

# Learning Effectiveness and Satisfaction in Study Groups: A Consideration of the Moderating Factors

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**ABSTRACT:** *The emerging predominance of group learning in the business world represents a significant trend of group work assignments in the context of formal education. Group learning effectiveness and satisfaction has been analyzed on the basis of traditional theories of group dynamics. However, the assessment of learning effectiveness and satisfaction has its uniqueness and requires special attention. Based upon equity theory, we propose a model to highlight the significant impact of workload equity and mutual collaboration on members' performance and satisfaction in the group learning process. We conduct a study to validate the relationship and the results support our proposition. In addition, with reference to predicted outcome value theory, we propose that information transparency has a highly significant moderating effect in the group learning process. Hence, the findings of this study are consistent with the results of previous studies on team effectiveness that found conflicts and individual satisfaction to be negatively associated, and interpersonal understanding amongst team members to be positively correlated with team learning. On top of this observation, our study contributes to literature by highlighting the significance of information transparency in the group learning process. Finally, some implications, limitations, and recommendations of our study are discussed.*

**KEY WORDS:** *Group learning, learning effectiveness and satisfaction, workload equity, mutual collaboration, and interpersonal understanding.*

## Introduction

The emerging predominance of group learning in the business world represents a significant trend of group work assignments in the context of formal education (Senge *et al.*, 1994; Brown, Bull & Pendlebury, 1997; and Gottschall & Garcia-Bayonas, 2008). Group work can enhance students' understanding and interest. This collective way of learning provides an excellent opportunity for students to share their learning experiences and, thus, learn from each other through cooperation and interaction among themselves. It also motivates students and helps them to develop a sense of responsibility (Hackman, 1997).

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The objective of our study is to explore the complex underlying factors which influence group learning effectiveness and satisfaction in post-secondary education. We develop a model to explain the inter-relationship between group interactive factors such as equity and collaboration and group learning outcomes, including effectiveness and satisfaction. To validate our model, we conduct a study on group learning process in three English-speaking universities in an Asian metropolitan city. Based on our findings, we propose that workload equity and mutual collaboration are important antecedents of group learning effectiveness and satisfaction. In addition, we also observe that information transparency is a powerful moderating factor in the learning process.

## Literature Review

We begin our literature review by considering the various approaches to the assessments of group learning effectiveness and satisfaction. We, then, go on to consider two notable antecedent factors: workload equity and mutual collaboration, with a view to exploring the causal relationship between these two factors versus group learning effectiveness and satisfaction. Last but not least, based on predicted outcome value theory, we propose that information transparency will facilitate and enhance the effects of workload equity and mutual collaboration on group learning effectiveness and satisfaction.

***Group Learning Effectiveness: A Review.*** In an organizational setting, group learning refers to the acquisition of new skills, attitude, perspectives, and behaviors as needed by changing circumstances (Edmondson, 2002). It is through these learning activities that groups can improve group understanding, learn about changes in the environment, cope with the market and organizational demand, and encounter unexpected threats of the environment.

We review the literature on group learning effectiveness from five different perspectives: structural, systemic, cognitive, outcome-based, and process perspectives. *First*, from a structural perspective, studies of work groups in organizational settings have revealed that group learning effectiveness is enabled by structural factors such as organizational culture and structure, reward systems, task nature and design, and group structure, including roles, objective, and size (Hackman, 1997). From this perspective, the focus is on how to design an efficient group structure and its environment so that group learning can be fostered effectively.

*Second*, adopting a systemic approach, E. Lizeo (2005) proposed that since work groups could be regarded as complex social systems, the quality of learning, and the effectiveness of a work group lies in the interrelations of intermediating factors such as group dynamics and leader behavior. *Third*, based on a cognitive approach, some studies emphasized cognitive and interpersonal factors such as shared visions, group beliefs, and understandings to explain group learning effectiveness (Argyris, 1993). *Fourth*, focusing on the outcome of learning, some scholars suggest that group learning is the result of group operations which may include intra- and inter-group interaction processes (Ancona *et al.*, 1996).

Last but not least, *fifth*, considering learning as a process, A.C. Edmondson (2002) proposes a model that consists of three basic elements, namely antecedent conditions, team beliefs, and team learning behavior. Antecedent conditions refer to group structures such as group and task design, rewards, and information system, as well as leadership style, which can influence a group's competence. Team beliefs refer to common visions and understandings among group members which will determine the learning behavior. Team learning behavior refers to the actual learning activities performed by group members, including sharing information, soliciting assistance, and experimenting with new ideas. This is an integrative approach to group learning and effectiveness in which both structural factors and cognitive structures (socio-psychological traits) have a direct as well as indirect impact on group outcomes (Boud, Cohen & Sampson, 1999; and Edmondson, 2002).

**Group Learning Satisfaction: The Current State.** Group learning satisfaction reflects the level of affective response that individual team member holds toward the team experience, and the extent to which the team satisfies members' needs (Scott-Ladd & Chan, 2008). In the context of education, student satisfaction is often used as a critical indicator of teaching quality and has become a key concern for academic staff (Moore, 2006). We review the literature on group learning satisfaction from five different perspectives: perception, participation, achievement, leadership, and process perspectives.

*First*, from a perception perspective, J. Burdett and B. Hastie (2009) proposed that perceptions of learning and feelings of group-based achievement contributed most to learning satisfaction. They reported that knowledge of factors contributing to satisfaction allows teaching staff to identify potential problems in groups and improve the quality of the group learning experience. The basic argument is about how learning satisfaction would be linked closely to a learner's perception and feeling (Volet & Mansfield, 2006; and Burdett & Hastie, 2009). However, since learning may be influenced by perceptions of the group work experience, it is imperative that trainers should be well aware of the feelings of trainees, instead of just making sure that they learn what is taught (Ramsden, 1992).

*Second*, from a participation perspective, learners' satisfaction is observed to be linked to the participative activities of members in a group such as drop-out rates and learning performance (Suhre, Jansen & Harskamp, 2007; and Burdett & Hastie, 2009). Through participation in group work assignments, members in a group can learn about managing group dynamics and resolving conflict and about obtaining specific work-related knowledge (Cranmer, 2006). When group work is not involved, such valuable learning opportunities are missed (Volet & Mansfield, 2006).

*Third*, from an achievement perspective, group learning requires changes to conventional individual-based learning styles and may contradict the motivations, aptitudes, and learning preferences of high achievers (Yazici, 2005). Those with high-achievement orientation are often competitive, seek to work alone, and are less accepting of group-based rewards (Trank, Rynes & Bretz, 2002). M. Bahar (2003) found that students with achievement-oriented motivational styles were significantly less satisfied with group work, compared to those with curious,

conscientious, and sociable learning styles. It was expected that achievement orientation would be negatively related to overall satisfaction with group work. Dissatisfaction with assessment processes and marks awarded for group work assignments are a primary source of student complaint (Boud, Cohen & Sampson, 1999). Individual contributions of group members may not be acknowledged in the group mark awarded (Sharp, 2006). Differing standards may also influence students' reactions to a group's marks, along with achievement orientation. Students with higher standards would be expected to be more dissatisfied with low shared marks or to feel that they missed opportunities, because the group could not match the performance expected by the higher achiever (Bacon, 2005). It is expected that satisfaction with marks would be positively associated with overall satisfaction with group work.

*Fourth*, from a leadership perspective, although most group work assessment tasks involve leaderless groups, in practice, one or more students often end up taking responsibility for completing the work, whether or not they want to perform the leadership role (Mills, 2003). In some cases, these de facto leaders may be encouraged by others in the group to do more, resulting in higher responsibility and workload, while other become "free riders" in the group (Payne & Monk-Turner, 2006). This is likely to lead to resentment and dissatisfaction. It is expected that taking on a leadership role of an individual member in a group will, in general, feel unhappy and over-burdened with the group work (Pfaff & Huddleston, 2003).

Last but not least, *fifth*, considering learning as a process, different group interaction patterns may give rise to a variety of learning outcomes, including learner satisfaction of learning and team performance outcomes. In fact, the nature of peer interaction in an educational context can significantly influence students' achievement and satisfaction (Baldwin, Bedell & Johnson, 1997).

***A Process Approach to Learning Effectiveness and Satisfaction.*** Our literature review of theories related to group learning effectiveness and satisfaction has given us insights about our research. Among the various perspectives of learning effectiveness and satisfaction, a process approach to our study seems to have common importance in both issues. Based on the process theory, we identify two key factors that contribute to group learning effectiveness and satisfaction: workload equity and mutual collaboration.

***First, Workload Equity.*** In the context of group working process, workload refers to the extent that work is shared among group members. Workload equity, therefore, can be considered as the degree to which each group member takes up a fair share of the work assigned to the group (Werner & Lester, 2001). Equity theory suggests that workers expect a fair return for what they contribute to their jobs (Carrell & Dittrich, 1978). They compare their inputs and outcomes with those of their co-workers, and will likely seek to reduce the perceived inequity by altering and adjusting the relationship between inputs and outcomes (Huseman, Hatfield & Miles, 1987).

Uneven workload sharing in group assignments often seems linked to student frustration and conflict. Groups need to take responsibility for organizing their

collaboration and individual inputs in out-of-class time (Lizzio & Wilson, 2005). E. Pfaff and P. Huddleston (2003) reported that the perception of the fairness of workload distribution was a significant predictor of student attitudes towards group work. Overall satisfaction with group work will be positively associated with the satisfaction with workload distribution in group work tasks (Carrell & Dittrich, 1978). This is consistent with the empirical study by J.M. Werner and S.W. Lester (2001), who concluded that workload sharing is positively related to team satisfaction.

Respondents in this research felt that team members in their groups did a fair share of the work, everyone contributed equitably to the work, and no member relied on others to do work for them. This suggests that they divided responsibilities fairly within the group, and had confidence and trust in other team members to complete the task and produce high quality work. Such individual attitude and behavior enables the development of friendship within the team and satisfaction with cooperation (Chou *et al.*, 2008).

In a learning environment, a fair share of work, including group work and reports, is seen to be crucial to many people when they are involved in a group project work. On the contrary, uneven distribution of workload in group assignments frustrates group members. According to the study of M.A. Campion, G.J. Medsker and A.C. Higgs (1993), it is argued that fair workload distribution enhances group effectiveness by preventing free-riding. Social loafing happens when some group members decrease individual effort or find ways to avoid doing a fair share of the work (Latané, Williams & Harkins, 1979). Free riding occurs when an individual collects the benefits of group output without contributing to the input at all (Abernathy & Lett, 2005). Research suggests that social loafers who do not contribute often can manage to receive the same rewards as other hardworking members (Jassawalla, Sashittal & Malshe, 2009).

However, studies also show that perceived loafing to be detrimental to project success (Bacon, Stewart & Stewart-Belle, 1998; and Hasan & Ali, 2007); as well as team members' overall satisfaction with group work (Burdett & Hastie, 2009). Behaviors of social loafers are responsible for dysfunctional teamwork and are considered the greatest hindrance to members' potential performance in a group (Burdett & Hastie, 2009). Groups can learn more when the workload was evenly distributed and perceived fair workload sharing was a significant predictor of group performance and members' perceived satisfaction (Erez, LePine & Elms, 2002; and Erez Ellis *et al.*, 2003).

Hypothesis 1a: "*Workload equity has a positive impact on group learning effectiveness*".  
Hypothesis 1b: "*Workload equity has a positive impact on group learning satisfaction*".

**Second, Mutual Collaboration.** In a group learning environment, mutual collaboration is defined as the presence of influence, communication, and support amongst group members with a view to enhancing learning effectiveness (Aram & Morgan, 1976). The process of mutual collaboration allows the occurrence of social dynamics, including mutual support, cohesion, cooperative goals, and collaborative interactions which includes group participation, information exchange, and joint

problem solving (Andres & Shipps, 2010). The presence of mutual collaboration is purposive for problem solving with an intention to achieving positive results (Peters & Manz, 2007). Performance of teams can be enhanced if members help each other and have positive social interactions (Campion, Medsker & Higgs, 1993). Open and smooth interpersonal relations, including supportiveness, improve team satisfaction, and performance (Gladstein, 1984). Successful collaboration can bring along synergy in which the output is significantly enhanced in comparison to the input.

For the group learning satisfaction, mutual collaboration can enhance team morale (Heaney, Price & Rafferty, 1995); and has a significant relationship with work satisfaction and perceived learning (Hoegl & Gemuenden, 2001). In assessing research on student projects, J.M. Werner and S.W. Lester (2001) found mutual collaboration to be a significant predictor of team member's perceptions on satisfaction. A study on higher education showed that collaboration mode can impact teamwork and project-based task outcomes, through creating a social structure that influences the capacity for a team to maintain a mutual supportive and positive climate (Andres & Shipps, 2010).

Hypothesis 2a: "*Mutual collaboration has a positive impact on group learning effectiveness*". Hypothesis 2b: "*Mutual collaboration has a positive impact on group learning satisfaction*".

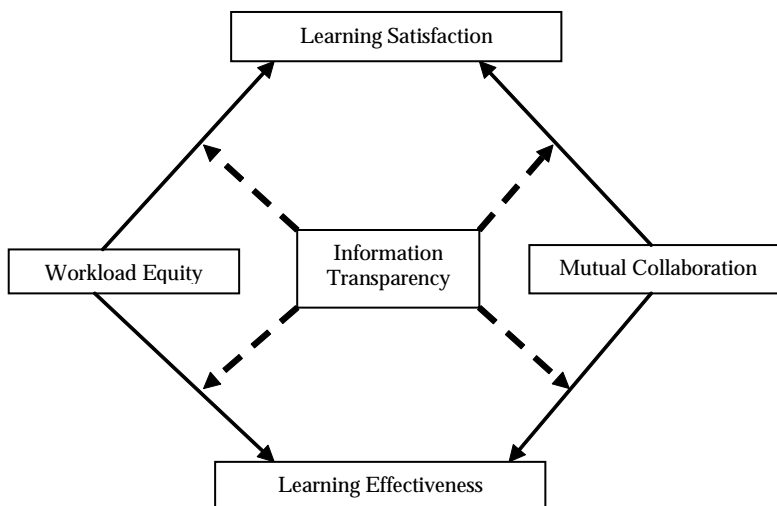
***Impact of Information Transparency on Workload Equity.*** Information transparency is related somewhat to team behaviors which involve information sharing (Jassawalla & Sashittal, 1999); and the degree to which team members have access to the information required for the tasks (Street & Meister, 2004). Research shows that information transparency exists when team members are willing to collaborate as well as be open to inspection in order to receive valid feedback (Popper & Lipshitz, 2000); and can communicate and share information frequently (Andres & Shipps, 2010). The higher the trusting relationship amongst team members, the more comfortable they are in sharing their information and knowledge (Jassawalla & Sashittal, 1999).

Group work provides an opportunity for students to engage in peer-to-peer learning. Learning is enhanced when students are able to share and clarify their knowledge and build creative problem solving capabilities (Almond, 2009; and Johnson & Johnson, 2005). Openness of the information exchange and sharing facilitates communication within a team can bring high satisfaction and greater personal growth (Hoegl & Gemuenden, 2001). Sharing and communication of information amongst team members may also lead members to perceive opportunities for learning (Ng & Butts, 2009); and enhance the feeling of attachment to the team (Sharp, 2006). Likewise, team performance outcomes are impacted by the level of transparency and communication practices within a team (Lovelace, Shapiro & Weingart, 2001; Street & Meister, 2004; and Andres & Shipps, 2010). R.J. Vandenberg, H.A. Richardson and L.J. Eastman (1999) asserted that high performance work teams emphasize increasing transparency of information and knowledge amongst team members.

Hypothesis 3a: “Information transparency positively moderates the impact of workload equity on learning effectiveness”. Hypothesis 3b: “Information transparency positively moderates the impact of workload equity on learning satisfaction”.

**Impact of Information Transparency on Mutual Collaboration.** Mutual collaboration depends on trust in inter-personal relationships which is related to the frequency of transactions and the length of time the commercial relationship has been in place. More frequent transactions allow persons to demonstrate their reliability and good faith more quickly; thus, potentially building trust sooner (Jassawalla & Sashittal, 1999). People who meet frequently for transactions also have more opportunities to share information. As the commercial relationship becomes increasingly long term, person owners build confidence in each other and expectations grow that the relationship will continue. Expectations of a continuing commercial relationship act to curb opportunism and promote risk-taking and investment (Street & Meister, 2004). Trust is more difficult when some persons have information that others do not. In practice, asymmetric information about general market conditions, benefits, opportunities, and risks is the rule rather than the exception. Information asymmetries can hinder the establishment of trust as individuals with less information may suspect that they are being unfairly exploited by those with more information (Lovelace, Shapiro & Weingart, 2001).

**Figure 1:**  
Testing the Moderating Role of Information Transparency on Learning Effectiveness and Satisfaction



Note:

- (1) A solid line and arrow represents a direct effect.
- (2) A broken line and arrow represents a moderating effect.

Information transparency facilitates trust by reducing uncertainty and allowing persons to negotiate with each other on the basis of similar information. Even though trust is the lubricant that allows commercial machinery to turn more smoothly, blind trust is a risky proposition in commercial relationships. A more prudent approach is to “trust but verify”. In the best case scenario, information transparency evolves into the active exchange of information and learning (Ng & Butts, 2009). This enhances opportunities for upgrading as vertical and horizontal linkages become conduits for the transfer of knowledge, skills, and technology.

Hypothesis 3c: “*Information transparency positively moderates the impact of mutual collaboration on learning effectiveness*”. Hypothesis 3d: “*Information transparency positively moderates the impact of team collaboration on learning satisfaction*”.

## Research Methodology

We conduct our research in three English-speaking universities in Hong Kong, a major metropolitan city in the southern region of China. With the assistance of some helpful Professors and Instructors in these universities, questionnaires were distributed to students during class breaks in the academic year of 2009-2010. Around 501 questionnaires were distributed to eligible respondents, 492 (98%) questionnaires were collected, of which 53 questionnaires were incomplete, thereby providing 439 usable questionnaires for data analysis.

**Measures.** All items were rated using 5-point Likert scales with the response scale ranges from 1 (strongly disagree) to 5 (strongly agree). Learning effectiveness was measured by using three items adopted from the team diagnostic survey by R. Wageman, J.R. Hackman and E.V. Lehman (2005).

Learning satisfaction was measured by three items, of which two items came from the team diagnostic survey by R. Wageman, J.R. Hackman and E.V. Lehman (2005) with special focus on assessing the general satisfaction of team members ( $M = 3.89$ ,  $SD = 0.84$ ,  $\alpha = 0.84$ ). The remaining item used for measuring individual satisfaction in this study was re-developed by the researchers based on D.G. Hackman's (1997) normative group effectiveness model ( $M = 3.92$ ,  $SD = 0.61$ ,  $\alpha = 0.85$ ).

The items for measuring workload equity were adapted from those used by M.A. Campion, G.J. Medsker and A.C. Higgs (1993) in their studies on job design, interdependence, composition, context, team process, and team effectiveness in group work ( $M = 3.22$ ,  $SD = 0.92$ ,  $\alpha = 0.84$ ).

Mutual collaboration is measured as the extent of cooperation which targets to achieve common team goals. We adopt six items developed by M. Hoegl and H.G. Gemuenden (2001) to measure this variable ( $M = 4.13$ ,  $SD = 0.55$ ,  $\alpha = 0.93$ ).

Information transparency refers to communication within the team relating to the frequency, formalization, structure, and openness of information exchange. The five-item scale from M. Hoegl and H.G. Gemuenden (2001) was used to measure this variable ( $M = 4.20$ ,  $SD = 0.44$ ,  $\alpha = 0.94$ ).



## Study Results

All 439 respondents were undergraduate students. Female students (53.1%) were more prevalent than male students (46.9%). Participants in the questionnaire survey were asked to specify the total number of team members in the student group work with which they recalled having been involved. All the constructs, except the objective-based measurement, will be assessed by a 5-point scale (5 = highly agree, to 1 = highly disagree). We control for individual demographic data such as age, gender, education level. Table 1 shows the means, standard deviations, and reliabilities of all dependent and independent variables.

**Table 1:**  
 Descriptive Statistics and Reliability

	Mean*	Std. Dev.	Skewness		Kurtosis	
			Statistic	St.Err	Statistic	St.Err
<b>Learning Satisfaction (LSAT)</b>						
Generally speaking, I am satisfied with this team.	4.01	.908	-.633	.110	-.374	.220
I enjoy the kind of work I do in this team.	3.82	1.013	-.523	.110	-.467	.220
My personal needs are more satisfied than frustrated by this team experience.	3.67	.912	-.543	.110	-.641	.220
<b>Learning Effectiveness (LEFF)</b>						
Our team is able to achieve our objectives.	3.81	.657	-.823	.111	2.045	.221
If conflicts came up, they were easily and quickly resolved.	3.59	.782	-.703	.110	.550	.220
I learn a lot from other members in the group.	3.67	.710	-.498	.110	.568	.220
<b>Workload Equity (WorkEQ)</b>						
Everyone on my team did a fair share of the work.	3.41	.908	-.729	.110	-.314	.220
No one in my team depended on other team members to do the work for them.	3.30	1.013	-.309	.110	-.629	.220
Nearly all the members on my team contributed equally to the work.	3.28	.912	-.383	.110	-.641	.220
<b>Mutual Collaboration (MutCol)</b>						
Team members helped and supported each other.	3.76	.779	-.688	.110	.855	.220
Suggestions of team members were respected.	4.05	.622	-.650	.111	2.120	.221
Suggestions of team members were discussed and developed.	3.85	.672	-.834	.110	1.836	.220
<b>Information Transparency (InfoTran)</b>						
There was frequent communication within the team.	3.63	.851	-.483	.110	.200	.220
The team members communicated often in spontaneous meetings, phone conversations, etc.	3.50	.816	-.412	.111	-.044	.221

	Mean*	Std. Dev.	Skewness		Kurtosis	
			Statistic	St.Err	Statistic	St.Err
The team members communicated mostly directly and personally with each other.	3.66	.833	-.556	.111	.197	.221
Project-relevant information was shared openly by all members.	4.04	.741	-.674	.111	.788	.221
The team members were happy with the timeliness in which they received information from other team members.	3.53	.762	-.685	.110	.797	.220
The team members were happy with the precision of the information received from other team members.	3.66	.691	-.859	.110	1.201	.220
The team members were happy with the usefulness of the information received from other team members.	3.75	.714	-.925	.111	1.495	.221

\* 1 = strongly disagree; and 5 = strongly agree.

**Factor Analysis and Instrument Validity.** We use the method proposed by Kaiser-Meyer-Olkin to measure sample adequacy by means of the SPSS program (Kaiser, 1974). The result is 0.824, showing that the sampling adequacy is very good and meets the assumption of Exploratory Factor Analysis (EFA).

Cronbach's alpha was used to measure the internal consistency of the multi-item scales used in this study. As the Cronbach's alpha values of all of the constructs were over 0.7, it can be claimed that they are all reliable.

The correlation matrix of the data set is shown in table 2. This enables us to examine all potentially overlapping constructs. If the items comprising a construct do not overlap much with other constructs (i.e. the AVE of a construct is larger than its squared intercorrelations with other constructs), then discriminant validity of the construct is assured (Fornell & Larcker, 1981). Table 2 shows also that the diagonal elements (reporting the square root of the variance shared between a construct and its measures) are all higher than the correlations between target constructs without exceptions, which suggest discriminant validity of all the constructs in this study.

**Table 2:**  
 Correlation Matrix

	AVE	1	2	3	4	5
Learning satisfaction.	.693	(.833)				
Learning effectiveness.	.579	.387**	(.761)			
Workload equity.	.519	.355**	.496**	(.720)		
Mutual collaboration.	.668	.329**	.474**	.580**	(.818)	
Information transparency.	.726	.127**	.245**	.237**	.303**	(.714)

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

Diagonal elements (shown in parenthesis) report the square root of the variance shared between a construct and its measures.

To check the existence of common method bias, we conducted the Harmon one-factor analysis suggested by P.M. Podsakoff and D.W. Organ (1986). A factor analysis combining every variable in the research framework did not detect a single factor explaining the majority of covariance. In addition, the results of the regression analysis showed different degrees of significance for the regression coefficients. The above evidence collectively suggests that common method bias was not a serious concern in this study.

**Test of Hypotheses.** The results of the regression analysis are presented in table 3. Both Workload Equity (WorkEQ) and Mutual Collaboration (MutCol) have some significant influences on Learning Satisfaction (LSAT) and Learning Effectiveness (LEFF). The interaction effects of Information Transparency (InfoTran) on the significant influences of both Workload Equity and Mutual Collaboration are also significant. Hence, all hypotheses in this study were supported.

**Table 3:**  
 Multivariate Analysis

Dependent Variable	Parameter	B	Std. Error	T	Significance
LSAT	Intercept	2.822	.337	8.387	.001
	WorkEQ	.356	.075	4.768	.001**
	MutCol	.200	.071	2.818	.005*
	WorkEQ * InfoTran	.098	.019	-.035	.972*
	MutCol * InfoTran	.147	.020	2.396	.017*
LEFF	Intercept	.334	.289	1.153	.250
	WorkEQ	.354	.064	5.507	.002**
	MutCol	.285	.061	4.658	.003**
	WorkEQ * InfoTran	.135	.016	2.130	.034*
	MutCol * InfoTran	.079	.017	.081	.966*

\*\* Significant at the 0.01 level.

\* Significant at the 0.05 level.

### Conclusion and Recommendation

The findings of this study are consistent with the results of previous studies on team effectiveness that found conflicts and individual satisfaction to be negatively associated and interpersonal understanding amongst team members to be positively correlated with team learning (Druskat, 2000; and De Dreu & Weingart, 2003). On top of this observation, our study contributes to literature by highlighting the significance of information transparency in the group learning process.

Because of changing economics and increasing competition in the business environment, the use of teams to undertake projects are likely to continue to be popular in both business and educational settings. This study makes two contributions to the body of knowledge relating to the effectiveness of such teams and in particular of the individuals within them.

*First*, this research contributes to business pedagogical research by providing evidence of team process effects on the effectiveness of individual satisfaction. It produced an empirically verified model to provide insights for management educators and students on factors contributing to individual satisfaction in a team experience. Results of this research indicate that team process impacts individual satisfaction. The findings of this study indicate that although students are working together on a temporary basis on group assignments, they exhibit behavior consistent with those of permanent teams in the workplace.

*Second*, this study dispels the generally held assumption that students instinctively know how to work together as a team and will find group work a rewarding experience. Identification of the effect of the different dimensions of team process on student satisfaction lays an important foundation for educators and students when considering process interventions for improving team attitude, knowledge, and skills in student projects.

### Limitations

Despite of the study's success in producing practical suggestions for enhancing team process and improving personal satisfaction in student teams, the research itself has limitations that need to be identified and explained. A basic limitation of this study involves its inability to predict causal relationships because the data were cross-sectional rather than longitudinal. The findings can only show the influence between the independent and dependent variables, but no conclusions can be drawn on whether the relationships are causal.

This research has applied a quantitative methodology to study team process as a positive and significant influencing factor on individual satisfaction. Specifically, the research examined the positive effect of three team process characteristics on individual satisfaction. Although it is recognized that there might be other contributing factors, this research only studied the effect of these three factors as antecedents to individual satisfaction. Last but not least, since the survey sample was restricted to a business student population in Hong Kong, there is a limitation to generalization of the results to a more diverse student population.

### Recommendation

Based on the findings of the study, several recommendations are made for future research. *First*, as this study collected data on a cross-sectional basis only, a longitudinal research aimed at investigating the effects over time of a variety of interventions, using multi-method measurements, could further the knowledge of causality of relationships and help determine what strategies enhance satisfaction, and learning over time when students undertake group work. *Second*, as this research was limited to Hong Kong's business students, it is not clear if the factors investigated in this study apply equally to university students of disciplines other than business or indeed to non-university students.

Future research is needed to examine this. Last but not least, only five constructs were examined in this study for the purpose of understanding determinants of student satisfaction in team work. Further studies are recommended to consider other constructs which might also have an impact on learning effectiveness and satisfaction. Examples of such variables are team diversity, group cohesion, and leadership.

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**Picture of Chinese Students in Hong Kong**  
(Source: [www.google.com](http://www.google.com), 15/7/2012)

Group work can enhance students' understanding and interest. This collective way of learning provides an excellent opportunity for students to share their learning experience and, thus, learn from each other through cooperation and interaction among themselves.