Online Temporary Learning Groups in Higher Education – Interactions, Compensation, and Maximisation of Achievements in an Israeli Case Study

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Abstract

Thesis. This article provides an analysis of online social interactions in two online Temporary Learning Groups (TLG) and their correlates with both pre-admissions scores and academic achievements.

Concept. The function of Social Networking Systems (SNS) use on academic achievements is most often indirectly assessed through surveying attitudes of students and teachers. Contrary to this approach, we directly assessed the content on a TLG and paired it with objective admission scores and academic achievements.

Results and conclusion. The results reveal that the content of the discussions on the TLGs is practical, immediate, and focuses on the allocation of information required for academic achievements. The users of the TLGs are usually students with lower admission scores and academic achievements. They use these platforms as a compensating mechanism to improve their achievements. In addition, some of the TLG users serve as maximising agents of other students' achievements. TLGs' implications for teaching, class-attendance and level of schooling must be recognised by teachers.

Originality. While researchers focus on the presence of SNSs in class and its hampering of schooling by multitasking the effect of TLG activity must also be addressed.

Keywords: Temporary Learning Groups, higher education, interactions, compensation, achievements, Social Networking Systems

Introduction

Social Networking Systems (SNS) have diverse effects on academic achievements of students (Marker et al., 2018). There are clear indications for detrimental consequences of in-class multitasking with SNSs (Facebook, Twitter, WhatsApp, etc.) on academic performance (May & Elder, 2018). Text-messaging, watching video clips, and other forms of web consumption by students are correlated with lower engagement, less "note-taking" and eventually lower Grade Point Average (GPA) scores (Junco, 2012). Conversely, other research indicates that SNS use is positively correlated with students' satisfaction from their university and their perception of achievements (Davidovitch & Belichenko, 2018). Regretfully, most research on SNS use and academic achievements addresses the general use of social networking platforms. Caroline Marker et al. (2018) reported a small positive association between academic achievements and SNS use, when SNSs are focused on schooling, rather than other general issues (Marker et al., 2018).

The integration of e-learning with face-to-face pedagogical approaches requires establishing relevant theoretical frameworks through which to understand this increasing phenomenon (Garrison, 2011). The Community of Inquiry (CoI) framework is an accepted theoretical framework often used to assess online distance-learning (Shea et al., 2012). According to this model, by fostering three essential elements – social presence, cognitive presence, and teaching presence – a community of inquiry can be created to promote student engagement and learning (Swan et al., 2009). *Social Presence* is defined as "the ability of participants to identify with the community (e.g. course of study), communicate purposefully in a trusting environment, and develop interpersonal relationships by way of projecting their individual personalities" (Garrison et al., 2001, p. 22). *Teaching Presence* relates to the design, facilitation, and direction of cognitive and social processes for the purpose of achieving valuable personal and educational learning outcomes (Anderson et al., 2001). *Cognitive Presence* is the extent to which

learners are able to understand through sustained reflection and discourse (Garrison et al., 2001). We propose that TLGs are a CoI subtype. TLGs are low on the Teaching Presence dimension, as teachers are not members of the group. Still, this enables an increase in the social presence dimension as members are free to communicate honestly.

Unlike institutionally established online learning systems, an online Temporary Learning Group (TLG) of students is established and managed by students themselves. Yvonne Hong and Lesley Gardner (2019) recently defined Facebook Learning Groups as learning groups created by students for their own purpose, without the presence of teachers (Aaen & Dalsgaard, 2016). Frameworks for analysing associations between SNS use and achievement most often address such networks as part of the learning process in which teachers are actively involved (Gazit, 2019). Traditional teaching that rests on the protracted and active presence of teachers, may be quite different when students use ad-hoc networks as an asset in their learning process. Teachers are not always aware of this process.

The trust between TLG members, which is mentioned in previous research (Gazit, 2019), is paradoxically based on the assumption that teachers and formal university agents will not be present, thus maintaining confidentiality and promoting communication. Its goals are supporting a class, or a cohort of students, in their efforts to succeed in their academic tasks. The informal nature of such a network can be partly attributed to the fact that teachers are not present in the network. As a result, students are more comfortable in the exchange of information, providing a "safe" platform for the students, allowing communication regarding other aspects of academia besides learning (Deng & Tavares, 2013).

Another challenge in examining the correlation between SNS use and academic achievement is the extent to which researchers use self-report scales regarding activity and achievements. Most of the research reviewed by Marker et al. (2018) assessed SNS behaviour and its correlates (for example, students' GPA scores) via self-report questionnaires (Marker et al., 2018). While self-reported GPA scores are indeed correlated with actual GPA scores, this remains a subjective measure (Cole & Gonyea, 2010). Based on the literature review, our first research question was formulated as follows: "What is the effect of *TLG activity on academic achievements?"* Would there be a positive correlation between objective measures of TLG activity and final GPA scores? There is insufficient empirical evidence regarding the correlation between actual SNS activity and objective measurements of students' abilities and performance. Our research hypothesis was phrased along with the description of the ways a TLG may interfere with the correlation between pre-admission academic potential and academic achievements. Following the contention made by Marker et al., (2018) about the positive correlation between specifically designed SNSs for schooling and academic achievements, we hypothesised that *TLG active students would have higher GPA scores than students who are not using the TLG.*

The Functioning of TLGs

The ways SNS use can affect academic achievement are unclear and contradictory, although it is clear that SNS use by students is highly correlated with a desire to increase GPA scores (Toker & Baturay, 2019). Possible influencing variables include, among others, the ability to get help with learning materials from peers and teachers (Gazit, 2019).

A possible explanation for the diverse effect of SNS use could be attributed to in-class (i.e. inattention during class) vs out-class effects (i.e. coordinating and collecting material). While SNS use during a lesson may decrease attention, it could also offer a well connected student the assistance of a firm social network that can provide support in his or her tasks.

Social acceptance and academic success were identified as key factors in the experiences of first-year students (Gibney et al., 2011). Like other social networks, SNSs foster quick and boundaryless information exchange, while organising collective activity to promote both academic success and social acceptance (Ainin et al., 2015). TLGs, often ad-hoc short-time entities, are social dimensions of academic achievements, as opposed to personal or personality dimensions (Kümmel et al., 2020).

Applying existing analytical frameworks, such as the Community of Inquiry (COI) approach, to TLGs would be somewhat inaccurate due to the informal nature of TLGs that do not include institutional staff or digital tools (Zulkanain et al., 2020). Designed explicitly for student interests, such a platform may not entirely reflect the construct of an institutional COI. It usually excludes teachers, and its functioning may be pragmatic and will not include the intellectual component. Lack of teachers and institutional requirements of learning mean that the cognitive presence specified in the COI model will be modest (Garrison et al., 2001). SNS-use patterns are mediated by personality traits and academic achievements (Naqshbandi et al., 2017), but such a correlation is not well explained in the context of COIs. In addition, SNS were shown to be unrelated to students' engagements when topics discussed are "generic and not specifically designed for academic work" (Koranteng et al., 2019, p. 1147).

Hence, while applying the research aim, we should focus our data collection technique on a specific SNS, namely on a TLG created specifically by students for learning. SNS platforms (e.g. Facebook) often focus on general issues. TLGs are limited in time and content and have an advantage over formal online teaching platforms for various reasons (Deng & Tavares, 2013). We aimed to identify the way TLG activity affects academic achievement, and phrased our research question as follows: "How does activity in TLGs affect academic achievements?". Our hypotheses derived from this research question were formulated after preliminary research on activity on TLGs in our classes.

Aim

The function of SNS use on academic achievements is most often indirectly assessed through surveying attitudes of students and teachers (Davidovitch & Belichenko, 2018). Contrary to this approach, we directly assessed the content on a TLG and paired it with objective admission scores and academic achievements.

Our empirical approach did not relate to real-time in class lessons. Cognitive theories (i.e. time-displacement or multitasking), often used for examining the role of SNS use and academic achievement, focus on real-time, in-class behaviour (Marker et al., 2018).

Our preliminary examination of the field included a monitored Facebook group established by every cohort of faculties in our university. Following 6 months of daily inspection, we identified a cohort of students in the Social Science departments who regularly used a Sociology FB TLG. We identified several distinct processes.

The following is an example of a typical message posted on the TLG page, translating to "Does anyone have summaries/translations of women and crime?" Such a request is phrased briefly, with a high number of question marks and emoji to reflect the student's desperation. The following is another example of post content intensified by a large number of exclamation marks: "URGENT!!!! who's got yesterday's lecture notes?" Such content reflects the experiences of students as they thrive to maximise their success under the pressure of upcoming finals.

We argue that TLG use is not uniform across all students and that active TLG members use this platform not for collaborative action, but rather for academic assistance wanted or offered. Specifically, students with low academic admission scores would be more inclined to use this platform to improve their academic performance. To reflect this, we hypothesised that "students with low admission scores would request more assistance than students with high admission scores." Our complementary hypothesis stated that "students with high GPA scores would offer more assistance then students with low GPA scores."

Methods

Data Preparation

Retrospective analysis of online activity in an informal social network was carried out in the year 2020. Mozenda, a web scraping software program, was used to collect the total communication on two independent Facebook groups active between the years 2014 and 2017. These two groups belonged to students of social sciences: Sociology, Psychology, Criminology, and Education. The groups served as a cohort for students who started their three-year undergraduate degree in 2014. The study was approved by the Institutional Review Board (IRB) of Ariel University and commenced after

receiving consent from both FB group administrators for collecting the information.

Following data scraping, any irrelevant information, such as advertisements and business promotion posts, were deleted. 879 posts were analysed (i.e. posted or commented at least once). Our coding system was developed bottom-up by reading and classifying the posts into distinct types of information. Three independent research assistants coded and quantified the qualitative information and classified the traffic into clusters of content and symbols.

Coding

The online communication was assessed and posts grouped into content-similar categories. All posts containing requests for class notes, summaries and possible exam questions were labelled "requests for academic assistance"; requests for help completing a survey were grouped into a distinct category, "survey help." Posts contain offers of academic-related help were labelled "offers of academic assistance." Requests for and offers of assistance in administrative-related issues (for example, suggestions for easier courses, whether a lecturer is strict or lenient, gives hard assignments/exams, checks attendance, etc) were categorised as requests for administrative assistance and offers of administrative assistance, correspondingly. "Begging" was an additional variable, measuring the number of exclamation marks and begging emoji posted by each student. These four variables represent the number of times each individual participant posted each content type. As such, if a participant did not request academic assistance, he/she was graded "0" for this variable. In addition, emoji and exclamation marks were analysed to reflect users' sentiments related to a specific topic. The following table presents examples for each type of content-group:

Table 1

Examples of TLG Content

Type of content	Example of content
Academic help requests	[Does] anyone remember "Prof John Doe's" exam questions? Please send me the notes from the last two lectures! URGENT!!!! Who's got yesterday's lecture-notes?
Academic help offers	I just uploaded the [notes] of the last lecture to the drive. Enjoy! We found someone to translate the articles! I know the exam's in a few hours, but here's my summary.
Administrative help request	Does "Prof John Doe" check attendance? Does "Prof John Doe" give hard assignments? Does anyone know what's taking so long with the grades?
Administrative help offers	PM me for "John Doe's" contact info… Political Sociology grades are on the web!!!

Source. Own research.

Academic help requests, administrative help requests, and requests for help completing a survey were aggregated to form a new variable "Total help wanted". Similarly, offers of academic help and administrative help offers were aggregated to form a new variable "Total help offers." Begging was operationalised as the number of times a student used begging emoji on the FB page.

In order to include data of participants without an SAT score in the analysis, SAT scores were recoded into a categorical variable comprising 3 groups: No SAT scores (participants without an SAT score), Low SAT scores (below-average SAT scores) and high SAT scores (above-average SAT scores).

Analysis

The SPSS.26 package was used for statistical analyses. We used descriptive statistics between all measures, independent t-tests, analysis of variance, and Pearson correlations for testing of the hypotheses. All data were available for statistical analyses (i.e. no missing data). A significance of $p < .05$ was considered significant in all statistical analyses.

RESULTS

Preliminary Analyses

Of the 525 students of the social sciences faculty in the years 2014-2017 cohort, 525 were members in two LTGs serving mostly psychology, sociology, middle-eastern studies, international relations and anthropology courses. This number represents about 17% of the entire population of students in about 50% of the first year students. Of the 525 members, 99 students (19%) had recorded FB activity, with a total of 879 posts. We have analysed all of the posts on these networks and manually connected each participant with admission scores and academic achievements. Table 1 presents descriptive statistics of GPA, SAT, and high-school average scores.

Table 2

Descriptive Statistics of Admission Scores and Achievement Variables

	Mean ± SD	Min	Max
High School average (n=505)	89.384± 8.055	63.73	112.74
SAT score (n=204)	485.221± 67.919	324.00	682.00
GPA (n=521)	84.966± 5.27	70.3	96.72

Source. Own research.

SAT scores were found for about 40% of the students and reflect the university policy that students with a satisfactory high school average are exempted from taking SAT exams. Preliminary analyses comparing

FB active and FB non-active groups indicated no significant differences between the number of students with and without SAT scores, or the number of males and females in each group. The results indicated no significant differences between the number of students with and without SAT scores, or the number of males and females in each group. See Table 3.

Table 3
Comparison of FB Active and FB Non-Active Participants

Measures	FB active	FB non-active	Non-parametric Analysis of differences
SAT score (Yes/No)	35 / 62	169 / 259	$\chi^2_{(1)}$=.386, p=.535
Gender (male/female)	7 / 90	46 / 382	$\chi^2_{(1)}$=1.086, p=.297

Source. Own research.

Hypothesis Testing
We hypothesised that FB non-active students would have lower GPA scores than FB users. To test this hypothesis, we computed the correlation between FB-use (1 = yes, 0 = no) and GPA grades. The correlations between scholastic measures are provided in Table 4.

Table 4
Pearson Correlations between Scholastic Measures and Academic Achievements

	High school average	SAT score	FB active
GPA scores	r =.223** p = .000 (n = 501)	r = .370** p =.000 (n = 202)	r = -.121** p =.006 (n = 521)
High school average		.220** p =.002 (n = 201)	r =-.110* p =.013 (n = 505)
SAT score			r =.041 p = .565 (n = 204)

Source. Own research.

Contrary to our first hypothesis we found that there were low negative correlations between FB use and high school average and GPA (Pearson's r

= -.121 & -.11, p < .05). There were no significant correlations between FB use and SAT score. As predicted, GPA scores were positively correlated with high school scores and SAT scores (r = .223, p = .000; r = .37, p = .000). SAT scores were positively correlated with high school scores (r = .220, p = .000).

Following the analysis of the correlations, we compared the means between both groups of FB users and FB non-users on the scholastic measurements and GPA. The results are provided in Table 5.

Table 5
Comparisons of FB active and non-active groups

Measures	*FB data* [A]	*No FB data*[B]	*Statistical analyses*
GPA scores	83.631±5.482	85.271±5.179	$t_{(519)}$= 2.781, p=.006
High school average	87.553±8.392	89.813±7.923	$t_{(503)}$=.2.487, p=.013
SAT score	491±61.472	483±69.282	$t_{(202)}$=-.577, p=.565

Source. Own research.

The GPA scores of FB non-active students (M = 85.255, SD = 5.17) were significantly higher than those of FB active students (M = 83.789, SD = 5.529) ($t_{(519)}$ = 2.542, p =.12). In addition, high school average scores of FB non-active students (M = 89.813, SD = 7.923) were significantly higher than those of FB active students (Mean = 87.553, SD = 8.392) ($t_{(503)}$ = 2.487, p = .013). In conclusion, our first hypothesis was not confirmed.

Following the examination of the initial research hypotheses, we continued our analysis on the data set of FB users for examination of the two other hypotheses. Pearson correlations were performed on FB activity variables and scholastic achievement measures of the FB active sub-sample. These results are provided in Table 6.

Our second hypothesis stated that students with low admission scores would request more assistance than students with high admission scores. Indeed, we found a significant weak negative correlation between high school average and requests for help (r = -.209, p = .042). This hypothesis was proven. Contrary to our third hypothesis we did not find a correlation between GPA scores and offers of help. We therefore performed an independent T-test between students who offered help and students who did not offer help, although the results were in accordance with our hypothesis we did not find significant differences on GPA scores (M = 87.090, SD = 4.714; M = 83.415, SD = 5.476) ($t_{(94)}$ = 1.961, p = .08). Our third hypothesis was not supported.

Table 6

Pearson Correlations of FB Activity Variables and Scholastic Achievement Scores

	Total help offered	Begging	High school average	GPA	SAT
Total help wanted	$r = .302^{**}$, $p = .003$	$r = .544^{**}$ $p = .000$	$r = -.209^{*}$, $p = .042$	$r = 0.024$, $p =$ N.S	$r = -0.225$, $p =$ N.S
	(n = 96)	(n = 95)	(n = 95)	(n = 96)	(n = 35)
Total help offered		$r = 0.012$, $p =$ N.S.	$r = -0.047$, $p =$ N.S.	$r = 0.071$, $p =$ N.S.	$r = -0.259$, $p =$ N.S.
		(n = 95)	(n = 95)	(n = 96)	(n = 35)
Begging			r = -0.133, $p =$ N.S. (n = 95)	$r = -0.131$, $p =$ N.S. (n = 96)	$r = -0.197$, $p =$ N.S. (n = 35)
High school avg.				$r = 0.151$, $p =$ N.S.	$r = 0.159$, $p =$ N.S.
				(n = 96)	(n = 35)
GPA					r = 0.097, $p =$ N.S.
					(n = 35)

Source. Own research

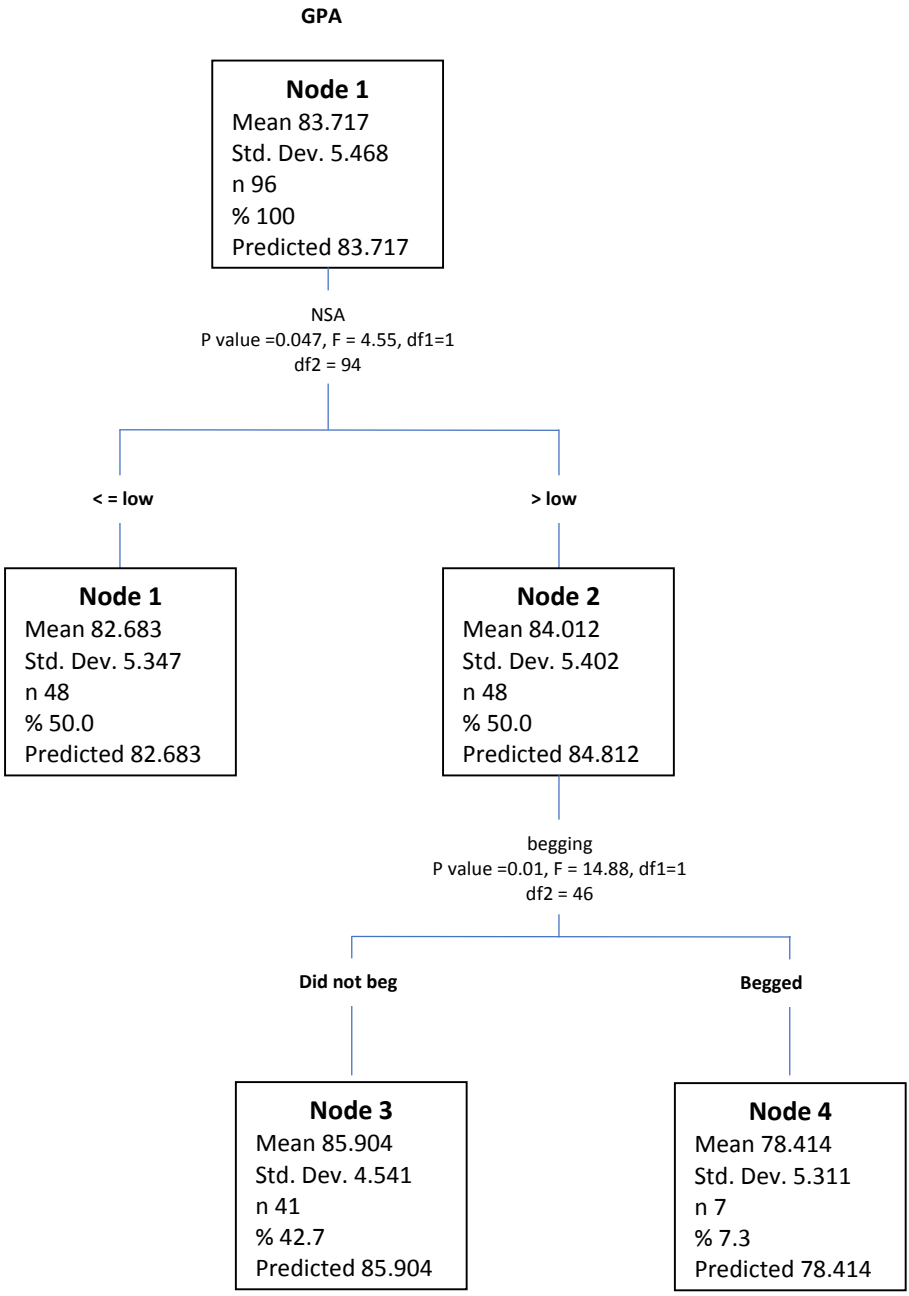
Further Analysis

In addition to the analyses mentioned above, we expanded our study by using the chi-squared automatic interaction detection (CHAID) algorithm. Previous studies have indicated its usefulness in detecting patterns of internet use and academic success (Baran & Kiliç, 2015). The analysis resulted in a decision tree with nodes classifying the dependent variable (Magidson & Vermunt, 2005). Our analysis included GPA scores as the dependent variable. Scholastic achievement indicators (SAT and high school average) were standardised and added together and dichotomised to produce high and low sub-groups. The second independent variable was begging (yes vs no). The results are exhibited in Figure 1, and the model shows a branching out of GPAs based on these variables.

The analysis reveals an interaction between academic potential and the use of TLGs in predicting academic success. The first node of the analysis classified two groups of high and low GPA ($F = 4.55$, $p < .05$). Students with relatively high academic potential include two sub-groups, those who are begging and those who are not begging for help ($F = 14.88$, $p < .01$). The differences in the GPA between the two groups was apparent (i.e., 85.904 vs 78.414). Overall, the analysis describes a process that correlates between potential and achievements of students, who are using the TLGs for maximisation of achievements or compensation for constraints.

Figure 1

Predicting GPA Scores by Scholastic Achievements (NSA) and FB Activity



Source. Own research.

Conclusion

Compensation and Maximisation

Sherko Kümmel et al. (2020) suggested that it would be useful to explore new digital settings and evaluate their relationship to academic achievements. Our study is in line with this, followed by providing objective indicators of both online activities and academic achievements. Data collected from a specific online group of students is a more reliable indicator of online TLG use than data collected through a participant self-reported survey. Our approach also follows Felix Nti Koranteng et al. (2019), who concluded that focusing on specific SNSs would better reflect the ways in which SNSs are involved in the process and outcomes of academic education. Our information reflects a trend in which students are increasingly using ad-hoc specific groups. The use of TLGs by students is different from the distinction between in-class and out-of-class use of social networking systems. Such specific networks are quickly established and are not directly present in class nor in the social aspects of students' vocational or social life. They are at the same time intimately connected to the learning process of students.

We hypothesis hypothesised that using TLGs may have a positive effect on academic achievements. However, this contention was not supported in our study. There was a negative correlation between the use of TLGs and academic achievements, and users of TLGs had relatively lower admission scores. More so, the content of a TLG "establishment" reflects a process of swift organisation rather than a deepening of academic inculcation of knowledge. Traffic content in the TLGs was paired with achievement scores. The teacher-less group was used primarily for such practical needs and seldom discussed the academic materials themselves.

TLG use may serve as a compensatory mechanism for students with low to medium achievement scores. The swift communication supports students through dissemination of information and provides students with the over-confidence to skip classes. The contention that the students are not in Moodle but on Facebook is correct (Deng & Tavares, 2013). However, students are not doing text messaging but are doing academic work in a manner that allows them to succeed in academia. We propose that the dichotomy of in-class and out-class involvement of SNSs in academic achievements should be expanded by probing specific online groups that are indirectly involved in the schooling processes. These networks could be very instrumental in the survival and success of students without real-life class attendance or face-to-face social interaction (Gibney et al., 2011).

Another potential sub-group of students is not only compensating by taking an active role in TLGs. They are using the network to maximise their achievements and the achievements of fellow class members. This relatively small group of excellent students is engaged in disseminating knowledge and supporting fellow students. Such behaviour allows them to support the

process of compensation but may also allow them to maximise their own achievements or confirm an altruistic ambition. Further study is required in order to understand the process of such participants better.

Our findings indicate that students with lower admission scores ask for more help compared to students with higher admission scores. To complement this result, the findings indicate that students who offered help had higher GPA scores. We conclude that the TLGs that we studied include distinct groups of students. These results call for further research not only on direct, formal networks but also on specific sub-groups established by students.

Contrary to a recent study by Sacip Toker and Meltem Huri Baturay (2019), the active use of a TLG is not used by highly motivated students alone. TLGs are being used as a means of maximising achievements and compensating for lack of time or competence. The socialisation dimension of a TLG is negligible. They are either compensated for or neutralised using dedicated SNSs. However, it seems the compensation processes are ineffective for genuine academic learning, as indicated by the final grades achieved by compensating students. We were able to show the validity of our approach by analysing the symbols used by students, especially by distinguishing between "Begging" vs "Non-Begging" groups. The decision tree presented provides further support for our arguments.

Research Restrictions

Our case study rests on two TLGs, and the number of such networks should be greatly increased. The climate of the institution and level of competition among students may have a great impact on the exact use of TLGs among students who decide to help their peers and probe their decision making and motivation. More traditional research methods such as interviews with active students and net managers are also required. Attitude surveys can also be added, concentrating on a specific TLG focused on a specific course, and studying its effects on involvement, satisfaction and presence in class. These variables will provide a broader perspective of the role that TLGs play in academic experiences and achievements.

Cognitive Value

Implications for Teachers and Teaching

Our results indicate that much of the academic activities of students occur not only outside the class but also outside the usual social networks open to teachers. While researchers focus on the presence of SNSs in class and its hampering of schooling by multitasking (May & Elder, 2018), the effect of TLG activity must also be addressed. TLGs are used to allow students to compensate for lack of capabilities or restrictions. These restrictions could be lack of time which is invested on vocational or recreational goals. They

may also allow a reduction of physical class attendance. We propose that TLGs are a CoI subtype but are low on the teaching presence dimension, as teachers are not members of the group. The content of traffic in the TLGs studied is very practical and lacks the intellectual depth offered in the CoI model (Anderson et al., 2001). And yet, the use of these networks has a considerable effect on academic achievements and probably also on class attendance and involvement.

Teachers were present on the TLGs examined in the current study, but the academic undertakings are very much central to the group, including exchange of useful information about teachers. This grey area surrounds the educational processes but has not been thoroughly assessed. It is very practical, emotional, and immediate. Practical students may use it to excel, but it may also promote education which is lacking in meaningful student-faculty encounters. The literature distinguishes between active engagement and lurking on internet social groups (Amichai-Hamburger et al., 2016). However, in our study, this distinction falls short as many of the participants were active when they needed to be. The practical orientation of the TLGs allows access to crucial information for students who are not lurking but compensating for lack of time, presence, and ability.

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