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FEATURE

Group Investigation: How Does It Work?

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Abstract – *This qualitative study describes events and perceptions about the Group Investigation (GI) model of teaching, as experienced by students in a doctoral class on Program Evaluation. Individual interviews and observations were used to gather data from ten doctoral students in a graduate program. Participants come from various cultural and linguistic backgrounds. The GI project was to design and implement an actual evaluation of a program in a nearby school, and the class was organized to achieve this goal.*

The participants reported experiencing emotional fluctuations. Obstacles were experienced during the GI implementation and the solutions that evolved resulted in success experiences and emotional highs. This study also collected GI participants' recommendations for more successful GI implementation in classrooms, particularly in higher education.

Our classrooms have many available options for teaching methods. We observe teachers using a variety of strategies. We also read from literature how the viability of teaching methods has been tested experimentally to see how the given method affects the teaching-learning process (Butler, 1992; Carlton & Ryan, 1999; Handelsman, et.al., 2004).

Joyce, Calhoun, and Hopkins (2002) popularized the framework developed by Joyce and Weil (1996) to organize many of the teaching methods which are in existence into what they call *families of models*. The models are divided into four families: personal, social, behavioral, and information processing. This study will explore one of the models in the social family, where the emphasis tends to be on social interaction for learning. This is often translated into some form of cooperative learning, which has been a popular method of teaching in recent years. Its popularity has been the object of many research endeavors. Theorists and practitioners of cooperative learning have developed unique strategies and approaches to assist the teaching-learning process (Johnson, Johnson, & Smith, 1998; Joyce, Weil, & Calhoun, 2000; Kagan, 2005). The

social model chosen as the focus of this study is group investigation (GI), which was studied qualitatively by a participant observer during a doctoral class in Program Evaluation.

Group Investigation

Theoretically, GI is one strategy in the social family of models of teaching (Joyce, Calhoun, & Hopkins, 2002). It was developed by Shlomo and Sharan in 1988 (Allison, 1997) and was designed to expose students to scientific procedures in cooperatively solving problems (Joyce, Calhoun, & Hopkins, 2002; Oregon Department of Education, 2005). This method is divided into six phases. Its purpose is “the development of skills for participation in democratic purposes. Emphasizing social development, GI promotes the development of the academic skills and also personal understanding” (Joyce, Weil, & Calhoun, 2000, p. 31).

To implement GI, the following steps have to be carried out in sequence:

Phase One: Encounter puzzling situation (planned or unplanned)

Phase Two: Explore reactions to the situation

Phase Three: Formulate study task and organize for study (problem definition, role, and assignments)

Phase Four: Independent and group study

Phase Five: Analyze progress and process

Phase Six: Recycle activity, (Joyce, Weil, & Calhoun, 2000, p. 30)

Much of the research conducted on cooperative learning has focused on determining the relationship between cooperative learning and student achievement (Abu, Flowers, & Flowers, 1997; George, 1999; Jones & Caston, 2004; Slavin, 1995;). Unfortunately, the jury is still out on the issue. While George (1999), and Jones and Caston (2004) found significant positive relationships between cooperative learning and student achievement, other studies such as the one by Abu, Flowers, and Flowers (1997), and also of Thompson and Chapman (2004) revealed no significant relationships.

Few research endeavors appear to have focused on GI. Leming (2005) studied the effects of cooperative learning on multicultural awareness and cross-ethnic friendships, interpersonal relationships, and pro-social behaviors. His results revealed that cooperative learning, GI included, produce positive effects on students' academic achievement and social behaviors. Jongeling and Lock (1995) also used GI as an alternative to the lecture method in a research methods class of 69 registered nurses. Their results show that the following factors determined the success of the group investigation process in student achievement and social behaviors:

- (a) careful and extensive pre-course planning,
- (b) selection of appropriate 'research' topics,
- (c) a clear statement of objectives,
- (d) availability and location of resources,
- (e) development of group investigation skills and group dynamics,
- (f) a clear understanding of course assessment and the fairness of the procedures for assessment. (p.7)

The review of literature, however, did not find any describing how GI is implemented in the teaching-learning process, which is the purpose of the present study.

Method

A qualitative approach was chosen to gather and analyze data (Ary, Jacobs, & Razavieh, 2002; Biklen, 1992; O' Connor, 2002) during a GI project involving 10 doctoral students in a class in Program Evaluation. Permission to conduct the study was obtained from the appropriate academic department of the university, and from the professor and the 10 students in the class. All participants were interviewed before and after the GI project, and were observed during the GI orientation and all meetings and activities. Participants were promised confidentiality, and informed that the tape-recorded interviews would be deleted after transcription.

Program Evaluation was a new course offering for doctoral students in the university where the study was conducted. In this class, the professor decided to use GI as a method of teaching principles and procedures in doing program evaluation. All members of this class voluntarily agreed to participate in this study. Participants came from varied cultural backgrounds, including South Africa, Nigeria, Philippines, and Indonesia. One of the authors of this article was also enrolled in the class; the other was the professor of the class.

Results

Data analysis revealed four major themes: GI investigation procedures orientation, perceptions and expectations before the actual GI process, GI experienced, and perceptions after the GI process.

Group Investigation Procedures Orientation

Before the GI implementation, the professor formed GI groups and conducted an orientation. By random assignment. Group 1 was composed of 2 members; group 2, of 3; group 3, of 3; and group 4, of 2 members. GI was also introduced in four phases since the class was grouped into four. Each phase was to be the responsibility of a specific GI group. The phases were: (1) choosing a

topic/area for program evaluation; (2) formulating and designing the evaluation questionnaire; (3) gathering the program evaluation data using the designed questionnaire, (4) and analysis of the data. Each group was to be responsible for a part of the overall evaluation using GI to help accomplish the content goals of the course, but the groups had to work together to accomplish the project.

Choosing a topic for Evaluation. Group 1 was in charge of the following: (1) to choose a topic to investigate in curriculum and instruction; (2) to set the purpose, mission, goals, and objectives of the investigation; (3) to be responsible for negotiating with a school where the evaluation would be conducted, (4) and eventually to inform and seek guidance from other GI groups about the outcomes of their tasks and assignments. .

Designing the Evaluation Questionnaire. Group 2 was responsible for constructing the data gathering instruments. Group 1 was to help Group 2 in validating the instruments. The other GI Groups would then review the instruments before Group 3 would administer them.

Data Gathering. The third group gathered the information stipulated in the questionnaire Groups 1 and 2 designed and developed. As field workers, they would visit the school and conduct the actual evaluation procedures such as interviews, observations, and surveys. Subsequently, they would forward the gathered data to group 4 for analysis and interpretation.

Interpreting Data Reporting of Findings. Group 4 analyzed the data and reported the results. After interpreting the data, the members drafted a comprehensive report of their findings and shared it with all GI members for their approval about its accuracy and acceptability. The report was then to be shown to the principal of the school where the investigation took place for his consideration and approval before he shared it with the rest of the school faculty.

Perceptions and Expectations before the Actual GI Process

The initial perceptions of the participants were thoughts of certainty about GI implementation and what it benefits them, anticipations of advantages and GI success, and hesitancy because of expected problems even if they knew how to solve them.

GI Group Roles

The GI participants showed adequate understanding of their roles. They explained that their roles and tasks were clearly defined during the orientation:

Ah, as far as I understand, the first group's purpose is to take the topic which was decided today, and work out a mission, and purpose of the study, the evaluation, and to go with the person we have decided to evaluate, and ask for permission. We will join the second group, and

we will work out instruments. And the third and the fourth group will do whatever the instruments say. If it's interviews, they will do that. If it's observations, they will do that. And finally, we will gather together, and make the evaluation and results. That's how I understand it. (Daisy)

So each one has his work to do. For example, the first one they have to set what's the topic, ask permission, and then mission of the project that we are going to investigate. And later the group two will come together with the instruments and the structure how to do it. And the group three will try to continue the data collection. And together with the group four, they will try to analyze and come for the result or finding. It's just like you're making your thesis or dissertation. It's chapter one, two, and so forth (Jun).

Advantages

Looking forward to the GI experience, the participants highlighted three advantages that the process would provide: (1) providing a balanced experience between theory and practice, (2) developing social skills, (3) and building confidence to be expert evaluators.

Providing a Balanced Experience between Theory and Practice. The participants viewed GI as providing them with the opportunity to apply theories learned from the Program Evaluation class. They valued GI as a realistic learning approach. They considered it an opportunity to participate in an actual micro-evaluation process:

Of course, it will ...[be of] benefit because we learn it now. We... not only learn the theory or the background knowledge, we experience... the investigation. (Klang)

Development of Social Skills. Respondents viewed the GI process as an opportunity to develop social skills. Friendships, cooperation, communication, sharing, and supporting each other are among those skills:

Group investigation will help develop my relationship with others, to deal with them, and on how they work with other people. (Jun)

It's essential, too, in getting into what other people feel about people and other issues as part in this project. I will be able to study others' feelings and attitudes. It's an exposure to a process and others. (Charity)

Confidence as Experts. The GI process was perceived by participants as an avenue to help them become experts in conducting program evaluation. The process was not only a class requirement, but training in developing expertise as curriculum and instruction majors:

I think that at the end of this... I will feel very confident to go in any program at least to where I am an expert in curriculum and instruction...I will be able to evaluate effectively, I believe. (Daisy)

Factors Relating to GI Success

Despite the perceived problems the participants would likely face, they were also asked how likely it was that the GI process would succeed. They were optimistic about its success. That anticipated success, however, was relative to many factors. They suggested keeping in view the aims and goals of the project. Everyone had to stay focused. Members had to develop that desire to finish the work even within a short period of time. This meant the commitment of each member to the group task, and also to each other as members of the team. This was perceived to require honesty, personal accountability, trust, and commitment of the members. These success factors, however, were seen to be evident among the members:

I think... our classmates are good and cooperative with each other. I know from previous classes that we work all together. Yes, definitely! In this class, I believe it will succeed. (Daisy)

Jun predicted success since he observed good qualities among the GI members:

I don't have any worries whether the group investigation will succeed. I can see that all members are professionals and talented...

Conditions for success were understood; however, the group's expectations were high:

If we work together, we can. And we contribute to each other. Not let them do...We have our destination. We have our aim. We want to finish as soon as possible. (Carla)

It is clear that the GI members anticipated GI success. The members showed optimism and felt they had the ability to do the group project.

Group Investigation Process Experienced

The events during the GI implementation can be subdivided into four episodes.

Episode 1: Choosing a Topic for Evaluation

Immediately after the orientation, group 1 explored possible evaluation topics. Initial topic preferences included: (1) effectiveness of the services of a nearby English Center, (2) programs of a British academy, and (3) the curriculum in a nearby elementary school. From these topic preferences, group one explored a focus. They tentatively selected the third option.

Group 1 started out to negotiate with a nearby international junior academy right after the orientation. Group 1 made an appointment to visit the principal the next day.

In the principal's office the next morning, they explained their request to do GI in his school. They brainstormed areas of the school's curriculum on which the evaluation would focus. The principal suggested that they consider the areas of the school's mission statement. He offered to send a copy of the mission statement through email so Group 1 could choose which parts of the mission statement they would evaluate.

Group 1 reported the results of the negotiations to the rest of the GI groups for discussion, suggestion, clarification, revision, and acceptance. The specified area of evaluation was the mission statement, which the principal preferred. However, other groups had suggestions. They preferred doing investigation at a school in a nearby town. Some suggested investigating a department in the university, the English department.

At this, choosing a topic became an obstacle Group 1 faced. Each GI group had its suggestions and preferences for evaluation. In fact, it took several class meetings before a decision could be made. It was difficult to choose a topic or area to evaluate.

The professor had to share his preference--the final decision. He decided to focus on some areas of the curriculum and instruction of the nearby elementary school Group 1 had initially negotiated with. He preferred this endeavor to save time and money. The school was easily accessible for gathering data.

Consequently, all groups agreed with the professor's preference. Group 1 continued to negotiate with the principal. They met him again, planned, scheduled, and finalized areas of the investigation. Finally they agreed to study the extent to which two of the goals of the junior academy's mission statement had been achieved.

Participants perceived three problems during this episode. One, it took time to finalize the evaluation topic: it took them 17 days. There were several options to choose from. Two, group 1 struggled whether to go ahead with the junior academy in a nearby school or go through a democratic way of coming up with a decision. Three, the rest of the class suggested alternative places for evaluation.

Solutions to these problems were possible because group 1 maintained good relationships with the principal of the nearby junior academy. Group 1 continued to provide the principal information regarding the progress and status of the investigation. Also, the professor assisted in finalizing the project at the Junior Academy located near the university.

Consequently, Group 1 negotiated again with the Junior Academy principal. The topic, goals, rationale, and target population were finalized by group 1, studied and revised by the rest of the GI groups. Finally, copies of these documents were also sent to the principal of the junior academy and to Group 2.

Episode 2: Developing Evaluation Instruments

The same day that Group 2 received Group 1's final output, they agreed to meet at the library to start developing the questionnaire. After approximately four hours of formulating evaluation questions, Group 2 came up with an initial draft. Group 2 was ready to share their output with Group 1.

When Groups 1 and 2 met, they discussed, revised, improved, and finalized the questionnaire that Group 2 had initially developed. It took them approximately two hours to finalize the details. They designed a questionnaire containing opinion surveys. They also developed outlines for individual interviews, focus group interviews, and observation. They prepared them for presentation to the rest of the GI groups for more input and suggestions.

Groups 1 and 2 presented the evaluation questionnaire to the rest of the GI groups and the professor for critique and suggestions. After approximately 2 hours of discussion, a consensus was achieved, and some revisions were suggested. Group 2 decided to meet to make revisions, but they could not because it was raining so heavily. Also, the internet connection was not steady at that time--it was not reliable for sending email with WORD attachments containing the suggested revisions. As a solution, one of the members volunteered to do the revisions. He did, then he sent copies to Groups 1 and 2 and the professor. Fortunately, that night around 10:00 pm, the email containing the revisions was successfully sent.

The next day, the professor confirmed the readiness of the instruments. However, he requested Groups 2 and 3 to show the document to the principal of the junior academy. With a few suggestions, the school principal also gave approval. Then the professor signaled that Group 3 could gather data.

During this episode, Group 2 faced a major problem: the pressure from Groups 3 and 4 to complete the data gathering instruments. It took approximately 2 days to finalize the instruments despite the sincere efforts of the Groups 1 and 2 who did their best to work quickly.

Episode 3: Gathering Data

Group 3 started collecting data. Group 4, however, suggested they should be part of this process. They argued that they should be involved to secure adequate information as they were to interpret the results. With the professor's approval, Groups 3 and 4 assigned their members portions of the data gathering instruments to work on.

To the sample population consisting of grades 5, 6, and 7 of the junior academy, survey questionnaires were administered. Personal interviews were also conducted with parents whose children were in grades 5, 6, and 7. Scheduled classroom observations, teacher interviews, and focus group interviews were conducted, as well. These data gathering methods were carried out as designed by group 2.

Groups 3 and 4 had a very short time to gather the evaluation data. The data collection amounted to approximately two days. This period seemed to provide them the data they needed. It was, however, observed that they wanted to talk to the teachers, do more classroom observations, conduct more focus group interviews, and interview parents, but they met several obstacles.

First, the evaluation schedule was interrupted by a series of full-school student practices scheduled for a Christmas Cantata. The whole junior academy was busy with preparations for a Christmas program. The school spent at least four hours practicing every day. Group 3 could not gather data during those hours. To address the problem, groups 3 and 4 visited the teachers during their free time and in their homes near the school.

The second problem was the typhoon. The typhoon broke out, interrupting school activities. When announced on TV that it was a signal 4, the principal had to suspend classes. Consequently, group 3 could not continue the evaluation. Now, groups 3 and 4 had to devote as much time as possible to doing the evaluation within two days to collect data before the scheduled Cantata. They divided up the evaluation tasks, and gathered as much data they could. They were able to interview and observe teachers. They were also able to observe and interview students.

The third problem was that members of Groups 3 and 4 did not all attend to their assignments. Most members provided concerted and collaborative efforts. However, a few members did not. These few left the rest of the members to fill in for their absence. And to fill in the need for human resources, members present during the two-day data gathering helped one another. Instead of doing observations as team, they formed sub-groups which simultaneously observed classes, students, and teachers. During the focus group interview, however, most of the evaluators took part.

Episode 4: Developing the Evaluation Summary

Group 4 was assigned to do the initial interpretation of data. It did not work that way, however. Groups 3 and 4 explored initial interpretations. Eventually, the task of interpreting the data was carried out by all the 4 groups due to the shortage of time.

Before developing the executive summary of the evaluation report, all four groups met, discussed, and decided on a uniform report format. The format included a table of contents, an executive summary, delimitations, limitations, a brief background of the junior academy, evaluation methods, findings and interpretation/analysis of the data (in the form of commendations and recommendations), acknowledgements, and appendices.

The process started with a scheduled meeting, expecting all groups to meet in one of the university's rooms. Not everyone came. Only four members were present. The meeting went on, anyway. The discussion, however, created a heated argument between two members.

This was the sequence of the event. At the beginning, four members could not agree on the style of the presentation of the data, i.e.—the tables and narration. Considering the framework of the report, some wanted to work on data interpretation only. They also argued to begin the report with the executive summary. Some wanted to draft the introduction, others the methodology, commendations, and recommendations. At one point, two complained that they had come to work only on data interpretation. As a result, two participants had a heated verbal exchange. Not much was done that morning, and as a result, another session was scheduled in the afternoon to meet at the university library discussion room.

In the afternoon, they continued their discussion and dealt with the data. The groups met four problems, however. First, members did not come on time as agreed. Group members appeared in the library discussion room at their own convenient time. Some came on time, some mid-afternoon, and others late in the afternoon.

Second, everyone had his/her own ideas to share. The GI groups could not come up with unanimous decisions quickly. Lengthy discussions dragged out the completion of the project.

Third, the group did not have a full-time computer word processor. Actually, the group started to work with two word processors owned by two of the participants. Unfortunately, one had to take his computer during other appointments. The group could use the computer only during the owner's short visits, but other, seemingly damaged one, was always available. So, the group had to be content with what was available.

We had computer errors. Joy's computer had errors. Also Daisy (brought) her computer, but (took it) home also. But we did it??? at the computer place and in Carla's house. (Eldra)

Fourth, a handful of the GI participants were not willing to work full-time on the project. Some said they had other appointments, and others commented their part was over. Others had to attend to their families' needs, etc. Late that afternoon, two members showed resourcefulness by securing food for the working group as the night drew on. In fact, they showed enthusiasm and fun while working. They swapped fun stories and cracked jokes. Only a few members attended to the project until 11 o'clock that night.

It took a few more days before the report could be ready. Some members came faithfully, but others were not as regular. Following are some reasons given.

I went to the capital city. I had an appointment. Our family had to see the officer in charge of our embassy. In a few more days, we will be going home. I wish I could attend, but I need to prioritize papers and documents. (Fonta)

I can't be here on some of our schedules. I have some students to attend to. I teach them, and I needed to be there. This is the way I earn a living. (Daisy)

Due to such reasons, some participants could not attend all the meetings. The final report was checked, and completed by some members of the group.

Perceptions after the GI Process

Participants' perceptions about GI immediately following the experience were varied, and emergent themes included experiences, problems, and suggestions related to the group investigation learning and teaching strategy.

High-point Experiences During the GI Process

The participants revealed positive experiences resulting from their involvement with the GI process. Every participant mentioned cooperation. They enjoyed working together despite the problems encountered. Cooperation was coupled with respecting others' ideas and opinions. There was brainstorming of ideas, sharing of personal experiences, and fellowshipping.

The GI process was considered very practical. It illustrated the theory of program evaluation as well as the practice. Its practicality provided them the experience in doing program evaluation. Participants pointed out GI's usefulness in the workplace, especially in the classroom and any project that requires cooperative endeavor. Participants' comments can be summarized in these sample responses:

It gave me practical experience to make an evaluation. I particularly enjoy classes which provide practical training with a good balance of theory. (Eldra)

It was very practical activity. It provided me exposure on skills to practically help me if asked to do [this] next time. (Carla)

Experiencing individual differences among members showed evidences of multiple intelligences. This reality provided them opportunities to respect and appreciate diverse perspectives in doing and thinking, and to complement each others' deficiencies. Almost everyone recognized the beauty in diversity. They recognized individual strengths and weaknesses:

My best experiences include working together in a nice way, including respecting and appreciating group members...Variety of ways others think. I enjoyed how other groups uniquely did their work in the way they learn and in the way they did their work. (Klang)

Working together...recognizing the multiple intelligences of members...I saw the strengths and weaknesses of individuals. Also I feel the recognition of the contribution of others. Others are knowledgeable on some aspects of the project, and others are not too. But others' expertise compensated [for] others' lack of skills. (Joy)

This experience is paralleled in other research, where it is argued that working in groups provides the GI members a better perception and experience on group performance, member satisfaction, learning, and achievement of common goals (Engleberg & Wynn, 1997). Group members exhibit satisfaction with the contributions other members make, and the fellowship enjoyed. Members also learn from each other, and have collective input to gain additional information (Engleberg & Wynn).

Bad Experiences

Contrasting positive experiences were the problems the GI participants met. These problems tended to affect the development of the final GI output. The problems most likely contributed to their perceptions about GI process.

First, time did not cooperate with the groups' work. The majority complained that had they had more time, the output of the GI process could have been better. This problem threaded into the whole process because of the delays contributed by group 1.

I felt there was not enough time. I was in the first group and we didn't get off to a quick enough start so the following groups suffered and I felt sorry about that. (Daisy)

You know, it took a long time for the first group to do their work. (Carla)

Second, GI members showed less cooperation during final output. When meetings were called for to finalize the final draft of the GI output, many showed less cooperation. Many ignored the value of their contribution to the final output. Sample responses from three of the participants show this:

Many ignored the final process. Some did not come to attend. Many did not cooperate, and many were in a hurry to do other things. No cooperation... I feel not satisfied with the results of the project. That work is not the best work. I have regrets. And I learned that cooperation is the key to produce the best results. (Carla)

In the final time for analysis of data, not all came. We worked until late, not eating. Not everyone came. Not good. So in our experience, sometimes you see that not all of our classmates came, but whoever is available. And I wish that it was participated in by everyone. (Eldra)

Third, participants recognized that directions were not clear on the roles of members during the final drafting of the GI output. All members had difficulty recognizing their duties during the actual GI process. Fonta's response is revealing:

For me, there were not clear roles in the last part. Not clear directions. It's hard if I did not understand, so I lack confidence in my part. I didn't like to be laughed when my ideas were bad compared to others. I forgot also some of my responsibilities because many times I was absent.

In addition, our observation reveals that participants had difficulty taking part in the process towards the completion of the project report. They understood what to do during their individual group's tasks, but they had difficulty playing their roles in the final stage of their project.

Fourth, they recognized that because they did not have a coordinator or chosen leader to coordinate, monitor, and control the group's tasks during the final phase, everyone wanted to do things their own way. Nobody was responsible for facilitating all the activities of the group. Many members had their own way of doing things. Some members also had their own way of being available, and this contributed to the already existing problems.

In this study and others, working in groups in the actual GI process was problematic due to time constraints (Schultz, 1996), role confusion, leadership issues, and cooperation during the final stage of the process (Barker, Wahlers, & Watson, 1995). Schultz rightly points out that time imposes specific demands on group members. A group may not have enough time to do the job. Scheduled meetings may end up without achieving a goal. Group members may not meet scheduled appointments (1996). Members may experience role confusion especially when there is "role conflict, role ambiguity, and role overload," and

these may affect the collaborative functioning of the group (Barker, Wahlers, & Watson, 1995, p. 52). Also, group leadership is essential to maintain group functioning in terms of tasks, relationship maintenance, and conflict management among members (Barker, Wahlers, & Watson).

Suggestions for a Better GI Process

The participants suggested ways to improve the GI process the next time it is used as a teaching method. They suggested the following concepts:

1. There should be a leader, a facilitator, or coordinator who will be responsible for keeping the group and its members going. To avoid delays in accomplishing tasks, and to get things organized, the leader should ensure everyone's involvement, keeping everyone on task. The leader should also be responsible for ironing out members' disputes.
2. There should be a criteria or rubrics for expected roles of GI tasks. Competencies should be set as bases for group or individual task evaluation.
3. A step-by-step job or task description of the group or individual work should be clearly outlined. It should be a blueprint outlining specific roles of participants to facilitate the completion of individual tasks.
4. Members should be encouraged to be more open with each other. There should be more sharing of ideas and suggestions.
5. While cooperation was experienced, more was still needed. The group suggested full cooperation as the key to group success. This means attendance in meetings and availability of members in all the group's activities.
6. Each member should experience the tasks and procedures of each group of the four GI groups. Participants wished they had the feel of what other groups in their respective tasks were doing.

Thinking Patterns

The thinking patterns of participants tended to be positive at the beginning of the GI process. Many of them showed excitement, maybe because they looked at the learning advantages lying ahead. The initial interviews revealed three major advantages: practical experience, development of social skills, and building confidence as experts.

Observation and interviews, however, revealed that during the GI process, respondents met challenges which showed significant changes in their perception about the GI process. Time, cooperation of members especially during the last stage, lack of group leadership, and a lack of clearly defined roles of participants during the final stage of the process were mentioned as causes of frustration among the group members.

The above-mentioned three problems influenced the thinking patterns of the participants. At the beginning, optimism appeared to be high. As episodes of the GI were cumulatively realized, it showed that thinking patterns swung from optimism to pessimism. This was evident in the low level group participation. One reason identified was that some members placed high expectations on others.

On one hand, the suggestions of the participants on how to better experience GI in the future show a significant change from pessimism to optimism again. In fact, of the experiences in the GI process what members valued most included working together, fellowship, developing skills, recognition of member's contribution, and adding more information to the knowledge base.

To sum up, there was a slight fluctuation in the thinking patterns of members relative to their perception on the GI process. The expectations and the lows and highs experienced during the GI affected their attitudes, which swung from optimism to pessimism and back to optimism. This suggests that, thinking patterns of participants in relation to the GI process may change relative to bad or good experiences. The absence of unforeseeable events such as typhoon, computer and internet difficulties, and the Christmas Cantata which brought additional stress, might make this process as more positive experience if it were repeated.

Conclusion

Findings in this study support Jongeling and Lock's (1995) study that adequate and careful planning before GI administration, which includes goal setting is essential. When groups set clear directions on what they purport to do, members are more motivated to work because goals play an important role in attaining fulfillment, happiness, and a sense of accomplishment. However, careful planning includes "goals in process" (Napier & Gershenfeld, 1993, p.182), which are inherently "value loaded." The group's goals "elucidate the good things" members "intend to accomplish. Goals also generate benefits members wish for themselves and others" (Zander, 1983, p. 27).

Some problems were anticipated even before the GI process which included time availability, communication, cooperation, and the designing of the evaluation instruments. Participants anticipated two categories of solutions to these problems: group qualities and personal qualities demonstrated by the participants. There were predominant group qualities like cooperation, respect, individual and group commitment, and accountability. Individual qualities which were relied upon during the process included individual academic skills (writing, organizing, and communicating), and participants' knowledge of the GI process itself.

Each group, in spite of having its assigned task, walked through every detail of the four episodes with some innovations. The episodes consisted of choosing a topic to investigate, designing an evaluation or investigation instrument, interpretation of the data collected, and reporting of the investigation results. Changes in the procedures and roles, however, were accounted for by groups 3 and 4. Procedure 4 was jointly accomplished by all four GI groups.

Group investigation process showed levels of effectiveness which are grounded in participants' projected levels of cooperation, having a good time, respect and tolerance exercised by members, and other positive experiences (Crano & Messe, 1982; Zander, 1983). On the other hand, the group experienced levels of conflicts which were not always addressed in constructive ways (Engleberg & Wynn, 1997).

Well-defined leadership was considered a missing part. Had this been considered, it could have contributed to the levels of effectiveness of the group. Thus, participants suggested strong emphasis on leadership whenever GI is introduced as a teaching method. With strong leadership, someone can act as a catalyst in making things work. Having well-defined leadership helps others be enthused to achieve group goals (Napier & Gershenfeld, 1993).

Consequently because of the negative experiences, participants suggested ways to improve the GI process the next time it is used as a learning and teaching method. Six suggestions comprise this list: clearly defined leadership, clarified roles and job descriptions, step-by-step and methodical descriptions of individual tasks, more open communication, more cooperation among members, and everyone experience all four procedures in the GI process.

These suggestions closely concur with Jongeling and Lock's study (1995) on GI as a "Viable Alternative in Adult Education." They pointed out that implementation on GI depends on the following:

- (a) careful and extensive pre-course planning,
 - (b) selection of appropriate 'research' topics,
 - (c) clear statement of objectives,
 - (d) availability and location of resources,
 - (e) development of group investigation skills and group dynamics, and
 - (f) a clear understanding of course assessment and the fairness of the procedures for assessment.
- (p. 10)

The participants' thinking patterns fluctuated during the whole GI process. As the experience progressed, both negative and positive emotions were encountered with greater swings toward the negative pole. However, at the final stages of the GI process, the participants' thinking swung back to the positive direction. This was evident in their high point experiences and suggestions of a better GI process in the future.

Given the experience of this class, the following implications for GI implementation in the classroom are suggested. First, teachers need to provide clearly defined goals and directions in GI. Goals provide participants the opportunity to see advantages of the method. They assist in identifying possible problems and pursuing solutions for a successful GI process.

Second, the GI participants need to ensure effective group functioning, which is essential to group process and success. Participants should consider effective communication, respect, tolerance to individual differences, and personal accountability as ingredients to group success.

Third, GI users need to seek ways to view groups in many dimensions, especially after experiencing the process. That means participants should value positive and negative experiences in the process. This will provide the basis for finding new ways to improve the GI process.

There is no perfect GI process. This method of teaching is dynamic. Whatever experiences GI participants go through during the process have a bearing on their thinking patterns. If teachers want to develop positive attitudes using this method, participants need to be exposed to situations which will provide positive, wholesome learning experiences.

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