

Feedback theory through the lens of social networking

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Feedback has long been utilised as an effective tool to enhance learning. Between students and teachers; students and students; students and schools, feedback provides a channel of communication between all parties within an education system. With the emergence and development of social networking sites (SNSs) over the past decade, it has become very convenient for people to stay in touch with each other, through computers, tablets and mobile phones. On SNSs, the barriers of face-to-face feedback between students and teachers can be diminished, and students can ask questions any time, anywhere. SNS can serve as a platform for effective feedback communication to improve student-teacher relationships and student performance. This paper presents a case study in which a class of students used *Facebook* as a hub for feedback between themselves and their teacher. The study utilises a mixed-method approach that substantiates the analysis with both quantitative and qualitative schemes. It also taps into both student and the teacher perspectives on their experiences with using SNS for feedback. Various aspects of the feedback mechanism have been manifested on *Facebook*, especially in terms of timeliness, motivation, consistency and clarity of feedback. Strategies for teachers to moderate the feedback process on SNS effectively are presented.

Introduction

Feedback is a way of communication. Ilgen, Fisher and Taylor (1979) described feedback as “a special case of the general communication process in which some sender conveys a message to a recipient”. It is a communication process because it involves a source (the sender) and a destination (the recipient). Black and William (1998) defined the content of feedback as “any information that is provided to the performer of any action about that performance”. Applying this definition of feedback to education, Ellery (2008) stated that “real learning takes place when feedback is used in ways that help close the gap between where students are (‘actual level’) and where they need to be (‘reference level’)”. The process of determining the size of that gap between actual and reference level is through assessment.

The importance of feedback has been described in many areas, such as work places (Herold & Greller, 1977), clinical studies (van de Ridder, Stokking, McGaghie & ten Cate, 2008) and even in auctions (Adomavicius, Curley, Gupta & Sanyal, 2013). The mechanism of feedback also is evident in electronics and control systems (Zhang, Allen & Huard, 2003). With the same significance, feedback mechanisms should provide inspiration to the context of education. Students need to provide feedback to their teachers so that the teachers can adjust their teaching pace and teaching material to suit their students. Students can also provide feedback to their peers so that they may coordinate with each other on projects and assignments. Students may even provide feedback to their schools in order for the schools to devise policies and regulations to accommodate student needs, for example, to achieve a more democratic atmosphere. Feedback creates a balance

among all the stakeholders in a school system and helps them to operate in a stable equilibrium (Ramprasad, 1983).

Hattie and Timperly (2007) asserted that feedback is one of the most powerful influences on learning and achievement, and can be used to enhance effectiveness in classrooms. The role of feedback is also widely praised in the agile but rich relationship between supervisors and their research students in college (Bitchener, Basturkmen & East, 2010). Lacking interactions in a classroom setting, supervisors and their research students tend to rely on constructive feedback on written work to communicate with each other. Therefore, the impact of feedback on writing has been recognised as a crucial component in academic success (Hyland, 2009).

Feedback models

Numerous feedback models have been postulated (Spratling & Johnson, 2006; Hummel, 2006). Some emphasise error correction being provided to recipients of feedback (van Beuningen, de Jong & Kuiken, 2012), whilst others focus on steering the recipients to get on the right track by themselves, instead of giving explicit instructions in the feedback (Nassaji, 2011). A few models are illustrated in Figures 1, 2 and 3, which do not attempt to cover all the feedback models proposed in the literature, or encompass all principles of feedback theory. They are examples of feedback mechanisms illustrating a progression into increased complexity.

Linear model

A linear model depicts a simple relationship between the provider of the feedback and the receiver of the feedback (Figure 1). The information contained in the message is unidirectional. The provider could be a teacher or a parent. The receiver could be a student or another teacher. Regardless of previous knowledge about the receiver, the provider sends out the feedback to the receiver and the receiver will process the message and behave as instructed, leading to an outcome.

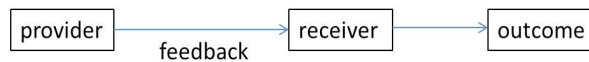


Figure 1: A linear model of feedback

Cyclic model

A cyclic model is based on perceiving that dialogue between students and teachers is fundamental to the success of learning. Dialogue is a two-way action. The teacher provides feedback to the students to inform them how they are performing. At the same time, the students should also let the teacher know how he or she is performing. The most important feature of feedback lies in its ability to continuously keep all the components in a system in check at an optimal point. If the feedback flows only one way, then even if the optimal condition is achieved at some point, it cannot be sustained in the long run.

Feedback should flow in a cycle from the providers to the receivers; then the receivers should generate their own feedback and send it back to the providers, as illustrated in Figure 2.

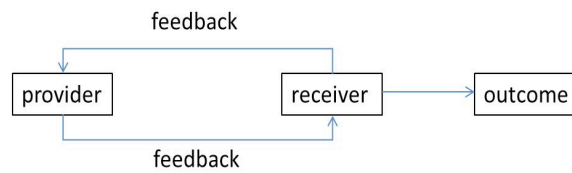


Figure 2: A cyclic model of feedback

Connected model

A connected model of feedback takes into account the growth of a student's learning experience towards integrating knowledge acquisition from teachers and from peers, and recognises that learning is a social process. Peterson (2009) viewed learning as a social cultural event that emphasised interaction within a class, not only between the teacher and the students, but also between the students themselves. Through collaborative learning, students engage in a dynamic interaction with other peers, who may be more capable in certain aspects of the subject being studied. Collaboration between learners is a key feature of a connected feedback model, as depicted in Figure 3.

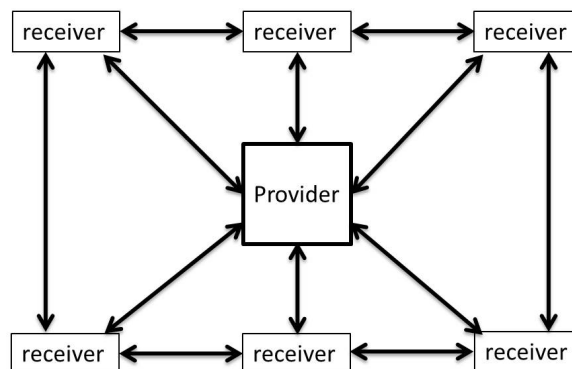


Figure 3: A connected model of feedback

Figure 3 illustrates a connection between each participant in a feedback process. Connections are two-way, indicating that the feedback is cyclic between each pair of boxes. The identity of the provider becomes more unclear in this model, as the feedback can take place between any two or more participants. The feedback process can propagate along the connections, reach many receivers, and generate content that is multi-angled and multi-viewed. There can also be multiple feedback processes going on simultaneously. The only thing that can identify the provider is their position to lead multiple feedback processes. For example, the teacher usually is the person to handle multiple discussions at the same time in a class. He or she provides initial feedback threads to many feedback

groups, and those threads can grow by themselves among their discussion groups. However, the teacher always maintains a presence in each feedback group, no matter how far the discussion within each group has grown. As a result, the teacher, as expected, is still considered as the provider. However, in many other situations, such as group games and round table meetings, the provider is not so well defined.

The role of social networking sites (SNS)

Although feedback has long been recognised as a critical element in the success of an education system, media for providing feedback have been limited in earlier times. Whether provided by face-to-face communication, paper correspondence, or even telephone conversations, the scope and ease of feedback exchanges have been limited by the intrinsic limitations of these communication mechanisms. The emergence of SNS, however, provides a solution. Members of SNS can initiate conversations anytime they want. Feedback can be posted immediately, is not limited by venue, and members can join in the conversation from anywhere with a network access. Access to the conversation can be controlled, with messages being viewable only by specified members, or any members within a group, thereby ensuring the security of the feedback content.

The connected feedback model applies seamlessly to social networking sites. The word “social” in social networking sites reflects an intention to foster communication longitudinally among friends and families, such that the need to stay connected with them can be achieved through this platform. Every user maintains a “friends” list on these SNSs. However, communication is not only limited between the user and their friends. The friends themselves can communicate with each other without the involvement of that user. It appears as though the friends have their own connections with each other. This interconnectivity distinguishes the connected feedback model from the other two models. Every member in the model is able to create a path to any other member, thereby achieving peer discourse and generating their social presence.

Utilisation of SNS in schools has grown in recent years. Asterhan, Rosenberg, Schwarz and Solomon (2013) looked at communication patterns between students and their teachers on *Facebook* to develop guidelines for effective dialogue on SNS. Their findings indicated that privacy, respect and distance are areas for caution when it comes to SNS communication at the high school level. Lantz-Andersson, Vigmo and Bowen (2013) used a content analysis technique to investigate SNS group postings from children across different countries. They believed that SNS could be an effective platform for children’s language learning, if given proper guidance by teachers. Mao (2014) adopted a sequential mixed methods approach to probe into students’ attitudes and beliefs towards using SNS in their studies. The results confirmed their proposition that students generally show positive attitudes towards social media use in education. SNS has even found application as a learning management system, as Petrovic, Jeremic, Cirovic, Radojicic and Milenkovic (2014) compared SNS to *Moodle* in a university class. Students report that ‘ease of use’, ‘better dissemination of information’ and ‘stability of system’, among other areas, to be more advantageous in SNS than *Moodle*.

From these studies of academic use of SNS and the importance of feedback in learning, the indications all point to the potential utilisation of SNS as an effective tool in feedback processes. The various features in SNS have shown the potential to enhance formative and timely feedback between students and their teacher, so there are good reasons explore SNS in a classroom setting.

Participants

The current study was initiated with the goal of enhancing students' learning experiences through a connected feedback model provided by the utilisation of an SNS. Since *Facebook* (<https://www.facebook.com/>) is generally regarded as the most prominent SNS in terms of its user base and popularity (Fowler, 2012), it was adopted as the SNS of choice for this study. A class of 40 students in a local high school in Macao was selected to participate in this study, aimed at increasing students' exposure to the academic aspects of social networking sites. The students were in their 11th year of education and the class comprised 22 boys and 18 girls. A *Facebook group* was set up for the class. The *group* is a feature on *Facebook* that allows a group of people to share information and communicate with each other just within the group. Figure 4 provides a screen picture from a typical *Facebook* group.



Figure 4: A *Facebook* group screen picture

The class teacher set up and moderated the Group. Students in the class were invited to join the group since they all had *Facebook* accounts already. The Group was intended mainly for after-school communication. The subject that the teacher taught was English,

but students were allowed to use both English and Chinese on the Group. The teacher initiated participation from the students by posting information regarding lectures, homework, activities or projects. Students could respond to the postings with their own suggestions, or simply observe. Students could also post their own material and suggestions in the Group, and other students may then respond to such additions. The postings on the Group were not anonymous as students used their own *Facebook* accounts to join the Group. The purpose of the Group was to encourage feedback processes that could generate more discussion, not anonymity.

The *Facebook* group was run for one semester, during which the teacher and students exchanged ideas and opinions on curriculum materials, extra-curricula activities and group projects assigned by the teacher. Conversations sometimes involved only students, as they communicated with each other on issues concerning themselves, such as group assignments and research content. The teacher let students generate their own feedback to each other, and took note to incorporate that feedback into the teaching, which is a direct and desirable result of a feedback process.

Methods

A mixed method approach was adopted to conduct the current research. Both quantitative and qualitative data were collected to provide a corroborative perspective of the analysis (Greene, Caracelli & Graham, 1989). In recent years, mixed methodology has gained much support in social and behavioural sciences (Tashakkori & Teddlie, 2003). Many would argue that since we are living in a multi-dimensional world, it would only be natural to inquire and investigate using multi-dimensional methods (Mason, 2006), rather than strictly using either a qualitative or a quantitative approach. By integrating both, the data are more likely to provide triangulation to ensure data convergence and complementarity to clarify and to enhance the results obtained from only one method (Croswell, 2003).

At the end of the semester, a survey was administered to the students to assess their experience of using *Facebook* as a feedback mechanism to enhance their learning. The quantitative section of the survey elicits students' perception on various opinion parameters relating SNS and feedback. Qualitative data are in the form of open-ended questions at the end of the survey, and monthly reflective interviews with the teacher. The open-ended questions seek students' input on what elements constitute factors that make SNS better as a feedback instrument. The monthly reflective interview with the teacher attempts to explore the teacher's perspective on using SNS as a feedback tool.

The survey was administered without the presence of the teacher in the classroom, to ensure a pressure-free environment during the survey. The answers to both quantitative and qualitative questions are all anonymous so that students would not tend to give answers that are necessarily biased to the teacher's preference. The survey questions were translated to Chinese first, and then back to English by separate translators, to contrast any loss of meaning. No major difference was detected from the two English versions.

The survey was kept intentionally short, to minimise disturbance of the class. The whole process took about 10 minutes to finish.

Data analysis

Quantitative data on student opinions

The quantitative questions on feedback in the current survey are all original questions that are not based on any particular instruments in the literature. However, the individual items in this feedback section might have similar meanings with questions from various articles in the literature, as different authors have explored different aspects of the feedback process. Students rated these questions on a Likert scale of 1 to 5, with 1 being most disagreeable and 5 being most agreeable. The items are summarised in Table 1 along with the results of the students' assessment in terms of their means and standard deviations. There are 8 items in this feedback survey and the Cronbach's *alpha* of the data is 0.77, indicating internal consistency of the data (UCLA, 2013).

The first question looked at the timing of feedback in the *Facebook* group and the result shows mean 3.70. This is a very high score that says students agree that they are able to receive timely feedback in the group. Phye and Andre (1989) advocated for immediate feedback, as they believed that early correction is more likely to assist knowledge retention. The sooner the feedback is provided, the better the receiver can retain the content of the feedback.

Question 2 asked if the feedback is specific and detailed. The mean rating was 3.18, which is relatively low. The feedback may be too general in nature. Question 3 inquired about the multi-source feature of the feedback on the *Facebook* group and a score of 3.50 confirmed the fact that feedbacks are coming from different classmates and even the teacher. Swain and Lapkin (1998) reported that learner-learner interaction often leads to peer assistance that elevates the prospect of achieving expected outcomes in students. The *Facebook* group provided exactly the platform for this learner-learner interaction.

The power of feedback is not only on information and knowledge. It also exerts an influence on learning and achievement through motivation. Cauley and McMillan (2010) discussed five key practices for teachers to enhance student motivation. All of them lead to higher achievement in student learning. Question 4 asked whether students received motivational feedback from the group. The mean is also high, 3.60, suggesting that a large amount of motivational feedback occurred in the *Facebook* group.

Table 1: Survey items on feedback

Item	Mean	Std dev
1. The feedback I get in <i>Facebook</i> group is very timely.	3.70	1.24
2. I can get more specific and detail feedback on <i>Facebook</i> group.	3.18	1.30
3. <i>Facebook</i> group is able to generate feedback from different people.	3.50	1.22
4. <i>Facebook</i> group provides a convenient means for motivational feedback from the teacher and classmates.	3.60	1.24
5. The feedback in <i>Facebook</i> group includes both positive and negative feedback.	3.23	1.29
6. The feedback in <i>Facebook</i> group is informative and rich in content.	3.13	1.20
7. The feedback in <i>Facebook</i> group is consistent and clear.	3.55	1.47
8. It is much easier to get feedback from <i>Facebook</i> group than otherwise.	3.43	1.13

Both positive feedback and negative feedback have academic implications. Kluger and DeNisi (1996) demonstrated that both positive and negative feedback can enhance learning, provided the feedback contains enough information to allow the students to acknowledge what is right or wrong in their performance or understanding. Question 5 asked whether both categories of feedback occurred in the *Facebook* group. The mean score was 3.23, which is a reasonable agreement that students and the teacher gave out both positive and negative feedback to the group.

Question 6 inquired whether the feedback was formative in nature. The score of 3.13 was only a mild result, suggesting that the content of feedback in the *Facebook* group needs to be more informative.

Question 7 was on the consistency and clarity of the feedback. Clear and consistent feedback can achieve greater impact on the receiver since it reduces confusion. Vagueness and uncertainty can lead to a lower level of learning, and reduced motivation to respond to the feedback (Ashford, 1986). The students recorded a high agreement to that with mean 3.55.

Question 8 evaluated the ease of feedback generation in the *Facebook* group, compared with any other means. The score of 3.43 indicated a favorable agreement from the students that the *Facebook* group is an easy place to get feedback.

Testing students' agreement

On the scale of 1 to 5, we assumed that a mean greater than 3 indicated a general agreement with the question, and a mean less than 3 indicated a general disagreement with the question. To infer this result from the sample of 40 students to the general student population, a t-test was performed on the data to show statistical significance on the inference. The hypothesis is:

- Null (H0): For an item on the survey, the mean is less than or equal to 3, indicating a general disagreement.
- Alternative (H1): The mean is greater than 3, indicating a general agreement.

With a sample size (N) of 40 and a significance level of 95% (α level of 0.05), the one-tail critical t-score value is 1.68. As a result, if the t-score of an item is bigger than 1.68, the null hypothesis (H0) is rejected and the alternative hypothesis (H1) is adopted. Reversely, if the t-score of a question is less than 1.68, the null hypothesis cannot be rejected.

Table 2 shows the results of t-tests for all the questions in the survey. From these t-scores, only question 6 is less than the critical value of 1.68, indicating that a general agreement to this item cannot be confirmed in the greater student population. All other questions have t-scores greater than the critical value of 1.68, indicating that it is statistically sound that the larger student population would generally agree with all these items. One can conclude with confidence that students generally consider SNS to be an effective feedback tool with the benefits of convenience, timeliness, ease and clarity. These benefits can elevate the feedback process to another level so that students and teachers can engage with each other more efficiently in the pursuit of knowledge.

Table 2: t-test results

Question	t-score
1. The feedback I get in <i>Facebook</i> group is very timely.	4.90
2. I can get more specific and detail feedback on <i>Facebook</i> group.	2.56
3. <i>Facebook</i> group is able to generate feedback from different people.	4.21
4. <i>Facebook</i> group provides a convenient means for motivational feedback from the teacher and classmates.	4.58
5. The feedback in <i>Facebook</i> group includes both positive and negative feedback.	3.12
6. The feedback in <i>Facebook</i> group is informative and rich in content.	1.09
7. The feedback in <i>Facebook</i> group is consistent and clear.	4.01
8. It is much easier to get feedback from <i>Facebook</i> group than otherwise.	3.89

Qualitative data from open-ended questions

At the end of the survey, two open-ended questions were asked. The first question asked students what they considered to be the most important aspects of the *Facebook* group that encourage them to use it as an effective feedback tool. The second question asked them to make suggestions to improve the feedback process on SNS, so that it could be better utilised in the future. As the survey was anonymous, the survey papers were first given identifications such as student1, student2 and student3, etc., to enable tracing. The answers were then recorded and analysed by keywords and themes. Similar answers were then grouped together to form categories that are distinctive and prominent (Omar, Embi & Yunus 2012).

Two themes emerged from the answers to the first question: convenience and mutual assistance. Convenience appears the most in the answers. Many students pointed out that it is the availability of *Facebook* at any time and any place that makes it the perfect feedback vehicle in a connected model. Studies have shown that convenience is being recognised as one of the most important features that make social networking attractive and enticing. Mansumittrchai, Park and Chiu (2012), using factor analysis, found convenience as one of the factors that influenced students' adoption of *Facebook* in South Korea. Barczyk and Duncan (2013) analysed student attitudes towards *Facebook* and received a 65% agreement from the students that convenience is a strong reason why students were attracted to the social networking site. Here are some of the translated answers received from question 1 on convenience.

Facebook is already part of my life and staying close with classmates on *Facebook* group is very convenient for me. I can talk to them whenever I want and they are always there to listen to me (Student 11)

I think the most important element is that I can discuss with my classmates at any time. Sometimes I talk to my project members at the middle of the night to go over project assignments. This would have been impossible if it was not for the *Facebook* group (Student 15)

Every time I log in, there are always other classmates that are also there and I can talk to them whenever I want to. Even if I do not get feedback right away, it does not take long for them to get back to me (Student 31)

Now there are many mobile apps for *Facebook*, I can stay connected anytime and anywhere. Sometimes I even login during school time. It's effortless to share something like photos and links whenever I want to (Student 2)

In my opinion, the most useful element of the *Facebook* group is that I get to see what other classmates have to say about issues almost in real time. It keeps me updated on what is going on within the discussions of my classmates and I can also give my input if I think it concerns me (Student 5)

The thing about the *Facebook* group is that I get automatic notification on my cell phone anytime there is a new post on the group. I can keep up with what is going on in any discussions among the classmates without any delay (Student 13)

This convenience factor of SNS is exactly the reason why the first question on timely feedback in the quantitative section received the highest mark from the students. Immediate feedback in this fashion would have been impossible in any other feedback mechanism.

The next theme coming out of the answers to question 1 was assistance to each other on the *Facebook* group. In a group setting on *Facebook*, students were bound together, not for their personal engagement, but for their academic goals. The purpose of *Facebook* group was clear to the students: use it to provide feedback on school related issues. It is then natural that students raise questions and get answers through these discussions, and form

a culture of mutual assistance among themselves. Lampe, Wohn, Vitak, Ellison and Wash (2011) looked at the assistance that students provided to each other on *Facebook* through questions and answers. They were bundled together to form a positive impact on classroom collaboration in a factor analysis on *Facebook* activities.

Some of the matters that students reported concerning mutual assistance are illustrated in the following quotations.

Whenever I have a problem on homework, I can immediately post it on the *Facebook* group and I will get the answer quickly from my classmates. Sometimes there are many answers and I don't know which one is correct, but at least it gives me a start on how to solve the problem (Student 25)

The most important thing on the *Facebook* group is that I can get many helps from my classmates (Student 36)

There are many assignments of the class and the *Facebook* group provides a place for me to get assistance from my classmates that was not possible otherwise. I was not able to ask a lot of questions to my classmates in school or on the phone before. But with the *Facebook* group, I can ask questions a lot easier (Student 17)

It is especially useful that classmates remind each other of deadlines and submission dates of homework and exams. Sometimes there are so many things going on at the same time that I tend to forget the time frame once in a while, but my classmates helped me out several times (Student 28)

The *Facebook* group allows me to learn more through occasionally helping my classmates. I feel that it is a two way benefit when I answer questions on the group and at the same time, receive feedbacks on the answer I provide (Student 30)

The theme of mutual assistance agreed with the high scores on the third and eighth questions in the quantitative section. Students gave high endorsement to those questions, recognising that they were getting help from multiple sources on *Facebook* group and were able to receive feedback readily and easily. That would have been hard if feedback had to go through traditional channels.

The second open-ended question asked students for suggestions on how to make the feedback mechanism better on SNS. It invited students to think about what they can do, what their teachers can do, and what their school can do. The answers to the second question were more sporadic and dispersed. They ranged from audio-visual encouragement, restaurant recommendation, to weekly news topics and competition on posts. Yet, one theme did emerge as a number of students gave similar answers. This theme pointed to the need for even more engagement from the students, to make the feedback process more significant.

Although the *Facebook* group gathered an increased amount of participation from the students during the course, some felt there could be more engagement from students,

reflecting the idea behind the connected feedback model, which demands input from more directions in order for the feedback process to flow more effectively. As Kuh, Cruce, Shoup, Kinzie and Gonyea (2008) discovered, an increased engagement from students leads to improvements in their academic performances. It was further confirmed by Heiberger and Harper (2008) as they applied the benefits of student involvement to social media. Apparently, many students have realised that benefit from the *Facebook* group and have made suggestions accordingly in responses to question 2, including:

I think I should be more involved on the *Facebook* group to make myself improve more. Sometimes I wanted to join the discussion but I got lazy and disinterested easily (Student 20)

I will keep participating on the *Facebook* group and try to reply to more topics. By talking to my classmates, I really benefitted a lot in many areas (Student 30)

The success of the *Facebook* group depends on the hard work of all the members including the students and the teacher. I think there can be more discussions in the group and more classmates should be involved. The posts in the group should come from more students and not just from a few (Student 7)

The content on the *Facebook* group so far has a big portion on lots of extra-curriculum activities. I hope the portion on studies can become more in the future. That requires more effort from all the classmates in the class. They should demonstrate more effort in the group (Student 15)

Although the *Facebook* group had the intrinsic advantage of convenience and openness, to exercise that advantage towards a better feedback flow is easy. The scores on the second and sixth questions in the quantitative section were not among the highest, and students took notice of that in their answers to the open-ended questions. These are valuable inputs for the teachers and the schools to consider when drafting strategies on social networking site policies.

Qualitative data from monthly reflective interviews with the teacher

During the course of the research, the author met with the teacher on a monthly basis to reflect on the feedback mechanism provided by the *Facebook* group. The purpose of the reflective interviews was to identify obstacles and difficulties in moderating the group, from the teacher's perspective, and come up with tactics to overcome these obstacles. During the meetings, the researcher discussed only the operation of the group, making notes of the opinions expressed by the teacher. The researcher did not make any suggestions, thus leaving the teacher to find ways to solve problems, without an extrinsic influence from the researcher. The interviews gathered some issues that potentially could impede feedback processes. The teacher tried various solutions to counter these issues and was able to observe improvements over the course of the semester.

Obstacles and difficulties regarding effective feedback on SNS included:

1. Students were skeptical initially about the usefulness of the *Facebook* group as an effective feedback tool.
2. Feedback was provided mostly from only a few students. Many students just observed and did not participate much.
3. Discussions were usually short. There were few in-depth discussions that encompassed broader knowledge areas. Usually, feedback just answered simple questions regarding homework and assignments.
4. Sometimes, students expressed discontent that may propagate negativity to other students.
5. Feedback provided was mostly mono-toned, that are text-based only, with little audio visual content or website links.

To tackle these issues, the teacher tried the following tactics:

1. The teacher provided tips to questions on in-class quizzes one day before the quizzes. The teacher would also posted questions similar to those in the quizzes.
2. The teacher posted questions regarding lectures and rewarded extra points to the first few students who provided the answer.
3. The teacher posted more links on the *Facebook* group, thereby providing more information on assignments and homework.
4. The teacher attempted to pause any negative comments on the *Facebook* group, and followed up personally in or after class.
5. The teacher encouraged students to post more audio visual content during class time.

The teacher reported that improvements in student perception and participation were observed after introduction of the first two tactics. More and more students gave 'likes' to those tips on quiz questions, and even attempted to provide answers by themselves. The reward system also drew more attention from the students. More students attempted to provide feedback to the questions in addition to the usual few students.

The third issue was a little difficult to solve even after the teacher posted more information in the group. For the feedback to be more formative and in-depth, a culture of voluntary discussion has to be cultivated among the students, which would require more than just a *Facebook* experience. It would have to come from a top down change in philosophy made by the school.

Considering the negative comments on the group, the teacher was able to cater personally to the needs of the particular students and this improved the situation considerably. In a way, this is a manifestation of the feedback process at work, as the teacher was made aware of a situation through feedback on the group and was able to resolve it accordingly. The fifth issue of "mono-tone" feedback did not improve much, but the teacher did not feel any urgency in this matter.

It is worthwhile to point out that, according to the teacher in the interviews, some expected issues did not occur during this experiment with a *Facebook* group. For example, it was concerning that some of the discussions between students might become heated,

but that situation was not observed. Discussion was mostly calm and informational. It would occasionally get skittish but it was more for entertaining than for conflict. Not much bullying was observed either. The teacher felt that since the *Facebook* group was moderated, the students knew their perimeter and would not easily cross the boundary. It was satisfying to see that the pitfalls of online communication were not present during the current experiment.

Discussion

The overall assessment of the quantitative questions on the feedback survey is generally satisfying. The students were getting an ample dose of feedback on the *Facebook* group and benefitted generously from it. The various values of the feedback process were reflected adequately in the group and students took advantage of that to make the most use out of their interactions with each other. Content, timing, and characteristics of feedback were all being echoed on the *Facebook* group that enabled an efficient feedback process, abundantly available to its members.

On *Facebook*, students were able to receive timely feedback both from fellow classmates and from teachers. They may receive formative feedback which is rich in content, but indirect in nature. Students were also able to collect feedback from multiple sources on *Facebook* as conversations were not limited to only two people. The information obtained in that way is more reliable and trustworthy (Foster & Ohta, 2005). Feedback on *Facebook* is not limited to information, but may include motivation and encouragement also. Mutual support for each other through motivation is a major factor of the feedback elements. Dweck (1999) argued that feedback and assessment should focus not only on performance but also on objectives and development. Motivational feedback stimulates meta-cognitive ambition in learners and inspires them to pursue higher goals, even when the level of complexity becomes more and more difficult. The self-generated will to chase knowledge is always more efficient than outside enforcement when it comes to effective learning. In this regard, the *Facebook* group was an excellent venue for motivational feedback, scoring the second highest point among the questions in the survey.

Feedback on *Facebook* may not always be positive. Students reported both positive and negative feedback being made in the *Facebook* group. Most of the research literature confirms that using only one kind of feedback, positive or negative, is not sufficient to provoke practical results (Losada & Heaphy, 2004). To stimulate constructive output in learners, a mixture of positive feedback and negative feedback should be utilised. A majority of positive feedback with a smaller dose of negative feedback seems to be the optimal combination (Baumeister & Cairns, 1992).

The results from the quantitative section were corroborated by the qualitative answers in the open-ended questions. Students generally reported convenience as the major advantage of using SNS as a feedback tool. That explains the high agreement from the students on the timeliness of feedback on *Facebook*. Immediacy of feedback is critical as it gives best scope for strong reinforcement (Clariana, 1999). The ready availability of SNS

facilitates immediacy of feedback, which is a priority for students looking for answers. Mutual assistance is also regarded as an important factor in feedback processes, and SNS can provide an environment of mutual support for students. With many classmates as members of the *Facebook* group, there are always friends around when they log in. Nevertheless, students reported that they would like to see more engagement from more people, in order to make the SNS environment even more informative and helpful.

From the teacher's perspective, moderating the *Facebook* group is not as easy as perceived. The connected feedback model requires multiple participants and participation at the early stages of the group is not automatic. An element of reward has to be injected into the feedback process to elicit interest from students in the group. Only after a careful balance of reward and restraint can a reasonable scale be achieved in the group. Caution also has to be applied when students express negative opinions. Personal follow-up is the correct action to do, instead of merely simple replies to the *Facebook* group.

With Web 2.0 technology maturing and content creation on the web being the current norm, the connected feedback model finds application in almost every online learning environment. Social networking sites are the latest and most convenient platform to elicit students and teachers to participate in the feedback process. Participation involves giving input, responding to peers and sharing ideas, all of which conform to the social cultural characteristics of online learning. In SNS, teacher dominance is no longer the issue. Their role there is to facilitate communication with minimal intrusion. The learners make their presence known on SNS through comments and contributions which are seen as participatory behaviour by other learners and their teacher. Through this participation, learners feed off each other's effort and understand the value of taking part in a collective learning experience.

Conclusion

Advances in network availability in our daily environments and innovation in the design of social networking sites (SNS) have shaped modern communication into an "anyone, anywhere and anytime" interaction. Making feedback has never been easier as providers can make the feedback on SNS to anyone, at any time and from anywhere. This investigation utilised *Facebook*, the leader in SNS, as a platform for feedback, with students and teachers engaging each other on the SNS with information, discussion, motivation and knowledge. The results of this experiment indicate that SNS can be an efficient feedback tool, when properly administered by the teachers and actively supported by the students. Feedback models and feedback content suggest that reinforcement and retention of knowledge is achieved through timely, formative and multi-source feedback, conducted within an environment that is freely accessible, is frequently visited, is actively discussed, and has wide participation.

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