

CHAPTER II

LITERATURE REVIEW

Learning Outcomes

Cohen (1994) found that cooperative learning is a good strategy for producing learning gains, the development of higher order thinking, pro-social behaviour, interracial acceptance, and as a way to achieve equal status interaction. It is also a strategy to manage academic heterogeneity in classrooms with a wide range of achievement in basic skills. Fisher and Ellis (1990) analysis support Cohen (1994) findings on higher order thinking skills that the 'incubation period' in cooperative group learning is necessary to achieve creative and high quality decision-making.

Slavin (1980) found that the three main outcomes of cooperative learning are academic achievement, race relations and mutual concern among students. Other outcomes includes student liking, self-esteem, time on task, ability to take the perspective of another person. He concluded that cooperative learning techniques are no worse than traditional techniques, and in most cases they are significantly better for academic achievement. However, cooperative learning techniques appear to be more effective than the traditional techniques for the low level learning outcomes such as knowledge, calculation and applications of principles. However, cooperative learning techniques must be a structured, focused, schedule of instruction with individual accountability for performance among team members and a well-defined group reward system. He also found that in high level cognitive learning outcomes such as identifying concepts, analysis of problems, judgement and evaluation, a less structured cooperative techniques that involve high student autonomy and participation in

decision making may be more effective than traditional individualistic techniques. Furthermore, he argued that cooperative learning techniques have fairly consistent positive effects on mutual concern among students regardless of the specific structure used. There is some indication that cooperative learning techniques can improve students' self-esteem. Students in classes using cooperative learning generally report greater liking of school than do traditionally taught students. These results indicate that cooperative learning techniques can achieve both cognitive and affective goals.

Cohen (1994) found that Slavin (1983) argued in a best evidence synthesis that cooperative learning is only effective when group rewards and individual accountability are present. According to Bramlett (1994), most evaluation have shown that higher, average and low achieving students benefit from cooperative learning as long as two essential components are present. They are group rewards and individual accountabilities. This evaluation agrees with Slavin (1980).

Zhining, Johnson and Johnson (1995) compared the impact of cooperative and competitive efforts on problem-solving. Does cooperation promote higher or lower quality individual problem solving than does competition? They examined 46 studies from 1929-1993 and classified findings into four categories according to the type of problem-solving measured. They are linguistic (solved through written and oral language); non-linguistic (solved through symbols, math/motor activities, actions); well-defined (having clearly defined operations and solutions); and ill-defined (lacking clear definitions, operations and solutions). They found that cooperative effort was superior to solving non-linguistic than linguistic problems. Problem-solving was operationally defined as a process that required participants to form a cognitive

representation of a task, plan a procedure for solving it and execute the procedure and check the results.

Jacobs, Watson, and Sutton (1996) studied the effects of a cooperative learning method on mathematics achievement and affective outcomes of students in a private elementary school. Mathematics achievement, friendship, attitude towards mathematics and self-concept are the four possible learning outcomes. They found significant increase in mathematics achievement. Jacobs et al., (1996) findings agreed with Zhining et al., (1995) of the effectiveness of cooperative effort which promote creative problem solving given that constructive group norms are set down first. Cooperative group learning begins with constructive attitude like joint effort but whether it promotes creativity is not determined. Excessive group norms may even prevent creative thinking. However, if excellent facilitation of group behaviour is promoted, creative or critical thinking maybe increased especially if members take responsibility and accountability of task set. Galanes and Brilhart (1994) defined critical thinking as involving statements and assertions with systematically and logically supported examination of reasoning and evidence. They believed that critical thinking in small groups require certain attitudes of group members, a methodical search for information, thorough evaluation of the information, and careful assessment of the reasoning behind opinions and beliefs based on the information. Slavin (1980), Johnson (1988) and Sharan (1980) have indicated that cooperative learning techniques can be used in the classrooms as the dominant instructional mode. Sharan (1980) conducted a field experiment on group investigation model to assess the effects of 'Group Investigation' learning on cognitive and social variables as part of a two year

project to retrain teachers and implement cooperative small-group learning in several elementary schools in a lower class neighbourhood in Israel. In this study, teachers from three schools participated in a series of workshops devoted to small group teaching techniques. Five special achievement tests were constructed requiring responses at low and at high levels of cognitive functioning according to Bloom's taxonomy. Finally, the content analysis of four hundred essays was collected from pupils in these three schools. Prominent themes in the essays were: Learning in small groups gave pupils greater freedom to express themselves, greater independence and sense of responsibility since they felt the teacher trusted them, and it gave them a sense of being accepted because other children listened to them. Many studies have consistently positive effects on affective and social variables have been reported in many of the cooperative studies with all methods. Johnson et al., (1988), Slavin (1980) and Sharan (1980) all found that cooperative group learning achieve cognitive and affective goals. All of these studies yielded superior achievement results for the cooperative as compared to a competitive and an individualistic learning method.

The above studies on cooperative group learning showed that there are many possible learning outcomes. Cohen (1994), Slavin (1980), Jacobs et al., 1996, Johnson et al., (1988), and Webb (1983,1991) all found positive academic achievement in group learning. Cohen (1994), Zhining et al., (1995), Fisher & Ellis (1990), and Galanes & Brilhart (1994) found higher thinking skills or problem-solving as one possible outcome. Slavin (1980), Sharan (1980), Johnson et al., (1988), and Jacobs et al., (1996) found cognitive and affective outcomes. Cohen (1994) and Slavin (1980) found other outcomes such as interracial acceptance, and pro-social behaviour.

Jacobs et al., (1996), Ajzen & Fishbein (1980) and Fisher & Ellis (1990) found attitude towards the subject to be an important measure. Slavin (1980) and Jacobs et al., (1996) found outcomes like self-esteem and self- concept respectively. Another important outcome from cooperative group learning is friendship (Jacobs et al., 1996). Nattiv, Winitzky and Drickey (1991), and Cohen (1994) found equal status interaction or democratic values as another possible outcome.

Structuring Effective Cooperative Group Learning

Nattiv et al., (1991) used three approaches to cooperative learning: incremental, immersion, and multistrategy. In the incremental approach, students begin working in loosely structured cooperative groups, gradually they learn more of the details of cooperative learning, and engage in increasingly complex cooperating structures. In the immersion approach, cooperative learning is introduced on the first day and thereafter is the only instructional method used. While in the multistrategy approach, the incremental and immersion approaches are combined.

Nattiv et al., (1991) found more than 50 cooperative learning instructional strategies. Some of the more frequently used strategies are roundtable, numbered heads together, jigsaw, pairs check, three-step-interview, think-pair-share and group investigation. Since students differ in their preference for learning through cooperative, competitive and individualistic strategies, all three modes of learning should be used to ensure a more balanced approach in the classroom. Cooperative learning promotes democracy in schools to develop good citizenship in the young children. The procedures of incorporating cooperative learning are: providing a

rationale for explaining how to do it, demonstrating, providing a guided practice, debriefing and providing an independent practice where possible.

Research in classroom management suggested an ideal proportion of cooperative learning should be about sixty per cent while the rest of the forty per cent should be competitive or individualistic learning. This will provide diversity of teaching strategies in the classroom to reduce boredom, routine and increase motivation. Zhining et al., (1995) and Johnson et al., (1988) stressed that some of the features of cooperative group technique are the presence of joint goals, shared resources, joint effort, positive interdependence, individual accountability, face to face interaction, and mutual rewards.

One of the features of implementing individualistic technique in the classroom is ensuring one student's achievement is unrelated and independent from the achievement of others. Secondly, there is no interaction among the students. Thirdly, the individual is expected to take full responsibility and accountability of task completion. Fourthly, rewards are only for those who achieve the goal by outperforming others. Lastly, there are only scarce resources and competitive roles (Johnson et al., 1988).

According to Slavin (1980), classroom cooperative learning techniques differ along five dimensions. They are reward interdependence, task interdependence, individuality accountability, teacher-imposed structure and use or non-use of group competition.

Jigsaw is the cooperative learning technique that used the most structured form of team interaction. Jigsaw consists of structured cooperation on the group task but no

explicit group goal. It is an example of low reward interdependence and high task interdependence. A few cooperative techniques are designed on motivational device, that is a reward system that motivates students in their teams to go over academic materials again and again until they and their teammates know them. Some techniques use the team structure primarily as a facilitative device to encourage students to share ideas, to brainstorm, and to decide how to structure its own activity (Slavin, 1980).

Cattell (1948), as quoted in Shaw (1976), formulated the Group Syntality Theory based on an empirical-statistical orientation. There are two interrelated parts, namely dimensions of groups and dynamics of syntality. Dimensions of groups consist of population traits, syntality traits and characteristics of internal structure. Population traits are defined as the characteristics of the individual members who compose the group. Syntality(group behaviour) consists of the personality of the group or any effect that the group has as a totality. While the internal structure refers to the relationships among group members and structural characteristics describing the organisation patterns within the group. All three dimensions are inter-dependent. Group syntality are influenced by population traits and structure only. It is also indirectly influenced by cultural variables. The major concept in Cattell's theory is synergy, the total of the individual energy that is available to the population. According to Cattell, there are two kinds of activities that affect group effort. They are the maintenance synergy and the effective synergy. Maintenance synergy is the activities directed towards the maintenance of the group to ensure cohesion and harmony. While effective synergy is the activities directed toward the group's goal/s. Therefore, in structuring cooperative

group learning it is necessary to look at the factors that determine maintenance synergy and the effective synergy of a group.

Shaw (1976) identified some factors that must be considered when investigating into group dynamics. They are social facilitation, risk-taking, group formation and development, the physical environment, the personal environment, the social environment, the group composition, the group structure and the task environment.

Slavin (1980), Zhining et al., (1995), and Johnson et al., (1988) found that effective group learning should be structured with the following characteristics: joint effort, positive interdependence (group interaction), individual accountabilities, task interdependence, and mutual rewards (group goals).

What Is Considered Effective Cooperative Group Learning?

In an analysis focussing on task and interaction in cooperative group learning, Cohen (1994) argued that a technique that is effective for a learning outcome might not be effective for another. She distinguished among different meanings of productivity or effectiveness of cooperative learning. The commonest definition of productivity for cooperative learning is the conventional academic achievement that stresses basic skills, recall of factual materials and the application of algorithms in areas such as mathematics. Secondly, productivity can also be defined in terms of conceptual learning and higher order thinking. Thirdly productivity is defined as the occurrence of equal-status interaction within the small groups. Finally, productivity may be defined in terms of desirable pro-social behaviour such as being cooperative

or being friendly towards students of a different ethnic or racial group in a multiethnic setting.

The central proposition of Cohen (1994) is that the relationship of the total amount of interaction within a group to achievement differs according to the nature of the task. Not all tasks assigned to cooperative groups are true group tasks. Some could be done as individually but have the character of collaborative group work. Theoretically, the total amount of interaction should be more important for achievement gains when there is an ill-structured problem that is a true group task than when the task is more clear-cut and could be carried by individuals. The type of interaction that is the most effective and thus the most desirable will vary with the nature of the task and the instructional objective. Two examples were described. In the case where the tasks comes with clear procedures and right answers, routine learning in collaborative seatwork is enough. In conceptual learning with group tasks and ill-structured problems, an extensive mutual exchange of ideas, hypotheses, strategies, and speculations are desired.

Cohen (1994) found two perspectives on group interaction. They are the implicit group processes and the explicit structured group. Barnes and Todd (1977) and Schwartz, Black, and Strange (1991) studies took a social construction of knowledge view of group processes. They believe meanings are constantly negotiated. Therefore, it is necessary to make a distinction between operational meaning of the moment and subsequent reflective meaning. Whereas the other view from Chang and Wells (1987) and Vedder (1985) believe in order to be effective, groups must manage the process of problem solving with explicit talk. They define learning as problem

solving where the planning and execution of tasks are brought under conscious control. These studies suggest that students need to be taught differently or they tend to operate at the most concrete level (Cohen, 1994).

Cohen defined a group task as a task that requires resources (information, knowledge, heuristic problem-solving strategies, materials, and skills) that no single individual is likely to solve the problem or accomplish the task objectives without at least some input from others (Cohen and Vargas, 1987). Cohen developed the general proposition that given an ill-structured problem and a group task, productivity will depend on interaction.

The most consistent, positive predictor of achievement in these studies is the giving of detailed, elaborate explanations (Webb, 1991). The student who does the explaining is the student who benefits, controlling for how well he or she would have done based on past achievement/ability. Swing and Peterson (1982) also found that high achievers benefited from participation in heterogeneous groups, especially by giving explanations to others. In addition, students with higher initial achievement/ability scores tend to give more explanations. A key distinction of interaction in small groups and its relationship to effectiveness is based on the group task and the type of assignment (Cohen, 1994).

How is group effectiveness measured? Cattell (1948) measured group effectiveness by the effective synergy that is the achievement of group goals. Cohen (1994) measured effectiveness by learning gains, conceptual learning and higher order thinking skills, equal status interaction within the group and pro-social behaviour. Webb (1983,1991) found that the most positive predictor of achievement is the

students' ability to give detailed and elaborate explanations to others. Measurement of group effectiveness is a subjective evaluation. A group is considered effective if it achieve the goals that it was set up to accomplish. Therefore, a cooperative group is considered successful if it achieved its main learning outcome that is improving students' academic achievement. Other learning outcomes such as pro-social behaviour or self-esteem building are somewhat subjective and therefore difficult to measure or quantify. It would be difficult to see an improvement in such areas unless under a long period of qualitative study.

Developmental Life Cycle of A Group

The difficulty of measuring the learning outcomes of students is further compounded by the fact that groups have a developmental life cycle. They go through stages of development similar to those of human beings. In Wheelan's Integrative Model of Group Development, there are five stages. They are dependency and inclusion (stage one), counter dependency and fight (stage two), trust and structure (stage three), work (stage four) and termination (stage five).

In 1965, Tuckman's developmental model of group consisted of four identifiable periods of forming, storming, norming, and performing. In 1977, Tuckman and Jensen added a fifth phase that they referred to as adjourning. Phase one, or forming, is a period devoted to issues of membership, inclusion, and dependency. Storming is similar to the conflict or fight stage described by Bennis and Shepard (1956) and Bion (1959). Norming is the period in which a group determines its rules, structure, and roles. Performing is similar to Parson's goal attainment phase, in which the group actively works on its task. Adjourning refers to termination, in

which a group deals with the fact that it has finished its task and is, as a result, disbanding.

Schutz's theory of group development (1966) is based on three needs of members at certain periods in the group's development. The first need is the need for inclusion followed by the control phase and finally the affection phase. Inclusion refers to the need to belong to the group and to be included in group-interaction. Control refers to issues of power and authority among the members. Affection is characterised by work on the interpersonal relationships of members in order to meet needs for positive interpersonal interaction (Schutz, 1966).

Every group is unique. The amount of time spent in each stage of development varies greatly due to serious difficulties in establishing goals or the composition of group membership. Certain member skills, knowledge, or other resources may be limited. The temptation to pin the blame for group failure on individual group members should be resisted. The causes of slow progress or reasons for group inefficiency may be at the group level and not at the level of individual personalities. The most practical approach to the diagnosis of problems relies on an understanding of the group's processes in general and on its stages of development in particular (Luft, 1984).

Attitudes and Behaviour

What is an attitude?

An attitude can be a positive or negative evaluation. An attitude is an evaluative summary of an object with a knowledge structure supporting that evaluation. All attitudes have a referent, an object of thought or a stimulus object.

Attitudes are categorisations. Attitudes are responses that locate in memory. There are three components in the ABC Tripartite model: affective, behavioural, and cognitive.

According to Katz (1960) functions of attitudes are knowledge, utilitarian, value expressive and ego-defensive. The knowledge functions help us explain and understand the world around us. The utilitarian functions help us gain rewards and avoid punishment. The value-expressive function is a public statement of what a person believes or identifies with. Lastly, the ego-defensive function expresses strong hostility to some out-groups. While Herek (1986) suggests that attitudes are evaluative where the attitude object is an end in itself and expressive where the attitude object is a means to an end to providing social support and increasing self-esteem (Augoustinos and Walker, 1995).

According to Fisher and Ellis (1990), there are three principles of an effective group work. They are attitudinal factors, interpersonal factors and group identity factors. Attitudinal factors consist of an open-minded psychological mind-set orientation to the group and to other members of the group, principle of commitment (group consensus and cohesiveness), feeling of responsibility and group effort.

Are Attitudes and Behaviour Linked?

In order to answer the question, several factors need to be considered including the relevance of the attitude to the behaviour, the strength and stability of the attitude and factors relating to the specifics of the situation (Krebs and Schidmt,1993).

According to Fisher and Ellis (1990), attitude towards interaction is about the individual member level of participation, group loyalty, and willingness to take risk in experiencing conflict in a group. However, Cowie et al., (1994) research showed that

two important factors make for effective group work were fairness and reciprocity in subjective group norms. Synder and Swann (1976) as quoted in Krebs and Schmidt (1993) argued that factors that interact with attitudes include personality characteristics, such as self-monitoring. High self-monitor individuals tend to take less risk in interaction while low self-monitor individuals are willing to take risks. Therefore low self-monitor tend to interact more in a group.

The third principle according to Fisher and Ellis (1990) is group identity factors such as sensitivity to the group process, commitment to the group and group slowness. An inexperienced member will be frustrated and anxious to get started while an effective member maybe frustrated but not overly anxious and may be willing to exercise patience and observe the process getting underway. According to Fisher and Ellis (1990), the 'incubation period' or 'mulling time' is a crucial step in creative and high quality decision-making.

According to Fishbein's Theory of Reasoned Action (1967), attitudes do not predict behaviour but rather behavioural intentions. The two basic determinants of behavioural intentions are attitude toward the behaviour and the subjective norm. Behavioural intention is the probability that people place on the likelihood that they will engage in a behaviour that is relevant to a held attitude. A person's intention is a function of two basic determinants. One is personal in nature and the other consists of social influence. The personal consists of the individual's positive and negative evaluation of performing the behaviour. This factor is termed attitude towards the behaviour. It simply refers to the person's judgement that performing the behaviour is good or bad, that he is in favour of or against performing the behaviour.

The second determinant of intention is the person's perception of the social pressures put on him to perform or not perform the behaviour in question. Subjective group norms deal with the perceived prescription. Generally speaking, individuals will intend to perform a specific behaviour when they evaluate it positively and when they believe that important others think they should perform it. The relative weights of the attitudinal and normative faction may vary from one person to another.

According to the Theory of Reasoned Action, attitudes are a function of beliefs. Generally speaking a person who believes that performing a given behaviour will lead to mostly positive outcomes will hold a favourable attitude toward performing the behaviour, while a person who believes that performing the behaviour will lead to mostly negative outcomes will hold an unfavourable attitude. The beliefs that underlie a person's attitude toward the behaviour are termed behavioural beliefs. Attitude of a person towards performing a given behaviour will be measured by identifying the behavioural beliefs multiply by their beliefs' strength.

Subjective norms are also a function of beliefs, but beliefs of a different kind, namely the person's beliefs that specific individuals or groups think he should or should not perform the behaviour. These beliefs underlying a person's subjective norms are termed normative beliefs. Generally speaking, a person will perceive social pressure to comply if he also believes that there are many referents with whom he is motivated to comply think he should perform the behaviour. Conversely, a person who believes that many referents with whom he is motivated to comply think he should not perform the behaviour will have a subjective norm that puts pressure on him to avoid performing the behaviour. Thus, the subjective norms may exert pressure

to perform or not to perform a given behaviour, independent of the person's own attitude. Subjective norms are measured by identifying the normative beliefs multiplied by the motivation to comply (Ajzen and Fishbein, 1980).

In summary, there are two levels operating on behavioural intentions to perform an act. Attitude toward the behaviour is at the personal individualistic level and subjective norm is at the societal level. Subjective norms refer to what the individual actor believes his or her significant others believe he or she should do. Subjective norms refer to the perceived social pressure to carry out the behaviour. Therefore, a person's behaviour is influenced by his/her intentions that are in turn determined by his attitude toward the behaviour and the restraints of societal norms. The theory of reasoned action is applicable to behaviour under volitional control only.

However, one of the authors of the original model of the theory of reasoned action, Icek Ajzen (1988), revised the model to become the 'Theory of Planned Behaviour' to accommodate the fact that behaviour are often not under the volitional control assumed by the theory of reasoned action. The Theory of Planned Behaviour as shown in Figure 2 retains behavioural intentions as central in the link between attitudes and behaviour, and still holds that behavioural intentions are the product of attitudes toward the behaviour and subjective norms. However, an important third factor is added that is perceived behavioural control. This factor refers to the individual's perception of the ease or difficulty of performing the behaviour based on prior experience and anticipated barriers in performing it.

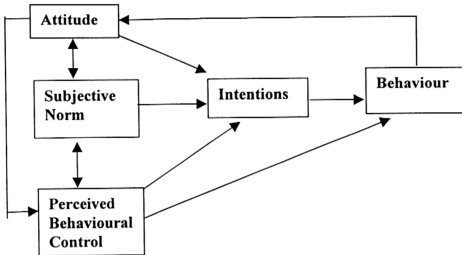


Figure 2. Theory of Planned Behaviour (Adapted from Ajzen, 1988 as quoted in Krebs and Schmidt, 1993)

Perceived behavioural control is the third determinant that can directly or indirectly influence the intentions to perform a given behaviour. It is measured by a person's perceived control over a given behaviour multiplied by the need to have control over the given situation. Perceived behavioural control affects the formation of behavioural intentions, and also, importantly, directly affects the production of behaviour itself, independently, of behavioural intentions. Ajzen (1991), who reviewed several studies, showed that the Theory of Planned Behaviour predicts behavioural intentions better than the Theory of Reasoned Action. Perceived behavioural control adds to the prediction of behavioural intentions over and above the effects of attitudes to the behaviour and subjective norms (Augoustinos and Walker, 1995). Therefore, the Theory of Planned Behaviour suggests that the likelihood that a person will behave in a way that is congruent with an attitude depend on a measured, rational decision-making process in which a combination of several

factors is considered. The link between attitudes and behaviour is not a direct one. Attitudes are influenced by behavioural beliefs and subjective norms are influenced by normative beliefs. At any point in time, place and context, there are a few salient beliefs that affect attitudes and subjective norms. The strength and stability of attitudes and subjective norms will influence behavioural intention. According to the Theory of Planned Behaviour, behaviour is the result of an intention to behave in a particular way. However, the intention is a result of an attitude, subjective norm, and perceived behavioural control (Ajzen, 1987) as quoted in Krebs and Schidmt, 1993).

In their review of research on the attitude-behaviour relation, Ajzen and Fishbein (1977) formulated a “principle of compatibility”. It stated that verbal and nonverbal indicators of a given attitude are said to be compatible with each other to the extent that their target, action, context, and time elements are assessed at identical levels of generality or specificity. Further, consistency between the two indicators of a disposition is a function of the degree to which the indicators are compatible with each other. (as quoted in Krebs and Schmidt, 1993)

In the Theory of Reasoned Action, Ajzen and Fishbein(1980) systematically develop a framework for the prediction and understanding of human behaviour. Their theory of Reasoned Action involves a limited number of constructs that can be applied to any behaviour under volitional control. They developed instruments to predict and understand weight loss, women’s occupational orientations, family planning behaviour, consumer behaviour, voting behaviour and behaviour of alcoholics. They provided steps in the construction of a standard questionnaire for predicting and understanding human behaviour.