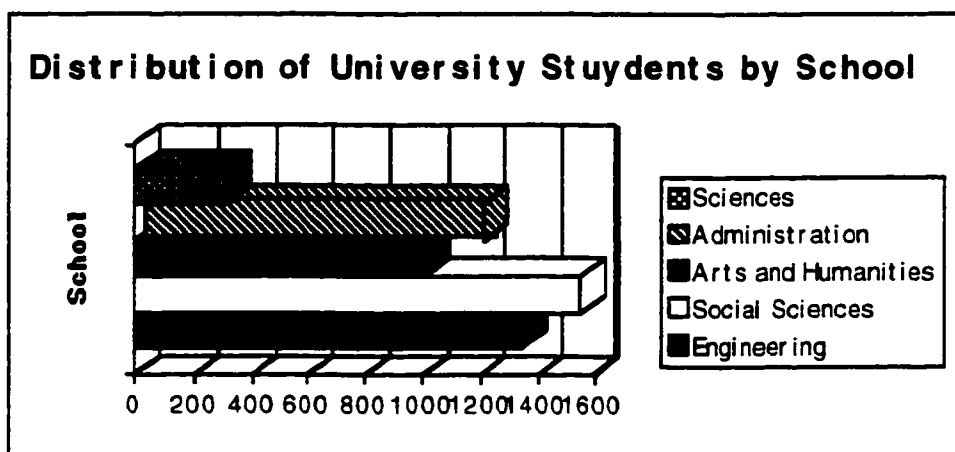


Figure 6. Distribution of University students by school.

Design

Two overall groups of students were formed. Two teachers volunteered to provide feedback to their students during the on-line discussion process. Each section was divided in working groups using teacher assignment of participants, in order to maintain the groups balanced in terms of skills and ability.

Variables which, as reported in the literature may affect the results, were measured prior to the task: previous experience, attributional style, and initial self-efficacy. This was useful to establish the equivalence of the feedback and non-feedback teams. As illustrated in figure 7, students were divided into these two overall teams to participate in the revision of written essays, a task where specific skills have to be applied. During task completion, one team received feedback that would help them to correct mistakes. The other did not receive feedback from the coordinator of the activity, thus allowing each working group to develop their own beliefs and performance cycles.

After the completion of the first phase, working groups were restructured and a similar assignment was provided. In the restructuring of teams, the membership assigned to the feedback/non-feedback conditions was respected in order to avoid any confounding effects. It was a repeated measures design: the second task was divided in three successive deliverables or submissions, at which points measures of variables were taken to observe any changes in the process. The purpose of having multiple deliverables was that efficacy-performance spirals would be easier to generate, and changes in perceptions at the individual and group levels could be monitored.

The second phase allowed for testing the transfer of efficacy beliefs (individual and group) to new work teams.

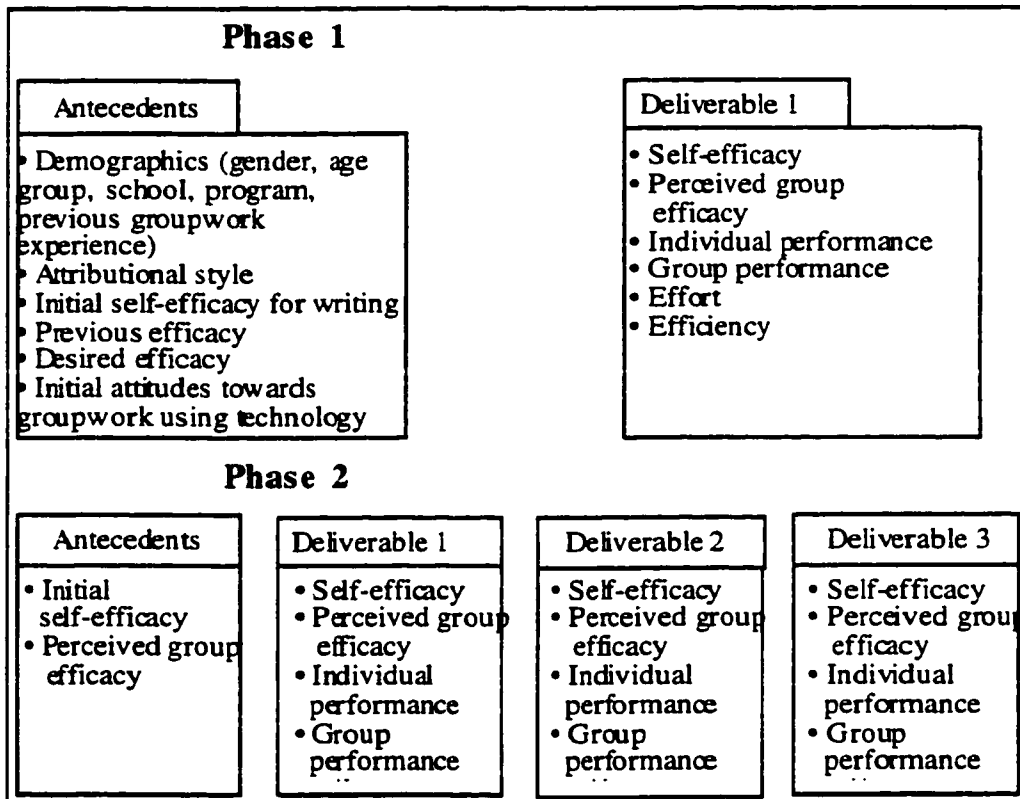


Figure 7. Design and variables to measure in each observation

The monitoring of efficacy and performance allowed determination of the point at which spirals were generated. When a spiral continued, analyses of transcripts of the on-line conversations were conducted to identify the presence of the factors affecting continuation or termination as suggested by the model of Lindsley *et al.* (1995).

Instruments

Most instruments used for measurement were standardized; however, the translated versions had to be reviewed to ensure appropriate use of the language. The comments of participants in the pilot study helped to refine the translations needed. And in some cases instruments (e.g. self-efficacy instrument, and MASQ) were tested with focus groups to ensure appropriate use of language. Table 4 presents how each variable in the model was measured or held constant in the present study.

Independent Variables	Measurement
Feedback provision (accuracy, timeliness, and specificity)	<p>Not measured. Manipulated to be present as accurate, on time and specific in one condition, and absent in one of the conditions. Corrective feedback during the process, before final submission was provided by the teacher to the group using the groups' conferences.</p> <p>Accurate = Coherent with criteria to assess performance</p> <p>Timely = At a point in time where courses of action can still be adjusted</p> <p>Specific = Informative according to individual contributions relevant to the task</p>
Task uncertainty	<p>This factor is controlled.</p> <p>The outcome of the task is uncertain, given that it is a different task than the ones they are used to do. Students are used to individual writing, but in this case group members' contributions will influence the final result.</p>
Task experience	<p>It is a controlled variable. No previous experience is expected for the task itself. However, self-reported previous groupwork experience, and students' field of studies will be considered for group composition.</p>

<p>Attributional Style</p>	<p>Measured through attributional style questionnaire (Henry & Campbell, 1995). Reliability for subscales using Cronbach's alpha ranges from 0.67 to 0.90</p> <p>Predictive validity was calculated through correlations with grades and hierarchical multiple regressions ($r=0.20$, $p<.01$, and $R^2=0.02$, $p<.01$, respectively.). Not all scales were significant predictors, but the overall score was.</p> <p>Consistency was calculated as correlations with student grades at time 1 and time 2 (16 weeks apart). They ranged from 0.39 to 0.65, $p<.01$ for all subscales. The composite measure was 0.61, $p<0.01$</p>
<p>Previous self-efficacy</p>	<p>Measured by self-reported scale of previous experience and performance level in task related activities. This was pilot-tested to confirm reliability and language use. Test-retest coefficients ranged from $r=0.14$ to $r=0.66$. Reliability for the total score was $r=0.22$. Results should be interpreted with caution.</p>
<p>Desired Self-efficacy</p>	<p>Measured by self-reported scale of expected performance level and percentage of confidence for the tasks involved in the project. This was pilot-tested to confirm reliability and language use. The test-retest reliability coefficient for individual items ranged from $r=0.19$ to $r=0.95$. The coefficient for the total score was not high $r=0.13$. Therefore, results should be interpreted with caution.</p>

<p>Attitudes toward groupwork using technology</p>	<p>Controlled and measured by a five point Likert scale developed for this purpose. Results for test-retest reliability indicated a range of $r=0.15$ to $r=0.66$ for the item by item analysis, and a stability coefficient of $r=0.36$ for the total score. Results should be interpreted with caution.</p>
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Dependent Variables	Measurement
Individual Self-efficacy	Measured by the Writing Self-Efficacy Scale, developed by Don Prickel & Associates (1994), for adult basic writers, and validated with several samples. Latest Cronbach's alpha= 90.91. This scale was translated and language was reviewed with a focus group.
Perceived group efficacy	Same instrument (i.e., the Writing Self-Efficacy Scale) to be answered by each member assessing the group's capability to succeed in the completion of the task. It was pilot-tested with a focus group of students checking for language and understanding.
Effort	Number of participations as reported in conversations on-line.
Individual Performance	Student's grade as reported by the teacher, considering the four abilities to be developed: grammar, style, organization of ideas, and use of rhetorical resources, in their individual works.
Group Performance	Grade reported by the teacher for the essay worked in groups, according to evaluation criteria previously established for the task. All instructors were working with the same professor responsible for the course, which allowed to ensure the application of similar evaluation criteria and avoid possible biases.
Efficiency	Timeliness of participations.

Table 4. Variables measured in the project.

Instruments used are presented in appendix B. From the variables and measurement presented above in Table 4, formal instruments consisted of:

- a general data questionnaire filled in at the beginning of the study,
- the modified attributional style questionnaire,
- a questionnaire for previous efficacy and desired efficacy in activities related to the task (i.e., not the task itself but related activities),
- an attitudinal scale to measure their like or dislike to work in teams, and
- a self-efficacy scale for writing, used both at the individual and at the group level.

The general data questionnaire consisted of a section where students could suggest two pseudonyms to be used in the study, and seven questions addressing general information. The first items addressed data such as age, gender, school, program of study, and previous studies in other higher education programs or institutions. The last three questions were open ended and they focused on students interests in three different fields: academics, arts, sports, and any other field. These items also explored participants' previous experience in diverse types of groupwork, not necessarily related to instruction. These fields included academics, sports, social activism, arts, in-class groupwork, and any other the student wanted to add.

The modified attributional style questionnaire developed by Henry and Campbell (1995), a modified version of Peterson's et al. Attributional Style Questionnaire, was used to determine the attribution variables for each participant. This instrument includes items related to academic activities, and was therefore selected as appropriate to the setting and to the type of participants in this study. Moreover, the instrument is useful because it includes three different dimensions for attributions -- internality, globality, and stability -- in success and failure cases. The internality dimension is equivalent to what Weiner (1991) calls the locus of attribution dimension, and is related to perceptions of efficacy and effects on performance according to the literature reviewed -- in both cases (i.e., success and failure). The reliability and validity coefficients of this scale are presented in the previous table. The instrument consists of 20 items of hypothetical situations of success or failure. For each item the student has to respond to three seven-point scales, each one corresponding to one of the dimensions measured by the instrument. The questionnaire was translated and pilot tested with Mexican students in order to ensure appropriate use of the language.

The difficulties in measuring self-efficacy due to its specific to task nature were reviewed earlier. Following what has been done in the development of other instruments for this construct (Locke, Frederick, Lee, & Bobko, 1986), five judges were asked to produce statements for activities related to the task. These judges were students of the Department of Education, who are familiar with the teaching of Spanish, and with the use

of technology for educational purposes. Five more ordered their degree of relationship to the task according to a five point scale. From these activities, those that belonged to knowledge and skills were selected to build the questionnaire for previous efficacy and desired performance, whereas the attitudinal ones were used for the scales on attitudes towards teamwork. According to the literature, disposition to work in groups is important in collective endeavors; therefore, a Likert type five-point scale was developed to measure students' attitude towards groupwork using the technology. Even though these two instruments were pilot tested with a group of 23 students in the Department of Education, it should be noted that these two instruments need further applications to establish their validity and reliability. Therefore, results produced by them should be interpreted with caution.

The pilot-test was useful to establish a stability coefficient for these two custom-developed instruments. A test-retest procedure was followed, applying the tests two weeks apart (the same timeframe that would be used in the actual experiment). An item by item analysis indicated correlation coefficients ranging from $r=0.14$ to $r=0.66$ for the test of previous efficacy, and of $r=0.19$ to $r=0.95$ for desired efficacy (i.e., goals). The total score correlation indicated a coefficient of $r=0.22$ for previous efficacy, and $r=0.13$ for desired efficacy; thus one can conclude that results should be interpreted with caution. The same procedure was followed for the instrument measuring attitudes towards groupwork. Results indicated a range of $r=0.15$ to $r=0.66$ for the item by item analysis, and a stability coefficient of $r=0.36$ for the total score. Given the low coefficients of both instruments, caution in interpretation is emphasized.

The most important instrument for the study was the Writing Self-efficacy Scale, developed by Prickel (1994). This scale has been tested with multicultural populations, and is directly related to writing skills, including grammar and punctuation, style, organization of ideas, and vocabulary. These skills were very closely related to the kind of skills and criteria used in the evaluation of the papers for the course (i.e., grammar, style, organization of ideas, and use of rhetorical resources). Given this similarity, it was considered an appropriate instrument for the project. The scale consists of 25 statements related to the four dimensions mentioned, and responses are registered in a five-point Likert type scale for degree of agreement. Given that this instrument can be used as situation specific, it can be used repeatedly, making sure that students understand that each time they respond refers to immediate experience.

The instrument was developed as an individual measure of self-efficacy; however, given that no specific measures for collective efficacy in this type of task have been developed, and that analysis of other collective scales -- such as Bandura's (1993)

collective efficacy scale -- indicates the possibility of using statements similar to those at the individual level with the group level, this second level was added. The instrument was again translated and pilot tested with the group of 23 students for language and clear understanding. Adjustments in language were made in two items: Item 13, and 25 which had translation problems. They were rewritten to communicate the same idea as in English.

Procedure

During the summer of 1996 the researcher contacted the administrator of the groupware at the UDLAP and the Regent of one of the Colleges to explore the feasibility of the project. Positive answers were obtained rapidly from both, meaning that the project could begin in August.

Presentation of the project to the possible participants in the pilot study.

During the first week of August 1996, freshmen attending the orientation session for College II were invited to participate in the project as an extra-curricular activity. Although it had been said that 400 students belonged to the college, attendance to the orientation session was very low. A few others joined the project as they heard about it from classmates, thus finally giving a total of 54 participants.

A formal presentation of 15 minutes was made to this group of students explaining what was involved in the project. It was emphasized that this study involved group work using the groupware FirstClass, that participants were going to receive a free training workshop, and that the best group product would be edited to be used with the freshmen of the following year. This method of working, via groupware, had the advantage that no physical meetings would be required. Each individual could work whenever she had time so long as her contributions to the collaborative task were provided on time according to the deliverable dates stated in the instructions of the project. The group product consisted of designing a survival guide for freshmen, a document which would include a series of "tips" or pieces of advice they would have liked to have known as part of their orientation or introduction to the University. The task required specific knowledge from different disciplines and some general knowledge.

It was also explained that some data regarding their perceptions of their own efficacy and the efficacy of their group were going to be administered on-line. Finally, it was emphasized that confidentiality and anonymity would be ensured. Students were given a copy of the agreement sheet to be signed, and the first questionnaire collecting demographics to be answered on site was administered. The agreement letter caused much

distress, since this is not a common practice and many expressed concerns about something dangerous or harmful involved in the project. It was necessary to explain several times that this did not threaten their well-being in any way, and that this was a normal procedure in research ethics. This information was reinforced by clarifying that nobody could force them to participate in any kind of research, harmful or not since that was a violation of their human rights. It was also made clear that, as stated in the letter, they could withdraw from the project at any time, simply giving notice to the researcher. Only three students did not agree to participate.

Virtual spaces for the on-line activities.

The administrator of the groupware created a conference on the server for this particular project. There, the researcher was able to create subconferences as necessary. The space was organized following Harasim's (1995) recommendations for the design of virtual spaces for on-line activities. Figure 8 presents the modified main the student encounters in accessing the project. The "Mission" (*Misión*) contained all the instructions for each of the deliverables. Instructions were added to this space as the various subordinate objectives were being accomplished, until the goal of the group project was achieved. "Virtual Offices" (*Oficinas Virtuales*) indicated the space where groups would work and make their contributions. This space was subdivided into small-group conferences to which only the designated members could enter and participate. The "CMC" conference had information about other computer-mediated activities, what the term meant, and it was also the space for any technical questions. The "Mailbox" (*Buzón*) -- not represented here -- was the place to submit any finished deliverable corresponding to the subgoals stated in the "Mission" (*Misión*). The "Virtual Café" (*La Cafe Virtual*) was the conference where they could post any informal messages not related to the work. Last, but not least, the "Urgent Notices" (*Avisos Urgentes*) folder holds any important messages for the members of the College. The last two conferences were used frequently by the Regent, thus showing her presence in the project. Although the structure was good, space had to be rearranged for the actual study. In particular, the "mailbox or *buzón*" was deleted, since final papers had to be submitted in paper, according to teachers' requests.

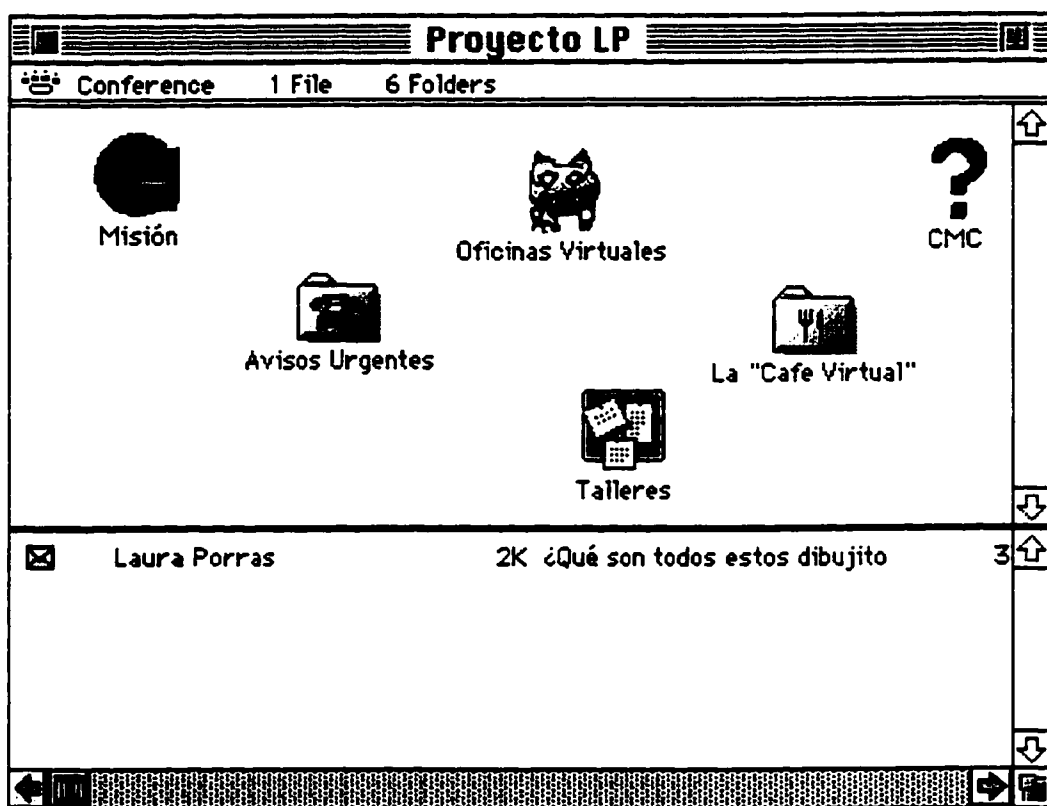


Figure 8. Main Screen of project conference.

Workshops.

In order to ensure that everybody had the technical skills necessary for the project, a series of workshops was scheduled for the participants. This attracted more participants, who registered in the course, but who finally did not conclude the project. There were workshops scheduled at different times during a week, so that students could choose the one that did not interfere with their courses or working hours. These workshops were taught by the administrator of the groupware server at the university. He had previously received the lists of participants for each time including name, ID number, gender, and program of study. With this, he was able to create the necessary accounts. These workshops provided a way to ensure that students could feel confident with the tool and concentrate on the task, instead of focusing on the medium (Harasim, 1995). The researcher attended all the workshops as an observer, checking attendance, and helping with any logistic difficulties.

The workshop included: how to log on to the server, change password, get familiar with the conferences in the server (not only those of the project), create a résumé, paste an image, send a private message, send a public message, and know the rules of use. After the

workshop each student received a message indicating the virtual office to which she belonged, thus enabling the start of the project work.

These workshops were successful in terms of attendance, since not only the 54 students who had signed the letter attended. Total attendance was 140 students. Upon the Regents request, the workshop was open to all residents of the college, not only the participating students. Very few technical questions were raised after the workshop, most of them on how to log on from different computers in and outside the campus; further use of the system continued with a minimum of technical difficulties. Considering this experience a need was identified to provide a basic written guide (besides the on-line help available in the system), in order to enrich the workshop and facilitate further use of the groupware. This need was addressed in the workshops for the group in the actual study, as explained later in this chapter.

The group work in the pilot study.

Students worked on a monthly deliverable in each of the 12 groups created for the project. The first deliverable was the most successful one, however, participation decreased with time. Many students apologized for not participating due to their course commitments. The activity, which was seen as extra-curricular, was left at the end in their priority list. This was completely understandable. It was therefore necessary to ask them for comments and feedback on the instruments and the project itself. This qualitative information enriched the actual implementation of the project. Students commented that the activity itself was very interesting, but time-consuming, and that at the beginning they were not aware of the amount of work it represented. Some suggestions included combining it with a project in their own courses, having computers available in the Residence to have more flexibility in time to participate. Finally, many of them expressed being ashamed for not accomplishing the objectives of the project, for leaving somebody in the group working alone, and for not providing a good quality product.

Only four groups submitted all the deliverables. These were evaluated by the regent and the coordinator of the College. None of them was, however, a product that had the necessary quality to be used with freshmen for the coming year. Nevertheless, as stated by the coordinator and the Regent, the tips included in these submissions helped them to improve the following orientation session. An informal meeting was held with the Regent and the Coordinator to discuss the results.

Regarding the instruments, records were not enough to establish validity and reliability, according to the proper procedures with this pilot study. Nevertheless, qualitative information generated in this experience was useful. Questions were clearly

understood, and only two items had to be reworded. The filling of the "Previous experience and self-efficacy scale" was complicated and therefore, it had to be explained orally with an example to be well understood. A similar solution was applied to question five of the "General Information" questionnaire.

Selecting the scenario for the actual implementation.

The main reason for the lack of participation had been the priority given to the activity. Therefore, in October 1996, the Chair of the Literature Department was contacted to analyze the possibility of including an activity like this as part of their curriculum. Since the Writing course is compulsory for all freshmen, the sample was representative of the universe (the students at the UDLAP) as documented in the section regarding participants in this report. In November, the coordinator of the program agreed to have five sections (i.e., groups) as part of the study. The five sections were randomly selected. Fortunately, all of the selected sections had enough students to open the course in the Winter term.

Presentation of the project to teachers.

Prior to the beginning of the course, the project was presented to all teachers of the program as one of the points in the agenda of their general meeting. With the help of acetates, an explanation was given. It included the objectives of the project, how teachers had been selected to participate, what was expected from them (i.e., allow data collection, dedicate one class to an introductory workshop, and report performance monthly), what was expected from the students, and what was expected from the researcher. A section of agreements was also included. This involved mainly the type of work to be done on First Class.

It was explained that, for the project, students would be divided in groups of four to write an essay (which is what they would normally do individually). One student would write the draft and put it on their folder to be revised by her group. Since the program is very deep, there was insufficient time for a joint writing project, therefore teachers suggested this approach. Each person in the group had a role assigned as a reviewer of each of the four abilities to be developed in the project. Regarding the type of abilities that were going to be evaluated, the suggestion to consider grammar, style, use of rhetorical resources, and organization of ideas was accepted. Roles would rotate to make sure all students had a chance to practice all of these skills. Each participant had to use a color code according to the role she was playing in her group, thus corrections to grammar were done in blue, orange was used for style, organization of ideas was corrected in magenta, and green was chosen for use of rhetoric functions. Besides role interdependence, there was

also reward interdependence, since the outcome of the group as a whole would affect their own grades, and the best groups received verbal recognition for their effort by their researcher. Moreover, there was environmental interdependence, since each group had a virtual office, where only members and the teacher had access.

It was also agreed that, at the middle of the term, participants were going to be reassigned to new groups to do the same type of work with the new rhetorical devices they were learning. The same working dynamic applied to this second phase of the project.

In terms of motivation and recognition, it was agreed that as an ongoing incentive relevant contributions were going to be recognized as part of their grade in participation before the total score was calculated. As a final incentive, the best groups in the first and second projects were going to receive a verbal recognition for their effort. This was understood differently by the instructors, as will be discussed in the next chapter.

In order to avoid the irregularities of enrollment, teachers also agreed to schedule the introductory workshops for FirstClass for the second week of classes, after the withdrawal, change, and addition of courses period was over. Since there was no time for a teacher training course before classes started, participating teachers had to take the workshop with their students.

Consent Form and First Data Collection

Having prepared everything for the FirstClass workshops, each section was visited by the researcher to explain the project to students, ask for their consent to participate, and start the data collection. When some students asked what would happen if they did not sign the sheet, the researcher answered that they had the right to refuse, but they would lose the opportunity to add some points to their percentage in participation and thus to improve their grade in the subject. Nobody refused. During that visit the first data were collected. Questionnaires addressed general data and demographics, attributional style, previous experience, initial self-efficacy, and initial attitude. The time and place for the FirstClass workshop was announced, and it was emphasized that the other questionnaires were going to be filled in on-line once the time came.

Workshops

Workshops were taught by the administrator of the server, and they basically followed the same dynamic as in the pilot study. Some additions included giving job aids for students in order to have handy advice on how to log-in, send private messages, send messages to a conference, upload and download their essays and add colors. These instructions were also included on-line. As a homework they would also have to send the

researcher a private message, and send a public message to the “Virtual Café” conference. This allowed the researcher to confirm that everybody could log on without problems before starting to work with the tool. Some students even uploaded songs, in order to practice their skills. Those who still had problems had to ask the researcher or the administrator for personal help in order to finish their homework.

During the workshops two instructors wanted to provide feedback during the project and their groups were selected to be in the feedback condition for the two phases of the project. Since one of the sections had to leave the study, it was necessary to re-test the initial equivalence of groups in the feedback and non-feedback conditions. In order to test for the true equivalence of both groups, oneway analysis of variance was conducted for each of the variables measured in the beginning of the study. No significant differences between the two groups were found for the following variables: (i) attributional style ($F=0.12$, $p>.05$), (ii) previous efficacy ($F=.72$, $p>.05$), (iv) desired efficacy or goals ($F=.03$, $p>.05$), (v) initial attitudes ($F=1.61$, $p>.05$), (vi) previous groupwork experience ($F= 0.4$, $p>.05$), (vii) self-efficacy for writing ($F=.001$, $p>.05$), and (viii) actual performance ($F=1.38$, $p>.05$). Nevertheless, it should be noted, that given the established composition of each section they were not gender balanced. This will be addressed in the results and discussion chapters.

Phase one.

Once it was established that everybody had the needed skills to participate, groups were assigned and the project started, lasting until the middle of the term (eight weeks). During this phase, the two groups in the feedback condition received on-line feedback by their teachers regarding the progress of their work. The other two only received the scores on the final paper. This phase included only a final data collection since the repeated measures were going to be applied in the second phase. At the end of the four weeks data on self-efficacy was collected, through a questionnaire sent on-line (The same questionnaire that appears in Appendix B.) Information on performance was obtained from teachers, reported by the scores obtained in four evaluations. It should be noted that performance was evaluated considering the four criteria established for the groups (grammar, style, organization of ideas, and use of rhetorical devices), and that grades given by each instructor are reported to the professor responsible of the subject. Since all sections selected for the experiment belonged to a single professor responsible of the subject, uniformity in criteria for evaluation was ensured. Effort (as participation) was recorded, timed with the four evaluations made by teachers. This information was obtained from the conferences of each group. Questionnaires for self-efficacy and group-efficacy were

answered individually on-line, and sent as a private message to the researcher. At the end of this phase, the best groups were congratulated by the researcher.

Phase two.

This phase lasted eight weeks as well, and included several measurements. Again, during this phase, the two groups in the feedback condition received on-line orientation (i.e., qualitative feedback during the process) by their teachers regarding the progress of their work in the four aspects considered to evaluate their products. The other two only received the scores after submitting their papers. Every two weeks a questionnaire addressing self-efficacy was sent, and performance was registered. The difference between these repeated questionnaires were that students had to think of what had happened in those two weeks only, thus enabling the record of possible spirals. Each time instructions emphasized that their answers should refer to what had happened in each period, in order to avoid different references, and potential testing effects. Again the best groups were congratulated on-line by the researcher, and in the general area of the project conference space public thanks were given to all participants for their collaboration in the project. The conferences stayed open one month after the courses had finished.

Analysis

According to each of the research questions a series of analyses, both quantitative and qualitative, was conducted. The quantitative statistics used were mainly regressions, correlations and Chi-squares. Figure 9 shows the planned analyses before any data screening had been conducted.

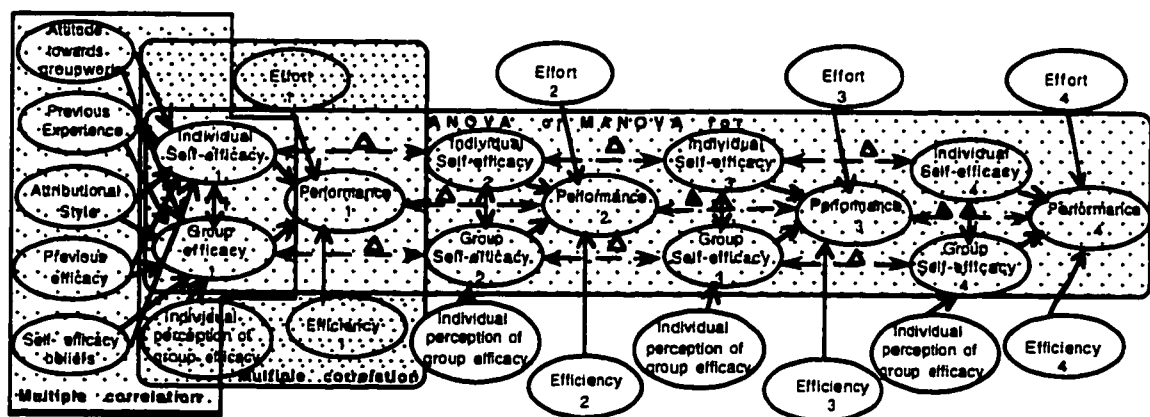


Figure 9. Planned analyses for the variables involved in the study.

The analyses represented in figure 9 aimed to answer each of the research questions considered in the study.

1. Do the efficacy-performance spirals generated at the group level affect individual perceptions of self efficacy?

The following hypothesis was developed:

Ha: Changes in the appropriate direction of individual self-efficacy will be higher in groups where deviation amplifying spirals occur than in the non-spiraling groups.

ANOVA or MANOVA (depending on meeting the assumptions) for repeated measures illustrated above was the planned analysis. However, the number of spirals generated in the sample under study was not enough to perform this kind of analysis, as will be further discussed in the results section. Given this limitation the method of choice had to be a more descriptive one. Crosstabulations between perceptions of group efficacy and perceptions of self-efficacy revealed interesting results to answer this question.

2. Do individual members transfer their perceptions of group efficacy to other groups when faced with similar tasks?

HA: Individual beliefs of group efficacy in project 1 will be related to individual beliefs of group efficacy in project 2.

Here a correlation between individual perceptions of group efficacy 2 (which corresponds to the end of project 1), and individual perceptions of group efficacy 3 (which corresponds to the beginning of project 2) was the main analysis. It was also considered that performing a stepwise multiple regression using the variables at the beginning of project 1 affecting perceptions of group efficacy at the end, and then at the beginning of project 2 affecting perceptions of group efficacy at the beginning of project 2 would also enrich the analysis. Nevertheless, the number of variables to be included in the analysis had to be reduced given the size of the sample. Based on findings reported in the literature (Locke, et al. 1984; Bandura, 1991) the variables that are strongly related to performance are the goals (here considered as desired performance), and perceptions of self-efficacy. Therefore these two were the ones selected to conduct the multiple regression.

3. Do individual members transfer their perceptions of self-efficacy to other groups when faced with similar tasks?

Ha. Individual beliefs of self-efficacy in project 1 will be related to individual beliefs of self-efficacy in project 2.

The analysis was a correlation between perceived group-efficacy 1 for the first and second projects. A t-test for paired samples was conducted to test whether there was a difference

between the means of both measurements, which would indicate whether there was transference from one group to the other.

The results for each of these questions is presented in the next section.

RESULTS

Results presented in this section refer only to the usable sample, given that it would have been very difficult to derive any kind of conclusions from students who withdrew from the project or who had too many missing data. As explained before the initial sample of 120 subjects was reduced to 86 according to these criteria. A first analysis of data revealed that a few missing cases were present in the participants that constitute the final sample.

Considering that these missing cases were very few (some in the third and fourth measure of efficacy, in previous experience, and in desired performance), general means substitution and group means substitution were applied.

A second screening of the data revealed that the group means substitution using the means of the subjects' section had been more effective in that variables met the requirements of normality, and the number of outliers was reduced. Therefore, the data with group mean substitution was used for further analyses. The reference groups utilized for this computation were the sections. Those variables where group means substitution was applied involved the third and fourth measure of efficacy, in previous experience, and in desired performance.

Demographic and initial data

Even though demographic data was collected in this first questionnaire, some of the demographic data relevant to the description of the sample has already been presented in the previous chapter; therefore it will not be covered in detail in this section.

Students were asked to choose two pseudonyms for the exercise. Some of them found this difficult, since they are accustomed to working with their ID numbers for any sort of activity requiring anonymous or confidential responses. Therefore, the administrator of the server decided to give accounts according to ID numbers instead of pseudonyms, a procedure which was also more secure in terms of possible account misuses.

The first questions of the instrument explored descriptive demographic information. As presented in figure 3, the sample succeeded in obtaining a homogeneous young population of freshmen, for whom the tasks would be new. This was confirmed by the fourth question of the same instrument, where all students but one (99.8%) indicated in their answers not having been enrolled in any other higher education programs.

Concerning gender, the proportion of males in the sample was higher than that of the university. However this could be explained because one of the sections, due to the time at which it was offered, was mainly composed of basketball and football players.

The third question referred to the school and program where the participant was enrolled. As shown in the previous chapter (see figure 4), all schools were represented in the

sample; however, a high number of students came from the School of Engineering or from the School of Management. This is also consistent with the distribution of the University population. The School of Humanities, which would be the area mostly related to the type of writing abilities the students were learning, represented 10.45% of the total sample.

When analyzing in detail from which programs the students came, it was found that most students belonged to administration and accountancy, and only one came from a related subject, literature (see figure 10).

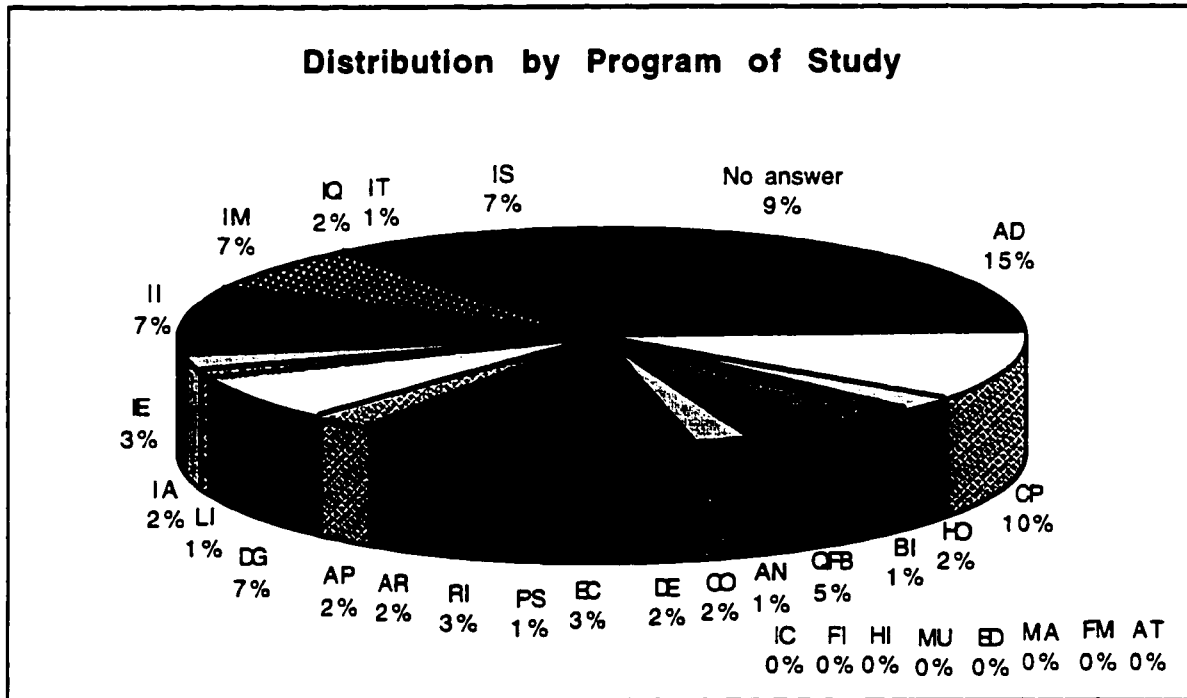


Figure 10. Number of students per program of studies.

AD= Administration, CP= Accountancy, HO= Hotel Administration, BI= Biology, QFB = Farmacobiology Chemistry, AN= Anthropology, CO= Communications, DE= Law, EC= Economics, PS= Psychology, RI= International Relations, AR= Architecture, AP= Plastic Arts, DG= Graphic Design, LI= Literature, IA= Food Engineering, IE= Electronic Engineering, II= Industrial Engineering, IM= Mechanical Engineering, IQ= Chemical Engineering, Textile Engineering, IS= Systems Engineering (Computer Science, IC = Civil Engineering, FI= Philosophy, HI= History, MU= Music, ED= Education, MA= Mathematics, FM= Physics, AT= Actuary

From the answers in the section concerning interests, it can be seen that students' interests were mainly related to their areas of study, some had sports and very few reported some interest in artistic activities. Considering that this was a creative, and to some extent artistic activity, this tendency may have had an influence in their attitude towards the task.

The final item in the demographic questionnaire addressed previous participation in any sort of organized group activities. Distribution of responses for this question is presented in figure 11.

Distribution by Previous Experience in Group Activities

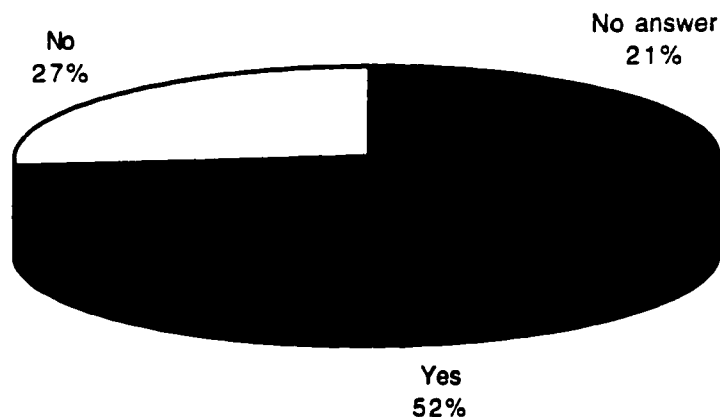


Figure 11. Distribution by self-reported previous experience in group activities.

Half of the participants had been part of different types of organized groupwork either in the political sphere, in sports, social action, artistic groups, in-class, or religious groups. From among these categories the most popular were sports (42.15%), artistic groups (22.31%), social activism (17.35%), and lastly, academic boards (16.53%). It is noticeable that their academic group activity experience was not as high as the other categories.

Attributional Style

Table 5 shows the measures of central tendency for the measure of attributional style, analyzed as suggested by Henry and Campbell (1995). The score for individual dimensions in each condition (i.e., success or failure), was calculated by adding the responses of the student for all questions pertaining to that dimension. Global scores for the cases of failure and success were derived from the addition of all scores in that condition. Finally, a composite score was calculated by subtracting the global score for failure cases from that of success cases.

Measures for the three dimensions included in this scale were analyzed separately in the cases of success and failure. In all three dimensions, variation was higher in the case of failure than in the case of success. It is also remarkable that, for the globality and stability dimensions, means for success are higher than those for failure. This could be interpreted as a general desire to make success transferable across situations (globality) and a relatively stable result, rather than a transient one.

On the other hand, the opposite is true for the internality dimension, where the mean and the median for the failure condition are slightly (two points) above the success condition. This suggests that, in the case of success, students in the sample would tend to attribute it to external causes, rather than to internal ones whereas, for failure, responsibility would rest with them.

Variable	Mean	Median	SD
Composite Attributional Style	24.60	25.00	28.00
Attributional style in failure	125.55	126.00	24.51
Attributional style in success	149.69	150.00	15.64
Globality in failure	39.22	39.00	11.74
Globality in success	44.71	45.5	9.55
Internality in failure	54.44	54.00	9.34
Internality in success	52.05	52.00	4.67
Stability in failure	32.69	31.50	12.39
Stability in success	52.91	53.00	6.55

Table 5. Measures of central tendency for variables included in the study.

Even though there is still some debate regarding the trait versus state characteristic of attributions, for the purposes of the study it was considered as stable based on the findings of Henry and Campbell (1995), and based on the fact that no special intervention -- such as attributional training -- was made to affect this variable. This was also convenient for the study, as it avoided overwhelming students with repeated measures for more than one variable.

Self-efficacy, performance and attitudes.

Other variables measured at the beginning of phase one were related to efficacy and previous experiences. Table 6 summarizes the descriptive statistics for these variables.

Variable	Mean	Median	SD
Previous efficacy	65.84	66.00	25.10
Desired efficacy (Goals)	101.1	105.5	22.66
Initial attitude towards groupwork	41.31	41.00	3.93

Table 6. Descriptive statistics for initial measures.

In the self-reported measures of previous and desired efficacy, students recorded higher scores for the expected measures than for the previous ones. This difference is more noticeable in the efficacy variable, where expectancy is 1.5 times higher than previous efficacy. The ten-question survey of their attitude towards groupwork was also positive, even though 27% reported not having participated in any organized groupwork activity before.

Effort and Performance

As described in the methods section, effort and performance were not measured with questionnaires. The number of participations on-line that helped toward the completion of the project was monitored for both phases in each deliverable. Students had been asked to participate at least once per deliverable, and in spite of some fluctuations, most students were able to accomplish this target. However, in two deliverables participation decreased slightly, recovering in the last deliverable, where the mode, mean and median were 2 participations. This pattern coincides with the approach of the end of term (Table 7).

Variables	Mode	Median	Mean	SD
Effort 1	2	2	1.69	1.2
Effort 2	1	1	0.61	0.70
Effort 3	1	1	0.77	0.63
Effort 4	1	1	1.19	1.11
Effort 5	1	1	0.64	0.63
Effort 6	0	1	0.79	0.83
Effort 7	0	1	0.70	0.85
Effort 8	2	2	2.07	0.83

Table 7 Descriptive statistics for effort. (The first four measures belong to their participation in phase one. Measures five to eight are equivalent to the initial measure of phase one and the three deliverables in phase two.)

Performance was reported by teachers, and it was equivalent to the global grade assigned when evaluating the application of the four abilities: grammar, style, organization of ideas, and rhetorical resources in each of the deliverables. These were the most problematic variables, since only the first of them was normally distributed. Transformations were not performed since it would be difficult to interpret their meaning afterwards.

	Mean	SD	Mode	Median
Evaluation 1	7.90	2.73	9.5	8.8
Evaluation 2	8.14	2.40	10.0	8.7
Evaluation 3	8.05	2.69	8.5	8.7
Evaluation 4	8.00	2.69	9.0	8.7
Evaluation 5	8.29	2.23	9.0	9.0
Evaluation 6	8.35	2.24	9.0	9.0
Evaluation 7	8.56	1.83	9.0	9.0
Evaluation 8	8.96	0.93	9.0	9.0

Table 8. Descriptive statistics for the performance variable.

As had been planned in the analysis, a multiple regression was performed in order to see the relationship among the variables measured at the beginning of phase one and performance. Since multiple regression requires a minimum of 20 cases per independent variable, the sample size was not big enough to include them all in the equation. Therefore,

only two variables were selected. According to the literature, LISREL studies have demonstrated that self-efficacy and goals exhibit the strongest relationships with performance (Locke, et al., 1984). Therefore, these two variables were selected for the analysis.

Variable(s) Entered on Step Number					
1.. GOAL					
Multiple R		.34			
R Square		.12			
Adjusted R Square		.11			
Standard Error		2.58			
Analysis of Variance					
	DF	Sum of Squares	Mean Square		
Regression	1	74.12	74.12		
Residual	84	558.73	6.65		
F =	11.14	Signif F =	.0013		
----- Variables in the Equation -----					
Variable	B	SE B	Beta	T	Sig T
GOAL	.26	.08	.34	3.34	.0013
(Constant)	1.51	1.93	.78	.44	
----- Variables not in the Equation -----					
Variable	Beta In	Partial	Min Toler	T	Sig T
SEI1	.19	.20	.95	1.85	.07

Table 9 Stepwise multiple regression analysis for goals, self-efficacy and performance.

Confirming previous findings (Locke, *et al.*, 1984) performance goals was the variable that explained most of the variation in the regression equation ($R=.34$, $R^2=.11$, $F=11.14$, $p<.05$). The variable for self-efficacy did not enter the equation.

Research questions

In order to analyze the results for the three research questions, they have been reorganized according to the phase of the project where each one was addressed.

Regarding the distribution of subjects according to feedback and non-feedback conditions, two teachers volunteered to provide feedback to their students, thus leaving three groups in the non-feedback one. After the withdrawal of one of the latter groups, distribution was unequal (see figure 12) in terms of number of participants but not in terms of number of sections per condition. In spite of this difference in number of participants, one-way ANOVAS conducted for the variables measured at the beginning of the study showed no significant difference between the feedback and no feedback condition, as explained in the

previous chapter. Results for these variables were: (i) attributional style ($F=0.12$, $p>.05$), (ii) previous efficacy ($F=.72$, $p>.05$), (iv) desired efficacy or goals ($F=.03$, $p>.05$), (v) initial attitudes ($F=1.61$, $p>.05$), (vi) previous groupwork experience ($F= 0.4$, $p>.05$), (vii) self-efficacy for writing ($F=.001$, $p>.05$), and (viii) actual performance ($F=1.38$, $p>.05$).

Distribution by feedback condition



Figure 12. Distribution by feedback condition.

This distribution was maintained for the first and the second phases of the project, in order to answer the three research questions, and in order to avoid feedback condition becoming a confounding variable.

Transfer of self-efficacy beliefs to new groups.

In order to test this relationship, a correlation between perceptions of self-efficacy at the end of phase one and at the beginning of phase two was conducted. The simple correlation coefficient ($r= 0.58$) was significant ($p< 0.01$). The two tail procedure was employed, since the kind of relationship was not previously determined. Results showed a moderate positive relationship between the two variables.

A t-test was then performed with the purpose of determining if the transfer meant having the same or different values for efficacy. The test yielded a significant difference in the means of both measures ($t=-3.07$, $p<.05$), (see table 10).

Variable	Number of Cases	Mean	Standard Deviation	Standard Error		
SEI1	86	82.08	20.58	2.22		
SEI2	86	87.65	13.11	1.41		
(Difference) Mean	Standard Deviation	Standard Error	2-tail Corr. Prob.	t Value	Degrees of Freedom	2-tail Prob.
-5.5698	16.83	1.82	.578 .000	-3.07	85	.003

Table 10. t-test for self-efficacy at the end of phase one and the beginning of phase two.

Transfer of group-efficacy beliefs to new groups.

Similar results were obtained when the transfer of group-efficacy beliefs were analyzed.

A moderate positive correlation was also found ($r=0.52$); significant ($p<.01$) for the two tailed condition (table 11). The further analysis using a t-test yielded the same results as at the individual level. The means of both measures were different ($t=-4.2$, $p<.0001$).

Variable	Number of Cases	Mean	Standard Deviation	Standard Error		
SEG1	86	85.6860	17.230	1.858		
SEG2	86	92.6395	13.261	1.430		
(Difference) Mean	Standard Deviation	Standard Error	2-tail Corr. Prob.	t Value	Degrees of Freedom	2-tail Prob.
-6.9535	15.344	1.655	.519 .000	-4.20	85	.000

Table 11. t-test for group-efficacy at the end of phase one and the beginning of phase two.

Further analyses were performed in order to determine the degree of relationship between consecutive measures of efficacy when working in the same group with the same task. A repeated measures procedure was applied to analyze differences in the observations of perceptions of self-efficacy and group efficacy as dependent variables. Initial measures showing the equivalence of groups were used in this analysis as covariates in a MANCOVA with two dependent variables: self-efficacy and perceived group-efficacy. Descriptive statistics for each of the dependent variables are presented in table 12.

	Self-efficacy1	Self-efficacy 2	Self-efficacy 3	Self-efficacy 4
Mean	82.08	87.65	92.19	92.20
SD	20.58	13.11	9.48	13.15
	Group-efficacy1	Group-efficacy2	Group-efficacy3	Group-efficacy4
Mean	85.68	92.64	97.05	96.73
SD	17.23	13.26	10.77	13.61

Table 12. Descriptive statistics for dependent measures.

It is noticeable that in all four observations, the means for self-efficacy were lower than group-efficacy, and that in all cases -- except for the last measure of group-efficacy -- an increment between consecutive measures occurred.

The multivariate tests indicated a significant difference for the between subjects effect (Hotellings' $T^2=0.53$, $p<.0001$). The effect size was 0.35, and a power of 1. Further univariate tests showed significant differences for both measures. The within subjects effect did not indicate a significant Hotellings' T^2 ($T^2=.17649$, $p>.05$) The reported effect size in this case was 0.081, and a power of 0.63. The averaged multivariate tests of significance reported similar results (Hotellings' $T=.295$, $p<.0001$, effect size =.13, power=1).

Further univariate F-tests reported significant differences for both measures (see Table 13).

Variable	Hypoth. SS	Error SS	Hypoth. MS	Error MS	F	Sig. of F	Power
SEFF	5949.08	29442.92	1983.03	115.46	17.17	.000	1.00000
GEFF	7217.75	27357.50	2405.92	107.28	22.43	.000	1.00000

Table 13. Univariate F-tests for dependent variables.

Polynomial contrasts were conducted for both measures obtaining significant results for all except the last observation. No significant differences were found for the last measures of self-efficacy (T4), nor for group-efficacy (T8), as shown by the t-values and confidence intervals presented in table 14.

Estimates for	Coeff.	Std.Err.	t-Value	Sig. t	Lower - 95%	CL-Upper	Noncent.	Power
T1	177.06	2.44	72.58	.00000	172.21	181.91	5267.9	.99755
T2	7.80	1.54	5.07	.00000	4.74	10.86	25.7	.999
T3	-2.78	1.01	-2.76	.00716	-4.78	-.77	7.59	.782
T4	-.78	.80	-.97	.33377	-2.375	.82	.94	.174
T5	186.05	2.23	81.14	.00000	181.49	190.61	6584.1	1.000
T6	8.39	1.38	6.10	.00000	5.66	11.13	37.22	1.000
T7	-3.63	1.00	-3.62	.00050	-5.63	-1.64	13.12	.950
T8	-.49	.92	-.53	.59775	-2.31	1.34	.28	.038

Table 14. Estimates for orthonormalized transformed variables. T1 through T4 represent observations of self-efficacy. T2 through T4 are measures of self-efficacy during phase 2. T1 and T5 represent the last measures of self-efficacy and perceived group-efficacy in phase 1. T6 through T8 belong to observations of perceived group efficacy during phase 2.

In order to obtain measures of relationship among consecutive measures of efficacy while working in the same group during phase 2, simple correlations were performed. Table 15 presents the results for self-efficacy. It is noticeable, that both pairs of consecutive measures had moderate positive relationships.

	SEI3	SEI4
SEI2	.6305**	
SEI3		.6174**
* - Signif. LE .05 ** - Signif. LE .01 (2-tailed)		

Table 15. Relationships of consecutive self-efficacy measures when working with the same group.

Following the analyses conducted at the individual level, further analyses were performed for the relationships of the group-efficacy measures when working in the same group (table 16).

	SEG3	SEG4
SEG2	.6079**	
SEG3		.4187**

* - Signif. LE .05 ** - Signif. LE .01 (2-tailed)

Table 16. Correlations of consecutive measures of group-efficacy when working with the same group.

In contrast with the results of the individual level, the relationship between the two last measures was not as strong as in the previous ones, although the relationship was still significant. ($r=.42$, $p<.01$).

Effects of group-level spirals on individual perceptions of self-efficacy

In order to determine the number of individual and group-efficacy-performance spirals, the definition provided by the literature was used (Lindsley, *et al.*, 1996). First, any three consecutive increments on the measurements of efficacy were calculated and classified as positive cycles, then any three consecutive decrements were classified as negative cycles; lastly, any oscillating measures were considered as no-efficacy cycles. These same operational definitions were applied to the performance variable in order to determine positive and negative performance cycles. To classify the efficacy-performance spirals, the combination of a positive efficacy cycle and a positive performance cycle was considered a positive spiral. A negative spiral was composed by a negative efficacy cycle and a negative performance cycle. Any other cases were classified under the no-spiral groups.

Individual level

Following the calculations described above, it was found that 29.1% (i.e., 25 students) of the participants presented positive cycles, two students had negative cycles, and 61.6% of the sample did not exhibit them. From the ones that presented positive cycles, 84% belonged to the feedback condition, and 16% to the non-feedback one. All of the students classified in the negative cycles group were in the feedback condition group. The no-cycle category was fairly evenly distributed in the feedback and non-feedback conditions (47.2% and 52.8% respectively) (see table 17). Chi square's pearson test of independence was significant ($X^2= 12.73$, $p<.05$), thus suggesting a correlation among self-efficacy cycles and feedback. This finding was confirmed by further comparisons between negative and positive self-efficacy cycles only, omitting the no-cycle groups ($X^2= 9.5$, $p<.05$). This result

suggests that feedback conditions and the generation of positive and negative self-efficacy cycles are related.

Count Row % Column % Total %	No Feedback	Feedback	Row Total
No SE cycle	28 52.8% 73.7% 32.6%	25 47.2% 52.1% 29.1%	53 61.6%
Negative SE cycle	6 75.0% 15.8% 7.0%	2 25.0% 4.2% 2.3%	8 9.3%
Positive SE cycle	4 16.0% 10.5% 4.7%	21 84.0% 43.8% 24.4%	25 29.1%
Column Total	38 44.2%	48 55.8%	86 100%

Table 17. Crosstabulation of self-efficacy cycles with feedback conditions.

The greatest percentage from the total sample falls in the positive cycle and feedback cell. This percentage is closely followed by the no-cycle category in both feedback conditions.

Other variables were crossed with the self-efficacy cycles categories. Concerning gender, 68% of the students presenting positive cycles were females; in the negative cycle category 75% were males, and in the no-cycle group 35.8% were females, whereas 64.2% were males. Chi-square analyses yielded a significant difference ($X^2 = 8.44$, $p < .05$).

With regards to school distribution, all schools were represented in the positive and in the no-cycles categories, one of the students in the negative cycle class belonged to the School of Management, the other did not report this data. Chi-square values were not significant in this case ($X^2 = 6.99$, $p > .05$).

An interesting variable was self-reported previous experience in group activities (table 18). Almost half of the students in the positive and non-self-efficacy cycle categories reported having previous experience, and less than a third of these categories did not have experience in group work. Distribution between these two categories of experience is more even in the negative self-efficacy cycle group. Again, chi-square analyses were not significant ($X^2 = 1.85$, $p > .05$).

Count Row % Column % Total %	No answer	Previous Experience	No Previous Experience	Row Total
No SE cycle	11 20.8% 61.1% 12.8%	30 56.6% 66.7% 34.9%	12 22.6% 52.2% 14.0%	53 61.6%
Negative SE cycle	1 12.5% 5.6% 1.2%	4 50.0% 8.9% 4.7%	3 37.5% 13.0% 3.5%	8 9.3%
Positive SE cycle	6 24.0% 33.3% 7.0%	11 44.0% 24.4% 12.8%	8 32.0% 34.8% 9.3%	25 9.1%
Column Total	18 20.9%	45 52.3%	23 26.7%	86 100.0%

Table 18. Crosstabulation of self-efficacy cycles and previous group work experience.

Concerning actual individual performance cycles, the number was lower than that of self-efficacy cycles. seven percent (i.e., six students) presented positive consecutive increments, 4.7% had negative cycles and 88.4% did not exhibit this phenomenon. None of the chi-squares analyses performed for this variable were significant.

Again, further analyses were conducted crossing these categories with other variables. When analyzing the details of feedback conditions, it was found that the highest percentage of students fell in the cell of no-cycles and feedback condition (See table 19). The positive cycle condition was evenly distributed between both conditions, whereas negative performance cycles were higher in the feedback condition Again chi-square pearson's independent test was not significant ($X^2 = .69, p > .05$).

Count Row % Column % Total %	No Feedback	Feedback	Row Total
No performance cycle	34 44.7% 89.5% 39.5%	42 55.3% 87.5% 48.8%	76 88.4%
Negative performance cycle	1 25.0% 2.6% 1.2%	3 75.0% 6.3% 3.5%	4 4.7%
Positive performance cycle	3 50.0% 7.9% 3.5%	3 50.0% 6.3% 3.5%	6 7.0%
Column Total	38 44.2%	48 55.8%	86 100%

Table 19. Crosstabulation between performance cycles and feedback condition.

In terms of gender, distribution was perfectly even in the negative and in the positive cycles categories. In the no-cycles category 56.6% were males. Concerning school belonging, all schools were represented in the no-cycle category, there were two representatives from the School of Engineering and two from the School of Management in the negative cycles class. The positive cycle category had one representative from Engineering, Social Sciences and Arts and Humanities, three from Management and none from Sciences.

The analysis of previous experience in groupwork yielded interesting results as compared with the results in self-efficacy cycles (see table 20). In this case, in the negative cycle group, more students had experienced groupwork before (75%), the rest had no previous experience in this type of work (25%). In the positive-cycles category distribution was perfectly even, and in the no-cycle class the majority had experienced this type of work format before.

Count Row % Column % Total %	No answer	Previous Experience	No Previous Experience	Row Total
No performance cycle	18 23.7% 100% 20.9%	39 51.3% 86.7% 45.3%	19 25.0% 82.6% 22.1%	76 88.4%
Negative performance cycle	0 0.0% 0.0% 0.0%	3 75.0% 6.7% 3.5%	1 25.0% 4.3% 1.2%	4 4.7%
Positive performance cycle	0 0.0% 0.0% 0.0%	3 50.0% 6.7% 3.5%	3 50.0% 13.0% 3.5%	6 7.0%
Column Total	18 20.9%	45 52.3%	23 26.7%	86 100.0%

Table 20. Crosstabulation of performance cycles with self-reported previous experience in group activities.

Interestingly, when the self-efficacy-performance spirals were analyzed, only two students (i.e., 2.3%) fell into the positive spirals category, and 96.5% did not present any spirals. No negative spirals were registered. When further analyses were run, it was found that even if the feedback condition did not have the expected catalyzing effect on the generation of spirals, the only two spirals reported by the analysis occurred in the feedback condition group (see table 21). This represents only 4.2% of the number of students in the feedback condition, and 2.4% of the total sample.

Count Row % Column % Total %	No feedback	Feedback	Row Total
No self- efficacy performance spiral	38 45.2% 100.0% 44.2%	46 54.8% 95.8% 53.5%	84 97.7%
Negative self- efficacy performance spiral	0 0.0% 0.0% 0.0%	0 0.0% 0.0% 0.0%	0 0.0%
Positive self- efficacy performance spiral	0 0.0% 0.0% 0.0%	2 100.0% 4.2% 2.3%	2 2.3%
Column Total	38 44.2%	48 55.8%	86 100%

Table 21. Crosstabulation of self-efficacy-performance spirals with feedback condition.

In terms of gender, in the positive spirals group one of the students was a male and the other one a female. They belonged to the most highly represented schools: one came from the School of Management and the other from the School of Engineering, the schools with highest number of representatives. The no-spiral category was composed of representatives from all schools, and gender distribution was 44.6% females and 55.4% males.

Another interesting finding was that both students in the positive spiral group reported not having any previous experience in group work (see table 22).

Count Row % Column % Total %	No answer	Previous experience	No Previous Experience	Row Total
No self- efficacy performance spiral	18 21.4% 100% 20.9%	45 53.6% 100.0% 52.3%	21 25.0% 91.3% 24.4%	84 97.7%
Positive self- efficacy performance spiral	0 0.0% 0.0% 0.0%	0 0.0% 0.0% 0.0%	2 100.0% 8.7% 2.3%	2 2.3%
Column Total	18 20.9%	45 52.3%	23 26.7%	86 100.0%

Table 22. Crosstabulation of self-efficacy-performance spirals with previous group work experience.

Group level

In the measurement of group-efficacy cycles 24.4% of the students presented positive cycles, and six students recorded negative cycles. Still the majority remained in the non-cycle category.

Following the same analyses conducted at the individual level, crosstabulations revealed that positive group-efficacy cycles occurred in both feedback conditions, being higher in the feedback group. It was also noted that the majority of negative cycles were present in the non-feedback class (see table 23). Chi-square analysis reported no significant differences ($X^2 = 3.56, p > .05$). All other chi-squares for the cross-tabulations of this variable were not significant either. Even when the no-cycle groups were omitted chi-square results were still not significant ($X^2 = 2.90, p > .05$).

Count Row % Column % Total %	No Feedback	Feedback	Row Total
NO GROUP EFFICACY CYCLE	28 47.5% 73.7% 32.6%	31 52.5% 64.6% 36.0%	59 68.6%
NEGATIVE GROUP EFFICACY CYCLE	4 66.7% 10.5% 4.7%	2 33.3% 4.2% 2.3%	6 7.0%
POSITIVE GROUP EFFICACY CYCLE	6 28.6% 15.8% 7.0%	15 71.4% 31.3% 17.4%	21 24.4%
Column Total	38 44.2%	48 55.8%	86 100%

Table 23. Crosstabulation of self-efficacy cycles with feedback conditions.

Gender distribution in the non-cycle group was slightly higher for males (59.3%); however 61.9% of the students in the positive group-efficacy cycle category were females. All schools were represented in the non-cycle and in the positive cycle groups. Students in the negative cycle category belonged to the School of Engineering, the School of Arts and Humanities, the School of Sciences, and three learners came from the School of Management.

In terms of self-reported previous experience in group activities, almost half of the students in the non-cycle category had previous experience in group work. Two-thirds of the negative cycle students reported having experienced group activities previously, whereas these differences seemed to diminish in the positive cycle group. (See table 24).

Count Row % Column % Total %	No answer	Previous Experience	No Previous Experience	Row Total
No group efficacy cycle	10 16.9% 55.6% 11.6%	32 54.2% 71.1% 37.2%	17 28.8% 73.9% 19.8%	59 68.6%
Negative group efficacy cycle	0 0.0% 0.0% 0.0%	4 66.7% 8.9% 4.7%	2 33.3% 8.7% 2.3%	6 7.0%
Positive group efficacy cycle	8 38.1% 44.4% 9.3%	9 42.9% 20.0% 10.5%	4 19.0% 17.4% 4.7%	21 24.4%
Column Total	18 20.9%	45 52.3%	23 26.7%	86 100.0%

Table 24. Crosstabulation of group-efficacy cycle with self-reported previous groupwork experience.

Concerning group performance cycles, a lower number of students had three consecutive increments (18.6%), 9.3% had negative cycles, and 72.1% had no cycles. From the students in the positive cycle group, the majority (75%) belonged to the non-feedback condition (see table 25). In the negative cycle group distribution per feedback condition was even, and in the no-cycle category 64.5% belonged to the feedback condition.

Count Row % Column % Total %	No Feedback	Feedback	Row Total
No group performance cycle	22 35.5% 57.9% 25.6%	40 64.5% 83.3% 46.5%	62 72.1%
Negative group performance cycles	4 50.0% 10.5% 4.7%	4 50.0% 8.3% 4.7%	8 9.3%
Positive group performance cycle	12 75.0% 31.6% 14.0%	4 25.0% 8.3% 4.7%	16 18.6%
Column total	38 44.2%	48 55.8%	86 100%

Table 25. Crosstabulation of group performance cycles and feedback conditions.

As in the previous analyses, gender was fairly even, except for the negative cycle group, where 75% of the students were males. In the distribution by school, all five schools were represented in the positive and in the no-cycle categories, however, no students from the School of Arts and Humanities, or from the School of Management belonged to the negative cycle group.

In terms of previous experience in group activities most students in all the three cycles categories reported having experience in this type of working format (see table 26).

Count Row % Column % Total %	No answer	Previous Experience	No Previous Experience	Row Total
No group performance cycle	13 21.0% 72.2% 15.1%	30 48.4% 66.7% 34.9%	19 30.6% 82.6% 22.1%	62 72.1%
Negative group performance cycle	0 0.0% 0.0% 0.0%	6 75.0% 13.3% 7.0%	2 25.0% 8.7% 2.3%	8 9.3%
Positive group performance cycle	5 31.3% 27.8% 5.8%	9 56.3% 20.0% 10.5%	2 12.5% 8.7% 2.3%	16 18.6%
Column Total	18 20.9%	45 52.3%	23 26.7%	86 100.0%

Table 26. Crosstabulation of group performance cycle with self-reported previous groupwork experience.

Concerning group-efficacy-performance spirals, again, in spite of having used feedback as a catalyzer in some sections, only four efficacy-performance spirals were generated at the group level. In this case, all four cases belonged to the same section and to the non-feedback condition (see table 27 and 28).

Count Row % Column % Total %	Section 1	Section 2	Section 3	Section 4	Row Total
No group efficacy-performance spiral	28 34.1% 100.0% 32.6%	17 20.7% 100.0% 19.8%	17 20.7% 81.0% 19.8%	20 24.4% 100.0% 23.3%	82 95.3%
Negative group efficacy-performance spiral	0 0.0% 0.0% 0.0%	0 0.0% 0.0% 0.0%	0 0.0% 0.0% 0.0%	0 0.0% 0.0% 0.0%	0 0.0%
Positive group efficacy-performance spiral	0 0.0% 0.0% 0.0%	0 0.0% 0.0% 0.0%	4 100.0% 19.0% 4.7%	0 0.0% 0.0% 0.0%	4 4.7%
Column Total	28 32.6%	17 19.8%	21 24.4%	20 23.3%	86 100%

Table 27. Crosstabulation of group-efficacy -performance spirals with section.

Count Row % Column % Total %	No Feedback	Feedback	Row Total
No group efficacy performance cycles	34 41.5% 89.5% 39.5%	48 58.5% 100.0% 55.8%	82 95.3%
Positive group efficacy performance cycles	4 100.0% 10.5% 4.7%	0 0.0% 0.0% 0.0%	4 4.7%
Column Total	38 44.2%	48 55.8%	86 100%

Table 28. Crosstabulation group-efficacy -performance spirals with feedback condition.

With regards to gender distribution, 57.3% of the students in the non-spiral group were males, whereas 75% (3 students) of those in the positive-spiral group were females, and 25% (1 student) were males. In the positive spiral category, two came from the Management School, one from Social Sciences, and one did not respond. These students had different degrees of experience in group activities: two had previously worked under this format, and the other two did not respond.

Given the difference between the number of spirals generated for the perceived efficacy variable and the actual performance, crosstabs were conducted crossing the two kinds of individual and group cycles, and individual and group spirals with the internality dimension of attributions for success and failure. No significant differences were found in any of the calculated chi-squares. This suggests that attributional style was not accountable for that difference in this case. Tables 27 and 28 present these results.

Count Row % Column % Total %	External	Internal	Row Total
No group efficacy- performance spiral	31 37.8% 93.9% 36.0%	51 62.2% 96.2% 59.3%	82 95.3%
Positive group- efficacy- performance spiral	2 50.0% 6.1% 2.3%	2 50.0% 3.8% 2.3%	4 4.7%
Column Total	33 38.4%	53 61.6%	86 100%

Table 29. Group efficacy-performance spirals by internality of attributions for success. Breakpoint for internality is the median.

Count Row % Column % Total %	External	Internal	Row Total
No group efficacy- performance spiral	29 35.4% 90.6% 33.7%	53 64.6% 98.1% 61.6%	82 95.3%
Positive group- efficacy- performance spiral	3 75.0% 9.4% 3.5%	1 25% 1.9% 1.2%	4 4.7%
Column Total	33 37.2%	54 62.8%	86 100%

Table 30. Group efficacy-performance spirals by internality of attributions for failure. Breakpoint for internality is the median

Moreover, since it was interesting to compare spirals at both levels, again crosstabs helped determine how many of spirals at the individual level crossed with spirals at the group level. These final results are shown in table 31.

Count Row % Column % Total %	No group- efficacy- performance spirals	Positive group- efficacy- performance spirals	Row Total
No self- efficacy- performance spirals	80 95.2% 97.5% 93.0%	4 4.76% 100% 4.65%	84 97.67%
Both self- efficacy- performance spirals	2 100.0% 2.4% 2.3%	0 0.0% 0.0% 0.0%	2 2.3%
Column Total	82 95.3%	4 4.7%	86 100%

Table 31. Self-efficacy-performance spirals by group-efficacy-performance spirals.

It should be noted that the cell where spirals at both levels should occur remained empty. Most cases fell in the no-spiral categories, both at the individual and group levels.

Qualitative results

Analysis of communications registered in the different conferences reveals that most corrections and comments addressed mainly problems of use of resources. These were followed in proportion by corrections in style, then organization of ideas, and finally a very few grammar problems. Many students commented that this was due to the availability of on-line spell checkers; some students even added a comment at the end of the paper indicating that spelling had already been checked electronically. Nevertheless, a careful review of their work indicates that many grammatical mistakes had been overlooked. As a matter of fact, requests from two students were received by the researcher to help them check their grammar in the third and fourth delivery.

Products were varied in the topics they addressed, and sometimes they represented a good way to learn from other disciplines, as the two teachers in the feedback condition groups mentioned. The length of the messages was very short if comments and corrections were few; however, when several mistakes were found, corrections were made on a copy of the written text using color coding for each type of correction: (blue for grammar, orange for style, green for organization of ideas, and magenta for use of rhetorical devices). The preference was mainly the short approach since the average essay length was one and a half computer screens. Some excerpts of the ideas exchange in a group are presented in Appendix C.

Concerning the use of virtual spaces, the “Virtual Offices” were the most visited place. Every day new messages were posted in any of the working groups. Something that has to be noted is that participation was not related to teachers’ on-line feedback. Some students in section six, who belonged to the non-feedback condition, but who received extra points as a group for excellent work, were the most participative ones (this type of external feedback was not contemplated in the design, and will be discussed further in the next chapter.) Most of these students used the private mail to ask questions related to the task or to technical skills, whereas other groups used the virtual space dedicated to this purpose.

The virtual cafe as a space did not have as many messages as one would have expected. Only three students posted messages for the total duration of the project. These were concerning good luck in exams, St. Valentines, and general greetings. The section for questions and answers was second in use after the virtual offices. Although people tended to post messages anywhere at the beginning of the project, they soon understood that each space had a purpose and that organization was important. The main screen was used to post questionnaires to be answered electronically, since the posting in the “Urgent Messages” section did not seem to capture the attention of those who were focused on the task and automatically went to the “Virtual Offices” without visiting other folders.

Finally, it should be said that even though no formal request for opinions was posted at the end of the project, 14 students responded to the thank you note by the researcher expressing their gratitude for having been taught how to use the technology and for making the class different. There were also good luck wishes.

The interpretation and implications of the results presented in this chapter are discussed in the following chapter.

DISCUSSION AND CONCLUSIONS

Interesting interpretations can be made of the previous results in light of the literature related to the topic of perceptions of efficacy and their effects on performance. In what follows, possible explanations for the expected and unexpected results of this study will be presented. Two of the research questions referred to the transfer of efficacy beliefs to new working groups facing similar tasks. It was hypothesized that a transfer would occur at the individual level with each participant's own self-efficacy beliefs, and that the same would happen with group efficacy beliefs. Findings seem to support these hypotheses, but not without controversy. Therefore, these two questions are presented first in this chapter for a detailed discussion. The third question addressed the cross-level effects of efficacy-performance spirals at the group and individual levels. Based on the theoretical model tested, it was hypothesized that efficacy-performance spirals occurring at the group level would favor the occurrence of spirals at the individual level. No support was found for this hypothesis in the results of the present research; nevertheless a detailed discussion is needed in this chapter. For each research question the associated results will be discussed, presenting speculations regarding underlying mechanisms, implications for theory, and suggestions for further research.

Transfer of efficacy beliefs at the individual and group levels.

Results for the two research questions referring to transfer of efficacy beliefs at the individual and group levels to new working groups facing a similar task provided interesting and controversial results to support the hypotheses presented at the beginning of the study. The existence of a moderate positive correlation at the individual level ($r=0.58$, $p<.01$), and at the group level ($r=0.52$, $p<.01$) show a relationship between both measures. Further analyses using t-tests revealed significant differences for both levels ($t=3.07$, $p<.05$ at the individual level, and $t=-4.20$, $p<.05$ at the group level), thus meaning that beliefs generated in one group are not equal to the ones generated in the second. Furthermore, means are higher in the second group than in the first. The interpretation of these results can be controversial in the sense that it can be argued that the difference of means may indicate that no transference took place, however, one should bear in mind that these variables refer to unstable constructs which, according to the theory, are expected to vary according to experience and other sources of information.

It could also be argued that the adjustments of any group life-cycle explain these differences. Literature on group dynamics shows that most groups start with positive feelings that decrease in the following stages. If the conflict and norming stages are solved,

successful performance can take place, thus leaving members satisfied (Tuckman, 1965). Although this might be part of the explanation, one should consider that in this study the whole duration of the students' projects was observed. Repeated measures were obtained which allow us to achieve a better understanding of the process, leading to a different possible explanation based on the nature of the self-efficacy construct and the generation of spirals.

As DeMoulin (1993) contends, self-efficacy beliefs fluctuate in ranges, so that the same person's perception on the same task may fluctuate from low to low-moderate, from low-moderate to high-moderate, and from high-moderate to high. Since perceptions are not static as some other constructs are, some differences in measures are expected. Moreover, according to the Lindsley's *et al.* (1995) model, spirals were expected to be generated. The fact that MANCOVA analyses for repeated measures showed significant differences among all means except for the last one while working in the same group suggests that this might be a more probable explanation. Although further analyses and theoretical thought is needed in this respect, if a partial transference did take place, as suggested by the correlational results, this would support the idea that, at least when no biases toward new team members are present, (as one might expect in CMC environments where identities are covered), beliefs of one's efficacy are carried to the new group at the beginning of the task, and that these beliefs may be higher for the new group. Since one of the contributions this research attempted to make to the theory in self- and group-efficacy was that of transference (something that was not included in the theory), these findings provide support for what was hypothesized and contribute to theory. Further research in this respect is needed in order to clarify the nature of transference, under which conditions this process can happen, as well as the mechanisms which help or hinder this type of transference to take place.

Such a process can have important implications for new working patterns where more freelance, contract, and project formats are being used, thus forcing individuals to continuously adapt to new working groups, most of the times facing similar tasks in different environments. These results for self-efficacy and group-efficacy beliefs make one think that regardless of the team, the first individual attitude will be similar to the previous one, making one believe that one's contributions will be as valuable in this team as they were in the previous one, and that the team will be as efficacious as the previous one. It must be emphasized, however, that this project controlled cultural biases by using CMC to cover identities. This does not always happen at school or in the workplace, where some stereotypes can influence first impressions and beliefs (Adler, 1986). Findings like this might suggest some practices in new working patterns wherein it should be ensured that such biases do not interfere with the first stages of the group dynamic -- where establishing

agreements and common grounds is crucial. CMC and similar technologies can be useful tools for interaction during these phases, with other types of interactions (mediated or not) being introduced once common grounds have been established. Further research can explore the applicability, effectiveness and efficiency of such tools and interaction designs in terms of group productivity. It can also focus on the possible effects that such interactions can have on self-perceptions and peer perceptions of different types of students or workers following, for example, DeMoulin's (1993) classification.

It is remarkable that, in spite of the significant correlations found in all of the repeated measures, significant means differences remained until the last stage. A significant positive correlation was still present in both cases, but no significant means differences were found between the third and fourth deliverables. This may be interpreted as the point at which a clear understanding of the group is now present and perceptions are adjusted according to a more informed auto-evaluation. The slightly lower correlation coefficient found for the relationship of the third and fourth deliverables at the group level but not at the individual level, suggests a stronger group phenomenon. It is a concern reported in the literature to facilitate students building accurate perceptions of the self that allow them to grow according to their own capabilities (Bandura, 1982, Schunk, 1981; DeMoulin, 1993, Pajares, 1996a).

This specific point in the group dynamic can be of interest for further research on the changes that allow a more accurate self-evaluation in relation to the group. Developing an "objective" estimate of one's capabilities takes time, as it is clearly demonstrated here. Given the characteristics of the medium, it can be assumed that CMC used as a tool certainly reduces the channels of information that individuals use from the environment in order to make their self-evaluations and build self-concepts, as most research on the self shows (Cooley, 1902; Mead, 1943; Rosenberg, 1965). The question that remains when using this technology is whether this time-frame to build accurate concepts of the self and the group is increased because of the channel reduction and orientation to the task, or if it is decreased due to a reduction in biases that have to be unlearned and then rebuilt, as is suggested in the literature about learning organizations (Hedberg, 1981).

These findings of transference from one group to another support what has previously been found in the literature regarding the feeding of self-efficacy by previous experiences (Bandura, 1991), and the theoretical assumptions that the same phenomena that happen at the individual level can be applied at the collective level (Gist, 1989; Bandura, 1982; Lindsley *et al.*, 1995). They also support the assumption that the concept of collective efficacy, proposed by Bandura (1982) and extended by Gecas (1989) to the political field, can be transferred to other domains, in the same way that Bandura (1982)

has experimentally proven cross-domain application of the self-efficacy concept. Besides providing empirical support to what has been previously stated at the theoretical level, these findings also shed some light on something that had not been stated previously in relation to group activities: transference of individual and group-efficacy beliefs. They also open gateways for further research concerning these issues with implications for working patterns and the design of groupwork activities.

Crosslevel effects of efficacy-performance spirals.

Concerning the third research question, addressing the effects of group spirals on individual perceptions of self-efficacy, results provoke rich discussion. According to Lindsley's *et al.* (1995) model, it was expected that accurate, specific and timely feedback would reduce the number of deleterious spirals both at the individual and group level, and that the non-feedback condition would increase them. When perceptions of self-efficacy only were analyzed, the only significant differences found were for gender. More females presented positive cycles than males, whereas a male predomination was obtained for the no-cycle and the negative-cycle categories. Contrary to what is reported in the literature about gender differences (Pajares, 1996a), where most women perform better than males, yet have lower self-efficacy ratings, here women increased their self-efficacy beliefs whereas men did not.

Possible explanations for these results can be found in the content: most gender differences have been found in studies conducted using mathematics and science as subject matters; however, writing is not a skill that is as gender biased by society as other skills, thus making girls feel confident to perform well without violating the roles to which they may be socialized. Moreover, in spite of the even gender distribution at the university, in the Mexican society it is still the case that few women have access to higher education. University female students therefore may be the most persistent and interested in pursuing further education. They may also be the ones who see their role in society differently from the traditional one. The fact that all teachers and the researcher were females may also have influenced role models, motivating female students to invest more effort in the task, and demotivating or at least not having an impact on males. In any case, it would be interesting to consider different domains in the study of gender differences along with some changes of roles in society.

Concerning the manipulation of feedback, significant results were obtained to support the idea that more positive cycles happened in the teacher feedback condition as opposed to the non-feedback condition. However, when actual performance was analyzed, the number of cycles was dramatically reduced, as compared to the cycles generated for

beliefs only. The number of students in the self-efficacy no-cycle category was higher in the no-feedback condition group, the number of negative cycles was higher in the no-feedback condition, and more positive cycles occurred in the feedback condition. Literature reports that overconfidence is very common (Hacket & Betz, 1993; Pajares, 1996a; Pajares, 1996b). However, since feedback was used as a catalyzer to avoid this, results were surprising. This leads one to think that teachers' feedback had a stronger effect on beliefs than on actual performance, even though corrections and comments were directly related to performance in writing. This finding is interesting since research in motivation reports that incentives related to performance are more effective than incentives related to mere participation (Pajares, 1996a, Pajares, 1996b). Although students knew that their work would be graded according to the four established criteria (grammar, style, organization of ideas, and use of rhetorical resources), the fact that their process contributions (only the correct ones did count) would be reflected in the grade for participation, which is only an element of their final grade, may have biased their perception, focusing them on participation rather than addressing teachers' comments to improve their performance. This suggests that careful design of incentives for the tasks is needed to avoid erroneous perceptions by participants.

Moreover, the fact that more cycles happened in the teacher feedback condition than in the non-feedback group may be explained possibly by the assumption that the feedback generated within the group by all its members during the activity may have had a stronger influence in the perceptions, thus minimizing the impact of the information imparted by the teacher. This would be strongly related to the question which individuals students conceive as the significant others from whom to draw information for self-appraisal. Considering the age group of this sample, one would assume that the developmental stage participants are at would emphasize peer approval (Rosenberg, 1965). This is something that needs further investigation to be confirmed. To what extent can internal feedback supersede external feedback and how can this be avoided to eliminate possible deleterious spirals of perceptions that do not correspond to actual performance? And how are sources of feedback prioritized in different age groups? Lindsley's *et al.*'s (1995) model, having based their propositions in most of what is known at the individual level, certainly does not take into account these kinds of group processes which are difficult to derive from research that has not looked at group processes. The importance of focusing on the self with a social perspective in order to enrich the model is clear, since there are several lacunae in our knowledge concerning these issues. Several variables play an important role in social processes, and many of them were left out of the scope of this project. Nevertheless, it is important that more research is conducted to build on our knowledge of these processes.

When analyzing self-efficacy and performance spirals, no significant differences between both group conditions were found and the number of spirals was reduced to only two students in the feedback condition group. For the interpretation of these results one should bear in mind that several alternative explanations are possible, one of them being the lack of accuracy in the performance measurement. A more detailed approach such as a linguistic analysis of students' products would have yielded interesting and more accurate results for this variable. Another possible explanation is related to the fact that students may have chosen not to perform at the highest level of their competencies. This explanation seems to be reinforced by the effort put on the task, since most students accomplished only the minimum required for participation. Such an explanation would therefore be linked to theories of performance versus mastery orientations (Dweck, 1991). The low scores in the desired efficacy also reinforce this interpretation if analyzed under the assumptions of goal theory, thus confirming that students' desires determine whether they choose to perform or not (Locke *et al.*, 1984). In this particular sample, the composition by school was important, because most students came from administration or engineering, careers which usually are not as related to writing skills as are social sciences or arts.

In spite of the small number of spirals, it is remarkable that both of them belonged to the feedback condition, and none of them had previous experience in group activities. The fact that the only two students who exhibited negative cycles reported never having participated in group activities before may help to explain the discrepancy between perceptions of efficacy and actual performance. Since those who generated positive spirals had no experience in group activities, the new format may have scared them, making them more attentive to teacher's feedback; whereas the ones who had already experienced it may have perceived this as an enjoyable activity resting on the group's efforts. This could be related to Salomon's (1983) hypothesis of the amount of mental effort invested as related to the perception of the difficulty of the task, and how difficult it is to learn from the medium. Learning in a format one already knows may be perceived as easier than something that is unknown, thus leading to less investment of effort to learn. Another relation to theory is found in the concept of self-efficacy: DeMoulin (1993) presents an interesting reconceptualization of self-efficacy where stress is involved. Stressors can have important effects in perceptions of self-efficacy, and the theory of innovation supports the idea that any new experience creates instability and increases anxiety (Rogers, 1983).

From these findings one could speculate that if our previous assumption is true, teacher feedback was considered more important for these two students given the lack of experience in group processes, and it seemed to make those students aware of their efficacy level in a manner congruent with their actual performance level. This would be congruent

with research in self-appraisals, where not all the information in the environment is considered to build a self-concept, but only information provided from sources in which the individual recognizes some authority, people who are considered significant (Felson, 1993). In this case, not being confident of the group's feedback, they may have tended to focus on the teacher's information. Whether group members' feedback can mitigate other sources of feedback, and under which circumstances this may occur, needs to be further researched and tested, as stated previously.

At the group level, results were similar to the individual level, with slight differences. What was expected from theory was not empirically confirmed by significant results. Members of groups where spirals did occur did not show any efficacy-performance spirals at the individual level. However, the number of spirals was too low to allow for generalizations. Analyses remained at the descriptive level; however, it is worth reviewing them, bearing in mind that no evidence was found to support the stated hypotheses. Similar with what happened at the individual level, the majority of negative group-efficacy cycles were present in the no-feedback condition; whereas the greater number of positive cycles and no-cycles occurred in the feedback condition. From these results one could speculate that if feedback did not prevent the formation of deleterious positive cycles, at least participants in this condition did not generate negative cycles. These findings are related to what the literature reports as feedback on performance helping to improve achievement (Pajares, 1996a; Pajares, 1996b, DeMoulin, 1993). It is also related to results obtained in cultural analyses where some cultures do not change a positive perception of the self in spite of evidence showing the contrary (Graham, 1994; Lay & Wakstein, 1985).

As opposed to what was found at the individual level, no significant differences were obtained for gender and group-efficacy cycles. A possible explanation for this difference between the two levels might be that perceptions at the group level stop being a total reflection of the self, and therefore in heterogeneous groups (as most of the groups in the project were), gender stops being a variable of concern to influence perceptions of capabilities. Research in constructs of the self has shown that when external attributions of success and failure are predominant, people tend to be more flexible judging the self, whereas those who tend to make internal attributions make more strict judgments (Weiner, 1991). It has also been demonstrated that while acting in groups, responsibility tends to diffuse among all members, thus making the individual feel less accountable for results, and allowing social resting (Abrami, *et al.* 1994). It would be interesting for gender studies to deepen the understanding of how these interactions between the perceptions of the self and the perceptions of the group occur, and can help to change perceptions of roles and cultural gender stereotypes.

In spite of these lack of gender prejudices, when performance cycles were analyzed, again a mismatch with the cycles of perceived efficacy was found. The number of positive group performance cycles were higher in the no-feedback group, but the number of no-cycles were higher in the feedback condition. Thus, groups as wholes increased their performance in the condition where no feedback was provided. This is contrary to what was expected. Nevertheless, the fact that in this case all cycle categories had a majority of members with groupwork experience may help to explain this result. Moreover, whereas school distribution had been equal at the group level, in this case it was interesting to see that the School of Management, the most populous school represented in the sample, was not present in the negative cycles groups. Since their practice strongly emphasizes group activities and most of the theory they apply is based on group accomplishments, this may have helped them to optimize the group's productivity. Again, this needs to be confirmed in further research.

Contrary to what happened at the individual level, results for group-efficacy-performance spirals yielded only four spirals in the no feedback condition. The most interesting point is that all of them belonged to a single section. In this section the teacher introduced another variable in the design when she violated the types of rewards that should be provided for the best groups by adding extra points to the total grade to outstanding groups, instead of considering this activity under participation and giving verbal rewards. Lindsely *et al.* (1995) focus on feedback as information, and not necessarily as a consequence of behavior. This may suggest that strong external rewards focused on the group level, instead of on the individual, may have an effect in the focus of group members to enhance group performance, and that the informative feedback provided by the group may partially substitute for the lack of teacher feedback to appropriately assess and optimize the group's efficacy and performance levels. This is also consistent with what was advanced as a possible explanation for results at the individual level, where the process results rewarded under participation may have misdirected the students' focus to participation instead of performance. This can have important implications in the design of learning and working activities in groups, where the teacher, due to time, location or group size circumstances, is not able provide as much feedback as she would desire. Knowing what kind of motivation is predominant for students is important to enhance their efficacy (DeMoulin, 1993).

One should also bear in mind that the sample used for this project is representative of the university student population as distributed by program of study. From the descriptive data presented, it is clear that very few belonged to programs directly related to writing skills. This makes one assume that this task is not perceived as a priority in relation

to other subjects directly linked to their area of studies. The use of an incentive may have made students change their perceived value of the group activity in that particular subject.

In this study, students had a tendency towards external attributions of success. This may help to explain their preference for extrinsic rewards, and their reliance on the group, as opposed to the individual. Even though this was not a cross-cultural study, and cultural variables were not included in the design, it is important to bear in mind that culture has an effect in self-efficacy, as stated by Gecas (1989). The measurement of attributional style, and the preference for extrinsic motivation is coherent with findings by Ross, Mirowsky, and Cockerham (1983) where it is clearly stated that cultures that emphasize fatalistic beliefs, such as the Mexican society, are associated with lower self-efficacy and beliefs in external control. Therefore, it can be suggested to conduct comparative studies of different cultures and subcultures in the future.

Another finding was related to the establishment of goals. According to existing theory (Bandura, 1991), self-efficacy along with self-evaluation and adjustment of personal standards mediates goal motivation and its effect on performance. Locke *et al.* (1984) provide empirical evidence for a strong relationship between goal setting and performance, and for the proposition that self-efficacy is more related to past-performance than with future performance. The multiple regression analysis conducted in this study confirms a strong relationship between goals and performance, leaving self-efficacy out of the equation. It should be noted that given the small sample size only two variables could be used in the analysis and that results need to be confirmed with larger samples in order to determine the relationships among the variables considered in this case. The fact that goals and performance were strongly related is interesting when compared to the discrepancy between perceived efficacy and actual performance cycles. If perceptions of efficacy increased in several cases, and performance cycles did not, but performance was more related to self-established goals, then it is impossible to determine if the lack of performance cycles was due to a lack of actual efficacy or due to not establishing challenging goals that demand more effort. In working or learning situations it is important to differentiate these two possible causes since the lack of efficacy is related to a lack of knowledge or skills, whereas challenging goals is related to attitudinal aspects. In spite of some efforts to design learning activities that overcome these problems -- such as learning contracts (Harri-Augstein & Thomas, 1991) and self-regulation strategies (Zimmerman & Risemberg, 1994) -- this is a field that needs to be refined in practice.

More suggestions for further research.

Besides what has been suggested as further research directly related to each of the research questions, other interesting findings that may have implications for the design of future research on the topic can be drawn from the pilot test.

It was clear that individually assigned priorities to activities have a strong effect on participation in groupwork. Therefore, the value of the activity has to be competitive with the other activities that the student has to undertake. Internal or external incentives, as valued by students' preferences, have to be used for this. The fact that a whole section withdrew from the project is also important to consider since qualitative information could be collected showing an indifferent attitude towards the project by the selected teacher, in spite of having agreed to participate. It is therefore, strongly recommended that future research considers teachers' attitudes and teaching styles, given that at these educational levels it is difficult to find several sections being taught by the same teacher in order to control for this variable. Further research should also improve the limitations of sample size in the study in order to perform complex analyses that can throw some light on some of the incipient descriptive results regarding the third hypothesis presented in this project, namely individual members transfer their perceptions of self-efficacy to other groups when faced with similar tasks. This would also allow one to conduct regression analyses with all the variables that play a role according to the literature on this topic, and to conduct analyses of variance that can determine the extent to which cross-level effects can take place.

From a pedagogical point of view, the understanding of motivational aspects in groupwork becomes relevant. Little research has been done regarding the inclusion of motivational strategies in curriculum design, even though the need has long been stated (Keller, 1979). Except for individualized methods, most of the learning that takes place in schools and training is planned to be in collective or small group settings. From the results of the present study it is clear that not all of what is known at the individual level can be transferred to the group level. As suggested by the results of this study, the kind of strategies that may work with an individual alone may not work for that same individual when she is in a group, due to the interaction with others. Understanding what sources of feedback, and what kind of incentives are preferred by the group in order to enhance both self-appraisal and performance then become key elements for teachers to observe when designing learning activities. Making students aware that performance is determined by both individual and collective abilities and that these two are different may also help students generate an accurate assessment of themselves and of the group, thus avoiding deleterious cycles where they rest on the group's efforts, or where anxiety is so strong that lack of any trust in the group generates negative spirals.

The results of this research also point to an approach in education which focuses more on the affective domain as opposed to the strong emphasis currently given to cognitive aspects. It should be considered that teacher feedback had a strong effect on the beliefs, not so on performance, thus indicating what kind of impact one can create. Our knowledge about the affective domain is still limited and few strategies have been developed to really operationalize this role of the teacher. More research in this line would be of special interest both for students and teachers alike.

Cautions and limitations.

The present project had several limitations which can be overcome in further research. One of them was that of the sample size. As discussed previously, samples need to be large in order to perform statistical analyses that involve the various variables that play a role in the phenomenon under study. Moreover, the use of groups as units of analyses would be very interesting in larger samples. Contrasting the measure of group-efficacy in the three different ways suggested by the literature (individual perceptions added, individual perceptions averaged, and scores obtained by group consensus), would be interesting in order to clarify which procedure to use under what circumstances. A larger sample would also allow a replication of the present study to determine the frequency of spirals as the model suggests. Concerning the sampling process it would also be important to maintain a balance for gender and disciplines of study in order to create equivalent groups in terms of these variables along with the other ones considered in the study, thus allowing a clearer interpretation of the results obtained. In this study the groups were already formed and such a balance could not be established, thus suggesting that, according to the literature, group dynamics may have been different in each group due to these characteristics.

In terms of instruments it should be noted that some instruments were custom developed for the project and that reliability and validity needs further testing and development. As presented in the methods section, results obtained from these instruments should be interpreted with caution, given that they need further improvements. It would also be recommended to develop an equivalent form to measure self-efficacy in order to avoid test-retest effects. Even though students were explicitly advised to answer the questionnaire thinking of their latest experience in the group, test-retest effects cannot be ignored in repeated measures designs. The fact that developing specific instruments is not an easy task poses a problem; however, it will need to be addressed in further projects.

Another important limitation was the lack of detail in some measures, such as the one for performance. Even though the possibility of a lack of agreement among teachers

was somehow balanced by the coordinator of the subject, who checks teacher-assigned grades, more specificity to the categories considered for evaluation (i.e., grammar, organization of ideas, style, and use of rhetoric devices) should be developed. In this sense the experiment allowed teachers to realize the need of establishing more accurate evaluation criteria, and this is a project they are presently undertaking in the department. It would also be advisable to use some techniques from the linguistics field in order to analyze the level of maturity in language use as it is represented in student papers. These qualitative results, such as sentence complexity and use of specific structures, may provide more objective and accurate data with respect to performance of this particular skill.

Concerning the nature of the task and of the groups one should bear in mind that the setting was very specific in this project. Generalization of results to other settings and different task structures requiring other types of interactions among members is difficult. One would suggest to conduct further research both for other task structures and different types of groups.

Even though the objective of this project was not to compare the use of CMC with other learning strategies but to use this technology as a tool, it is evident that we need more research to understand how interactions and group processes are affected by the characteristics and languages of new technologies, as they are introduced into teaching practices. Further research in this area is also recommended to find appropriate uses for this technology.

Finally, it should be stated that there are still many phenomena that need to be understood and explained when individuals work in groups, since what research has found at the individual level may only be partially transferable to the group level, where interactions among variables become more complex. It is also worth mentioning that in spite of the presence of perceived efficacy and performance cycles, efficacy-performance spirals are not easily maintained over time. As Gecas (1989) and DeMoulin (1993) suggest, when a high level of efficacy and performance is present, one reaches a level of incompetence sooner or later that makes one face reality and become aware of the true match between self-beliefs and actual performance. It is important, however, to state that the implications of these findings for learning and working environments should not be disregarded, as they provide a picture of reality that was lacking, and they confirm that further research in the topic is necessary in order to determine the match between theoretical interpretations and real phenomena. Real life is complex, colorful and spiced, and therefore, interesting and challenging.

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Appendix A

Consent Forms

Consent Form For Staff To Participate In Research

This is to state that I agree to participate in a program of research being conducted by Laura Helena Porrás-Hernández as part of her doctoral dissertation research under the supervision of Dr. Steven Shaw of Educational Technology at Concordia University.

A. Purpose

I have been informed that the purpose of this research project is twofold:

- i) to investigate the effects of efficacy-performance cycles at the individual and group levels, as produced by the manipulation of feedback, and
- ii) the transference of efficacy beliefs to new working groups. Computer-mediated communication will be used as a tool to investigate these issues.

B. Procedure

I have been informed that my participation in this research will consist of:

1. Participating in a workshop to train me how to use groupware software that supports computer-mediated collaborative work
2. Using this technology to act as a judge and evaluate the products of the students.
3. That pseudonyms will be used for the messages sent in the computer both to protect my identity and the identity of students, and to support the purposes of the research.
4. That information submitted on this technology and related to the project will be used by the researcher. Any other personal information, even if submitted by this medium, can not be used in the research study.
5. That if I feel that the time spent in the project or any of the conditions of the experiment jeopardize my achievement in the university, I am free to withdraw my participation in this project. I should express my concerns to the researcher and no penalties will be associated with my voluntary withdrawal.
6. Once the experiment is finished, I will have access to all general results and to any specific information regarding my own participation.
7. I will obtain a written summary of the results from the researcher.
8. I will be able to participate in a workshop for attributional training and self-regulation strategies which are helpful both for the interpretation of the results of the research and for the improvement of student (and my own) learning strategies.
9. Benefits associated with my participation in the project are:
 - a) For students:
 - i) Reflect on their own learning (i.e., metacognition) and share with other students their learning strategies.
 - ii) Start using the technology and resources available at the university from the beginning of their studies
 - iii) Get involved in student activities that have a beneficial impact on the student community
 - iv) Learn to work in groups and value each member's expertise and contribution

b) For the Universidad de las Americas, Puebla

i) The staff and faculty of the university will be able to evaluate the implementation of similar approaches on a larger scale, and identify possible ways of improving student and group academic counseling based on motivational variables as much as in cognitive ones.

ii) The products of the activities will benefit the student community in general, by providing useful tools for academic achievement, and developed by peers.

iii) A better sense of community can be generated from these integrative approaches.

c) For the field of educational technology

i) Support new trends in teaching and working practices that encourage groupwork and distributed collaboration.

ii) Enhance our understanding of motivational variables acting at the individual and group levels.

iii) Enhance our understanding of motivational variables in individual members performing in diversity (i.e., several different teams)

iv) Enrich human resources practices that facilitate high performance and cope with the present trends of cooperation, distributed groupwork, outsourcing, and globalization.

C. Conditions of participation

- I understand that I am free to withdraw my consent and discontinue my participation at anytime without negative consequences.
- I understand that my participation in this study will not disclose my identity, and that individual data collected will be confidential
- I understand that the general results from this study may be published and presented in conferences
- I understand the purpose of this study and know that there is no hidden motive of which I have not been informed

I HAVE CAREFULLY STUDIED THE ABOVE AND UNDERSTAND THIS AGREEMENT, I FREELY CONSENT AND AGREE TO PARTICIPATE IN THIS STUDY

NAME (please print legibly) _____

SIGNATURE _____ DATE _____

WITNESS SIGNATURE _____

Consent Form For Students To Participate In Research

This is to state that I agree to participate in a program of research being conducted by Laura Helena Porrás-Hernández as part of her doctoral dissertation research under the supervision of Dr. Steven Shaw of Educational Technology at Concordia University.

A. Purpose

I have been informed that the purpose of this research project is twofold:

- i) to investigate the effects of efficacy-performance cycles at the individual and group levels, as produced by the manipulation of feedback, and
- ii) the transference of efficacy beliefs to new working groups. Computer-mediated communication will be used as a tool to investigate these issues.

B. Procedure

I have been informed that my participation in this research will consist of:

1. Participating in a workshop to train me how to use groupware software that supports computer-mediated collaborative work
2. Using this technology and working in a team with other three students in a writing class project during the first part of the term.
3. That information submitted on this technology and related to the project will be used by the researcher and any other personal information can not be used in the research study.
4. Once the experiment is finished, I will have access to all general results and to any specific information regarding my own participation.
5. I will be able to participate in a workshop for attributional training and self-regulation strategies which are helpful both for the interpretation of the results of the research and for my own learning strategies.
6. That if I feel that the time spent in the project or any of the conditions of the experiment jeopardize my academic achievement in the university, I am free to withdraw my participation in the project. I should express my concerns to the researcher and no penalties will be associated with my voluntary withdrawal.
7. Benefits associated with my participation in the project are:
 - a) For myself:
 - i) Reflect on my own learning (i.e., metacognition) and share with other students learning strategies that are helpful to succeed in the university.
 - ii) Start using the technology and resources available at the university from the beginning of my studies
 - iii) Get involved in student activities that have a beneficial impact on the student community
 - iv) Learn to work in groups and value each member's expertise and contribution
 - b) For the Universidad de las Americas, Puebla
 - i) The staff and faculty of the university will be able to evaluate the implementation of similar approaches to a larger scale, and identify possible ways of improving student and group academic counseling based on motivational variables as much as in cognitive ones.

ii) The products of the activities will benefit the student community in general, by providing useful tools for academic achievement, and developed by peers.

iii) A better sense of community can be generated from these integrative approaches.

c) For the field of educational technology

i) Support new trends in teaching and working practices that encourage groupwork and distributed collaboration.

ii) Enhance our understanding of motivational variables acting at the individual and group levels.

iii) Enhance our understanding of motivational variables in individual members performing in diversity (i.e., several different teams)

iv) Enrich human resources practices that facilitate high performance and cope with the present trends of cooperation, distributed groupwork, outsourcing, and globalization.

C. Conditions of participation

- I understand that I am free to withdraw my consent and discontinue my participation at anytime without negative consequences.
- I understand that my participation in this study will not disclose my identity, and that individual data collected will be confidential
- I understand that the general results from this study may be published and presented in conferences
- I understand the purpose of this study and know that there is no hidden motive of which I have not been informed

I HAVE CAREFULLY STUDIED THE ABOVE AND UNDERSTAND THIS AGREEMENT, I FREELY CONSENT AND AGREE TO PARTICIPATE IN THIS STUDY

NAME (please print legibly) _____

SIGNATURE _____ DATE _____

WITNESS SIGNATURE _____

Hoja de Consentimiento para participar en Investigación (Staff)

A través de la presente, constato que estoy de acuerdo en participar en el programa de investigación dirigido por Laura Helena Porras-Hernández como parte de su disertación doctoral en Tecnología Educativa de Concordia University, bajo la supervisión del Dr. Steven Shaw.

A. Propósito

He sido informado(a) que el doble propósito de este proyecto es:

- i) investigar, en los niveles individual y grupal, los efectos de los ciclos de eficacia y rendimiento producidos por la manipulación de retroalimentación; así como
- ii) la transferencia individual de las creencias de eficacia a nuevos grupos. Para investigar estos dos puntos se utilizará la comunicación mediada por computadora (CMC).

B. Procedimiento

He sido informado(a) que mi participación en esta investigación consistirá en:

1. Tomar parte en el taller de entrenamiento para la utilización del software que se aplicará en el trabajo colaborativo mediado por computadora.
2. Utilizar esta tecnología para actuar como jurado y evaluar los productos de los equipos de estudiantes.
3. Que se utilizarán pseudónimos para el envío de mensajes, con el propósito de proteger tanto mi identidad como la identidad de los estudiantes, y para cumplir con los objetivos de la investigación.
4. Que de la información adquirida a través de esta tecnología durante la experimentación, sólo aquella relacionada con el proyecto podrá ser utilizada por la investigadora. Cualquier otro tipo de información personal no podrá ser integrada al análisis.
5. Que si en algún momento siento que el tiempo invertido en el proyecto o que las condiciones del mismo ponen en peligro mi rendimiento en la universidad, soy libre de dejarla investigación. Deberé expresar mis inquietudes a la investigadora, y ningún tipo de penalidades podrán asociarse con mi retiro voluntario.
6. Una vez que el experimento haya terminado, tendré acceso a los resultados generales y a cualquier información específica referente a mi participación individual.
7. Obtendré un resumen de los resultados, escrito por la investigadora
8. Podré participar en el taller sobre entrenamiento atribucional y estrategias de autorregulación, los cuales son útiles tanto en la interpretación de los resultados de la investigación como en el mejoramiento de las estrategias de aprendizaje de los alumnos (y de las propias).
9. Los beneficios asociados con mi participación en el proyecto son:
 - a) Para los estudiantes:
 - i) Reflexionar sobre su propio aprendizaje (es decir, aplicar metacognición) y compartir con otros estudiantes sus estrategias de aprendizaje.

- ii) Empezar a utilizar la tecnología y los recursos disponibles en la universidad desde el inicio de sus estudios.
- iii) Involucrarse en actividades que tienen un impacto benéfico en la comunidad estudiantil
- iv) Aprender a trabajar en equipo y valorar la experiencia y aportaciones de cada miembro del grupo

b) Para la Universidad de las Américas, Puebla

- i) El staff y la facultad de la universidad podrán evaluar la posible implantación de proyectos similares a mayor escala e identificar posibles estrategias para mejorar la asesoría académica a estudiantes y grupos, basadas tanto en variables cognitivas como motivacionales.
- ii) Los productos de las actividades beneficiarán a la comunidad estudiantil en general, al servir como herramientas útiles en el rendimiento escolar, desarrolladas por estudiantes.
- iii) Un mejor sentido de comunidad que puede ser generado a través de proyectos integradores como este.

c) Para el área de Tecnología Educativa

- i) Apoyar las nuevas tendencias en las prácticas educativas y laborales que fomentan el trabajo en grupos y la colaboración distribuida.
- ii) Mejorar la comprensión de las variables motivacionales que actúan a los niveles individuales y grupales.
- iii) Mejorar la comprensión de las variables motivacionales que actúan en los individuos que trabajan en un ambiente de diversidad (vbg. varios grupos diferentes)
- iv) Enriquecer las prácticas de recursos humanos que facilitan el alto rendimiento y que están de acuerdo con las tendencias actuales de cooperación, trabajo distribuido en equipos, outsourcing, y globalización.

C. Condiciones de participación

- Tengo entendido que poseo la libertad de retirar mi consentimiento y finalizar mi participación en cualquier momento, sin ninguna consecuencia negativa.
- Tengo entendido que mi participación en este estudio no dará a conocer mi identidad, y que los datos individuales que sean recolectados son información confidencial
- Tengo entendido que los resultados generales de este proyecto pueden ser publicados y presentados en conferencias
- Comprendo el propósito de este estudio y sé que no existe ningún motivo oculto del cual no haya sido informado.

HABIENDO COMPRENDIDO Y ESTUDIADO CUIDADOSAMENTE EL CONTENIDO DE ESTA FORMA DE CONSENTIMIENTO, VOLUNTARIAMENTE DOY MI CONSENTIMIENTO Y ACEPTO A PARTICIPAR EN ESTE ESTUDIO

NOMBRE (con letra de molde) _____

FIRMA _____ FECHA _____

FIRMA DE TESTIGO _____

Hoja de Consentimiento para participar en Investigación (Estudiante)

A través de la presente, constato que estoy de acuerdo en participar en el programa de investigación dirigido por Laura Helena Porras-Hernández como parte de su disertación doctoral en Tecnología Educativa de Concordia University, bajo la supervisión del Dr. Steven Shaw.

A. Propósito

He sido informado(a) que el doble propósito de este proyecto es:

- i) investigar, en los niveles individual y grupal, los efectos de los ciclos de eficacia y rendimiento, así como
- ii) la transferencia individual de las creencias de eficacia a nuevos grupos. Para investigar estos dos puntos se utilizará la comunicación mediada por computadora (CMC).

B. Procedimiento

He sido informado(a) que mi participación en esta investigación consistirá en:

1. Tomar parte en el taller de entrenamiento para la utilización del software que se aplicará en el trabajo colaborativo mediado por computadora.
2. Utilizar esta tecnología durante el semestre, y trabajar en equipo con otros tres estudiantes en la clase de Redacción, desempeñando la función de revisor asignada por el maestro.
3. Que, de la información adquirida a través de esta tecnología durante la experimentación sólo aquella relacionada con el proyecto podrá ser utilizada por la investigadora. Cualquier otro tipo de información personal no podrá ser integrada al análisis.
4. Una vez que el experimento haya terminado, tendré acceso a los resultados generales y a cualquier información específica referente a mi participación individual.
5. Podré participar en el taller sobre entrenamiento atribucional y estrategias de autorregulación, los cuales son útiles tanto en la interpretación de los resultados de la investigación como en el mejoramiento de las estrategias de aprendizaje de los alumnos (y de las propias).
6. Si en algún momento siento que el tiempo que invierto en el proyecto o que cualquiera de las condiciones del experimento atentan contra mi desempeño académico, podré retirarme sin que exista ninguna penalización asociada.
7. Los beneficios asociados con mi participación en el proyecto son:
 - a) Para los estudiantes:
 - i) Reflexionar sobre su propio aprendizaje (es decir, aplicar metacognición) y compartir con otros estudiantes sus estrategias de aprendizaje.
 - ii) Empezar a utilizar la tecnología y los recursos disponibles en la universidad desde el inicio de sus estudios.
 - iii) Involucrarse en actividades que tienen un impacto benéfico en la comunidad estudiantil
 - iv) Aprender a trabajar en equipo y valorar la experiencia y aportaciones de cada miembro del grupo
 - b) Para la Universidad de las Américas, Puebla

- i) El staff y la facultad de la universidad podrán evaluar la posible implantación de proyectos similares a mayor escala e identificar posibles estrategias para mejorar la asesoría académica a estudiantes y grupos, basadas tanto en variables cognitivas como motivacionales.
- ii) Los productos de las actividades beneficiarán a la comunidad estudiantil en general, al servir como herramientas útiles en el rendimiento escolar, desarrolladas por estudiantes.
- iii) Un mejor sentido de comunidad que puede ser generado a través de proyectos integradores como este.

c) Para el área de Tecnología Educativa

- i) Apoyar las nuevas tendencias en las prácticas educativas y laborales que fomentan el trabajo en grupos y la colaboración distribuída.
- ii) Mejorar la comprensión de las variables motivacionales que actúan a los niveles individuales y grupales.
- iii) Mejorar la comprensión de las variables motivacionales que actúan en los individuos que trabajan en un ambiente de diversidad (vbg. varios grupos diferentes)
- iv) Enriquecer las prácticas de recursos humanos que facilitan el alto rendimiento y que están de acuerdo con las tendencias actuales de cooperación, trabajo distribuído en equipos, outsourcing, y globalización.

C. Condiciones de participación

- Tengo entendido que poseo la libertad de retirar mi consentimiento y finalizar mi participación en cualquier momento, sin ninguna consecuencia negativa.
- Tengo entendido que mi participación en este estudio no dará a conocer mi identidad, y que los datos individuales que sean recolectados son información confidencial
- Tengo entendido que los resultados generales de este proyecto pueden ser publicados y presentados en conferencias
- Comprendo el propósito de este estudio y sé que no existe ningún motivo oculto del cual no haya sido informado.

HABIENDO COMPRENDIDO Y ESTUDIADO CUIDADOSAMENTE EL CONTENIDO DE ESTA FORMA DE CONSENTIMIENTO, VOLUNTARIAMENTE DOY MI CONSENTIMIENTO Y ACEPTO A PARTICIPAR EN ESTE ESTUDIO

NOMBRE (con letra de molde) _____

FIRMA _____ FECHA _____

FIRMA DE TESTIGO (Cualquier compañero de clase) _____

Appendix B

Instruments

General Information

ID _____

Date: _____

Preferred pseudonyms

1) _____

2) _____

The purpose of this questionnaire is to collect important information to account for some of the results that may be obtained from this project. Please fill in the blanks the required information. or select the appropriate answer in the multiple choice items. Remember that all information collected will be confidential. No other student or faculty member can access it. If you have any questions regarding the procedure or the items themselves, please do not hesitate to ask.

Thanks for your participation.

I. General Data

1. Age:

- a) 15-17
- b) 18-20
- c) 21-23
- d) 24-26
- e) 27- or more

2. Gender

- a) Female
- b) Male

3. School

- a) Engineering
- b) Social Sciences
- c) Arts and Humanities
- d) Administration and Economy
- e) Sciences

Indicate programme of study _____

4. Have you been enrolled in a higher education programme before?

- a) Yes
- b) No

5. List your interests in each of the following fields:

Academics	Arts	Sports	Other

6. Have you ever participated in organized group activities?

- a) Yes
- b) No

7. If you answered yes in the previous question, indicate the kind of activity:

- a) Student rep's
Name of institution: _____
- b) Representative sports teams:
Indicate for what sports: _____
- c) Social action groups (e.g., boy scouts, community action)
Indicate the type: _____
- d) Artistic groups (e.g., music, dance, theatre)
Indicate the type: _____
- e) In-class groups in specific subject matters at school
Indicate subject matter: _____
- f) Any other group (specify) _____

M A S Q

Instructions: Select the number in the scale that best represents what happens to you by dragging the cursor and highlighting the number of your choice. In the Edit menu select "Color" then "red". Your answer will change color. Once you have answered all the questions, send me a private mail with your responses. Remember, this information is confidential and your classmates do not have any access to it.

Thanks.

Laura Porras.

Imagine that you are in each of the following situations. Answer ALL of the following questions:

1 You cannot get all the reading done that your teacher assigns.

a) Write down the major cause. Is the cause of this due to something about you or something about other people or circumstances?

Totally due to others 1 2 3 4 5 6 7 Totally due to me

b) In the future, will this cause again be present?

Never present 1 2 3 4 5 6 7 Always present

c) Is this cause something that affects just this type of situation, or does it also influence other areas of your life?

Just this situation 1 2 3 4 5 6 7 All situations

2. You give a presentation in class and you receive a favorable grade.

a) Write down the major cause. Is the cause of this due to something about you or something about other people or circumstances?

Totally due to others 1 2 3 4 5 6 7 Totally due to me

b) In the future, will this cause again be present?

Never present 1 2 3 4 5 6 7 Always present

c) Is this cause something that affects just this type of situation, or does it also influence other areas of your life?

Just this situation 1 2 3 4 5 6 7 All situations

3. You fail an examination.

a) Write down the major cause. Is the cause of this due to something about you or something about other people or circumstances?

Totally due to others 1 2 3 4 5 6 7 Totally due to me

b) In the future, will this cause again be present?

Never present 1 2 3 4 5 6 7 Always present

c) Is this cause something that affects just this type of situation, or does it also influence other areas of your life?

Just this situation 1 2 3 4 5 6 7 All situations

4. An instructor praises your work in class.

a) Write down the major cause. Is the cause of this due to something about you or something about other people or circumstances?

Totally due to others 1 2 3 4 5 6 7 Totally due to me

b) In the future, will this cause again be present?

Never present 1 2 3 4 5 6 7 Always present

c) Is this cause something that affects just this type of situation, or does it also influence other areas of your life?

Just this situation 1 2 3 4 5 6 7 All situations

5. You receive a poor grade on a surprise quiz in class.

a) Write down the major cause. Is the cause of this due to something about you or something about other people or circumstances?

Totally due to others 1 2 3 4 5 6 7 Totally due to me

b) In the future, will this cause again be present?

Never present 1 2 3 4 5 6 7 Always present

c) Is this cause something that affects just this type of situation, or does it also influence other areas of your life?

Just this situation 1 2 3 4 5 6 7 All situations

6. You make a higher grade than expected on an examination.

a) Write down the major cause. Is the cause of this due to something about you or something about other people or circumstances?

Totally due to others 1 2 3 4 5 6 7 Totally due to me

b) In the future, will this cause again be present?

Never present 1 2 3 4 5 6 7 Always present

c) Is this cause something that affects just this type of situation, or does it also influence other areas of your life?

Just this situation 1 2 3 4 5 6 7 All situations

7. You are placed on academic probation.

a) Write down the major cause. Is the cause of this due to something about you or something about other people or circumstances?

Totally due to others 1 2 3 4 5 6 7 Totally due to me

b) In the future, will this cause again be present?
 Never present 1 2 3 4 5 6 7 Always present

c) Is this cause something that affects just this type of situation, or does it also influence other areas of your life?
 Just this situation 1 2 3 4 5 6 7 All situations

8. You receive an academic scholarship.

a) Write down the major cause. Is the cause of this due to something about you or something about other people or circumstances?
 Totally due to others 1 2 3 4 5 6 7 Totally due to me

b) In the future, will this cause again be present?
 Never present 1 2 3 4 5 6 7 Always present

c) Is this cause something that affects just this type of situation, or does it also influence other areas of your life?
 Just this situation 1 2 3 4 5 6 7 All situations

9. You do not have enough grades to switch to your desired major.

a) Write down the major cause. Is the cause of this due to something about you or something about other people or circumstances?
 Totally due to others 1 2 3 4 5 6 7 Totally due to me

b) In the future, will this cause again be present?
 Never present 1 2 3 4 5 6 7 Always present

c) Is this cause something that affects just this type of situation, or does it also influence other areas of your life?
 Just this situation 1 2 3 4 5 6 7 All situations

10. You are one of the few students who successfully completed a project for extra credit.

a) Write down the major cause. Is the cause of this due to something about you or something about other people or circumstances?
 Totally due to others 1 2 3 4 5 6 7 Totally due to me

b) In the future, will this cause again be present?
 Never present 1 2 3 4 5 6 7 Always present

c) Is this cause something that affects just this type of situation, or does it also influence other areas of your life?

Just this situation 1 2 3 4 5 6 7 All situations

11. You are dropped from the university because your grades are too low..

a) Write down the major cause. Is the cause of this due to something about you or something about other people or circumstances?

Totally due to others 1 2 3 4 5 6 7 Totally due to me

b) In the future, will this cause again be present?

Never present 1 2 3 4 5 6 7 Always present

c) Is this cause something that affects just this type of situation, or does it also influence other areas of your life?

Just this situation 1 2 3 4 5 6 7 All situations

12. You are caught up on your class assignments.

a) Write down the major cause. Is the cause of this due to something about you or something about other people or circumstances?

Totally due to others 1 2 3 4 5 6 7 Totally due to me

b) In the future, will this cause again be present?

Never present 1 2 3 4 5 6 7 Always present

c) Is this cause something that affects just this type of situation, or does it also influence other areas of your life?

Just this situation 1 2 3 4 5 6 7 All situations

13. You cannot get started writing a paper.

a) Write down the major cause. Is the cause of this due to something about you or something about other people or circumstances?

Totally due to others 1 2 3 4 5 6 7 Totally due to me

b) In the future, will this cause again be present?

Never present 1 2 3 4 5 6 7 Always present

c) Is this cause something that affects just this type of situation, or does it also influence other areas of your life?

Just this situation 1 2 3 4 5 6 7 All situations

14. You are assigned a set of 20 homework problems and successfully complete them all.

a) Write down the major cause. Is the cause of this due to something about you or something about other people or circumstances?

Totally due to others 1 2 3 4 5 6 7 Totally due to me

b) In the future, will this cause again be present?
 Never present 1 2 3 4 5 6 7 Always present

c) Is this cause something that affects just this type of situation, or does it also influence other areas of your life?
 Just this situation 1 2 3 4 5 6 7 All situations

15. You get a "D" in a course required for your major.

a) Write down the major cause. Is the cause of this due to something about you or something about other people or circumstances?
 Totally due to others 1 2 3 4 5 6 7 Totally due to me

b) In the future, will this cause again be present?
 Never present 1 2 3 4 5 6 7 Always present

c) Is this cause something that affects just this type of situation, or does it also influence other areas of your life?
 Just this situation 1 2 3 4 5 6 7 All situations

16. A fellow student comes to you with a problem and you are able to help.

a) Write down the major cause. Is the cause of this due to something about you or something about other people or circumstances?
 Totally due to others 1 2 3 4 5 6 7 Totally due to me

b) In the future, will this cause again be present?
 Never present 1 2 3 4 5 6 7 Always present

c) Is this cause something that affects just this type of situation, or does it also influence other areas of your life?
 Just this situation 1 2 3 4 5 6 7 All situations

17. You cannot understand the points a lecturer makes.

a) Write down the major cause. Is the cause of this due to something about you or something about other people or circumstances?
 Totally due to others 1 2 3 4 5 6 7 Totally due to me

b) In the future, will this cause again be present?
 Never present 1 2 3 4 5 6 7 Always present

c) Is this cause something that affects just this type of situation, or does it also influence other areas of your life?
 Just this situation 1 2 3 4 5 6 7 All situations

18. You make the dean's list.

a) Write down the major cause. Is the cause of this due to something about you or something about other people or circumstances?

Totally due to others 1 2 3 4 5 6 7 Totally due to me

b) In the future, will this cause again be present?

Never present 1 2 3 4 5 6 7 Always present

c) Is this cause something that affects just this type of situation, or does it also influence other areas of your life?

Just this situation 1 2 3 4 5 6 7 All situations

19. You receive an incomplete in a course.

a) Write down the major cause. Is the cause of this due to something about you or something about other people or circumstances?

Totally due to others 1 2 3 4 5 6 7 Totally due to me

b) In the future, will this cause again be present?

Never present 1 2 3 4 5 6 7 Always present

c) Is this cause something that affects just this type of situation, or does it also influence other areas of your life?

Just this situation 1 2 3 4 5 6 7 All situations

20. You fully understand the course material.

a) Write down the major cause. Is the cause of this due to something about you or something about other people or circumstances?

Totally due to others 1 2 3 4 5 6 7 Totally due to me

b) In the future, will this cause again be present?

Never present 1 2 3 4 5 6 7 Always present

c) Is this cause something that affects just this type of situation, or does it also influence other areas of your life?

Just this situation 1 2 3 4 5 6 7 All situations

(Question 19 has been rephrased since no incomplete or in progress notes exist in the university where the project was conducted).

Previous efficacy and desired self-efficacy

Considering the following scenario, please fill in the four columns in front of each activity.

In order to produce a written piece collaboratively, one needs to perform several things. Given this framework, I...

Activity	have previously done this (Yes / No)	If yes, indicate degree of success 1=unsuccessful, 10=successful	I desire I could do (Yes / No)	If yes, indicate degree of confidence to succeed 1= not at-all 10= totally sure
Lead groups to produce				
Participate in groups that organize social-oriented activities (e.g., boards of students)				
Conduct market research				
Practice graphic design				
Create images to convey messages for mass communication, or campaigns.				
Use computer production tools (e.g., word processors, desktop publishing)				
Use computer applications for image composition and design				
Browse through the Internet				
Practice brainstorming in groups				
Use resources in a university library				
Observe characteristics of successful people				
Negotiate ideas to make group decisions				

Activity	have previously done this (Yes / No)	If yes, indicate degree of success 1=unsuccessful, 10=successful	I desire I could do (Yes / No)	If yes, indicate degree of confidence to succeed 1= not at-all 10= totally sure
Solve conflicts among people working together				

Initial Attitudes

Rate the following statements according to the five point scale below, as they apply to yourself:

Thanks. Laura Porras.

1. I like to participate in group endeavours

--	--	--	--	--

Not at all Seldom Sometimes Most of the times Always

2. I like to try new technologies

--	--	--	--	--

Not at all Seldom Sometimes Most of the times Always

3. I like to be creative and original in my work

--	--	--	--	--

Not at all Seldom Sometimes Most of the times Always

4. I like working with other students fro school projects

--	--	--	--	--

Not at all Seldom Sometimes Most of the times Always

5. I like to share my knowledge with others who are interested in the same field

--	--	--	--	--

Not at all Seldom Sometimes Most of the times Always

6. I like to help people

--	--	--	--	--

Not at all Seldom Sometimes Most of the times Always

7. I like to listen to ideas and opinions different than mine before making judgments

--	--	--	--	--

Not at all Seldom Sometimes Most of the times Always

8. I like to have high quality standards in the products of my work

--	--	--	--	--

Not at all Seldom Sometimes Most of the times Always

9. I like to have quality standards in the process while working in a project

--	--	--	--	--

Not at all Seldom Sometimes Most of the times Always

10. I like to feel useful to the society and the comunity

--	--	--	--	--

Not at all Seldom Sometimes Most of the times Always

WRITING SELF-EFFICACY SCALE

Directions for completin the Writing Self-efficacy Scale:

The statements, which follow, ask about your beliefs about writing. Please answer these statements as honestly as you can. Respond in terms of your PRESENT circumstances as a student and writer. In other words, answer in terms of what is true for you right now, not in terms of what you hope for the future.

To answer the following statement, please indicate the degree to which you feel confident in performing each statement today by circling the letter that corresponds to your feelings on the following scale below:

1 = If you strongly disagree; you never feel this way.

2 = If you disagree; you don't feel this way very often.

3 = If you are unsure how you feel: you are mostly undecided.

4 = If you agree; you feel this way most of the time.

5 = If you strongly agree; you always feel this way.

Before you begin, here is an example. Suppose you were asked to respond to the following statement:

I believe I can clearly express my ideas in sentences.

Suppose you have always had problems writing a good sentence. What may be true for you right now is that you fear you will never be able to write good sentences. Therefore...

A proper response would be: 1 = strongly disagree.

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Writing Self-efficacy Scale

	Strongly disagree	Disagree	Unsure	Agree	Strongly agree
1) I am capable of writing good essays	1	2	3	4	5
2) I believe that errors in punctuation and grammar stop me from being a good writer.	1	2	3	4	5
3) I am confident that my writing is understood by those who read it.	1	2	3	4	5
4) When writing, I am confident that I can think of words to express my ideas.	1	2	3	4	5
5) When writing, I lack confidence in correcting my own errors.	1	2	3	4	5
6) When I write a story or a paragraph, I have confidence in ending it with a clear statement.	1	2	3	4	5
7) When I write, it is difficult to find the correct words to express my ideas.	1	2	3	4	5
8) I am confident in making sentences related to each other.	1	2	3	4	5
9) I am not confident in writing an essay or story.	1	2	3	4	5
10) When I write, I find it hard to give reasons for my views.	1	2	3	4	5
11) I am confident in arguing and defending my ideas in writing.	1	2	3	4	5
12) I am not confident that I'm good at writing.	1	2	3	4	5
13) I am confident that my examples, facts, and details support my written ideas.	1	2	3	4	5
14) I am not confident in writing clear answers to test and/or exam questions.	1	2	3	4	5
15) I am capable of writing a composition that tells a story (for example, a car accident; build a house; cook a three course meal).	1	2	3	4	5
16) I am not confident in finding my own writing errors.	1	2	3	4	5

	Strongly disagree	Disagree	Unsure	Agree	Strongly agree
17) When I revise my paragraphs, I am confident in finding my spelling and punctuation errors.	1	2	3	4	5
18) I lack confidence in organizing my ideas.	1	2	3	4	5
19) I am confident that I can write stories that express my ideas.	1	2	3	4	5
20) I have difficulty in writing a good beginning sentence.	1	2	3	4	5
21) I believe I can clearly express my ideas in sentences.	1	2	3	4	5
22) When writing, I am unable to organize my ideas.	1	2	3	4	5
23) I am confident that I can do creative writing such as poetry, plays, short stories, poems.	1	2	3	4	5
24) I am unable to clearly state the main idea when I write a paragraph.	1	2	3	4	5
25) I am capable of using unusual and creative words in my writing.	1	2	3	4	5

Datos Generales

ID _____ Fecha: _____

Nombre _____

Pseudónimos que te gustaría utilizar para este proyecto

1) _____ 2) _____

Este cuestionario tiene el propósito de recoger datos importantes para interpretar los resultados que se obtendrán en esta investigación.

*Por favor, llena los espacios donde se te pide información o selecciona la respuesta apropiada en las preguntas de opción múltiple. Recuerda que los datos obtenidos por este instrumento serán **confidenciales**. Ningún otro estudiante o miembro de la facultad puede tener acceso a ellos. Si tienes alguna duda respecto al procedimiento, pregúntame con toda confianza.*

Gracias por tu participación.

I. Datos Generales

1. Edad:

- a) 15-17
- b) 18-20
- c) 21-23
- d) 24-26
- e) 27- o más

2. Sexo

- a) Femenino
- b) Masculino

3. Escuela

- a) Ingeniería
- b) Ciencias Sociales
- c) Artes y Humanidades
- d) Administración and Economía
- e) Ciencias

Indica la carrera que estudias actualmente _____

4. Has estado inscrito en algún programa de educación superior antes de éste?

- a) Sí
- b) No

5. Lista tus intereses para cada una de las siguientes áreas:

Académicas	Artísticas	Deportivas	Otras

6. Has participado anteriormente en actividades grupales organizadas?

- a) Sí
- b) No

7. Si respondiste afirmativamente a la pregunta anterior indica de qué tipo:

a) Mesas representativas de estudiantes.

Indica la institución: _____

b) Equipos deportivos representativos

Indica de qué deporte _____

c) Grupos de acción social (vbg. scouts, acción comunitaria)

Indica de qué tipo: _____

d) Grupos artísticos (vbg. música, danza, teatro)

Indica de qué tipo: _____

e) Grupos de trabajo en clase en alguna materia de la escuela

Indica la materia: _____

f) Algún otro tipo de grupos (especifica cuáles) _____

M A S Q

Instrucciones: Para contestar este cuestionario, selecciona el número de la escala que expresa tu respuesta corriendo el cursor, hasta que el número quede resaltado y en el menú de Edit selecciona "Color" y luego "rojo". Tu respuesta cambiará de color. Una vez que hayas respondido todas las preguntas de esta manera, envíame un mensaje privado con tus respuestas. Recuerda que esta es información confidencial y que tus compañeros no deben tener acceso a ella.

Gracias.

Laura Porras.

Imagina que estás en cada una de las siguientes situaciones y responde TODAS las preguntas que se te presentan:

1. No puedes terminar las lecturas asignadas por tu profesor.

a) Escribe cuál es la causa principal. La causa principal se debe a tí o a a otras personas o circunstancias?

Totalmente a otros 1 2 3 4 5 6 7 Totalmente a mí

b) En el futuro, esta causa estará presente nuevamente?

Jamás presente 1 2 3 4 5 6 7 Siempre presente

c) Esta causa es algo que afecta solamente esta situación, o también influencia otras áreas de tu vida?

Sólo esta situación 1 2 3 4 5 6 7 Todas las situaciones

2. Haces una presentación en clase y obtienes una calificación favorable.

Escribe cuál es la causa principal. La causa principal se debe a tí o a a otras personas o circunstancias?

Totalmente a otros 1 2 3 4 5 6 7 Totalmente a mí

En el futuro, esta causa estará presente nuevamente?

Jamás presente 1 2 3 4 5 6 7 Siempre presente

Esta causa es algo que afecta solamente esta situación, o también influencia otras áreas de tu vida?

Sólo esta situación 1 2 3 4 5 6 7 Todas las situaciones

3. Repruebas un examen.

Escribe cuál es la causa principal. La causa principal se debe a tí o a a otras personas o circunstancias?

Totalmente a otros 1 2 3 4 5 6 7 Totalmente a mí

En el futuro, esta causa estará presente nuevamente?

Jamás presente 1 2 3 4 5 6 7 Siempre presente

Esta causa es algo que afecta solamente esta situación, o también influencia otras áreas de tu vida?

Sólo esta situación	1	2	3	4	5	6	7	Todas las situaciones
---------------------	---	---	---	---	---	---	---	-----------------------

4. Un instructor te premia por tu trabajo en clase.

Escribe cuál es la causa principal. La causa principal se debe a tí o a otras personas o circunstancias?

Totalmente a otros	1	2	3	4	5	6	7	Totalmente a mí
--------------------	---	---	---	---	---	---	---	-----------------

En el futuro, esta causa estará presente nuevamente?

Jamás presente	1	2	3	4	5	6	7	Siempre presente
----------------	---	---	---	---	---	---	---	------------------

Esta causa es algo que afecta solamente esta situación, o también influencia otras áreas de tu vida?

Sólo esta situación	1	2	3	4	5	6	7	Todas las situaciones
---------------------	---	---	---	---	---	---	---	-----------------------

5. En clase, recibes una calificación baja en un examen sorpresa.

Escribe cuál es la causa principal. La causa principal se debe a tí o a otras personas o circunstancias?

Totalmente a otros	1	2	3	4	5	6	7	Totalmente a mí
--------------------	---	---	---	---	---	---	---	-----------------

En el futuro, esta causa estará presente nuevamente?

Jamás presente	1	2	3	4	5	6	7	Siempre presente
----------------	---	---	---	---	---	---	---	------------------

Esta causa es algo que afecta solamente esta situación, o también influencia otras áreas de tu vida?

Sólo esta situación	1	2	3	4	5	6	7	Todas las situaciones
---------------------	---	---	---	---	---	---	---	-----------------------

6. En un examen recibes una calificación más alta de lo que esperabas.

Escribe cuál es la causa principal. La causa principal se debe a tí o a otras personas o circunstancias?

Totalmente a otros	1	2	3	4	5	6	7	Totalmente a mí
--------------------	---	---	---	---	---	---	---	-----------------

En el futuro, esta causa estará presente nuevamente?

Jamás presente	1	2	3	4	5	6	7	Siempre presente
----------------	---	---	---	---	---	---	---	------------------

Esta causa es algo que afecta solamente esta situación, o también influencia otras áreas de tu vida?

Sólo esta situación	1	2	3	4	5	6	7	Todas las situaciones
---------------------	---	---	---	---	---	---	---	-----------------------

7. Caes en estado académico de advertencia.

Escribe cuál es la causa principal. La causa principal se debe a tí o a a otras personas o circunstancias?

Totalmente a otros 1 2 3 4 5 6 7 Totalmente a mí

En el futuro, esta causa estará presente nuevamente?

Jamás presente 1 2 3 4 5 6 7 Siempre presente

Esta causa es algo que afecta solamente esta situación, o también influencia otras áreas de tu vida?

Sólo esta situación 1 2 3 4 5 6 7 Todas las situaciones

8. Recibes una beca académica.

Escribe cuál es la causa principal. La causa principal se debe a tí o a a otras personas o circunstancias?

Totalmente a otros 1 2 3 4 5 6 7 Totalmente a mí

En el futuro, esta causa estará presente nuevamente?

Jamás presente 1 2 3 4 5 6 7 Siempre presente

Esta causa es algo que afecta solamente esta situación, o también influencia otras áreas de tu vida?

Sólo esta situación 1 2 3 4 5 6 7 Todas las situaciones

9. No tienes el promedio suficiente para cambiarte a la carrera que deseas.

Escribe cuál es la causa principal. La causa principal se debe a tí o a a otras personas o circunstancias?

Totalmente a otros 1 2 3 4 5 6 7 Totalmente a mí

En el futuro, esta causa estará presente nuevamente?

Jamás presente 1 2 3 4 5 6 7 Siempre presente

Esta causa es algo que afecta solamente esta situación, o también influencia otras áreas de tu vida?

Sólo esta situación 1 2 3 4 5 6 7 Todas las situaciones

10. Eres uno de los pocos estudiantes que completa un proyecto por los puntos extra.

Escribe cuál es la causa principal. La causa principal se debe a tí o a a otras personas o circunstancias?

Totalmente a otros 1 2 3 4 5 6 7 Totalmente a mí

En el futuro, esta causa estará presente nuevamente?

Jamás presente 1 2 3 4 5 6 7 Siempre presente

Esta causa es algo que afecta solamente esta situación, o también influencia otras áreas de tu vida?

Sólo esta situación	1	2	3	4	5	6	7	Todas las situaciones
---------------------	---	---	---	---	---	---	---	-----------------------

11. Te dan de baja de la universidad porque tus calificaciones son demasiado bajas. Escribe cuál es la causa principal. La causa principal se debe a tí o a otras personas o circunstancias?

Totalmente a otros	1	2	3	4	5	6	7	Totalmente a mí
--------------------	---	---	---	---	---	---	---	-----------------

En el futuro, esta causa estará presente nuevamente?

Jamás presente	1	2	3	4	5	6	7	Siempre presente
----------------	---	---	---	---	---	---	---	------------------

Esta causa es algo que afecta solamente esta situación, o también influencia otras áreas de tu vida?

Sólo esta situación	1	2	3	4	5	6	7	Todas las situaciones
---------------------	---	---	---	---	---	---	---	-----------------------

12. Estás "atorado" con tus tareas de las materias que cursas. Escribe cuál es la causa principal. La causa principal se debe a tí o a otras personas o circunstancias?

Totalmente a otros	1	2	3	4	5	6	7	Totalmente a mí
--------------------	---	---	---	---	---	---	---	-----------------

En el futuro, esta causa estará presente nuevamente?

Jamás presente	1	2	3	4	5	6	7	Siempre presente
----------------	---	---	---	---	---	---	---	------------------

Esta causa es algo que afecta solamente esta situación, o también influencia otras áreas de tu vida?

Sólo esta situación	1	2	3	4	5	6	7	Todas las situaciones
---------------------	---	---	---	---	---	---	---	-----------------------

13. No puedes empezar a escribir un reporte. Escribe cuál es la causa principal. La causa principal se debe a tí o a otras personas o circunstancias?

Totalmente a otros	1	2	3	4	5	6	7	Totalmente a mí
--------------------	---	---	---	---	---	---	---	-----------------

En el futuro, esta causa estará presente nuevamente?

Jamás presente	1	2	3	4	5	6	7	Siempre presente
----------------	---	---	---	---	---	---	---	------------------

Esta causa es algo que afecta solamente esta situación, o también influencia otras áreas de tu vida?

Sólo esta situación	1	2	3	4	5	6	7	Todas las situaciones
---------------------	---	---	---	---	---	---	---	-----------------------

14. Te asignan 20 problemas de tarea y los completas todos exitosamente.

Escribe cuál es la causa principal. La causa principal se debe a tí o a a otras personas o circunstancias?

Totalmente a otros 1 2 3 4 5 6 7 Totalmente a mí

En el futuro, esta causa estará presente nuevamente?

Jamás presente 1 2 3 4 5 6 7 Siempre presente

Esta causa es algo que afecta solamente esta situación, o también influencia otras áreas de tu vida?

Sólo esta situación 1 2 3 4 5 6 7 Todas las situaciones

15. Obtienes una calificación reprobatoria en uno de los cursos requeridos en tu programa de estudios.

Escribe cuál es la causa principal. La causa principal se debe a tí o a a otras personas o circunstancias?

Totalmente a otros 1 2 3 4 5 6 7 Totalmente a mí

En el futuro, esta causa estará presente nuevamente?

Jamás presente 1 2 3 4 5 6 7 Siempre presente

Esta causa es algo que afecta solamente esta situación, o también influencia otras áreas de tu vida?

Sólo esta situación 1 2 3 4 5 6 7 Todas las situaciones

16. Un compañero de clase viene a tí con un problema y tú eres capaz de ayudarle a resolverlo.

Escribe cuál es la causa principal. La causa principal se debe a tí o a a otras personas o circunstancias?

Totalmente a otros 1 2 3 4 5 6 7 Totalmente a mí

En el futuro, esta causa estará presente nuevamente?

Jamás presente 1 2 3 4 5 6 7 Siempre presente

Esta causa es algo que afecta solamente esta situación, o también influencia otras áreas de tu vida?

Sólo esta situación 1 2 3 4 5 6 7 Todas las situaciones

17. No puedes captar los puntos principales de un expositor.

Escribe cuál es la causa principal. La causa principal se debe a tí o a a otras personas o circunstancias?

Totalmente a otros 1 2 3 4 5 6 7 Totalmente a mí

En el futuro, esta causa estará presente nuevamente?

Jamás presente 1 2 3 4 5 6 7 Siempre presente

Esta causa es algo que afecta solamente esta situación, o también influencia otras áreas de tu vida?

Sólo esta situación 1 2 3 4 5 6 7 Todas las situaciones

18. Estás en la lista de estudiantes preferidos del Decano.

Escribe cuál es la causa principal. La causa principal se debe a tí o a a otras personas o circunstancias?

Totalmente a otros 1 2 3 4 5 6 7 Totalmente a mí

En el futuro, esta causa estará presente nuevamente?

Jamás presente 1 2 3 4 5 6 7 Siempre presente

Esta causa es algo que afecta solamente esta situación, o también influencia otras áreas de tu vida?

Sólo esta situación 1 2 3 4 5 6 7 Todas las situaciones

19. No puedes terminar a tiempo el proyecto final en un curso.

Escribe cuál es la causa principal. La causa principal se debe a tí o a a otras personas o circunstancias?

Totalmente a otros 1 2 3 4 5 6 7 Totalmente a mí

En el futuro, esta causa estará presente nuevamente?

Jamás presente 1 2 3 4 5 6 7 Siempre presente

Esta causa es algo que afecta solamente esta situación, o también influencia otras áreas de tu vida?

Sólo esta situación 1 2 3 4 5 6 7 Todas las situaciones

20. Entiendes completamente bien el material del curso.

Escribe cuál es la causa principal. La causa principal se debe a tí o a a otras personas o circunstancias?

Totalmente a otros 1 2 3 4 5 6 7 Totalmente a mí

En el futuro, esta causa estará presente nuevamente?

Jamás presente 1 2 3 4 5 6 7 Siempre presente

Esta causa es algo que afecta solamente esta situación, o también influencia otras áreas de tu vida?

Sólo esta situación 1 2 3 4 5 6 7 Todas las situaciones

(Question 19 has been rephrased since no IP's exist in the university where the project was conducted).

Eficacia previa y auto-eficacia deseada

De acuerdo con el siguiente escenario, llena las cuatro columnas para cada una de las actividades especificadas.

Para producir un escrito de manera colaborativa, es necesario llevar a cabo varias cosas. Considerando esto, yo...

Actividad	he hecho esto antes (Sí / No)	En caso afirmativo, indica el grado de éxito 1=sin éxito, 10=con éxito	Creo que desearía hacerlo (Sí / No)	En caso afirmativo, indica tu grado de confianza en tener éxito 1= ninguna 10= con toda seguridad
Liderear grupos productivos				
Participar en grupos de orientación social (vbg mesas de estudiantes)				
Realizar estudios de mercado				
Practicar diseño gráfico				
Crear imágenes para enviar mensajes masivos o campañas				
Usar herramientas de producción en la computadora (e.g., procesadores de texto, hojas de cálculo)				
Usar aplicaciones de computadoras para composición y diseño de imágenes				
Navegar por Internet				
Practicar lluvia de ideas en grupos				
Utilizar los recursos de la biblioteca				
Observar las características de las personas con éxito				
Negociar ideas para tomar decisiones grupales				
Resolver conflictos de personas trabajando en equipo				

Actitudes Iniciales

*Evalúa los siguientes enunciados utilizando la escala de cinco puntos según se apliquen a ti.
Gracias. Laura Porras.*

1. Me gusta participar en actividades grupales.

Nunca	Pocas veces	Algunas veces	Casi siempre	Siempre

2. Me gusta experimentar con nuevas tecnologías.

Nunca	Pocas veces	Algunas veces	Casi siempre	Siempre

3. Me gusta ser creativo y original en mi trabajo.

Nunca	Pocas veces	Algunas veces	Casi siempre	Siempre

4. Me gusta trabajar con otros estudiantes para trabajos de la escuela.

Nunca	Pocas veces	Algunas veces	Casi siempre	Siempre

5. Me gusta compartir mis conocimientos con otros que estén interesados en la misma área de conocimientos.

Nunca	Pocas veces	Algunas veces	Casi siempre	Siempre

6. Me gusta ayudar a la gente

Nunca	Pocas veces	Algunas veces	Casi siempre	Siempre

7. Me gusta escuchar ideas y opiniones diferentes a la mía, antes de hacer algún juicio.

Nunca	Pocas veces	Algunas veces	Casi siempre	Siempre

8. Me gusta tener altos niveles de calidad en los productos de mi trabajo.

Nunca	Pocas veces	Algunas veces	Casi siempre	Siempre

9. Me gusta tener altos niveles de calidad durante el proceso, mientras trabajo en proyectos

Nunca	Pocas veces	Algunas veces	Casi siempre	Siempre

10. Me gusta sentirme útil a la sociedad y a la comunidad.

Nunca	Pocas veces	Algunas veces	Casi siempre	Siempre

ESCALA DE AUTOEFICACIA PARA LA ESCRITURA

Instrucciones para completar la Escala de Autoeficacia para la Escritura:

Los enunciados que se presentan a continuación se refieren a tus creencias sobre tu habilidad de escritura y la habilidad de tu grupo.

Para contestarlo por RIA por favor sigue los pasos que se presentan a continuación:

1. Usa "Select All" del menú de "Edit" para seleccionar todo este mensaje.
2. En el menú de "Edit" seleccionas "Copy" para indicar que lo copiarás.
3. Abre un nuevo mensaje con "New Message" y en "To:" escribe Laura Porras.
4. Haz click con el mouse en el cuerpo del mensaje y selecciona "Paste" del menú de "Edit"
5. Responde cada enunciado para tí y para tu grupo, y una vez terminado, me lo envías con "Send".

Contesta lo más honestamente posible. Responde pensando en tu situación PRESENTE como estudiante y escritor. En otras palabras, responde en términos de lo que es cierto para ti en este momento, no en función de lo que desearías para el futuro.

Para responder a cada uno de los enunciados, indica el grado en que te sientes seguro de poder realizar ahora lo indicado en la oración. Abajo indica lo que sientes que tu grupo en conjunto es capaz de realizar. Escribe con distinto color la letra que corresponde a tus sentimientos según la siguiente escala:

- 1** = Si estás totalmente en desacuerdo; nunca te sientes así.
- 2** = Si estás en desacuerdo; tú no te sientes así muy seguido.
- 3** = Si estás inseguro de cómo te sientes; estás indeciso.
- 4** = Si estás de acuerdo; te sientes así casi todo el tiempo.
- 5** = Si estás totalmente de acuerdo; siempre te sientes así.

Antes de que empieces, aquí hay un ejemplo. Vamos a suponer que te piden responder al siguiente enunciado:

Creo que puedo expresar claramente mis ideas en enunciados.

Yo solo:

Con mi grupo:

Supongamos que siempre has tenido problemas para escribir enunciados correctamente. En este momento puede ser cierto que tienes miedo de que nunca seas capaz de escribir bien un enunciado tú solo. Por ello...

La respuesta apropiada para tí solo sería: 1 = totalmente en desacuerdo.

Si crees que con las sugerencias de tu equipo, tus trabajos tendrán oraciones correctamente escritas.

La respuesta apropiada para tu grupo es: 5 = totalmente de acuerdo.

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Escala de Autoeficacia para la Escritura

1) Soy capaz de escribir ensayos buenos

Yo solo:

Totalmente en desacuerdo	En desacuerdo	Indeciso	De acuerdo	Totalmente de acuerdo

Con mi grupo:

Totalmente en desacuerdo	En desacuerdo	Indeciso	De acuerdo	Totalmente de acuerdo

2) Creo que los errores de puntuación y de gramática no me permiten ser un buen escritor

Yo solo:

Totalmente en desacuerdo	En desacuerdo	Indeciso	De acuerdo	Totalmente de acuerdo

Con mi grupo:

Totalmente en desacuerdo	En desacuerdo	Indeciso	De acuerdo	Totalmente de acuerdo

3) Estoy seguro(a) de que los que escribo es comprendido por todo aquel que lo lee

Yo solo:

Totalmente en desacuerdo	En desacuerdo	Indeciso	De acuerdo	Totalmente de acuerdo

Con mi grupo:

Totalmente en desacuerdo	En desacuerdo	Indeciso	De acuerdo	Totalmente de acuerdo

4) Cuando escribo, estoy seguro de que puedo encontrar las palabras que expresan mis ideas.

Yo solo:

Totalmente en desacuerdo	En desacuerdo	Indeciso	De acuerdo	Totalmente de acuerdo

Con mi grupo:

Totalmente en desacuerdo	En desacuerdo	Indeciso	De acuerdo	Totalmente de acuerdo

5) Cuando escribo, me falta confianza para poder corregir mis propios errores

Yo solo:

Totalmente en desacuerdo	En desacuerdo	Indeciso	De acuerdo	Totalmente de acuerdo

Con mi grupo:

Totalmente en desacuerdo	En desacuerdo	Indeciso	De acuerdo	Totalmente de acuerdo

6) Cuando escribo una historia o un párrafo, tengo la confianza de podré terminarlo con un enunciado claro.

Yo solo:

Totalmente en desacuerdo	En desacuerdo	Indeciso	De acuerdo	Totalmente de acuerdo

Con mi grupo:

Totalmente en desacuerdo	En desacuerdo	Indeciso	De acuerdo	Totalmente de acuerdo

7) Cuando escribo me es difícil encontrar las palabras correctas para expresar mis ideas

Yo solo:

Totalmente en desacuerdo	En desacuerdo	Indeciso	De acuerdo	Totalmente de acuerdo

Con mi grupo:

Totalmente en desacuerdo	En desacuerdo	Indeciso	De acuerdo	Totalmente de acuerdo

8) Estoy seguro de poder escribir oraciones que se relacionan unas con otras

Yo solo:

Totalmente en desacuerdo	En desacuerdo	Indeciso	De acuerdo	Totalmente de acuerdo

Con mi grupo:

Totalmente en desacuerdo	En desacuerdo	Indeciso	De acuerdo	Totalmente de acuerdo

9) No tengo confianza para poder escribir un ensayo o una historia

Yo solo:

Totalmente en desacuerdo	En desacuerdo	Indeciso	De acuerdo	Totalmente de acuerdo

Con mi grupo:

Totalmente en desacuerdo	En desacuerdo	Indeciso	De acuerdo	Totalmente de acuerdo

10) Cuando escribo, encuentro difícil el proporcionar razones para mis puntos de vista

Yo solo:

Totalmente en desacuerdo	En desacuerdo	Indeciso	De acuerdo	Totalmente de acuerdo

Con mi grupo:

Totalmente en desacuerdo	En desacuerdo	Indeciso	De acuerdo	Totalmente de acuerdo

11) Estoy seguro de poder argumentar y defender mis ideas por escrito.

Yo solo:

Totalmente en desacuerdo	En desacuerdo	Indeciso	De acuerdo	Totalmente de acuerdo

Con mi grupo:

Totalmente en desacuerdo	En desacuerdo	Indeciso	De acuerdo	Totalmente de acuerdo

12) No estoy seguro de ser bueno para escribir.

Yo solo:

Totalmente en desacuerdo	En desacuerdo	Indeciso	De acuerdo	Totalmente de acuerdo

Con mi grupo:

Totalmente en desacuerdo	En desacuerdo	Indeciso	De acuerdo	Totalmente de acuerdo

13) Estoy seguro de que mis ejemplos, hechos y detalles soportan mis ideas por escrito.

Yo solo:

--	--	--	--	--

Totalmente en desacuerdo En desacuerdo Indeciso De acuerdo Totalmente de acuerdo

Con mi grupo:

--	--	--	--	--

Totalmente en desacuerdo En desacuerdo Indeciso De acuerdo Totalmente de acuerdo

14) No tengo confianza en poder escribir respuestas claras en las preguntas de exámenes.

Yo solo:

--	--	--	--	--

Totalmente en desacuerdo En desacuerdo Indeciso De acuerdo Totalmente de acuerdo

Con mi grupo:

--	--	--	--	--

Totalmente en desacuerdo En desacuerdo Indeciso De acuerdo Totalmente de acuerdo

15) Soy capaz de escribir una composición que narre una historia (por ejemplo, un accidente automovilístico; la construcción de una casa; la preparación de un platillo)

Yo solo:

--	--	--	--	--

Totalmente en desacuerdo En desacuerdo Indeciso De acuerdo Totalmente de acuerdo

Con mi grupo:

--	--	--	--	--

Totalmente en desacuerdo En desacuerdo Indeciso De acuerdo Totalmente de acuerdo

16) No tengo confianza en poder encontrar mis propios errores de escritura.

Yo solo:

--	--	--	--	--

Totalmente en desacuerdo En desacuerdo Indeciso De acuerdo Totalmente de acuerdo

Con mi grupo:

--	--	--	--	--

Totalmente en desacuerdo En desacuerdo Indeciso De acuerdo Totalmente de acuerdo

17) Cuando reviso mis párrafos, estoy seguro de poder encontrar mis errores de ortografía y de puntuación.

Yo solo:

Totalmente en desacuerdo	En desacuerdo	Indeciso	De acuerdo	Totalmente de acuerdo

Con mi grupo:

Totalmente en desacuerdo	En desacuerdo	Indeciso	De acuerdo	Totalmente de acuerdo

18) Me falta confianza para organizar mi ideas.

Yo solo:

Totalmente en desacuerdo	En desacuerdo	Indeciso	De acuerdo	Totalmente de acuerdo

Con mi grupo:

Totalmente en desacuerdo	En desacuerdo	Indeciso	De acuerdo	Totalmente de acuerdo

19) Estoy seguro de poder escribir historias que expresen mis ideas.

Yo solo:

Totalmente en desacuerdo	En desacuerdo	Indeciso	De acuerdo	Totalmente de acuerdo

Con mi grupo:

Totalmente en desacuerdo	En desacuerdo	Indeciso	De acuerdo	Totalmente de acuerdo

20) Tengo dificultad para escribir un buen enunciado inicial.

Yo solo:

Totalmente en desacuerdo	En desacuerdo	Indeciso	De acuerdo	Totalmente de acuerdo

Con mi grupo:

Totalmente en desacuerdo	En desacuerdo	Indeciso	De acuerdo	Totalmente de acuerdo

21) Creo que puedo expresar mis ideas claramente en enunciados.

Yo solo:

Totalmente en desacuerdo	En desacuerdo	Indeciso	De acuerdo	Totalmente de acuerdo

Con mi grupo:

Totalmente en desacuerdo	En desacuerdo	Indeciso	De acuerdo	Totalmente de acuerdo

22) Cuando escribo, soy incapaz de organizar mis ideas.

Yo solo:

Totalmente en desacuerdo	En desacuerdo	Indeciso	De acuerdo	Totalmente de acuerdo

Con mi grupo:

Totalmente en desacuerdo	En desacuerdo	Indeciso	De acuerdo	Totalmente de acuerdo

23) Estoy seguro de que puedo desarrollar la escritura creativa como la poesía, el teatro, pequeñas historias, poemas.

Yo solo:

Totalmente en desacuerdo	En desacuerdo	Indeciso	De acuerdo	Totalmente de acuerdo

Con mi grupo:

Totalmente en desacuerdo	En desacuerdo	Indeciso	De acuerdo	Totalmente de acuerdo

24) Soy incapaz de expresar claramente la idea principal cuando escribo un párrafo.

Yo solo:

Totalmente en desacuerdo	En desacuerdo	Indeciso	De acuerdo	Totalmente de acuerdo

Con mi grupo:

Totalmente en desacuerdo	En desacuerdo	Indeciso	De acuerdo	Totalmente de acuerdo

25) Soy capaz de utilizar palabras creativas y poco comunes en mis escritos

Yo solo:

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Totalmente en desacuerdo En desacuerdo Indeciso De acuerdo Totalmente de acuerdo

Con mi grupo:

--	--	--	--	--

Totalmente en desacuerdo En desacuerdo Indeciso De acuerdo Totalmente de acuerdo

Appendix C

Excerpts of a writing project

Wednesday, February 26, 1997 12:26:52 PM
Equipo 4-1 Item
From: 101951
Subject: Descubrimiento del Universo
To: Equipo 4-1

Cc:
INTRODUCCION

¿Te has preguntado qué es el Universo, cómo surgió , hacia dónde va o si desaparecerá algún día? Si no lo has hecho observa una noche clara, en el denso manto negro verás policromas luces titiriteantes, al principio de tu inspección te parecerá posible contar las estrellas prendidas en el firmamento ;sin embargo, al examinar minuciosamente cada fracción del cielo irán apareciendo lucecillas tenues , antes invisibles a tus ojos, entonces te darás cuenta del número infinito de cuerpos lumínicos plasmados en la bóveda celeste tan maravillosos como inalcanzables. Es posible que al mirar el cielo llame tu atención la hechicera Luna, su mágico resplandor es capaz de crear en tí la idea de pureza y perfección, ten cuidado al observarla, su gran hermosura puede hacerte perder la noción del tiempo y del espacio así como a Tales de Mileto, él por contemplarla cayó a un pozo. Debes saber que nuestro satélite natural no posee una superficie llana, ésta es mucho más interesante y misteriosa, posee elevaciones y depresiones provocadas por los meteoritos que colisionan violentamente contra la Luna. Si tienes suerte en la noche que observes, un meteorito intentará herir a la Tierra tal como lo hace con nuestro satélite, y verás como la bondadosa atmósfera lo va desintegrando lentamente , convirtiéndolo en polvo y en luces multicolores. Al cometa moribundo se le ha llamado estrella fugaz, dicen que si le pides un deseo lo hará realidad.

Después de haber deleitado tus sentidos con la magestuosa noche debes observar un purpúreo amanecer. Los rosados cabellos de la mañana darán una pincelada de sus excelsos tonos a todos los objetos que los reciben. El Sol irá despertando lentamente, ascenderá hacia lo alto del cielo, los objetos se divertirán proyectando móviles sombras e incluso tu cuerpo entrará en el juego, verás como las flores reciben jubilosamente la llegada de un nuevo día, mostrando al mundo sus delicados y estéticos colores y formas, alguna gota de rocío ante la alegría de pertenecer a la materia se deslizará sobre una hoja fundiéndose en el aire en su vertiginoso descenso.

Thursday, February 27, 1997 7:42:55 AM
 Equipo 4-1 Item
 From: 100499
 Subject: Re: Descubrimiento del Universo
 To: Equipo 4-1

Cc:

Aquí te marqué los errores de gramática y ortografía que hay que corregir, son poquitos. Nos vemos.

INTRODUCCION

¿Te has preguntado qué es el Universo, cómo surgió, hacia dónde va o si desaparecerá algún día? Si no lo has hecho observa una noche clara, en el denso manto negro verás policromas luces titiriteantes, al principio de tu inspección te parecerá posible contar las estrellas prendidas en el firmamento; sin embargo, al examinar minuciosamente cada fracción del cielo irán apareciendo lucecillas tenues, antes invisibles a tus ojos, entonces te darás cuenta del número infinito de cuerpos lumínicos plasmados en la bóveda celeste tan maravillosos como inalcanzables. Es posible que al mirar el cielo llame tu atención la hechicera Luna, su mágico resplandor es capaz de crear en tí la idea de pureza y perfección, ten cuidado al observarla, su gran hermosura puede hacerte perder la noción del tiempo y del espacio así como a Tales de Mileto, él por contemplarla cayó a un pozo. Debes saber que nuestro satélite natural no posee una superficie llana, ésta es mucho más interesante y misteriosa, posee elevaciones y depresiones provocadas por los meteoritos que colisionan violentamente contra la Luna. Si tienes suerte en la noche que observes, un meteorito intentará herir a la Tierra tal como lo hace con nuestro satélite, y verás como la bondadosa atmósfera lo va desintegrando lentamente, convirtiéndolo en polvo y en luces multicolores. Al cometa moribundo se le ha llamado estrella fugaz, dicen que si le pides un deseo lo hará realidad.

Después de haber deleitado tus sentidos con la magestuosa noche debes observar un púrpúreo amanecer. Los rosados cabellos de la mañana darán una pincelada de sus excelsos tonos a todos los objetos que los reciben. El Sol irá despertando lentamente, ascenderá hacia lo alto del cielo, los objetos se divertirán proyectando móviles sombras e incluso tu cuerpo entrará en el juego, verás como las flores reciben jubilosamente la llegada de un nuevo día, mostrando al mundo sus delicados y estéticos colores y formas, alguna gota de rocío ante la alegría de pertenecer a la materia se deslizará sobre una hoja fundiéndose en el aire en su vertiginoso descenso.

Thursday, February 27, 1997 7:51:16 AM
 Equipo 4-1 Item
 From: 102064
 Subject: Re: Descubrimiento del Universo
 To: Equipo 4-1

Cc:

Falta cita bibliografica, por otra parte es una excelente introducción que induce a un interesante tema

Thursday, February 27, 1997 9:31:42 AM

Equipo 4-1 Ítem

From: 102089

Subject: Re: Descubrimiento del Universo

To: Equipo 4-1

Cc:

TU TRABAJO TIENE UN CONTENIDO INTERESANTE, LO UNICO QUE DEBES HACER ES DEFINIR TUS IDEAS, YA QUE ALGUNAS NO ESTAN COMPLETAS Y LAS SEPARAS POR COMAS QUE HACEN CORTAR TU IDEA, POR OTRA PARTE TIENES QUE ESCRIBIR LA IDEA COMPLETA YA QUE HAY FRASES INCONCLUSAS.
BUEN TEMA ! FELICIDADES 101951!