UNVERSITÉ DE SHERBROOKE

Faculté d'éducation

Les équipes d'apprentissage et leurs impacts sur l'auto-efficacité des étudiants

Learning teams their impact on student's self-efficacy

Par

Pierre Charles Vachon

Essai présenté à la Faculté d'éducation
En vue de l'obtention du grade de
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Pierre Charles Vachon

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ABSTRACT

A student that faces a class of thirty or forty classmates feel a sense of intimidation and when dealing with a subject that has not brought them a great deal of success, the challenge can be overwhelming. Their self-efficacy is low entering the class, and the slightest miscue can worsen the situation further. This study researched how learning teams and reflective journals can help students improve their self-efficacy and succeed in a math-oriented subject. Guided by the works of Bandura, Senge, Bohm and Isaac, the research tested the use of learning teams on three classes of students in a college budgeting course. Examining the relationship between key variables based on literature versus standard assessments, both individually and in teams, the study identified the benefits accrued directly from this pedagogical strategy in acquiring the competencies. Learning teams and the reflective journals enhance learning and promote self-efficacy in students. The power of the two combines to enrich the learning process and facilitate the development of self-efficacy in students.

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Keywords: Learning teams, self-efficacy, dialogue in teams, thought process, thinking reflective journals

RÉSUMÉ

Un étudiant faisant face à une classe de 30 ou 40 de ses pairs ressent déjà de la pression et lorsque cela coïncide lors de cours dont il maîtrise moins la matière, le défi peut devenir accablant. L'auto efficacité personnelle est faible en débutant la session et le moindre problème peut aggraver la situation. Cette étude vise à examiner comment les groupes d'apprentissage et la tenue d'un journal de réflexion peuvent aider les étudiants à améliorer leur efficacité personnelle et à maîtriser un sujet basé sur les mathématiques. Guidée par les travaux de Bandura, Senge, Bohm et Isaac, cette étude évalue le recours aux groupes d'apprentissage dans trois classes, dans le cadre d'un cours de budget. En examinant la relation entre les variables clés provenant de la littérature, plutôt que des évaluations habituelles, de façon individuelle et en équipe, l'étude identifie les bénéfices acquis directement par cette stratégie pédagogique dans l'acquisition de compétences. Comparer ces variables aux changements de l'auto efficacité, démontrés lors d'une pré et post évaluation, permet d'enrichir les connaissances quant aux bénéfices liés à l'utilisation d'un journal de réflexion et de groupes d'apprentissage dans l'amélioration de la productivité des étudiants.

Ainsi, l'objectif central de la recherche est l'évaluation des deux stratégies (tenue de journal de réflexion et création de groupes d'apprentissage) et leur impact sur l'auto efficacité des étudiants, en plus d'un soutien à leur apprentissage global. Les étudiants participant au cours présentaient déjà de fortes lacunes quant à leur auto efficacité. Ces faiblesses se sont développées sur une perception résultant d'expériences passées, lors de cours liés aux mathématiques. Ceci représentait un obstacle majeur devant être pris en compte. Le questionnaire rempli au terme de la session a démontré que près de 70% des étudiants observaient un changement dans leur perception des mathématiques relativement au sujet d'étude qu'est le budget. Quantitativement, les résultats de l'étude confirment que la tenue d'un journal de réflexion, tout comme l'utilisation de groupes d'apprentissage, a un impact sur l'évaluation globale du cours et sur le taux l'auto efficacité des étudiants.

Si nous visons à remonter les échelons de la taxonomie de Bloom des objectifs éducationnels, en augmentant le niveau de réflexion chez nos étudiants, l'apprentissage par

groupe est une stratégie pertinente. Les étudiants vont de la mémorisation, à l'analyse et à l'application avec l'aide de leur équipe. Au terme de la session, notre sondage révéla que plus de 90% des étudiants ont confirmé voir une amélioration dans leur compréhension de la matière à l'étude. Leur perception était d'avoir appris quelque chose de valable, malgré leur résistance initiale. *"Je pense que ça c'est amélioré au fil de la session. Pour quelque chose que je trouvais difficile, j'ai été surprise de voir comment je comprenais de plus en plus facilement*

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Introduction

For years, I have been touting the benefits of working in teams. Two heads are better than one, three are better than two, and so on. Learning teams is a teaching strategy that is the focus in all my classes and my perception is that it has had an impact on student's success. Recently, I began to question to the degree of effectiveness this strategy really has. What benefits are students acquiring and what enhancement to their learning do teams offer?

My classes are approximately eighty percent female who are trying to specialize in the Fashion industry. Their journey takes them through many business courses that will prepare them for a career in fashion such as merchandisers, buyers or entrepreneurs in the industry. The focus in the targeted courses is the financial aspects in an industry that most deem to be high risk. For most of them, acquiring financial knowledge financial knowledge did not attract them to the program. On the contrary, it scared them, and quite often created a barrier that hinders their learning. This is especially true in large classes. The students feel self-conscious in their abilities, making it difficult for them to explore their perceptions, ask for explanations, or test their understanding. Since this discipline is a completely new area for them, they withdraw. A class of thirty or forty can be intimidating, making it harder for students to join the class learning activities.

In addition to learning teams, students needed a tool that facilitated their search to understand, question, and incorporate new learnings into their lives. To help in this platform, the need was to find a way that would guide them through the process and offer them the discipline that enhances their understanding. This environment had to put students at the center of their learning and facilitate them exploring and questioning new learnings. Students would then be in a position to incorporate what they learned into their lives. The platform that was offered was the reflective journal with guiding questions that focused on the process of learning and team development. Using Survey Monkey as a platform answered to the criteria of simplicity and creating an environment that was accessible to all students. The reflective journal offered students the discipline and the reflection needed to absorb the new information into thought.

The use of learning teams and reflective journals in any classroom is a choice available for all teachers and is one that can change a teacher's style and offer challenges. Working in teams is not easy; taking the time to reflect is essential in the learning process, both offered advantages for students to achieve success. This paper examined specifically the benefits accrued on self-efficacy of students.

Recognizing that a student's perception of their ability in a subject can impact whether they succeed or fail, led to the conclusion that making the environment less intimidating would be beneficial in the learning process. Putting students in teams has the effect of reducing their class to the size of their respective teams. Communication with teammates becomes less intimidating than among the class as whole, and when they do address the class, they do this as a team, not as individuals. Taking the time to reflect organizes and anchors the new learnings. Results indicated that learning teams and the reflective journals enhance learning and promote self-efficacy in students. The power of the two combine to enrich the learning process and facilitate the development of self-efficacy in students.

Chapter 1 - Problem Statement

The classes are approximately eighty percent female trying to specialize in the Fashion industry. Their journey takes them through a series of business courses that will prepare them for a career in fashion such as merchandisers, buyers or entrepreneurs in the industry. For most of them acquiring financial knowledge was not the prime attraction that brought them to the program. On the contrary, it scared them, and quite often created a barrier that hindered their learning. This is especially true in large classes. The students feel self-conscious in their abilities, making it difficult for them to explore their perceptions, ask for explanations, or test their understanding. Since this discipline is a completely new area for them, they withdraw. A class of thirty or forty can be intimidating, making it harder for students to join the class learning activities.

Students are afraid to voice their thoughts in a large class. The more the students, the more reticent they become. Unfortunately, the economics of our times are forcing the size of classes to increase, and therefore, the learning environment is becoming less friendly for students to have a voice. If students do not participate in class, they have trouble grasping the new content and thus drive their self-efficacy to lower limits.

In addition to this, fashion students come into class with the heavy baggage of being "lousy in math". For years this has been nurtured by parents, past teachers and reinforced by their peers, so much so, that this perception is well anchored into their thinking.

Learning teams have the effect of shrinking the size of the class to the size of their team. Students tend to find the size of the teams more suitable for dialogue and much less intimidating, and when they do communicate with the class, they do so as part of a team and feel much less frightened to face the whole class.

In addition to the strategy of using learning teams, focus was put on the learning process and, more specifically, the role reflection plays in this process. Using a reflective journal that is easy to use and guides the reflective process helped students anchor this knowledge and open discussions in teams.

Learning teams and the reflective journals enhance learning and promote self-efficacy in students. The power of the two combine to enrich the learning process and facilitate the development of self-efficacy in students.

The study focused on the development of self-efficacy and the pedagogical strategies that helped the process, the reflective journal and learning teams. The research questions were:

1. Do learning teams in a classroom have an impact on self-efficacy of a student?

2. Do reflective journals help students to develop their self-efficacy?

Chapter 2 - Conceptual Framework

Recognizing that a student's perception of their ability to be successful in a subject area has a major impact on the learning process, and that the responsibility of the teacher is to do everything to enhance this learning process, led me to conclude that I wanted to study ways to facilitate the student's development of their self-efficacy. The teaching strategy often used to help students learn involves learning teams which was be the focus of this research.

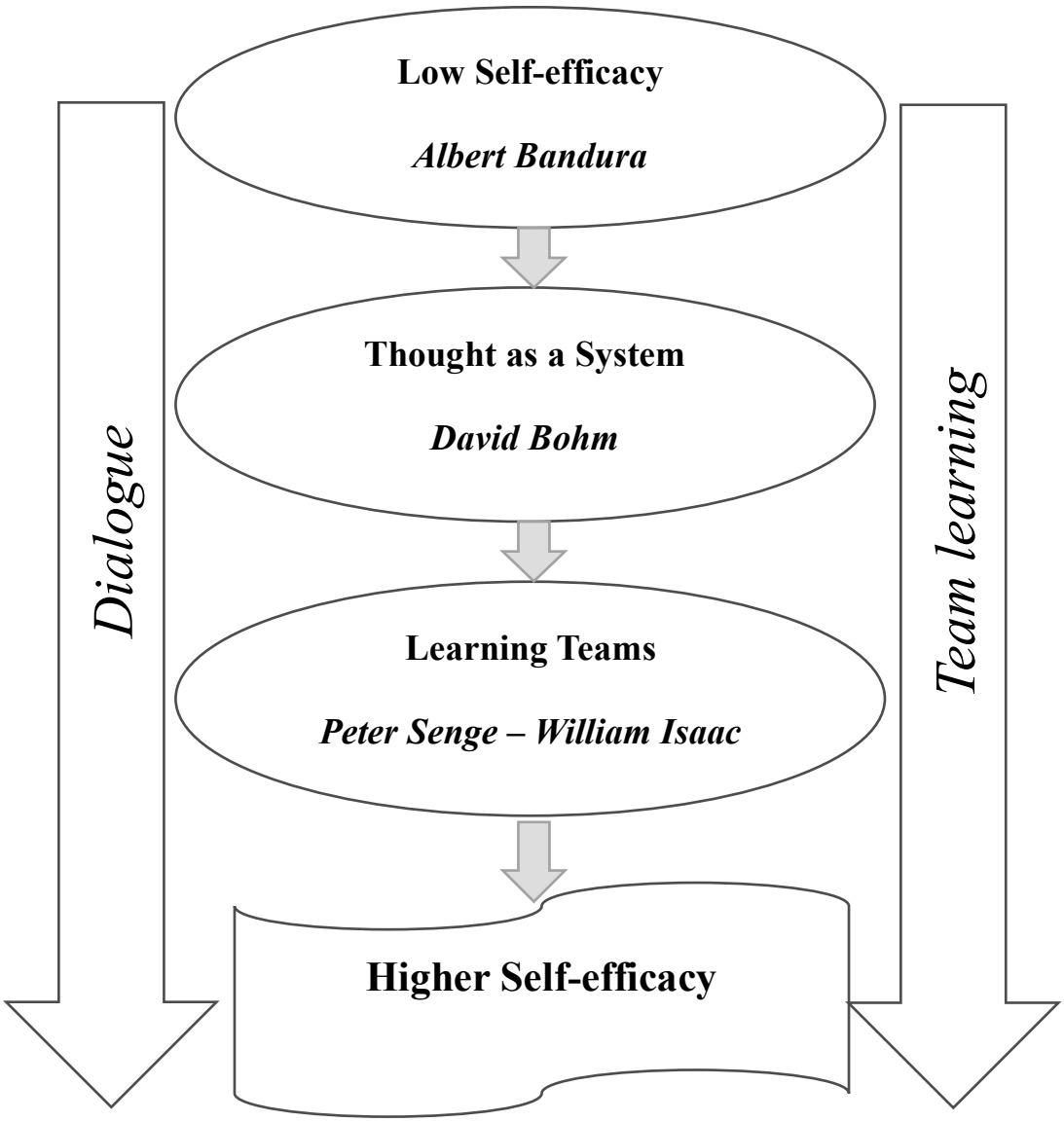
The social cognitive theory confirms the importance of self-efficacy in students. Using the research of Albert Bandura, this study explores the theoretical underlines of self-efficacy. He defines self-efficacy "as an individual's belief in one's own capabilities to execute behaviors required to achieve prospective outcomes…a person's beliefs about their capabilities to exercise control over events that affect their lives" (Bandura,1997, p1175). How does this evolve in students? Learning to understand this thinking process puts teachers in a better position to intervene, creating an environment that offers the student the opportune chance to succeed.

David Bohm takes us into the thinking process and views this as a system that encompasses not only the intellectual but also the emotional and physical. The concept of reflex in the thinking process offers students an opportunity to determine the source of their low self-efficacy and how they can change their behavior to promote a positive outlook on their capabilities to achieve their goals (Bohm 1994).

With an understanding of the role of self-efficacy, the research continues by learning about the role teams can play in the learning process. Do learning teams have an impact on students' outlook on their capacity to succeed in the subject? Peter Senge, in his book the *Fifth Discipline*, reflects on the wisdom of teams and the acknowledgement that the output of a team is greater than the sum of its members (Senge 2006). The primary tool that students need to succeed in this process is communication. More specifically, teams need to understand the way they communicate. Either through discussion or dialogue, students need to understand the difference between the two. Understanding conflict and the defensive routines members of a team use to avoid change, is critical to the success of the team. It is through this process that students learn to make changes in their behavior and, in doing so, can enhance their self-efficacy.

William Isaacs's book *Dialogue and the Art of Thinking Together* takes us deeper into the necessary elements of dialogue (Isaac 1999). By identifying the criteria needed to build the capacity for new behavior through listening, respecting, suspending, and voicing, students can expand their understanding of their capabilities toward the discipline they are trying to conquer. Researching these four elements in a team learning environment completes the strategy of linking self-efficacy to team learning to changing behavior.

Figure 1 – Conceptual map of literature review



Chapter 3 - Literature Review

Inquiries into the meaning and relevance of self-efficacy must begin with the works of Bandura (Bandura, 1997).

3.1 Human Agency

Agency is defined as the acts that humans perform voluntarily. This power to choose is the critical component of personal agency. The strength of one's belief on the chances of success in completing a task is critical to achieving the objective. Self-efficacy is the key factor in this agency. The stronger the belief in the specific capability to accomplish a given task, the more motivated one is to develop a plan to succeed, sticking to this plan, and putting in the required effort to fulfilling our expectations.

The question then arises as to how people cognitively activate this sense of doing. How is it initiated and put into action? If this can be tapped, teachers could then intervene to help the learning process. Therefore, how people think before putting action to their thoughts, is key to understand. This process is greater than seeing something and then reacting. There is the planning and analyzing the best course of action to achieve the best results (Bandura, 1997). People tend to face daily issues and problems in similar patterns. The cognitive process first identifies the problem or issue to be resolved, analyzes the environment that surrounds the issue, identifies the alternatives that may bring a solution to the activity, and concludes by selecting the best alternative that is available. The key element in this process comes later in the self-reflective stage of the cognitive process, in that, to learn from the experience, people reflect on the outcome to identify areas in their behavior that must change in the future to improve the results. By acting on the environment in this fashion people become agents of their own destiny.

3.2 Triadic reciprocal causation

In examining the environment deeper, the social cognitive theory identifies a causal relationship amongst three reciprocal structures that interact in this process. These elements both produce change in the environment and are affected by each other's changes.

Figure 2 – Causal relationship

This extension from the self to society and the interactions that occur further complicates the cognitive process in that it evolves in a collective environment that both reflects our inputs and those of others. The belief process is therefore extended to include others directly impacting self-efficacy. Bandura identifies that "collective efficacy is not simply the sum of the efficacy beliefs of individuals. Rather, it is an emergent group-level attribute that is the product of coordinative and interactive dynamics" (Bandura, 1997). People's self-efficacy is impacted strongly by the team.

3.3 Determinism and the exercise of self-influence

People need to develop the ability to exercise judgement over alternatives to engage the cognitive decision-making process. This is a process that one can become proficient at and not one that we are born with. Without this element, the process is stalemated which spirals

into a frustrating environment that is only affected by other parts of the triadic causation. This ability offers some measure of freedom to determine the actions of our environment.

The impact of self-reflection is critical and the element most predominate in this process is self-influence. It is through this that one can influence the future behavior. This is accomplished through the alternatives we choose and how the final product fits into the picture we have perceived. People construct their own list of standards that they use to evaluate the outcomes (Bandura, 1991). This guide motivates us to continue on a given line of action or adjust behavior to correct. In addition to these internal guides, people seek to find the most suitable environment that would give them the best opportunity to succeed (Bandura, 1986). The social needs and benefits in the learning process and the search for the optimal environment to achieve our goals are the objectives of the learning teams. The greater one's capability to plan and the stronger the drive to self-influence through the process of reflection, the more attainable are the learning goals.

3.4 Related Views of Personal Efficacy

Self-efficacy theory offers us specific guidelines on how to enable people to influence the outcomes in their lives.

3.4.1. Self-Concept

The self-concept is comprised of what we make of ourselves, and the influence others have on us. By examining the perception that people have of themselves, we are able to view how this might affect their outlook on life. Although self-concept offers some views on what the future may hold in the individual behavior, on its own it tends to be weak and can have many interpretations (Pajares & Kranzler, 1995; Pajares & Miller, 1994,1994a,1995).

3.4.2. Differentiating Self-Efficacy from Self-Esteem

The concepts of self-efficacy and self-esteem have very different meanings. The former identifies one's judgement on how well the task can be performed in achieving the desired goals while the latter identifies one's judgement on one's self-worth. One tends to be task oriented while the other is more ego oriented. Self-worth alone is not normally enough to accomplish our performance objectives. The perceptions of self-efficacy will set goals and

objectives, while self-worth has little to do with these (Mone, Baker, & Jefferies, 1995). There is no correlation between beliefs in one's abilities and whether one likes or dislikes the task. One can love hockey but have little ability in skating or playing the game.

3.4.3. Effectance Motivation

Students have a deep need to enroll in the environment. Whether this is by adjustment or altering it to fit one's needs, they seek a balance. This desire is defined as an effectance motive (White, 1959,1960). This complexity in the cognitive process of individuals creates a need to measure this motive. However, the measurement is further complicated in that students can be motivated by the competency that they are trying to achieve, or by the rewards the task allows them to gain. Social cognitive theory identifies that efficacy beliefs are driven not only from the mastery of the competency, but also from similar experiences. how others see it, and any changes that may occur from within. Competency takes time to develop and patience is required. Many variables may impact our measurement.

3.4.4. The Exercise of Personal Control: Inborn Drive or Prevalent Incentives?

Control in this circumstance is directed at what drives people to believe that they can perform. Is it the urge to master the competencies or is it the benefits that are accrued in achieving these competencies? Regardless of the origin of this control, the result is that people seek this drive to guide the demands of everyday lives. This environment carries many responsibilities and risks. Any incentives or changes in the environment that facilitate the process will enhance the drive and the self-efficacy in the person. This environment leads some to relinquish the choice for control to others especially if they carry a low sense of self-efficacy. This can be due to a genuine lack of skill, real or perceived. It may also be as a result that the benefit projected is not enticing enough to create a desire to achieve the skill (Langer, 1979). The new learnings often put the individual into an unsettling environment that puts them outside their comfort zone. This unfamiliarity often makes it easier to relinquish control.

3.4.5. Outcome Expectancy Theories

The expectancy valence theory illustrates that our behavior is a direct result of how we feel about the activity or what we see as the outcome of the activity (Atkinson, 1964; Feather, 1982; Vroom, 1964). People's perceptions of their future outcomes play a critical part in forecasting the behavior. How they think, how they create the motivation to succeed, and how they feel in general, is linked to their self-efficacy. Bandura identifies these primary objectives of our perceptions as perceived self-efficacy and the locus of control. Perceived self-efficacy is related to the performance of the activity and how we judge our capabilities to accomplish the task, while the locus of control refers to the outcome itself (Bandura, 1991). An environment that is responsive and rewarding, combined with a high sense of personal self-efficacy, will foster a productive engagement and a satisfying sense of accomplishment. A negative environment will accomplish the opposite results and have long-lasting impact on the student self-efficacy in the subject.

3.4.6. Self-efficacy, outcome expectancies, and control

Self-efficacy indicates the perceived capability to accomplish the task; the expected outcome is the perception on what successful performance will accomplish. Both are judgements but on different things. The former reflects on the performance while the latter focuses on the result. These reflections deal with human behaviors and any time this occurs the accompanying effect can be classified as positive or negative. This self-reflection deals with the first level of major class of outcomes. The second class deals with the social component that the behavior will initiate. Anyone who has ever tried to lose weight knows how hard it is and the patience and level of effort needed to succeed. The outcome of this work is not performed for the mere purpose of losing a few pounds but more significantly the health benefits and social benefits that may accrue from this. How people see the social impact of their successful attainment of their outcome has a significant impact on the level of effort to accomplish the task. It is due to this judgement on adequacy of performance and care for the perception of others that they rely on efficacy to help them decide on the course of action for future behavior.

3.4.7. Self-guidance by envisioned possible selves.

People create self-images of what the future will bring; some maybe positive and others negative. These dream or nightmare scenarios are fueled by our past experiences and our self-efficacy. The negative self-images can derail our efficacy and promote avoidance. On the other hand, the positive ones generate motivation and guide the progress and behavior. The images feed on how we see ourselves in the future. This image is driven from our life goals and will serve as a guide in the short run. These long-term images of our life goals are fed from our personal efficacy (Lent & Hackett, 1987).

3.4.8. Control beliefs

Control beliefs relate to the ability of students to choose the appropriate tool to produce positive self-efficacy. The lack of control may arise from two sources: a lack of skill to produce results or an environment that is not conducive to produce the desired outcome. To illustrate the latter, if at student gets a 70 on a test, but the average of the class is 90, the environment may promote a negative impact on self-efficacy of the student. In following this train of thought, students can exercise control over their efficacy in two ways: they can make the decision themselves and choose their destiny or they can let the environment select their choice (proxy control).

Students may either apply their efforts to change their environment or adapt to what exists. This is like Piaget's (1970) theory of cognitive development where the conflicting cognitive impasses forces the individual to either assimilate with the incongruities or accommodate with them. In assimilation, students will fit the reality to what they are expecting. This perception is critical in satisfying their sense of efficacy. In accommodation, they will change their behavior and adapt to the reality. If the student lacks the necessary skills, changing behavior to adapt to the new environment will be a lengthy process. The student and his/her environment is interrelated and reciprocal (Bandura, 1986). In dealing with their environment, individuals will adapt to things they like and try to change those that are disagreeable.

3.4.9. The self-efficacy component of social cognitive theory

Social cognitive theory addresses the acquiring of skills and knowledge as a function of models that guide our behavior (Bandura, 1986). This is especially significant in the initial

stages of skill development. If the individual believes in his/her ability to accomplish the task (self-efficacy), he/she will continue following the model. If this self-efficacy changes, behavior will change. A change in task or the demands will cause a reassessment of the model and likely in behavior. The perception of these tasks also serves as a source of motivation.

3.5 Thought as a System

The popular belief is that one is in control of what one is thinking and how one thinks. David Bohm tells us that this is not necessarily always the case. While letting us believe that this is so, thought controls most of what is happening within us. It gives us false information that we are in complete control, and until we can perceive this happening and how it is happening, we will remain subservient to the thinking process.

Another component of the process are emotions. Thought impacts emotions directly and vice versa is true. When one gets angry it is often harder to think, on the other hand the thought of something good will make one feel better. Thought has a tremendous influence on how one feels.

The link to self-efficacy, as defined by Bandura, is that the positive or negative self-efficacy is a direct result of the thinking process. To examine this further, it is useful to understand the difference between thinking and thought. Bohm defines thinking as an activity happening in the present. A sense of what may go wrong created from our perceptions of reality. Thought, on the other hand, has happen. It is a result of the thinking process – thinking becomes thought. Thinking becomes cemented into memory as thoughts. If parents continually repeat that people of a certain group are not good, then in the future this becomes a thought that arises whenever the child encounters people of this group. In fact, the child will hardly be aware that he/she is thinking. This can also be attributed to a child who has been told they are lousy in math. The repetition of this comment over time becomes a powerful stumbling block to learning any mathematical base course.

Therefore, unless this thinking changes, the self-efficacy towards any task will stay the same. This change, by definition, is within the individual, that is, no one on the outside can initiate this change. The only thing that can be done is communication in the

form of dialogue that the individual will accept. For change to occur one must first question the issue.

Bohm describes this process as a system that incorporates not only thinking but emotional and biological components. Human beings lean strongly towards the avoidance of unpleasant feelings and when faced with them, the first inclination is to make an about turn, to get as far from it as possible, without understanding the source. From very early in childhood we are trained this way. The reward system, whether it be within the family, or the educational system, or the work environment, has conditioned an avoidance to facing unpleasant feelings. Right solutions are rewarded and unpleasantness is attached to those that fail. To change the thinking in this entrenched environment requires more than dialogue. The simple word is not enough, one needs to see the change in action. These unpleasant thoughts are sources that one needs to discover in the search for new learnings.

Coherent thought carries the truth and a perception of reality that is correct. An indicator to monitor the existence of this is that if one feels pain or pleasure, the thought is no longer coherent. If this occurs the measurement is about pleasure or pain and as a result the thought has become destructive. The danger is intensified because one tends to get conditioned to this in our decision-making process. In fact, one gets so conditioned to this process that a reflex is developed and a reaction to a thought becomes automatic. The more it is repeated, the stronger the reflex becomes. These reflexes are anchored in memory that are available for recall whenever a similar situation appears. It carries all the emotional and physical impacts associated with the original event. When the mind is searching for answers to a difficult problem, it scans these reflexes in memory for the optimal solution. Bohm suggests that the system of thought is made up of these reflexes. There may be some new thought entering the system, but eventually they are driven to become reflexes. One may think we are controlling our thoughts, but most of what we are thinking is generated from these reflexes. These reflexes control not only our thinking, but also how we feel both physically and emotionally. The signs of incoherence take the form of contradiction, conflict, and stress. When these signs appear, the choice is either to strive to modify our behavior to get back to coherence or try to justify the incoherence. One of the most basic causes of incoherence is envy. It seems to be a human instinct that is common to all of us. The key is understanding how envy has materialized, and then make the steps towards change. This is

an ongoing process that is a continuous struggle for most of us. It is in this way that one develops control of the thinking process. In the same manner, the way we see our efficacy to achieve a given task can be enhanced. Understanding is the first step in adjusting our reflexes and controlling our thinking.

One of the most powerful thoughts we have is that of necessity. The feeling is that it has to be, and no change in behavior could ever be sufficient. For many students, this is the way they process their self-efficacy towards financial courses. Students reflect that they have always had trouble in math and this association is quickly made to the financial courses, and being so, history has proven that their chance of achieving success to be very limited. All this process is a reflex that the brain chose to be the most adaptable to the situation or the perception of reality. If they think it is impossible, then this is necessity at work and if nothing changes, this reflex will only feed on the experience and become stronger. Necessity also appears in a team learning environment. Many of the conflicts occur in a dispute over the members' view of the degree of necessity of an issue. This happens when, in the dialoguing process, one stops suspending one's view and the issue becomes an absolute necessity according to one's perception. This topic will be expanded later in our discussion of suspending.

Conditioning is another powerful process in thought. A process, that for students, reflects the educational, environmental, cultural and family influence in our thinking. If one has been repeatedly told that one is useless in math, the tendency is strong to believe it and to avoid all association to the topic. This is conditioning is driven from a multitude of sources that has a tremendous impact on the student's view of success. This becomes another reflex that will automatically surface when faced with an issue that it fits.

As was mentioned above, understanding the reflex is the first step towards changing behavior to adapt to a new perception of reality. The next is to put it in words. Words are the only way the brain can understand the new reality. If one puts it in words, the thinking process can start to put an order and a degree of importance to the change. It helps anchor the concept in memory. Putting it in words helps one remember and understand the process. This is changing the behavior that will eventually change the reflex.

3.6. Potential wisdom of teams

To achieve this wisdom, teams have a need to be aligned. This occurs when all its members function as one. The key identifiable element of teams that are not aligned is that there is wasted energy. Students work hard, but for some reason the output is not transferred to the team. Aligned teams are focused and share a vision that helps them concentrate on their activities. This common purpose helps them achieve this focus and develops into an extension of the individual's personal vision. Students find that classes fly by and they develop such a strong focus that no one can remember who said what on the road to achieving outcomes that meet team objectives. Building this shared vision is key to alignment in teams. This is the glue that brings the team together. This is when team learning occurs and new skills and knowledge spills outside the team to other teams in the classroom. In this way teams help each other inside the class.

3.7. Dialogue and Discussion

The primary tool available to teams to tap into this wisdom is dialogue. Key elements in dialogue is the suspending of one's thoughts and the power of listening. It shows a willingness to see someone else's view in comparison to our own. Through the process, insight into other's perceptions can feed learning. In a learning team, this is multiplied by the number of views available. Bohm believed through this development of mental maps from individual perceptions, was the true source of knowledge. Hence lies the power of the learning team.

In comparison, discussion is the presenting of one's view. It does allow the insight into individual perceptions of reality, however, it can be biased by the presenter's goals. There exists a sense of competition through which a winner will surface. This type of communication may hide the truth and promotes a win or lose environment that is not conducive to learning.

Teams offer the individual a greater perceptual view of reality. Seeking this common meaning gives the student a holistic view of reality, resulting in a free search by offering the experiences and thoughts of all participants to the student. This search brings the student to a greater understanding that never could be attain individually. Dialogue gives the student an

opportunity to challenge his/her understanding and the choice to adjust the incoherence in his/her thoughts. Students can bring their own thoughts up to compare with the understanding of others and reflect on the differences. Through this process students enhance their learning process. As the learning process evolves the student's self-efficacy grows.

Senge highlights the collective nature of thought and identifies that most of what we think comes from others. Our assumptions originate from our families, our culture, and all our acquaintances we have met on our life journey. We add our own interpretation to the original thought, but for the most part, we are not the source of our learnings or thoughts. It is only through a collective process that we can validate our understanding of our thoughts. Learning teams offer this forum of free exchange of interpretations that form the strength of new learnings. The incoherence of these interpretations forms the basis of our learnings. As a team searches for reasons for the difference in interpretations and the understanding of each perception, team learning begins. The objective of participants in a team is to become sensitive to these incoherencies even if they make us feel uncomfortable.

Bohm brings up the concept of suspending assumptions as a principle element to dialogue. Suspending assumptions requires the student to hold his understanding or perception of the topic in a place where it can be viewed and compared to others, as opposed to dominating the student's thinking. This view and compare process allows teams to identify the strength and weaknesses of each, in the quest to achieve the optimal understanding of the topic. This collective process allows the student an understanding that could never be attain alone. As teams practice this process, a bond develops among the members that inherently promotes a climate of trust. This climate permeates the environment and enhances the learning process.

3.8. Conflict and defensive routines

In an environment where all team members are suspending their assumptions, individual vision becomes meshed in a unified vision. The process to achieve this can be hard and painful. However, the presence of conflict shows that the team is in this process and following the natural path to achieve results. If a team appears to be running conflict free, it is usually because members are skilled at suppressing disagreements in order not to disturb

the team chemistry. Argyris (1985) brings the concept of mental models that are protective mechanisms we have developed to avoid embarrassment from people seeing weaknesses in the way we think. These mental models form defensive routines around our assumptions to avoid the pain of others showing us the weakness in our thinking. They also make it hard for us to verify the validity of our reasoning. He also indicates that the emergence of defensive routines brings to the surface that a problem exists. This problem can only be resolved by satisfying a need to gain knowledge to resolve this problem. This need also creates a threat, and hence, surfaces the defensive routines. To get through this, teams must reflect on their vision and objectives. They have an opportunity to transcend the defensive routines to gain a genuine commitment to learning. In this way, defensive routines become a signal, and highlight an opportunity to learning teams.

3.9. Dialogue and the Art of Thinking Together

William Isaac has identified four key elements of dialogue that are essential to master for learning teams to achieve their goals.

3.9.1. Listening

Dialogue begins and ends with a capacity to listen. Listening requires not only hearing, but the elimination of all inner noise that diverts our attention. Listening offers us an opportunity to participate in our world. To achieve this one must develop an inner silence, that is not something we are born with, enabling our ability to create a space that enhances listening. Our eyes often may deceive us, ears never lie. Whether it be the tone or the loudness, our ears offer information on the sender, about their perspective, their stance on their present environment, or about their intentions.

It is through listening that the process of dialogue can exist. Through listening, conversation and exchange can be activated. With this opportunity, one enters the world of learning and one of communal participation offering growth beyond individual capacity. William Isaacs speaks of hearing the written word, a process that occurs as we read, we hear what we are reading (Isaac 1999). This strange but powerful process allows our senses to fuse with the world and offers a valuable interpretation of our environment.

Upon reflection of the hearing process, one can associate the thinking process working almost in unison with hearing. Our minds fill with images or thoughts depending on what we are hearing. The two processes combine to activate your feelings for the situation. Memory, and what Bohm would call reflexes in the thought process, play an important part of our perception of what we are hearing. Because we are so dependent on our memory for interpretation, we are hindered in coming up with new thinking, and therefore responding in a new way becomes highly unlikely. From a student perspective with low self-efficacy, the teachers telling him that his low self-perception in math does not apply in this situation may very well go on deaf ears as the memory takes over. To partially alleviate this, the student must be conscious of the thought process and re-focus on what is being said. In developing this new approach and creating a discipline in hearing, the student can begin the process of changing his behavior and his self-perception.

Another weakness in our hearing process that often occurs in our students is that they often jump to conclusions before the concept is completely explained. Our culture, our memory, and our educational process, all contribute to making us focus on any topic for the shortest time possible. We are busy and cannot waste any time. This unfortunate situation worsens because we tend to take this partial information and treated as fact, with no testing. In many cases our minds are so efficient that not only does this become fact but it feeds the reflexive processes of the brain and next time we will react instinctively with little thought. What must be done to counteract this process is to offer students the opportunities to test the facts they are learning. An opportunity to distinguish the differences between perception and reality. Every time we make quick conclusions, we lose the chance to learn.

As previously mentioned, we often listen from prior memory of a similar situation that may have varying degrees of accuracy. These thoughts clutter the hearing process and create a disturbance in understanding what is being said. This occurs because what has been voiced is not agreeing to the memory of a similar occurrence (incoherence). Our thought process is geared to eliminate all incongruent situations and, therefore, make it harder to focus on hearing the new information accurately. The solution is to follow the disturbance and find the source of what is making focus difficult. The best way to achieve this is to question. This is the first step in the process of change.

Through listening, we see how others are experiencing the world. In comparing what we see to what they see leads us to the hardest step, that is, to match what we say to what we do. This process is difficult for all of us and gaps appear between the two. Noticing the gaps is when we are then able to change. In low efficacy students, the gap between what they are thinking and saying about their competency, and how effective they are in completing initial assignments and problems, is critical in this process. By scaffolding them through the process of achieving this competency is a delicate approach to reducing this gap. They need support and a team learning environment helps them through this process.

3.9.2. Respecting

Respecting, at its core, means recognizing that someone exists. They may be hard to get along with, but one recognizes they are here. This also means that one respects the boundaries of that person. By boundaries, it is meant that one will not intrude on a person's space and, at the same time, not pull away so far as to put them out of the picture. This is especially appropriate in a team learning environment. Students must recognize that each member of the team has things to teach them. When an impasse occurs, students must learn to respect these boundaries and recognize these differences as the keys to learning.

Students notoriously have trouble focusing and listening to the whole story. They will pick and choose what they want to hear and drift away while the story continues. This focus is a learned skill and requires repetition. At times, this occurs because they are too focused on specifics. By seeking to understand the whole picture before focusing on the specifics is key to enhancing our knowledge. Offering the sender this respect goes a long way to our understanding of the content.

Another part of respect requires that students become participants into the process. When disturbance occurs in the team, they must take their responsibility not only for finding the solution but also having a part of the problem itself.

William Isaac brings out an interesting point by indicating that when struggling or conflicting behavior occurs in our teammates, we should focus on how these can operate within ourselves (Isaac 1999). Conflict or disturbance offers the team the opportunity to focus their efforts on dialogue. This requires team members not to try to change people's behavior but recognize how we see ourselves in the circumstances. Offering teammates the space to be themselves is the respect that is needed and offers a platform for comparison and

growth. This requires that students need to forgive each other for errors in judgement that occur, developing an understanding that these can occur in ourselves. This forgiveness, for others and oneself, requires a deep trust in the process and respect for all its members.

Understanding that conflict is a natural process of teamwork, and that it is generally caused by opposite points of views being expressed. Offering the opportunity to dialogue and to find at a solution or compromise requires respect for all parties. The tendency is to depress the conflict to regain coherence in the group. But the learning rests in these opportunities. Leaving individuals the opportunity to express their points of view, feeds our learning and is vital in the dialogue process.

3.9.3. Suspending

The practice of suspending is to hold our view of a concept in limbo while someone presents the same concept from a different point of view. Their concept may agree with ours, or, may destroy it entirely. This is one of the hardest exercises for us to accomplish, but one that is essential for the art of dialoguing.

People in dialogue often are participating with incomplete thoughts. They arrive with many questions and, at this time, rarely have answers. The environment is one of risk-taking, and this is why it is so conducive to learning. This environment is what team learning tries to incorporate into the learning process. Students are offered this space to facilitate the experience of actively learning by engaging in the topic and being allowed to make mistakes. The first step in entering this environment is to suspend our thoughts.

One of the basic reflexes that students have to suppress while in this state is to critique or criticize. It seems to be inbreeded in us as a reaction to any differences we see. If one suppresses the urge, what happens to this criticism? This energy must be dealt with in some manner. Channeling this energy towards reflection on the source of this disturbance can potentially offers students the insight into their thought process which is the starting point for change.

To be aware of our thought process gives insight on what is happening, when it is happening. Suspension dictates that we do not try to fix or look for the right answer as a premise to asking questions on what we are seeing. For students, this can be scary. All their lives they have been rewarded for the right answer and punished for the wrong answer. Dialogue requires them to question without answers, to find questions in teams that do not

have answers. Students are notorious for rushing to find answers, but taking the time needed to find the right question is the goal. David Bohm introduces the concept of order between extremes (Bohm 1996). This does not mean that we want to compromise in order to reach a just middle ground but to identify unresolved issues between the poles. Suspending helps us see these questions and reflect on the source of the issues. In this manner, we don't take sides and stay away from the right or wrong scenario to understand the differences. A tool to achieve this is an exercise called framed experiment in which one puts on new glasses and tries a different perspective for a period of time to identify with its source. In a team learning environment this may be the exercise of defending opposite view points. This opportunity makes student live a little in the opposite's shoes. Another way of getting a team to suspend their thoughts is for them to generate questions through a brainstorming session without trying to find answers. The goal is to get the group out of the reflective thought process and inviting them to find new responses.

Team learning facilitates this process by reducing the disturbance that arises in dealing with large groups. For many students, dealing and communicating in groups greater than 8 students becomes intimidating. In smaller teams, students can reflect with their teammates on the processes and issues, learning not to personalize all emotional responses, but focusing on how others view the issues.

3.9.4. Voicing

Speaking our voice is essential in any dialogue process, not only being heard but speaking from a source that is free from any influences or prejudice. For this to happen one must believe in what is said and have the confidence that it is true, valid and pertinent. The search for our voice begins by listening to one's inner self. Not every word we think needs to be spoken. The process of choosing our words offers us control over what is being created; hence stability over ones thinking.

Students often will voice that they have nothing worth saying, when what is happening is they lack the confidence to voice their opinions or thoughts believing that whatever they want to say is not good enough. This is all rooted in a lack of self-efficacy. Working in learning teams can help develop this confidence in a smaller forum.

The voice that students are developing is a replica of someone they admire. They have become proficient at this mimicking, but the words are not theirs. In dialogue,

through the learning team environment, students are offered the opportunity to discover their voice in a non-threatening manner. For them to jump into a conversation with partial understanding is terrifying. Doing this in a learning team, not as much.

Finding the right words is an integral part of finding your voice. The strangest thing happens when the new voice emerges, we don't recognize it. This occurs in students as they discover this new voice that reflects a larger awareness. As they become comfortable with the learning team through dialogue, the voice becomes stronger. This flows to the larger audience with the support of the team, a sense of communal effort towards the larger group.

To dialogue, students need to speak; through speech they create. It is by showing the world their thoughts that they can create a better world. Through showing a little inside through their voice, they potentially create a better world. There is always a tendency to self-censorship, in that, for the fear of hurting someone, they withhold. To get over this hump, reflection is needed as to why they want to create and what do they have to offer the team? What risk exists arises with finding their voice and what benefits can be accrued?

3.10. Conclusion

Although the journey comes to an end, the thirst for knowledge is still very strong. Bandura links the student's perception of self-efficacy to the thinking process (Bandura 1997). This fits well with Bohm's concept of reflexes controlling thought (Bohm 1994). Understanding further this process will offer clues for teachers to help students. A major part of the thought process to be successful in developing and forming behavior is that of reflection. Students must take the time to reflect on new learnings for these thoughts to have any chance of anchoring into memory. Offering students the opportunity to reflect on new learnings at the end of each class enhances the opportunity to succeed in the learning process. This is especially true in a team learning environment as Senge introduced us to the power of learning teams and the trial and tribulations that students face in the evolution of the team (Senge 2006). How they interact can greatly impact students' success in achieving the competency. The way students dialogue using Isaac's four elements is critical (Isaac 1999). Understanding how students develop these skills will help teachers facilitate the

dialoguing process. We are spectators in the students' journey, and the more we understand the process that evolves in the way they think, the more we can facilitate their progress.

Chapter 4- Research Methodology

4.1 - Research Question and Hypothesis

The research questions were:

1. Do learning teams in a classroom have an impact on self-efficacy of a student?
2. Do reflective journals help students to develop their self-efficacy?

Self-efficacy is one of the pillars of the learning process and any improvement in students' perception of their ability to successfully achieving the competency enhances their learning. The independent variables in our scenario was the strategy of using teams in a classroom and offering students the opportunity to reflect on new learnings through the use of a journal. The dependent variable was students' self-efficacy. Testing validated either one of the following hypotheses:

- H0: Using learning teams and a reflective journal in a class does not help develop self-efficacy in students in the subject content.
- H1: Using a reflective journal does develop self-efficacy in students in the subject content.
- H2: Using learning teams in a class does develop self-efficacy in students in the subject content.
- H3: Using a reflective journal and learning teams does develop self-efficacy in students in the subject content

4.2 – Plan of Research

The primary objective of the research was to offer some validation that using learning teams and reflective journals increases the self-efficacy in students. The research methodology was guided by the literature review and has three pillars of strategic activity that are central to the pedagogical strategy.

Identifying them in the sequence that students faced, the first pillar was the midterm evaluation, the next encompassed the project, and the third pillar involved the final exam and a qualitative research questionnaire.

Students completed a questionnaire on self-efficacy at the beginning of the term and at end of the term. The change in self-efficacy from the beginning of the exercise to the end of the exercise gave us a measurement of the change over the term. Students were given a questionnaire from the dissertation of Dr. Diana May, University of Georgia (2009) *Mathematics self-efficacy and Anxiety Questionnaire* (Appendix 5). The focus was on highlighting the change between the first measure given in the first week of the semester and the second measure given in week 15. Performing the regression analysis between the change and the journal results, we identified the r score both in team and individual perspectives. This became the measuring base for our hypothesis.

The following table identifies the primary activities that students performed in the course and logic of each activity. The focus was to link team learning and the use of reflective journals to the change in self-efficacy through the results of these three pillars.

Table 1 – Pillars of this Project

Do learning teams enhance self-efficacy in students?		
Pillar 1- Midterm • *exam* • *journal*	**Pillar 2 - Project** • *presentation* • *report* • *journal*	**Pillar 3** • *final exam* • *qualitative questionaire*

4.3 - Pillar 1 – midterm assessment

The midterm assessment encompasses the daily journals that students complete at the end of each class and the midterm exam. In this activity, we looked at the relationship between these two activities. The aim was to identify any relationship that existed between the journal and the results of the midterm exam. In addition to focusing on the journal from an individual perspective, we examined the impact on a team basis. This gave some perspective on how teams are helping. Does the strength of individual members in the team

have an impact on others? Through this research activity we highlighted each team's results and examined the process of journaling to see if any relationship existed.

To understand the depth of the research, it is of value to examine two key elements of the data that are at the center of our focus.

Daily journals – David Bohm highlights the need to put into words the thoughts that are the result of the thinking process. The argument is that it is only after we have clearly identified what we are thinking, that we can change the behavior. This process was aimed at helping students understand not only their progress in the content, but how their thinking was processing the new knowledge. It was only by understanding this process that they can make a choice on how they perceive their ability to succeeding in learning a specific competency. The questions were as follows:

- *What have I learned today?* This question was aimed at reflecting on the content presented. By stating the content in their own words, they help the brain remember and categorize the new learnings. This reflection was the simplest and surest way of anchoring to new learnings. The assessment was performed on a Likert scale from one to five – with one showing the least effort or understanding of the topic and 5 showing a full understanding of the topic.
- *Where can this new learning be applied?* This question helps students categorize the new learnings. Bohm indicates that if the thought process cannot perform this task, the chances of it being available for future reference is negligible. Students need to access where this will apply in their lives. Again, we used the same scale to measure the student's input with one referring to little understanding of the best fit to five being very specific in this process of applicability in their lives.
- *How did my team perform?* This question is meant to focus on not only the team but the student's role in this team and how well they perceived their ability to evolve in the team. Learning is not done in isolation and the team performance is directly linked to successfully acquiring the content and changing self-perception of their abilities. The Likert scale was used as a measurement with the key variable being the focus on their role. Students were asked to rate their team's performance on the Likert scale of one to five for each of the following team values: trust, truth, openness, risk-taking, giving credit, honesty, and caring.
- *What can I do next class to help my team perform better?* This question has the purpose of initiating the student to get involved in the process of changing their behavior, hence, their learning. This reflection helps them plan for this change and prompts the student to take responsibility for the changes, not only for themselves, but also in the team. This

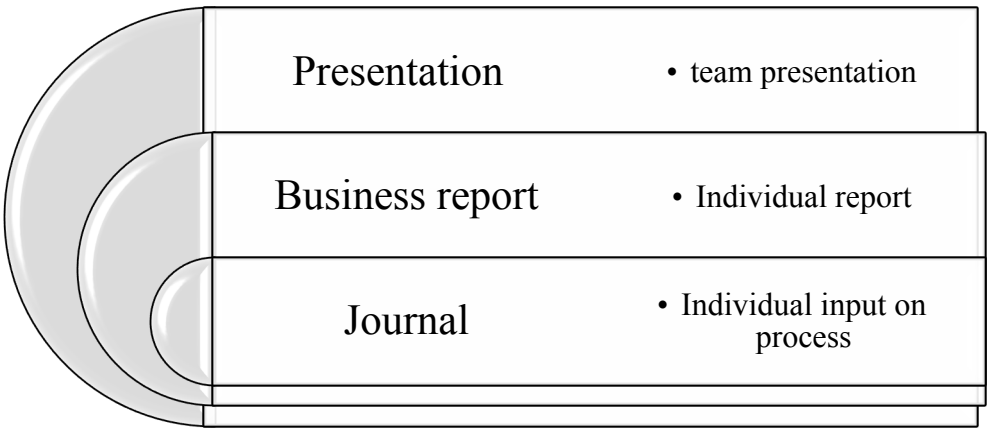
linking of individual to team is key for the student to succeed in the team environment. A Likert scale was used to measure their plan and degree of taking responsibility of change.

Midterm exam – Fashion students enter a business environment that is highly volatile. The midterm exam reflected the key elements of the competencies that are of utmost importance to succeed in the industry. The exam was developed before the semester started and reviewed by other finance teachers in the department, consistent with prior years.

4.4 - Pillar 2 - Project

This pedagogical activity was the primary focus for the second half of the semester. It incorporated the project-based learning component. This activity was designed to further the team learning experience. Using the case method process students were presented with a project that involves a business case in budgeting. Their mandate was to analyze the case and finding the best solution. Their research was guided by three components: team presentations, individual reports, and the daily journal.

Figure 3 – Components of project evaluation



Team presentation – Each team prepared a professional presentation using any medium selected by the team. The primary stipulation was that all members of the team must speak in this presentation and were evaluated on the following aspects:

- *Contribution* – from a weak contribution to a strong contribution, what role did the student play? Assessed on a Likert scale.
- *Offering an opinion* – Was the student simply reading from the text or offering an opinion about the case. Assessed from reading (one) to presenting a well-defined and developed opinion on the case (five).
- *Passion* – How involved was the student in the case. Could the student relate to it or feel for the client's predicament? Does the student show empathy for the situation the client is facing? Although it is very hard to define, an audience can identify it very quickly in any presenter. Assessed from one to five with one being the weakest and five being the most passionate.
- *Innovation* - Aimed at the team, did the presentation offer something new or simply regurgitated the obvious. To what depths did the analysis take us. Assessed from a weak analysis to a fully developed analysis.
- *Team spirit* – Was it one presentation or five presentations? How strong did the team worked together? Did they come to the defense of their teammates? Assessed from weak to strong on a Likert scale.

The objective of the research was to highlight any relationship between the variables being assessed and the results on the final exam question. Did presentation have an impact on learning, and if so, were there variables that should be the target of our focus more than others? We looked at the team performance as well. Could we identify a variable in a team that is critical to team success?

Report – The primary aim of the report was to make the student express, individually, the results of the analytical process of making a decision. The report was limited to two pages, double spaced. This process followed the basic methodology used through most business schools and identifies four variables:

- *Problem* – What was the problem that must be solved? The search was for the root of the problem. The variable was assessed on it conciseness and logic of its origin. Assessed from weak to strong on the Likert scale.
- *Analysis* – The analysis identified the strengths, weaknesses, opportunities and threats that existed in the environment that surrounded the problem. Identifying the key elements that could significantly impact the decision was key. Assessment was from weak effort to strong effort.

- *Alternatives* – Identified three alternatives that were available to solving the problem. Defined the impact, potential benefits, and the risks involved for each alternative. Assessment is driven from the perspective of the logic for each alternative and the strength of the argument from weak to strong.
- *Recommendation* – Selected from the three alternatives, the recommendation must have a strong logic to solving the problem. The reasoning for this choice and, if applicable, a schedule for implementation. Assessed from weak to strong.

Collecting data by individual and by variable offers us the opportunity to examine the impact of this strategy on the results of the final exam. were there any criteria that could underline the student success in the final? How did team outcomes relate to performance on the final exam?

Daily journal

The journal and the case project encompass the pedagogical strategies that enhance the team learning environment and was our focus of measurement in the second half of the semester. The objective was to measure the journal and the project to the final assessment to see if any correlation exists that would offer us confidence in using teams.

4.5 - Pillar 3

4.5.1. Final exam

Similar to the midterm exam, the exam was developed in advance and reviewed by peers in the department. The results were used as a basis to identify the impact that the journal had on the exam both on an individual basis and a team basis. The outcomes offered us a sound base as to understanding how much impact the strategies used had on the learning outcomes of the course and the overall competency that was sought. These outcomes validated that the new strategies of using learning teams and reflective journals impacted the students learning the competency that was aimed.

4.5.2. Qualitative questionnaire

Students were asked to complete a survey questionnaire at the end of term. The responses were anonymous and were completed using survey monkey software. The four

questions were based on their perceptions of the course strategies and the impact they saw on their learnings. Here are the questions:

1. The reflective journal has played an important role in our learning process by helping us organize and classify our new knowledge. To achieve this objective, we used survey monkey as our tool. What adjustments or amendments would you recommend helping in this process?
2. The project represented a major assessment process in this course. Its purpose was to introduce you to specific budgeting processes that you will face in your future jobs, both individually and as a team. Two of the primary activities were presenting in a team and completing a 2-page professional report of the activity done individually. The aim was to mirror an industry activity while developing an expertise related to the budgeting process. What changes would you recommend?
3. In our first class, we discussed how math was related to budgeting, how has the course changed your opinion on this subject?
4. How has your understanding of budgeting improved over the last semester?

The first two deal specifically on the strategies used in the course and how students perceived the course could be improved. The last two questions deal with their self-efficacy and how they feel about the course they have just completed.

The following table links the sources of the assessments that students face with the criteria that they were assessed on and the theoretical basis that led to them. The values that were targeted correspond for the most part to values that Peter Senge identified as key to team growth (Senge, P. M. (2006).

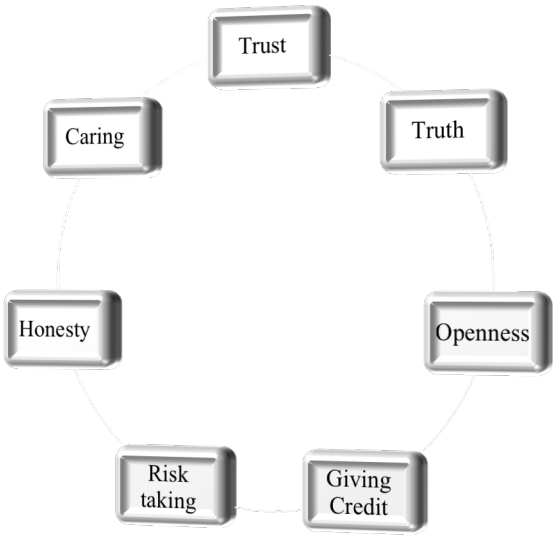
Table 2 - Theoretical sources of assessments

Summary of student activity				
Source assessment	**Evaluation criteria**	**Theoretical source**	**Output targeted**	**Key elements**
Journal	What did we learn today?	Bandura, Bohm, Senge	Insertion of thought to memory	Self-influence
	Where does it apply?	Bandura, Bohm, Senge	Validating need for future use in thought	Outcome expectancy theories
	How did my team perform?	Senge	Identifying role in team	Self-guidance
	How can I help my team next class?	Bohm, Senge	Self-reflection and planning	Personal control and control beliefs
Presentation	Contribution	Bandura, Isaac	Involvement into project	Participation & respect
	Offering opinion	Isaac	Confidence & giving voice to others	Voicing
	Passion	Bandura, Bohm, Isaac	Is effort to understand and deliver content	Respecting
	Teamwork	Senge	Come to rescue of others	Respecting
Report	Identify problem	Bohm, Senge	Decision process, cognitive thought process	Understanding thought and ensuring report is not from reflex
	Analyze environment	Bohm, Senge		
	Determine Alternatives	Bohm, Senge		
	Select Recommendation	Bohm Senge		
Pre-& Post Test	Bench marking self-efficacy	Bandura	Search in movement	Establishing change
Midterm exam	Determine level of competency	Bloom	Analyze	Reach desire competency
Final Exam	Determine level of competency	Bloom	Analyze	

4.6 - The Classroom Environment

The learning environment was a critical component of the learning process. Not only in physical appearance, but also the process of delivering the content and the values that students must buy into in order to successfully attain the competency. The environment is centered on teams. Students were assigned a team that they stayed with for the duration of the course. They were given a specific work area that was also maintained for the fifteen weeks. The primary values that a learning environment needs to enhance the learning process are summarized in the following table:

Figure 4 – Values of team learning



Students were given a bookmark with these values as a reminder of the values that this environment requires to succeed. In addition, on the reverse side of the bookmark incorporated the responsibilities of each team member. Peter Senge refers to these in his book "*The Fifth Discipline*" (Senge 2006).

Figure 5 – Responsibilities of a team member

A team member must:	Be a contributing member
	Openly seek others' opinion
	State the issue in your own words
	Express your opinion
	Experiment with others opinion
	All members must support result
	Participate in communicating decision

The typical class had thirty minutes of theory or modeling of problem solutions. The majority of the class time was devoted to applying the new learnings through working with problems in the teams. The teacher became a facilitator in this portion to guide solutions and to clarify any misconceptions of the theory. The final fifteen minutes was devoted to answering the journal questions.

4.7 - The Students

The research took place in the fall semester of 2017 and included three classes of Budgeting in the Fashion Industry for second year Fashion Marketing students (third semester). The population of students was fifty-seven. The researcher taught all classes and the objective was not to compare one to the other but have a larger sample. These students have had the researcher as a teacher before, and therefore, have encountered the similar pedagogical strategies used in previous classes. They were approximately eighty percent female ranging from 18 to 23 years of age. This sample was a convenience sample as they have been selected by the college and were continuing their selected program of courses.

4.8 - Ethical Issues

The primary ethical issue in this research was that I filled the roles of both teacher and researcher. Although there were some benefits in that the pedagogy and teaching approach were consistent in all three classes, the researcher/teacher graded all students and gathered all the data for it as well. To alleviate some of the consequences the following methodology was followed:

- The purpose of this paper and primary objectives was presented to the students – appendix 1.
- All students were asked to complete a mandatory consent form at the start of the session – appendix 2.1.
- These completed forms were put into an envelope by the students and sealed by an independent observer and delivered directly to the thesis supervisor – Dr. S. Taylor – appendix 1.
- Upon receipt of the consent forms, Dr. Taylor recoded all entrants for the purpose of insuring anonymity for all student involved. At no time did the researcher have knowledge of who accepted to participate and who did not.
- All data gathered during the semester was sent to Dr. Taylor and coded in the same process.
- The researcher only used the recoded data to analyze all results.
- Consent was received from College LaSalle – appendix 2.3.
- Consent was received from University de Sherbrooke – appendix 2.2
- This process should alleviate many of the concerns stated above.

Chapter 5 - The Results

Introduction

The research questions asked were:

1. Do learning teams in a classroom have an impact on self-efficacy of a student?
2. Do reflective journals help students to develop their self-efficacy?

The hypothesis in this paper posits that by using two pedagogical strategies – journals for reflection and learning teams – students will enhance their self-efficacy in a course, helping them to grasp a greater understanding of the course content as shown by the assessments. Therefore, the critical variables that are the focus of the study are the journals and the impact of teams. To achieve this aim, the results of each Pillar discussed in the methodology section are examined as to the impact these pedagogical strategies have had on self-efficacy and understanding the content.

5.1 Quantitative results

To review our findings, the statistical results are examined in the following order:

- The overall impact on self-efficacy.
- Pillar 1 results – mid-session review.
- Pillar 2 results – Project review.
- Pillar 3 results – Final exam results.

5.1.1. Impact on self-efficacy

Students completed two self-efficacy tests, one at the beginning of the semester and one at the end. Results were generated by 57 students in 16 teams ranging in size from 3 to 5 members. It was accumulated in three budgeting classes at LaSalle College in the fall of 2017. Students were asked twenty-one questions related to their self-efficacy in mathematics and accounting (Appendix 3). Their answers were recorded on a Likert scale from 1 to 5. The numerical value of each question was accumulated obtaining a value for each student.

At the end of the semester we obtain a value for each student for both the pre-test and the post-test. Using a t-test to compare both groups gave us a *p-value* of 0.01172 on a two tail-test indicating a significant change from the pre-test to the post-test. This confirms our hypothesis that a change in self-efficacy did occur and that the variation from the mean is consistent and not too spread out as shown by the standard deviation in the table that follows. Other statistical data obtained were as follows:

Table 3 - Results for Pre and Post Self-efficacy tests

Statistical Analysis	**Pre-test**	**Post-test**
mean	66.236	69.894
Standard deviation	12.9477	14.4311

Examining the data, it can be determined that by using the Likert scale, the greater the results, the more the student was confident and self-assured in succeeding in the course. Increasing this value determined an increase in self-efficacy which is at the root of the research. The change from the pre-test to the post-test showed a significant number of students increasing their level of self-efficacy.

Table 4 – Results of Students showing change in Self-efficacy

	# of students	**Percent**
Students increased	30	64%
Students with no change	3	6%
Students decreased	14	30%
Total	47	100%

Almost two-thirds of the students showed an increase in their self-efficacy from the start of the classes to the end of the classes. Note that those students that missed either one of the tests were not included in the results. This data offers confidence that the desired impact that occurred over the course of the fifteen weeks was probably the result of the pedagogical approach used, that is, learning teams and reflective journals.

To understand the impact of the pedagogical strategies, each pillar of our research must be examined.

5.1.2. Pillar 1 results – mid-session review

The elements of Pillar 1 comprise of four journals and a midterm exam combining to represent thirty percent of the final grade. The study first comparison focused on the impact the journals had on the grade for the midterm exam. The second looked at the journal and the change in self-efficacy calculated from the pre-test and post-tests results. This comparison is to find if one pillar had a greater impact on self-efficacy than the other. This was examined both on an individual basis and a team basis allowing us to view the impact of the team. The statistical tool used to analyze these results was regression analysis identifying the relationship between the independent variables and the dependent variable Defining the two primary statistical values of R and R^2 as:

- R is a measure of the relationship that the independent variable has on the dependent variable;
- R^2 is the percentage of the total change that was probably caused by the independent variable on the dependent variable.

The independent variables in the case of Pillar 1 are the pedagogical strategies used, that is the journal and putting students in teams. The dependent variables are both actual results and the impact on self-efficacy. In the case of Pillar 1, they are the midterm exams and the change between the pre and post self-efficacy tests.

The following table shows the results from the individual basis.

Table 5 - Individual results Pillar 1

Regression analysis	**R-value**	**R^2**
Journal to midterm exam	0.21	0.04
Journal to change in self-efficacy	0.19	0.04

Although the table shows that the journal does have an impact on both the mid-term exam and self-efficacy, it is slightly below the recognized .24 mark of significance. The journal represents the average for the first 4 weeks of Pillar 1. Students are beginning the process of learning to working with a reflective journal. The interesting observation occurs in examining the results from a team perspective.

Table 6 - Team results Pillar 1

Regression analysis	R- value	R^2
Journal to midterm exam	0.78	0.60
Journal to change in self-efficacy	0.21	0.04

The team results are obtained from the average of the team members as the base for the regression analysis. The same two variables we examined for the individual take a steep increase, especially with regards to the impact the journal has on the mid-term exam. The R^2, identifying the percentage impact that the journal has on the mid-term exam, reaches the 60%, indicating that both the journal and the team environment has a significant impact. Student reflection at the end of each class and sharing this with their respective teams appears to be having a major impact on students' self-efficacy.

5.1.3. Pillar 2 results – Project review

This pillar is very different in assessment than the first we examined. A project tends to highlight the team perspective more. The project involves three components of the assessment process: the team presentation, the individual report, and the journal. As was the case in Pillar 1, the journal represents the average of the 4 weeks working on the project. Our focus is maintained on the journal and the impact in both the individual and the team environments on the assessment variables involved.

Table 7 - Individual results Pillar 2

Regression analysis	R-value	R^2
Journal to Presentation	.52	.27
Journal to report	.34	.11
Journal to Total Pillar 2 results	.74	.53
Journal to change in self-efficacy	.21	.04

The above data indicates a significant relationship between the journal and the students obtaining success in the three elements of the assessment process. Students have now completed twelve weeks journaling and whether they are doing the presentation, writing the report, or the overall pillar assessment, a significant relationship exists with students taking the time to complete the journal. It does have an impact on self-efficacy, though somewhat lower and not quite what could be considered significant. When the journal is combined with a team environment, the following table shows how the impact of these strategies affect the assessments of Pillar 2.

Table 8 - Team results Pillar 2

Regression analysis	R-value	R^2
Journal to Presentation	.81	.66
Journal to report	.66	.43
Journal to Total Pillar 2 results	.87	.76
Journal to change in self-efficacy	.14	.02

In the team environment, the R values increase even more with a corresponding increase in the R^2 value. The only impact that is not significant is the self-efficacy variable. This seems to indicate that self-efficacy is much more complex and there are many other variables at play. The project requires a greater team participation that may impact individual

self-efficacy. The journal and the team environment may help develop its strength, but other variables such as interpersonal behavior may have a significant impact on its development.

5.1.4. Pillar 3 results – Final exam results

For the final assessment sector, we took the average of the journals for Pillar 1 and Pillar 2 as the base for comparison. This is the result of 8 journals throughout the semester and allowed the students time to acclimatize themselves to the journaling process. The final exam is the result of the exam itself; the final assessment is the sum of the weighted results of the three components of the assessment process – Pillar 1, Pillar2 and the final exam.

Table 9 - Individual results Pillar 3

Regression analysis	R- value	R^2
Journal average to final exam	.45	.20
Journal average to Final assessment	.61	.38
Journal average to change in self-efficacy	.15	.02

The individual results show a significant impact the journal has on both the final exam and the accumulated assessment for the entire course. The self-efficacy variable is weak but as we mentioned above, self-efficacy is complex, and it takes time to affect an impact on students.

Table 10 - Team results Pillar 3

Regression analysis	R- value	R^2
Journal average to final exam	.86	.77
Journal average to Final assessment	.92	.85
Journal average to change in self-efficacy	.31	.09

From a team perspective, results point to the significant impact that the journal has had on both course results and self-efficacy. The high R^2 indicates the journal has had a strong relationship for their success. Interestingly, in a team environment, the journal has shown a fairly significant value of .31 when compared with self-efficacy. This gives strength to the strategies of using journals and learning teams to improve self-efficacy in students.

5.1.5. Past results

The final comparison performed was to see if any change occurred from past cohorts. The results of the past 2 years were as follows:

Table 11 - Past Results

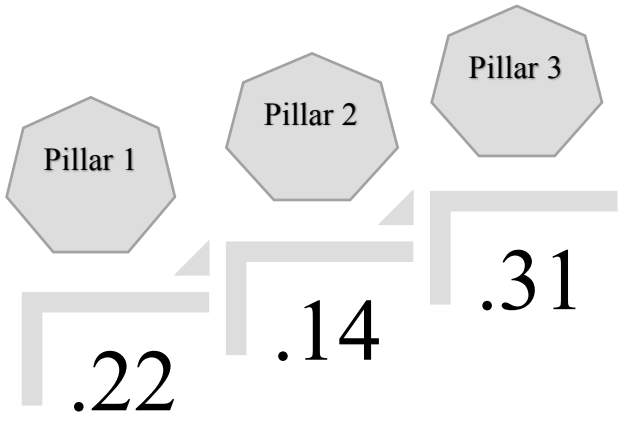
Semester	**Fall 2015**	**Fall 2016**	**Fall 2017**	**Assessment Value**
Pillar 1	77.14	82.58	84.09	30%
Pillar 2	81.20	80.21	69.41	30%
Pillar 3	74.38	79.65	76.50	40%
Final assessment	76.79	76.51	76.38	100%
# of students	61	38	65	
Passing rate	93%	92%	92%	

Looking at the final assessment, the results show a consistency throughout the 3 years. In examining each assessment component, Pillar one shows a growth in student average. In Pillar 2, there appears a significant drop in average in 2017. The passing rate denoting the number of students successfully passing the course appears consistent throughout the three years.

5.1.6. Summary of quantitative results

Our journey through the 3 pillars identifies that the strategies of using the journal and learning teams do have an impact on students mastering the content of the course. Examining the impact on self-efficacy through the pillars offers us another perspective of our study. The following chart indicates the impact at each stage with Pillar 3 showing the overall impact on students. The steps represent the Bloom's levels of learning. In the first pillar students are predominately faced with memory and process-oriented learning. Students are challenged to learn formulas and terminology that requires memorizing and understanding. The second pillar, students are faced with a project-based learning assignment that raise the level of learning to an analytical and application level following Bloom's taxonomy. The final pillar allows students to validate their learning on all these levels. Since our research was centered on the team approach, the focus was placed on the team environment.

Figure 6 - Journal to change in self-efficacy - Team environment -<u>THE R VALUE</u>



Pillar 2 shows a reduction in R value and setting us in a position to question this aspect. Possible observations are:

- This pillar seems to be a greater challenge for students as they work in teams and they must adjust to this change.
- The level of learning is increased to analysis and application, raising the challenge.
- If a student does not complete the journal, the impact is on the entire team bring down the average.
- Because this is later in the term, the journal becomes more repetitious and some students tend to slack off on the journal.

Nevertheless, the final R value of .31 answers our hypothesis affirmatively that learning teams does have an impact on self-efficacy. The student's journey to achieving self-efficacy in any area may not follow a linear path and many variables come into play. This small test offers real support for using learning teams and reflective journals.

5.2 Qualitative results

Introduction

On the final class of the semester students were asked to complete a questionnaire on the following topics:

1. The reflective journal
2. Pillar 2 assessment – the team project
3. Math related to budgeting
4. Understanding of budgeting.

The question on the reflective journal was selected because of the important role reflection plays in the learning process. Bloom, Vygotsky, and Bohm indicate that reflection plays such an important role that if a new thought does not go through this process, the chances of it surviving are very limited. (Bohm, D. (1994). An example used to reinforce this concept with the students is by telling them that new concepts introduced in class without this exercise will be forgotten by the time their feet hit the sidewalk in front of the building. Only if they take the time to reflect can the brain prioritize, categorize, and organize the new knowledge that can be retrieved for future use.

The project plays such an important role in achieving the learning outcomes in that it incorporates all the elements of behavior that will exist in students' future working environment. Their roles in the business world will incorporate teamwork, oral presentations and report writing. These are critical elements of workplace behavior that will be essential for them to succeed. Getting them to reflect on this exercise is important for us to understand their perceptions and offers students an opportunity to reflect on why they were involved in this exercise.

The perceived weakness in math is one of the principle stumbling blocks for students overcoming their lack of self-efficacy in budgeting. From the start of the semester, the relationship of math to budgeting has been examined and de-emphasized in that the math we are commonly using is adding, subtracting, multiplying and dividing. Obtaining students' perspective on this to see if their opinions have changed is fundamental to measuring the success in satisfying our hypothesis.

The final question that students were asked to answer deals with the competency of the course. The objective is to find out if students felt that they have succeeded in understanding budgeting. The results can offer us an indication if our strategies have really worked in the eyes of the students.

The purpose of the questionnaire was to find out what the students were feeling about the pedagogical strategies used, and in some part, offer them a way of reflecting on the evolution of the course throughout the semester. In each part the answers have been coded and results reported. Examples of the types of answers are offered as well.

5.2.1. The reflective journal

The question that students were given was: *The reflective journal has played an important role in our learning process by helping us organize and classify our new knowledge. To achieve this objective, we used survey monkey as our tool. What adjustments or amendments would you recommend helping in this process?* The results were coded identifying students that offered a change and those who were satisfied with the process. Our survey rendered the following results:

Table 12 – Qualitative results – The Reflective Journal

	# of students	***Percentage***
No Change	25	48%
Changes	27	52%
Total	52	100%

The first category are students that were satisfied with the process. A sample of the answers are offered to help get a feeling of the reflection students were offering.

- "Honestly, nothing else. It was helpful, simple and effective."

- "The survey monkey journal was very efficient throughout the semester. It acted somewhat as a notebook to write down what we did that class which would help us retain information and refresh our lesson for that class."
- "I enjoyed the journal as it is because it allows to make a recap of everything I've learned, and this helps my memory when it comes to retaining information."
- These comments show that the benefits of the journal were not only well received but confirmed. They knew the purpose of the journal and some actually enjoyed the experience. As for those who thought a change was needed, the following are a sample of the comments.
- "Make questions more detailed."
- "Need a method to review past entries."
- "Questions tend to be repetitive from class to class, becomes robotic."
- "Prefer manual journal."

The responses were spread between those who are more comfortable with a manual journal and those who simply do not like the journaling process. The one comment that came up several times was that once the answers were uploaded to survey monkey, they were not available for future reference to the students. They never saw them again. Whether it be from a system perspective or some process of review, a solution must be found to satisfy this weakness. It is their journal and must be available to students at any time.

5.2.2. Pillar 2 Assessment – The Project

The next question students answered was as follows: *The project represented a major assessment process in this course. Its purpose was to introduce you to specific budgeting processes that you will face in your future jobs, both individually and as a team. Two of the primary activities were presenting in a team and completing a 2-page professional report of the activity done individually. The aim was to mirror an industry activity while developing an expertise related to the budgeting process. What changes would you recommend?* The following table shows the results coded into three categories, team-oriented changes, no changes, and content-related changes.

Table 13 – Qualitative Results - The Project

	Total	***Percentage***
Team	8	16%
No Changes	27	53%
Changes	16	31%
Total	51	100%

The evolution of the team is a critical part of the learning process and how students think about this is very important. As teachers, we must separate these comments between those that are part of the process that members face as the team evolves and those that should be reviewed to find a better approach to the help the team process itself. For example, conflict is a natural part of the individuals growing into a team and, in most cases, one that students must themselves resolve. Students tend to reach for teacher's help in finding this solution, which is detrimental to them coming together as a team. Here are some of the comments that surfaced on teams:

- "Allow students to form their own teams."
- "Fairer teams."
- "Only individual parts to be assessed."
- "I liked the fact that my team and I got to work together and help each other when someone did not understand question. The only thing I did not like was the oral presentation."
- "Do the project individually."

Working in teams is hard, most of us would rather do things individually. However, our life in the real-world dictates that we learn to work in teams. It is part of the process of learning to work in teams. The way teams are formed is open to debate and a concern that teachers have. Most theorists have indicated that allowing the students to form their own teams is not the best approach. For this test, the selection of the teams was done in alphabetical order. This method is perhaps dispassionate but was done to approximate

realistic workplace conditions. They will not likely pick their teams in the future and the talents of its members will be diverse. Nevertheless, the selection process is not optimal and will be reviewed in the future.

The majority of students were satisfied with the process and seem to embrace the active learning approach. Fifty three percent of the students indicated that no change was their option. A sample of their comments is as follows:

- "It's really hard, I have to ask (my teammates) a lot of questions. But I really learned something, including specific budget knowledge and cooperation ability."
- "The project is very helpful and asks open-ended questions that required creativity and allowed us to explore our options, similar to how it would be in real life."
- "The project once again helped us collaborate with teammates and a great practice for our futured careers in the industry where we will need to work with various people. This project helped us listen, develop and present to our teammates our ideas."

Students indicated that a lot of good things happened in their learning process and the team environment helped to contribute to this success.

The final category for this question was those students who indicated a need to change the content of the project. Examples of their comments is as follows:

- "Different cases for each group."
- "I would make the questions direct and easier to understand, as when we did them, we always had a lot of questions on what something meant."
- "Go over similar case in class so we can understand."
- "The wording of the questions to better understand the question."
- "I would have, honestly, just have a much clearer understanding of the explanation of the project before hand in order to have a better atmosphere in the group and less of a conflict for no reason."

The project raised the level of understanding for students but for many of them, this experience was scary and put them in an uncomfortable environment. They were faced with a case that did not have a right or wrong answer. They had to analyze and select a best alternative. This process created an emotional response for some students and the comments relating to understanding the questions support this environment. This was the aim of the

project and it successfully achieved its goal. As for having each team do a different case, this would be very hard to achieve and loose some learning from viewing different perspectives.

5.2.3. Math related to Budgeting

Many of the self-efficacy issues in the students are related to students' perceived weaknesses in math and this is translated to a defined perception of being weak in budgeting even though they have not started or understand what budgeting is. The question they were asked was: *In our first class, we discussed how math was related to budgeting, how has the course changed your opinion on this subject?* The following table are the categorized results:

Figure 14 – Qualitative Results - Math to Budgeting

	Total	***Percentage***
Improved	33	67%
No Changes	18	33%
Total	51	100%

Sixty seven percent of students identified some improvement in their perception of budgeting. Sample of their comments are:

- "The math used in budgeting is very basic. Its more about understanding what effects the changes in an income and gross margin statement."
- "The course made me realize that it wasn't all math in this course. In fact, it was more about analyzing and interpreting a situation using different statements, equations and calculations methods."
- "I believe the math in budgeting isn't that complicated. As long as you know how to apply certain formulas and understand the task at hand, the math part is actually very simple."
- "It changed my opinion on it because I realized how important math is and I hope that I will eventually be able to understand, I will not give up."

Their perception changed, and they realized that budgeting is more than math. Their perceived weakness never materialized into a learning obstacle. This set the foundation of a change in self-efficacy.

As for the students that did not see any changes in their perception, here is a sample of their comments:

- "I still don't like math."
- "No, it has not changed my opinion, I think it does go hand-in-hand."
- "It hasn't changed my opinion, I believe that math is an important factor of budgeting."
- "I still feel there is a lot of math incorporated within this course."

They indicate a negative view and offer little in reasoning for this perception. Their low self-efficacy is still well anchored in their thoughts. These students may need more time to alleviate this perception and some may need to get involved more for these strategies to be successful.

5.2.4. Understanding of Budgeting

The final question deals with the content of the course. Understanding budgeting is the key competency that students must achieve. The question was: *How has your understanding of budgeting improved over the last semester?* The coded results were:

Figure 15 – Qualitative Results - Understanding budgeting

	Total	***Percentage***
Improved	46	90%
Unchanged	5	10%
Total	51	100%

A strong majority of the students could see an improvement in their understanding of budgeting. A sample of their comments is as follows:

- "I learned the same things, but in more depth, which helps me understand everything much better."
- "It has improved immensely, considering my marks last semester and also my willingness to learn. Before I was more scared of mathematics but now I want to learn."
- "I think it improved slowly over the course of the semester. For something that doesn't come so easy to me, I was surprised to see how I started to understand things easier and easier."
- "Yes, very much. I feel like I have more of an understanding of the aspects managers need to think of."

The math concerns have transferred to more managerial concerns and that is the focus that we are seeking. Students are now looking at budgeting as a managerial tool rather than a mathematical exercise. This is a significant leap and could not have been achieved without their self-efficacy being affected.

For the ten percent of students who did not see any changes, their comments seem to be centered on the math issue. Below is a sample of the comments:

- "It's a little bit clearer, but still very confusing."
- "I am very bad at math, so not so much improved (at times) more confused than I was before. Because there is more information to process, I get lost very easily even with homework and assignments."

Do these students need more time? Maybe, but more focus and discipline may also help.

5.2.5. Summary of Qualitative Results

In summary, the journal needs to adapt to students' need and help them reflect on their new learnings. It is their journal that we are privileged to view, and they need to be entirely in control and not feel that once they update the process it is over. We cannot forget that the use of the reflective journal has a learning curve and one must get used to it. One semester may not suffice for the process to be effective. It is not easy and demands focus to benefit from its use.

The project fulfilled exactly what we intended it to achieve. It raised the bar for the students and put them in an active learning environment that at times made them

uncomfortable. Teamwork is hard work and learning at higher levels of thought is difficult. Students must face the challenge of interpersonal behaviors and adapt to the changing environment. This is the challenge that students will face in the future. The project fulfilled this and helped them develop a sense of self-efficacy in the budgeting process.

As for the weakness in math related to self-efficacy, for many the weakness still exists, but they have learned that it does not necessarily transfer to other areas. Almost seventy percent have made this move, but for those that have found difficulty, other variables maybe in play that need to be addressed.

The competency, in the eyes of the students, was achieved with over ninety percent of them seeing this improvement. Again, those that do not see this improvement, other issues maybe at play that need to be addressed.

Chapter 6 – Conclusion

Introduction

The main focus of the research was to examine the impact of two pedagogical strategies of using reflective journals and the use of learning teams, and how these affected students' self-efficacy and ultimately helped their learning. For each of these strategies, the study examined the impact they had on both self-efficacy and the actual assessments of the course as they measure the achievement of the competency that was sought. Therefore, a reflection on both these elements is useful in determining the level of success.

The aim of this research was to answer the research questions and test the hypotheses that were presented. It is useful at this time to review where we started. The research questions were:

1. Do learning teams in a classroom have an impact on self-efficacy of a student?
2. Do reflective journals help students to develop their self-efficacy?

6.1 Quantitative research

6.1.1 Self-efficacy tests

The t-test measuring the change between the pre-self-efficacy test and the post self-efficacy test answers the research questions in a strong affirmative manner. Almost seventy percent of the students showed a positive rise in their self-efficacy. It is certain that the strategies used had an impact on student learning. The interesting observation from the qualitative data is that when students were asked how they felt about it, in almost identical numbers, they perceived their improvement on the self-efficacy scale. Learning has been enhanced.

6.1.2 Past results

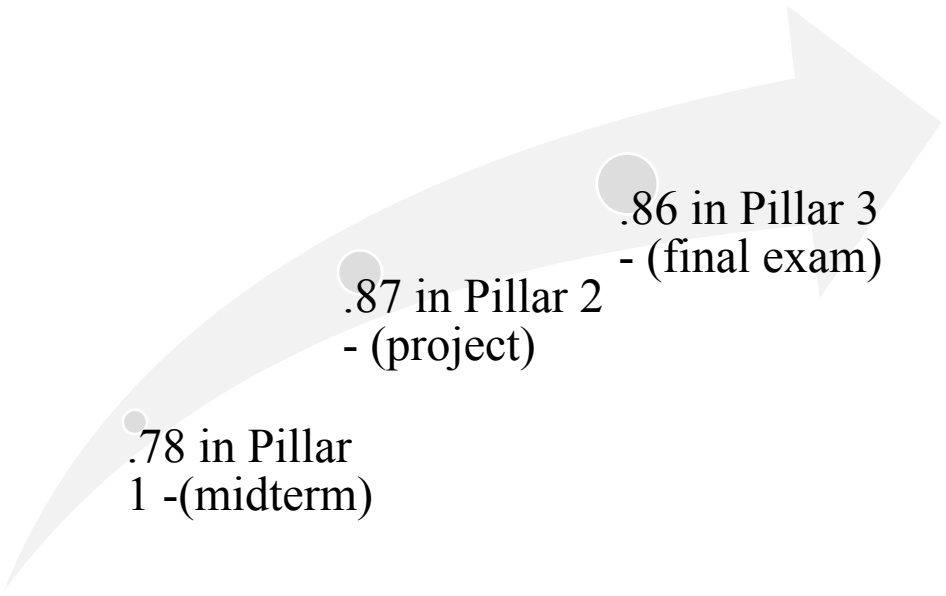
In reviewing the results of this cohort of students and comparing the assessments with those of the previous two years, over ninety percent of students have successfully completed the course which is consistent with prior years. The same strategies being used for

this research have been refined and used over the past three years. This research allowed us to measure the effectiveness of these strategies. Maintaining a high pass rate in a course that historically is deemed not to be attractive for fashion students, offers confidence in the strategies used.

6.1.3 Journal to actual results

Examining how the journal has impacted actual results, it can be seen that the journey from Pillar 1 to Pillar 3 is a process that sees the students progressively benefiting from completing the reflective journal, especially in a team approach. Figure 7 indicates the r value as measured at each of the three pillars.

Figure 7 – Journal to actual results in teams



The r value increases in Pillar 2 that carries out through their final Pillar. This indicates that the relationship between the journal and the results of each pillar is getting stronger. Students are learning to work together with specific deadlines and this has challenged their perceptions and their understanding.

Students become more proficient at working with the journal and with their teammates as the term evolves. The term ending questionnaire seems to support this

perspective in that fifty-three percent of the students seem to like the project with comments such as:

"It's really hard, I have to ask (my teammates) a lot of questions. But I really learned something, including specific budget knowledge and cooperation ability." (Student comment – Dec.2017)

For some students, they eventually get involved with the team and this can be seen by Pillar 3 where the team r-value has maintained the high value of Pillar 2. The impact on Pillar 2 is transferable to other assessments, in this case from project-based assessments to a final exam.

6.1.4 Journal to change in self-efficacy

The same can be seen in measuring the impact that the journal had on self-efficacy. Students are learning to work together throughout the term and as they experience the challenges from Pillar to Pillar, it grows on them and they become more confident and this is transferable from student to student especially in the team environment. The r value for the journal affecting self-efficacy in a team environment grew from Pillar 1 base of .21 to Pillar 3 fifteen-week base of .31. Self-efficacy is complex and change takes time. However, this project presents evidence that change has occurred.

6.2 Qualitative research

Students came into the course with a major deficiency in self-efficacy related to their perception based on their perceived experience in math courses. This was a major hurdle that needed to be addressed. The end of term questionnaire showed that almost seventy percent of students reported a change in their perception of math as it relates to budgeting. There are many variables that come into play, but reflection at the end of each class and the support of teammates are two that played a major role. Students asking each other at the end of each class "what did we do today?", stirs communication among teammates and an opportunity to validate individual understanding of the content. It encourages involvement, even from the most inactive of students. Learning teams come together at this time. It is a bonding moment.

6.3 Reflections on research

Things we learned through the process begin with the challenge of working in teams. Students find it hard and frustrating. Somehow through this process they need information on how teams evolve to allow them to prepare and adjust as the team progresses. The course content must allow time for them to adjust to this new environment. This investment in time will allow them to grow and benefit from this new learning. They need this time to develop the values necessary for teams to evolve. Finding the right balance between content and team process training is a challenge that teachers who use learning teams will face.

Students have repeatedly expressed the need to access the journal after they have made their entries. It is their journal and it should be available to them. However, currently the tool that is used does not permit this. Going to a manual journal is time consuming and not practical. A solution must be found to make the journal a tool for the student to reflect. It is not necessarily an assessment tool, but a learning tool.

One example that arose centered on conflicts in teams. Students first reaction to facing challenging situations is to bring it to the teacher. Their thinking is that the teacher will solve the problem. Unfortunately for them, only members of a team can solve problems in a team that will allow the team to succeed and grow. The solution must come from within. Students must learn to face these conflicts and challenges together. Teachers need help in understanding not only the process of team growth, but how students think in this process, how they react, when to intervene. A guideline that would help them facilitate learning teams is needed. Teachers facilitate this process, but the responsibility for the solution belongs to the team. This entire process of thought-provoking challenges must be documented and studied to help teachers know when to intervene and when to let the students face their challenge. Learning teams significantly affect the pedagogical strategies used in a classroom. This creates an increase workload for teachers in areas that are unfamiliar and challenging. This puts teachers in vulnerable and, at times, uncomfortable situations. Education on the benefit of teams is essential for learning team pedagogy to succeed. Teachers must not only be taught in this area but must willfully embrace the process for these strategies to be effective.

As was mentioned throughout the journey from pillar to pillar, time plays a large role in students getting accustomed to learning the tools of this new environment. If they face this one time and all their other courses revert to the traditional pedagogical strategies, the new learnings tend to be forgotten quickly. This approach cannot be a one hit situation for it to succeed. It is over time that students gain proficiency and expertise of working in teams. This will require a commitment by programs to review curriculum to adopt the changes needed to succeed. These changes need teachers reviewing their current courses to see how learning teams can be adapted. Changes, such as finding cases or projects that will adapt and enhance student learning, are essential for this approach to succeed. It does require a large commitment.

6.4 Limitations of research

The limitations of the study fall in the following areas:

- The sample size must be put into perspective in reviewing the results. Approximately sixty students limit our reliance on the outcomes. Additional research is needed to confirm the results.
- The researcher fulfilling the roles of data collection, teaching, and assessing creates a bias even with the best of intentions. The coding of students did help alleviate this somewhat, but the fact still may have impacted the outcomes.
- The tool for the journal was user friendly and achieve many of the objectives of the study, but the journal belongs to the student and this must be addressed in the future to allow the student to review and reflect on past entries.
- The study focused on a specific audience of fashion marketing students with a high level of female input. How representative this is of the student population still must be validated. Further research in other areas must be done to add to the value of the findings.
- The self-efficacy test used was one that was used previously by Dr. May (2009) but has its limitations. Refinement and study are needed to ensure our measurement of self-efficacy is as accurate as possible.

6.5 Concluding remarks

If there is a search to move up the ladder of Bloom's taxonomy of educational objectives, to raise the level of thought in our students, learning teams is a strategy that

allows this. Students move from remembering to analyzing to applying with the help of their team. Communicating and challenging their perceptions becomes part of their process in a safer, more risk-taking environment. In our end of term survey, over ninety percent of the students confirmed that their understanding of the content had improved. Their perception was that they had learned something that was of value, despite their resistance at the start of the course.

"I think it improved slowly over the course of the semester. For something that doesn't come so easy to me, I was surprised to see how I started to understand things easier and easier." (Student comment – Dec.2017)

This research has shown that reflection is key in learning. Just the act of students asking each other at the end of the class "what did we learn today", creates a desire to understand and an environment that enhances learning. This environment appropriates a confidence that enhances self-efficacy in students.

Next steps for this research is to extend the study to another year's cohort of budgeting students in the fall 2018. Using the same methodology will offer additional confirmation and a stronger base for our findings. It will also expand our knowledge of learning teams and the interactions that students face.

As was mentioned above, the strategy cannot work in isolation to achieve long term sustainable benefits. Work must begin to communicate the opportunities and methodology of learning teams. This must be done through workshops or seminars, in print and anywhere teachers are willing to listen. Establishing forums for teachers to collaborate on this issue will drive the search for knowledge on learning teams in the classroom and, ultimately, enhance self-efficacy in students.

To summarize learning teams and the reflective journals enhance learning and promote self-efficacy in students. The power of the two combine to enrich the learning process and facilitate the development of self-efficacy in students.

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Appendix 1 – Research study – information sheet

RESEARCH STUDY – INFORMATION SHEET

AUGUST – 2017

The information has been arranged in a question and answer format for your convenience. Should you have any additional questions please contact me directly.

WHAT IS THE PURPOSE OF THIS HANDOUT?

The goal is to provide you with the information about the research so that you can make an informed decision with regards to your participation in this study. This handout of two (2) parts:

1. *Information sheets: to inform you of the purpose and structure of the study, in addition, the extent of your involvement.*
2. *Consent form: to obtain your consent for your participation in the study*

WHY DO I HAVE TO GIVE MY CONSENT?

Your cooperation I any educational research study is voluntary, for which your consent must be provided. You have the right to decline participation, or to discontinue your cooperation in the study at any time without penalty.

Note that declining participation in the study does not exclude you from doing the course work nor will it impact assessment of your performance and achievement of course competency.

The aim of the study is to understand how the use of teams in a classroom impact the how students learn and more specifically how they think about their new learnings (self-efficacy). This understanding is a critical step in helping teachers learn how students learn and how they can intervene to help this process.

HAVE THESE TEACHING METHODS BEEN APPLIED BEFORE?

Team learning has been in the teachers' pedagogical tool box for a very long time. We live in a society that teamwork is essential in the successful completion of many tasks. The teacher has been using team work in the classroom for over ten (10) years. For most students in this class, this approach is not new as they have encountered it in their accounting class last winter. This research is being carried out in the context of my studies to a Master's degree (M. Ed.) in College Teaching at Université de Sherbrooke. I am conducting this research based on

my deep interest in teams and how students think in a collaborative environment. My thesis supervisor is Stephen Taylor Ph.D.

WHAT'S IN IT FOR ME?

Team work is a very important aspect of our environment, now and in the future. How our thinking evolves is critical to finding success in the future. The knowledge learnt in this process will benefit other teachers and future courses that you may take. The experience of working in a team environment will be long lasting and is transferable to many areas of your life. How you think about your abilities will dictate the success you will have in your quest. The tools used here will help you achieve this.

WHAT DO I HAVE TO DO TO PARTICIPATE IN THIS STUDY?

Your feedback will provide valuable data for this study. You will be asked to complete a questionnaire at the beginning and at the end of the semester indicating key data on your perception of how you feel about your ability to succeed in this course. No other additional work will be incorporated in the course. For statistical purposes, the grade on some of the questions in both the midterm and the final exam will be gathered and reviewed along with the grades for the journal, the presentation of the project, and the business report.

WILL MY FEEDBACK BE USED AGAINST ME?

No. When the researcher is also the teacher of the course the possibility of bias may be a concern. However, ***to prevent any prejudice against students of the course and to ensure that the privacy and confidentiality of participants are maintained, the following measures have been taken:***

- Consent forms indicating the choice of whether or not to participate in the study will be kept by a third party. The teacher/researcher will not be aware of who is participating in the study during the semester.

- The data will be transformed by a third party so that individual marks and responses will be thoroughly disguised.
- For the time the information is being analyzed, all documents collected from participants will be safeguarded by both the researcher and the supervisor and will be kept strictly private and confidential. They will be kept to a maximum of 5 years after the study is completed and shredded afterwards.
- No names or other identification will be used in reporting the results of the study. Even though data collected by this project may be published, used with other data sets, and/or used in a future study, of series of studies, on the research topic, the goal of the research is to report percentages and other statistical information (which is collective and anonymous … always!).

AM I ALLOWED TO ASK QUESTIONS ABOUT THE STUDY?

- You are encouraged to address questions at any time about the nature and structure of the study to the teacher/researcher, Peter Vachon, in person throughout the semester or through email: Peter.Vachon@collegelasalle.com
- If you decide to discontinue your participation in the study, you must state your intentions in writing before the last class to the supervisor of this study, Stephen Taylor, email: steveta@alumni.concordia.ca.
- The researcher reserves the right not to use participant feedback that is not believed to be offered in good faith.

Appendix 2– consent forms

Appendix 2.1 – Consent form - students

Research Project: **LEARNING TEAMS AND THEIR IMPACT ON STUDENTS' SELF-EFFICACY**

Researcher: Peter Vachon LaSalle College

August 2017

I certify to have read the accompanying information sheets and understand the responsibilities, conditions, stakes and benefits of participation.

I freely consent to participate in this study conducted within the Budgeting in the Fashion Industry (572-KRB-AS) during the fall 2017 semester.

Student Name (please print) _____

Student ☐☐☐☐☐☐☐ Number:

Student's Signature: _____

Date: _____

Instructions for submitting the consent form:

- ❖ Place this consent form in the envelope provided and seal it.
- ❖ Submit it to the person collecting these envelopes on first day of class.

These envelopes will be safeguarded until the end of the semester and will be re-coded by an independent person to maintain the confidentiality of the student. They will be held for five years in a safe and secure location by this individual. At no time will they be available to the researcher.

If you would like a copy of the study's findings (the report), please provide your email address (below). It will be sent to you at the completion of the study. (expected: Spring 2017)

Appendix 2.2 – Consent form U. de S.

ATTESTATION DE CONFORMITÉ ÉTHIQUE

Le secteur performa-Université de Sherbrooke certifie avoir examiné le projet

DATE DU RAPPORT	NOM DU PROJET	NOM, PRENOM DE L'ETUDIANTE OU DE L'ETUDIANT
3 août 2017	Learning teams and their impact on Students' Self-Efficacy.	Pierre Charles Vachon

PROGRAMME

Maîtrise en enseignement au collégial (M.ed.)

ÉQUIPE DE DIRECTION DU PROJET D'ESSAI

	NOM	PRÉNOM
DIRECTRICE OU DIRECTEUR	Taylor	Stephen

PERFORMA ESTIME QUE LE PROJET PROPOSÉ EST CONFORME AUX PRINCIPES ÉTHIQUES ÉNONCÉS DANS LE DOCUMENT : *BALISES RELATIVES À UNE DEMANDE D'ATTESTATION FACULTAIRE DE CONFORMITÉ ÉTHIQUE*

CONFIRMATION DES INTERVENANTES ET INTERVENANTS	
DIRECTRICE OU DIRECTEUR	Stephen Taylor, Ph.D
EVALUATRICE OU EVALUATEUR	Denyse Lemay, Ph.D
REPSONSABLE DE PROGRAMME	Sawsen Lakhal, Ph.D

LA RESPONSABLE DE PROGRAMME

SIGNATURE	DATE
Sawsen Lakhal	03 août 2017

Sawsen Lakhal, professeure, responsable de la maîtrise en enseignement au collégial- secteur anglophone

Appendix 2.3– Consent form - College LaSalle

Montréal, le 21 avril 2017

Madame, Monsieur,

La direction des études a analysé l'énoncé de recherche de Monsieur Peter Vachon intitulé « Learning Teams and Their Impact on Students' Self-efficacy ». Nous approuvons donc la méthodologie présentée dans le document, puisqu'elle respecte le code d'éthique prévu dans le cadre de consultations auprès des étudiants du Collège.

Cordialement,

Mathieu Lépine Directeur adjoint aux études

Appendix 3 – Self-efficacy questionnaire

Self-efficacy Questionnaire

In order to better understand what you think and feel about your budgeting course, please respond to each of the following statements on a scale of 1 (Never) to 5 (Usually).

1. I have been able to understand mathematics.
2. I have done well in my mathematics courses.
3. I have enjoyed mathematics.
4. I am the type of person who is able to learn mathematics well.
5. I have been happy in my mathematics courses.
6. Instructors have been willing to help me learn the material.
7. I have asked questions in my classes.
8. I have sought help from instructors outside of class.
9. I have set goals in my classes.
10. I have worked with other students in my classes.
11. I have worked hard in my mathematics classes.
12. I regularly do assigned homework in my classes.
13. Working on mathematics homework is stressful for me.
14. I worry I will not be able to understand the mathematics.
15. I get nervous when asking questions in class.
16. I get tense when I prepare for a mathematics test.
17. I believe I can do the mathematics in a budgeting course.
18. I believe I am the kind of person who is good at mathematics.
19. I worry that I will not be able to do well on budgeting tests.
20. I worry that I do not know enough mathematics to do well in future mathematics courses.

21. I believe I can get an “A” when I am in a mathematics course.

22. I worry that I will not be able to get a good grade in a budgeting course.

23. I believe I can learn well in a budgeting course.

24. I believe I can think like a manager.

25. I believe I can complete all of the assignments in a budgeting course.

26. I get nervous when I have to use budgeting outside of school.

27. I believe I can understand the content in a budgeting course.

28. I believe I can do well on a budgeting test.

29. I am anxious when the instructor is lecturing.

30. I worry that I will have to use budgeting in my future career.

31. I relate my ability in mathematics to how well I will do in budgeting.

Appendix 4 - Data Sets – Budgeting classes – Fall 1017

Data Set - Pillar 1 and Pillar 2

		Pillar 1			Pillar 2			
Code #	***Team***	***Journal***	***Midterm***	***total***	***Journal***	***Presentation***	***Report***	***Total***
156	BETA	9.33	75	20.53	10	20	14	24.00
163	BETA	6.67	89	24.23	10	21	17	26.10
168	BETA	9.00	86	23.49	0	19	10	16.40
175	BETA	10.00	100	27.3	10	22	18	27.20
178	BETA	10.00	97	26.49	10	20	16	25.00
325	CHI	5.00	56	15.27	7	18	15	21.63
326	CHI	7.50	96	26.15	7	20	15	22.83
224	DELTA	9.33	90	24.58	7	20	0	15.33
231	DELTA	9.67	88	24.05	7	19	15	22.23
240	DELTA	6.33	75	20.44	7	19	0	14.73
313	EPSILON	5.00	94	25.53	7	21	16	23.93
321	EPSILON	9.75	88	24.05	10	22	16	26.20
208	GAMMA	10.00	84	22.98	10	21	12	23.60
223	GAMMA	3.00	90	24.39	3	16	0	11.27
230	GAMMA	6.67	65	17.75	0	15	8	13.00
213	IOTA	6.33	100	27.19	10	23	15	26.30
215	IOTA	6.33	100	27.19	7	20	15	22.83
227	IOTA	5.67	44	12.05	3	19	13	19.57
229	IOTA	2.67	98	26.54	7	20	0	15.33
209	KAPPA	9.67	75	20.54	7	20	16	23.33
216	KAPPA	10.00	81	22.17	7	18	15	21.63
233	KAPPA	3.33	62	16.84	10	18	18	24.80
236	KAPPA	10.00	78	21.36	10	20	14	24.00
322	LAMBDA	7.50	100	27.23	7	22	16	24.53

		Pillar 1			Pillar 2			
Code #	***Team***	***Journal***	***Midterm***	***total***	***Journal***	***Presentation***	***Report***	***Total***
324	LAMBDA	10.00	77	21.09	10	21	15	25.10
211	MU	10.00	96	26.22	3	17	15	19.37
212	MU	6.67	98	26.66	10	18	13	22.30
225	MU	9.67	99	27.02	7	20	15	22.83
228	MU	3.33	91	24.67	10	18	13	22.30
150	OMEGA	3.33	88	23.86	7	20	16	23.33
173	OMEGA	6.67	100	27.2	10	22	16	26.20
153	OMICRON	6.67	91	24.77	0	21	15	20.10
177	OMICRON	8.33	49	13.48	0	10	12	12.00
187	OMICRON	9.67	75	20.54	7	21	17	24.43
190	OMICRON	10.00	94	25.68	3	13	16	17.47
154	PSI	6.00	100	27.18	3	20	15	21.17
171	PSI	10.00	28	7.86	7	20	0	15.33
182	PSI	6.67	84	22.88	10	20	17	25.50
314	SIGMA	7.25	97	26.41	7	15	15	19.83
333	SIGMA	7.50	97	26.42	10	15	17	22.50
207	UPSILON	10.00	97	26.49	10	22	11	23.70
210	UPSILON	10.00	100	27.3	10	22	15	25.70
220	UPSILON	6.67	92	25.04	7	19	14	21.73
222	UPSILON	6.67	96	26.12	10	22	14	25.20
159	ZETA	6.00	64	17.46	7	21	18	24.93
179	ZETA	9.67	45	12.44	10	20	17	25.50
184	ZETA	4.67	84	22.82	0	21	14	19.60

Data Set – Pillar 3 and Pre and Post self-efficacy tests

Code	Team	Final-mark	Pre-test	Post-test
156	BETA	82	76	80
163	BETA	86	67	63
168	BETA	75	53	53
175	BETA	96	68	69
178	BETA	92	75	76
325	CHI	74	65	69
326	CHI	86	70	66
330	CHI	89	64	97
224	DELTA	74	69	75
231	DELTA	82	75	77
240	DELTA	69	61	68
313	EPSILON	79	70	70
321	EPSILON	85	72	74
329	EPSILON	84	79	77
208	GAMMA	87	72	81
223	GAMMA	67	71	71
230	GAMMA	60	60	74
237	GAMMA	60	68	75
213	IOTA	94	90	75
215	IOTA	91	61	63
227	IOTA	63	63	68
229	IOTA	64	61	65
209	KAPPA	79	79	77
216	KAPPA	78	58	57
233	KAPPA	69	57	63
236	KAPPA	80	69	71
320	LAMBDA	80	72	72

Code	Team	Final-mark	Pre-test	Post-test
322	LAMBDA	94	75	73
324	LAMBDA	82	61	69
211	MU	81	80	80
212	MU	84	68	75
225	MU	93	70	64
228	MU	81	68	68
238	MU	86	79	79
150	OMEGA	78	73	74
173	OMEGA	95	66	66
153	OMICRO	84	65	66
169	OMICRO	80	70	70
187	OMICRO	75	63	65
190	OMICRO	78	59	65
154	PSI	81	63	79
171	PSI	60	70	62
182	PSI	88	66	73
186	PSI	93	76	100
314	SIGMA	78	65	65
333	SIGMA	77	59	59
152	THETA	82	63	87
176	THETA	84	72	63
207	UPSILON	87	78	68
210	UPSILON	93	67	77
220	UPSILON	79	74	73
222	UPSILON	80	69	63
159	ZETA	74	65	67
179	ZETA	62	71	75
184	ZETA	75	66	66
188	ZETA	98	74	73