



# Actual friends matter: An internet skills perspective on teens' informal academic collaboration on Facebook



M. Laeeq Khan <sup>a, \*</sup>, Donghee Yvette Wohn <sup>b</sup>, Nicole B. Ellison <sup>c</sup>

<sup>a</sup> American University of Ras Al Khaimah, School of Arts and Sciences, P.O. Box 10021, Ras Al Khaimah, United Arab Emirates

<sup>b</sup> New Jersey Institute of Technology, Department of Information Systems, University Heights, Newark, NJ 07102, USA

<sup>c</sup> University of Michigan, School of Information, 3443 North Quad, 105 S. State St., Ann Arbor, MI 48109, USA

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## ABSTRACT

Social media platforms such as Facebook enable adolescents to collaborate on academic activities, but this kind of participation may require a set of higher-order Internet skills. This study explores the factors that predict informal academic collaboration on Facebook, such as seeking help, discussing schoolwork, and finding class-related resources. Based on survey data collected from high school students ( $N = 690$ ), we found that academic performance, perceived support from 'actual' Facebook friends, higher order Internet skills (especially information seeking skills), and instrumental support from Facebook friends predicted academic collaboration on Facebook. In light of these findings, theoretical and practical implications are discussed.

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## 1. Introduction

Social interactions around learning can take place online through a wide variety of formal tools as well as informal channels such as social network sites (SNSs). According to a recent Pew report, 81% of teens say that Facebook is the social media they use most often (Madden et al., 2013). To what extent can Facebook use be harnessed by teens to support informal learning practices?

When they wish to collaborate on academic tasks, students have various options. In a face-to-face learning context, students may form study groups both within and outside of classrooms to solve study-related problems (Kuh, Kinzie, Schuh, & Whitt, 2010). In some instances, they may use online resources to search for information, share information, and, when needed, collaborate with each other to solve problems. Although the informational resources available online can support learning, the skills that are activated when students ask for, receive, and exchange help with one another may be even more valuable. In fact, Vygotsky (1978) asserted that learning occurs best in social settings involving interpersonal interactions.

Although there has been some research that examines the use of Facebook as a tool for classroom organization and student collaboration among college students (e.g., Lampe, Wohn, Vitak, Ellison, & Wash, 2011), studies about academic uses of Facebook by high school students are scant. This study fills this gap with an analysis of high school student use of Facebook for academic collaboration and associated issues, and thus contributes to the literature on the role of social media for class-related collaboration among teens.

Using social media for informal academic collaboration may be challenging for some students because they may lack the requisite Internet skills needed for collaboration and leaning. While early literature addressing issues of Internet literacy and the digital divide initially concentrated on *access* – how availability of technology can exclude certain communities or individuals (Jenkins, Clinton, Purushotma, Robinson, & Weigel, 2006) – more recent studies have emphasized the importance of *skills* (e.g., Sonck, Livingstone, Kuiper, & de Haan, 2011; Van Deursen & Van Dijk, 2009). Skill-related gaps could lead to not only differences in access but also inequality in the extent to which users benefit from their technology use (DiMaggio & Hargittai, 2001). Thus an important element of social media use for learning, and possibly academic collaboration, may be these higher order skills, such as requesting help in an efficient manner.

\* Corresponding author. Tel.: +1 971 56 487 0866.

E-mail addresses: [laeeqk@gmail.com](mailto:laeeqk@gmail.com) (M.L. Khan), [yvettewohn@gmail.com](mailto:yvettewohn@gmail.com) (D.Y. Wohn), [enicole@umich.edu](mailto:enicole@umich.edu) (N.B. Ellison).

In addition to skills, academic collaboration may be impacted by academic performance, demographic factors such as age or gender, and the frequency of social media use. Future educational opportunities may be limited when academic preparation is poor, and academic progress requires, among other things, consistency and the ability to collaborate with peers. In many cases, achieving good grades may indicate that students are studious and are investing time collaborating with other classmates. We are interested in knowing whether academic performance as measured by course grades is an indicator of academic collaboration on Facebook. Research shows that Facebook use is more common among individuals with higher grades (Pasek, More, & Hargittai, 2009), but what other factors influence this relationship?

Additionally, collaboration of any sort hinges upon being able to gain support from others. Facebook friends may provide various forms of support such as emotional and instrumental support. Among other things, classmates connected to each other via SNS may provide support by sharing resources and time. These forms of support are referred to as instrumental support (Malecki & Demaray, 2003), and may especially prove vital in online academic collaboration.

Considering the potential of social media use to support academic collaboration among teens and the lack of empirical data on this topic, this study focuses on the role of higher order Internet skills among adolescents on academic collaboration via social media. The motivation for this work is to better understand the extent to which specific Internet skills serve as a necessary foundation for class-related academic collaboration practices. In addition, we want to take a closer look at how different factors related to one's connections on Facebook could affect the propensity of academic collaboration via Facebook. The following section reviews the literature on Facebook for academic collaboration in more depth, including the role of gender and socio-economic status (SES), and a discussion of other factors such as Internet access, skills, and Facebook friends in enabling academic collaboration.

## 2. Collaborative learning

Collaboration is generally defined as a social activity that leads to a maximization of productivity (Bozeman, Dietz, & Gaughan, 2001). Our focus here is collaborative learning, which can be seen as a component of collaboration. Amongst various definitions, Dillenbourg (1999) defined collaborative learning as “a situation in which two or more people learn or attempt to learn something together” (p. 1). Seen from a wider perspective, it is argued that “social interaction is a prerequisite for collaboration and collaborative learning” (Kreijns, Kirschner, & Jochems, 2003, p. 340). Evidence shows that the cognitive processes for deep learning and information retention processes occur in dialogs (Van der Linden & Renshaw, 2001). Lack of social interaction is the main element that may inhibit the realization of full benefits of online collaborative learning.

Collaborative learning can benefit students. It has the potential to enhance critical thinking (Gokhale, 1995), and aid in the development of higher level thinking skills (Webb, 1982). According to Hafner and Ellis (2004), “students engaged in collaborative efforts typically retain the information being learned longer by becoming more actively engaged in the learning activity” (p. 1). Collaborative activities also “foster higher-order thinking skills such as analytical reasoning, synthesis, and evaluation” (Hafner & Ellis, 2004, p. 1).

Alavi and Dufner (2005) argued that collaborative learning occurs through active interpersonal interactions. Technology can play a central role in enabling collaborations simply due to the enhanced facilitative roles of advanced communication platforms. Students viewed an online collaborative forum as “convenient in time and place” and “more equitable for quieter students (Ellis, 2004, p. 3). Students may directly or indirectly influence each other by studying together. On Facebook, social interaction is supported via the ability to post content on another user's “wall” or comment on her posts, potentially leading to shared learning and the formation of learning communities centered around a common course in school. Additionally these behaviors are enacted in an environment replete with identity cues such as shared Friends and profile information (Ellison, Steinfield, & Lampe, 2007) that enables users to identify those with useful information and initiate contact with them.

### 2.1. Facebook for academic collaboration

There is significant interest among those in the research community and practitioners regarding the relationship between social media use and academic outcomes (Junco, 2012; Kamenetz, 2011; Lampe et al., 2011; Park, Cha, Lim, & Jung, 2013; Pasek et al., 2009). Much of this research focuses on the largest SNS, Facebook. Facebook offers opportunities for extracurricular activities, peer group interactions, formation of groups around shared interests, and faculty–staff interactions (Heiberger & Harper, 2008). Although not especially designed for learning, Facebook does share some functionality with formal courseware or learning management systems (LMS) such as Angel or Blackboard. For example, the availability of Facebook features such as private messaging or “Groups” provide a more private, closed space where students in a particular course can interact with one another.

Facebook also provides a platform for informal and unstructured forms of learning, and the collaborative potential of such sites can be tapped for academic purposes (Selwyn, 2009). Mason (2006) argued that Facebook's educational utility lies in its reflective qualities and its ability to facilitate peer feedback and collaborative learning. Furthermore, the design of SNSs facilitates peer feedback, encouraging collaboration and active participation (Maloney, 2007). Because so many students have Facebook accounts, it is often easy for students to find one another on the site, as opposed to using other channels such as email or text messaging. Additionally, the identity information available in the profile may provide information that lowers the barriers for requesting and providing help (Ellison et al., 2007).

A key feature of SNSs such as Facebook is the ability to articulate a network of connections on the site (Ellison & Boyd, 2013). In Facebook, these are known as “Friends.” Once a contact is “Friended,” barriers to initiating and engaging in directed or undirected communication are lowered. Facebook allows users to share and access identity information about others, allowing students to find those who might in some way be useful (Ellison et al., 2007). The availability of these contacts, which often reflect offline relationships (Ellison et al., 2007), may enable classroom-related communication to take place.

The use of Facebook for formal class-related academic collaboration has shown limited success. A study by Madge, Meek, Wellens, and Hooley (2009) of first year undergraduates at a British university found that only 10% of the students used it to discuss academic related work with other students on a daily basis and preferred to use Facebook for social reasons rather than formal educational purposes. Similar resistance to formal use of SNS was also found in Selwyn's (2009) study.

In some instances, Facebook has been used by instructors to support student interaction rather than using it as a place for learning new content. For instance, Wang, Woo, Quek, Yang, and Liu (2012) found that when a Facebook group was used as a learning management system, students were satisfied with its ability to make course announcements, share resources, take part in online discussions, and participate in weekly activities. Similarly, when a Facebook group was created for language learning in a secondary school, students interacted with each other through comments and shared resources (Ooi & Loh, 2010).

Although these studies shed light on purposeful uses of Facebook for academic activities, there is less work examining informal, student-organized collaboration, and no work that we are aware of which considers high school students. Nevertheless, Facebook has the potential to be utilized for diverse academic uses such as collaborating in a course in an informal capacity. According to one view, the value of SNSs within the educational context may lie in their ability to informally connect students as opposed to being used for completion of academic tasks (Lampe et al., 2011). Students who are already using Facebook can easily utilize it to ask questions to peers about coursework or share information about school (Lampe et al., 2011).

In this study, we examine self-organized class-related academic collaboration on Facebook among high school students; this includes a range of activities including using Facebook to contact and ask other students for help in class, to discuss schoolwork, and get resources that can be used in schoolwork. Below, we discuss the factors that may predict class-related academic collaboration on Facebook. These include a student's overall academic performance as captured by his or her grades, SES, type of Internet access at home, and higher-order Internet skills.

### 3. Factors associated with using Facebook for academic collaboration

#### 3.1. Course grades

Literature in this area suggests that collaborating in small teams can positively impact academic performance. For example, a study of ninth and tenth grade students in the U.S. found that class-wide student tutoring teams, whereby students worked collaboratively in small groups on academic tasks and provided immediate feedback to each other, led to better math scores and an overall improvement in letter grades (Maheady, Sacca, & Harper, 1987). It is uncertain, however, whether or not better grades increase the propensity to collaborate. We are interested in knowing whether academic performance as measured by course grades is a predictor of class-related academic collaboration on Facebook. Research that examines the relationship between academic performance in the form of grades and the tendency to collaborate academically on Facebook is limited, especially for teen samples. Thus we ask:

RQ1: *What is the relationship between self-reported grades and using Facebook for class-related academic collaboration?*

#### 3.2. Socio-economic status

Researchers describe a “digital divide” in terms of technology adoption based on SES (Dimaggio, Hargittai, Celeste, & Shafer, 2004). Low SES households who either cannot afford high-speed Internet service or do not have regular access may face serious consequences associated with digital inequality in the form of less Internet surfing time, lack of autonomy, and subsequent lack of sophisticated skill acquisition (Robinson, 2009). On the other hand, individuals from higher SES use the web in more advanced ways such as information seeking, learning, and communication (Robinson, 2009). Peter and Valkenburg's (2006) study revealed that Dutch adolescents aged 13–18 years, “with greater socio-economic and cognitive resources used the internet more frequently for information and less for entertainment than peers with fewer socio-economic and cognitive resources” (p. 293). We therefore believe that SES can directly impact students' likelihood to engage in class-related academic collaboration on Facebook. This leads us to the following research hypothesis:

H1: *Higher SES is positively related to student class-related academic collaboration on Facebook.*

#### 3.3. Home internet access

Facebook use requires access to the Internet and knowledge of how to use a computing device, such as a smart phone or laptop. Class-related academic activities such as problem solving, preparing together for an exam, and helping out peers may occur outside of classroom hours. While collaboration can take place both online and offline, online collaboration is more likely to occur when there is quality Internet service outside of school, especially at home.

Statistics reveal that almost one-third of American households have no broadband connection, while rural areas lag behind urban areas in Internet usage (NTIA, 2011). Besides the availability of home Internet access, its quality (e.g., bandwidth) may limit the kinds of activities users engage in, such as higher-order activities like creating and sharing video content. This is because online multimedia applications are increasingly bandwidth-intensive and many websites include interactive features or video content. Individuals with broadband connections use the Internet in different ways than people who have dial-up (Horrigan, 2008). For example, 80% of the users who had broadband Internet at home got news online as compared to 61% users who had dial-up (Horrigan, 2008). A dial-up or a slow Internet connection can limit access to and effective usage of many economic and social resources, such as online learning, e-government applications, health information, employment opportunities online, and basic communication functions such as email and web browsing (FCC, 2011). SNS use may also become constrained or limited when Internet access is lacking. SNSs can be very interactive in nature, and may include video and high-quality still images that require high-bandwidth Internet connections, the lack of which may exclude teens who might otherwise collaborate online. We therefore hypothesize that:

H2: *Faster Internet access will be positively associated with class-related academic collaboration on Facebook.*

### 3.4. Internet skills

A key factor that may predict Facebook class-related academic collaboration is the presence of a certain type of higher-order skills also known as information skills. We believe that the ability of the students to manipulate, structure, and use information to their advantage is critical in the new media environment. More so for new media, these vital skills need to be mastered. A useful way of looking at skills is by dividing them into higher and lower-order thinking skills, as outlined in Bloom's taxonomy of learning objectives (ACRL, 2013). For example, skills that involve analysis, evaluation, and synthesis – and hence greater cognitive processing – are thought to be higher-order skills (ACRL, 2013); these are important for problem solving and critical thinking.

In the research literature, the concept of Internet skills has been addressed through various terms. Hargittai (2009) and Van Deursen and Van Dijk (2009) refer to them as skills; while Eshet-Alkali and Amichai-Hamburger (2004) and Livingstone (2004) use the term “digital literacy.” Others such as Spitzberg (2006) referred to Internet skills as competency. Some have even defined Internet skills as “21st century skills,” which are important for navigating one's way through common tasks in a social environment (Warschauer & Matuchniak, 2010, p. 206).

The development of the Internet itself is reflected in the type of activities that characterizes Internet skills. Earlier conceptualizations of Internet skills were simpler, representing basic skills, such as browsing sites and downloading files, that reflected the available online activities at the time (Hargittai, 2002). More recent conceptualizations focus not only on aspects of Internet use such as assessing the credibility of online information, but also on skills that allow online users to search for information effectively (Haythornthwaite, 2009).

Since digital literacy can be viewed from varied angles, we will be concentrating on the information seeking and information sharing aspects of this concept.

#### 3.4.1. Information seeking

Information literacy, the ability to search and evaluate information, is a key component of digital literacy. Information-literate users look at the available information with a critical eye and question its validity (Mardis, 2002). This is important because in an online environment where many users are faced with issues such as information overload, there is a need to sift through, assess, and utilize online information in an efficient and timely manner. Users may also encounter biased and false information, as is the case when looking for health information online, and this requires careful filtering, assessment, and evaluation in order to distinguish credible content from advertising or inaccurate information. Teens who lack higher order Internet skills, or what are commonly referred to as *digital literacies*, waste time when they are online (Richtel, 2012). This is because productive information seeking requires using the appropriate keywords when searching, and thus poor search strategies can lead to ineffective and time-wasting activities.

We see the ability to look for health information as a strong indicator that a user has higher-order Internet skills. Similarly, being able to get online news and find information about current events and politics also indicates the presence of higher order Internet skills and the kinds of digital literacy that may be a pre-requisite for any collaborative activity online. Therefore, we suspect that such information access skills, which are acquired through proficiency in Internet use and training, will have a positive relationship with class-related academic collaboration on Facebook. We therefore hypothesize that:

*H3a. Information seeking skills—finding health information and news—are positively associated with class-related academic collaboration on Facebook.*

#### 3.4.2. Information sharing

Information seeking and sharing are closely related but have different nuances. Seeking help from classmates requires not only knowing who to ask but also asking in a way that is efficient. Often, social media users need to comment or share information in order to receive feedback or initiate a conversation. In other words, using Facebook for obtaining resources that can be used to help with schoolwork requires higher-order skills involving efficiently searching for information and sharing some information in order to ask the right person at the right time. Users may need to post content and reply to posts in addition to “liking,” sharing, and commenting on others' content. Higher-order information skills can also include one's ability to repurpose Facebook for academic uses, not just socializing. According to Livingstone and Helsper (2007), Internet skills are positively associated with tapping into online opportunities such as Internet use for completing schoolwork. This leads us to the following hypothesis:

*H3b. Information sharing skills – sharing original content and posting comments – are positively associated with class-related academic collaboration on Facebook.*

### 3.5. Support from Facebook friends

Social capital is a theoretical framework that considers access to different types of resources within one's network. The concept of social capital was introduced by Bourdieu (1986) and Coleman (1988); social capital is embedded in the connections between individuals, as such connections are necessary in order to access resources that are held by other people. For example, among college students, Facebook use was associated with higher perceived social capital, or access to resources embedded in one's networks (Ellison et al., 2007; Steinfield, Ellison, & Lampe, 2008). Social capital has been linked to various positive outcomes and academic achievement (Dika & Singh, 2002). Because it highlights the critical role of resources held by those in one's network, social capital can serve as a valuable framework for understanding the role of peers in relation to class-related academic collaboration.

SNSs can be used to harness the informational resources of one's network via question-asking on the site (Gray, Ellison, Vitak, & Lampe, 2013). The high rates of membership among high school students, meaning often all or most of one's classmates are available on a single platform, is helpful when students have class-related questions, because Facebook can serve as “one-stop shopping” for class-related help as opposed to having to use multiple platforms to reach all of one's classmates.

Early studies used the total number of Facebook friends as a metric for measuring intensity of Facebook use: Ellison et al. (2007) found that Facebook Intensity (which included the number of Facebook friends) positively contributed to perceptions of social capital. Later work asked participants about their “actual” Friends in addition to the total number of Facebook Friends. Ellison, Steinfield, and Lampe (2011) found that the number of “actual” friends on the site was predictive of social capital, while total number of Facebook Friends was not. They suggest that uses of the site that “express and develop relationships rooted in some kind of offline connection (operationalized as “actual friends”) are more likely to predict social capital than ... using the site to meet strangers” (p. 6). In the context of class-related academic collaboration, having more “actual” Friends may represent more possible sources of assistance when requesting homework help or other kinds of assistance because presumably “actual” friends are those contacts who are more likely to respond to requests for help. We thus hypothesize that:

H4: *The number of “actual” friends is a positive predictor of class-related academic collaboration instead of total number of friends.*

### 3.6. Instrumental support from Facebook friends

The notion of instrumental support captures the extent to which one's network provides help when needed. Instrumental support is task oriented (Mitchell & Trickett, 1980), and tangible (Vaux, Burda & Stewart, 1986). Although the number of actual Friends on Facebook represents the potential sources of help, instrumental support measures the extent to which users feel that they receive help from Friends when requested.

As mentioned above, Facebook enables collaborative activities and question-asking around academic content in a number of ways. In addition to lowering barriers to interaction and providing almost universal access to one's academic peer group, Facebook enables asynchronous communication such that users can request academic help from a fellow student via a Facebook message, status update, post to a Facebook study group, or by posting on a Friend's “wall.” Wohn, Ellison, Khan, Fewins-Bliss, and Gray (2013) found that being able to ask questions of one's network was predictive of feelings of self-efficacy around college application processes among teens. It may thus prove vital in class-related online academic collaboration. We therefore hypothesize that:

H5: *Facebook friends' instrumental support is positively related to class-related academic collaboration on Facebook.*

## 4. Method

### 4.1. Participants

High school students from a suburban midwestern state were administered pen and paper surveys during non-critical class time. All surveys were fielded within the span of one week. Students answered questions on scantrons (“bubble sheets”). We chose to use pen and paper because online survey administration would have excluded students without reliable Internet access. Because one of our variables of interest included computer and Internet proficiency, a possible bias would have been introduced through the use of an online platform for data collection (see Hargittai, 2008). Also, students were already familiar with standardized tests that use scantrons.

The total number of participants was 750. The scantrons were electronically scanned by the university's scoring office, and exported as an Excel file. Data analysis was conducted using SPSS 20.0. Data were screened for anomalies and random matches were made with the actual scantrons to check for accuracy. Cases that were incomplete and only answered a few questions were removed from the sample. In total, sixty cases that had less than 20% of the items completed and cases with systematically missing data were removed, leading to an actual sample of 690.

### 4.2. Demographics, instruments and measures

The survey included items regarding demographic factors such as academic grades, SES, and gender. In addition there were measures for home Internet access, Internet skills, and Facebook use. See Table 1 for the complete demographic characteristics of our sample.

The survey also asked about a student's Internet access, Internet use and Facebook use behaviors. Table 2 includes the survey items, which probed Facebook visit frequency, number of Facebook friends, Internet skills, and use of Facebook for instrumental support.

There were two scales in this study. The dependent variable, Facebook class-related academic collaboration, was a 4-item scale (see Table 2 for item wording and means and standard deviations of all items) adapted from Lampe et al. (2011). The scale included items about the use of Facebook for asking class-related academic questions and discussing schoolwork. The scale had adequate internal consistency (Cronbach's alpha = .89). This variable was measured on a 5-point Likert-type scale that ranged from “strongly disagree” to “strongly agree.”

The items about home Internet service included three response options: no Internet service at home; dial-up or slow connection; or broadband, DSL or high-speed Internet connection. About 14% of respondents indicated that they had no Internet access at home, while 64% had high speed Internet access at home.

Internet skills were measured by four separate items that probed the extent to which participants engaged in seeking complex information and information sharing. Two of the items asked about students' online information seeking behavior in the domains of health and news, while two other items probed their online information sharing behavior via creative work and comments. We were interested in seeing how four unique items differed (for information sharing and seeking). Moreover, two-item scales are known to have issues in terms of their scale reliabilities (Eisinga, Grotenhuis, & Pelzer, 2013). Therefore, we have added Pearson correlations (see Table 3), which are from low to moderate between these four items. The response items were: Never, Rarely, Sometimes, Often, and Very Often.

The questions related to Facebook use probed participants' total number of Facebook friends, the number of “actual” Facebook friends, and a scale measuring instrumental support from Facebook friends. Total number of Facebook friends and “actual” Facebook friends were based on a range (0–20 friends minimum, coded as ‘1’; 21–50 coded as ‘2’; 51–100 coded as ‘3’; 101–300 coded as ‘4’ and 301–500 friends

**Table 1**  
Sample demographics.

	Percentage
Gender	
Male	48.6%
Female	51.4%
Race	
White	77.7%
Black	5.6%
Asian	2.9%
Pacific Islander/American Indian	1.4%
Mixed	12.5%
Socio economic status (SES)	
Working poor	5.5%
Lower middle class	18.8%
Middle class	56.3%
Upper middle class	11.1%
Grades typically	
Mostly E's	2.8%
Mostly D's	4.8%
Mostly C's	20.9%
Mostly B's	34.6%
Mostly A's	37%
High school grade level	
9th grade	29.3%
10th grade	21.8%
11th grade	26.1%
12th grade	22.8%

maximum coded as '5'). The measure regarding the distinction between total versus "actual" Facebook friends was originally developed by [Ellison et al. \(2011\)](#). Facebook Friends' instrumental support ([Wohn et al., 2013](#)) was the second scale in this study, consisting of three items and had good internal consistency (Cronbach's alpha .92).

Person correlation coefficients showing relationships between variables were calculated and have been reported in [Table 3](#). Coefficients close to 1.0 or  $-1.0$  represent a strong relationship, between .3 and .7 a moderate relationship, and below .3 a weak relationship ([Cronk, 2012](#)).

## 5. Results

To address the research questions and hypotheses, we conducted a hierarchical (blocked) linear regression where the dependent variable was Facebook for class-related academic collaboration. We used this method to assess how much explanatory power digital skills and other factors contributed to the model above and beyond the variance explained by just demographic factors. We thus present four models: the first includes only demographic variables; the second model adds "access" variables; the third model includes "skills" variables; and the fourth model assesses the added contribution of Facebook-related measures. [Table 4](#) depicts the regression analyzes with the standardized beta weights and their significance levels.

As depicted in [Table 4](#), the Model 1 contained demographic variables (gender, SES, course grades, and high school level), and was a significant model  $F(3, 623) = 3.615, p < .01$  with an adjusted R-square of .03. Higher SES was positively related to use of Facebook for academic collaboration.

The second model was also significant and included the availability of and types of Internet access available to the student at home,  $F(6, 620) = 4.30, p < .001$  with an adjusted R-square of .04 at the  $p < .5$  significance level. Among the demographics in this model, SES remained a

**Table 2**  
Summary of items measuring Internet and Facebook use.

	Mean	S.D.
Information seeking		
<i>Health</i> : How often do you look for information online about a health topic that's hard to talk about?	2.62	1.2
<i>News</i> : How often do you go online to get news or information about current events or politics?	3.06	1.3
Information sharing		
<i>Creative</i> : How often do you share something online that you created yourself, such as your own artwork, photos, stories, or videos?	2.89	1.3
<i>Comments</i> : How often do you ever use the Internet to post comments to an online news group, website, blog, or photo site?	3.08	1.4
Use of Facebook for class-related academic collaboration		
I use Facebook to contact other students with questions related to a class or schoolwork	2.89	1.3
I use Facebook to discuss classes or schoolwork	2.57	1.7
I use Facebook to ask classmates for help in class	2.37	1.2
I use Facebook to get resources I can use in my schoolwork	2.31	1.2
Facebook friends' instrumental support		
My Facebook Friends give me ideas when I don't know what to do.	2.74	1.2
My Facebook Friends give me information so I can learn new things.	2.71	1.2
My Facebook Friends help explain things that I don't understand	2.61	1.2

[All items are on a 5-point Likert scale].

**Table 3**  
Pearson correlations among dependent and independent variables.

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
1 Gender	1														
2 SES	-.001	1													
3 Course grades	-.058	.164**	1												
4 High school level	.079*	.131**	-.051	1											
5 No home internet	-.017	.165**	.206**	-.008	1										
6 Slow home internet	-.018	-.016	-.003	-.004	-.137**	1									
7 Infoseeking: health	.103**	-.008	-.004	.032	-.128**	-.022	1								
8 Info seeking: news	-.021	-.111**	-.232**	.092*	-.250**	-.013	.364**	1							
9 InfoSharing: creative	.194**	-.037	-.076*	-.033	-.197**	-.043	.333**	.298**	1						
10 InfoSharing: comments	.128**	-.089*	-.005	.018	-.171**	-.068	.287**	.338**	.462**	1					
11 FB_VisitFrequency	.212**	-.038	.089*	.065	-.114**	-.134**	.083*	.083*	.327**	.330**	1				
12 Total FB friends	.167**	-.096*	-.042	.015	-.071	-.141**	.019	.082*	.220**	.252**	.541**	1			
13 Actual FB friends	-.019	-.054	.012	-.150**	-.088*	.002	.012	.061	.144**	.143**	.156**	.201**	1		
14 FB Instrumental_Supp.	.041	-.091*	.078*	-.075*	-.101*	-.013	.196**	.127**	.340**	.292**	.175**	.131**	.340**	1	
15 FB ClassRelated_Collab.	.055	-.125**	-.045	.004	-.154**	-.056	.223**	.234**	.281**	.295**	.229**	.185**	.259**	.473**	1

Note: Two-tailed, \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ ,  $n = 690$ .

significant positive predictor. Having no Internet at home, compared with having high speed Internet, proved to be a significant predictor that negatively predicted Facebook class-related collaboration. Students without high speed Internet in the home were less likely to engage in Facebook-enabled academic collaboration when compared with their peers who have broadband Internet access.

The third model was significant and included SES and information access skills  $F(8,618) = 9.61$ ,  $p < .001$  with an adjusted R-square of .15. Looking for health information online was positively significant in predicting Facebook class-related academic collaboration in this model. Moreover, sharing something online that you created yourself and using the Internet to post comments were positively related to higher use of Facebook class-related academic collaboration. Lastly, model 4 was also significant,  $F(12,614) = 24.75$ ,  $p < .001$  with an adjusted R-square of .28. This set of variables included items about Facebook use (Facebook use frequency, number of total Facebook friends, “actual” Facebook friends, Facebook friends’ instrumental support).

The regression results for the final model show that among the demographic variables, only course grades was significant in predicting Facebook class-related academic collaboration, such that students who reported higher grades were more likely to engage in class-related collaboration on Facebook. Neither SES nor high school level were significant in predicting Facebook class-related academic collaboration once Internet skills and Facebook usage were added to the model. Information seeking skills, such as looking for health information online, and getting news and information about current events and politics were significant in predicting Facebook class-related academic collaboration. In contrast with model 3, however, information sharing items did not remain significant once Facebook usage was taken into account.

Among Facebook variables, actual number of Facebook friends was a significant predictor of Facebook class-related academic collaboration, whereas “total” number of Facebook friends was not. Facebook friends’ instrumental support was strongly associated with class-related academic collaboration on Facebook. The more instrumental support that the students perceived having through Facebook friends, the more likely they were to engage in informal academic collaboration on Facebook.

**Table 4**  
Hierarchical regression predicting Facebook class-related academic collaboration.

	Model 1: demographics		Model 2: home internet access		Model 3: internet skills		Model 4: facebook use	
	$\beta$	Sig.	$\beta$	Sig.	$\beta$	Sig.	$\beta$	Sig.
Gender	.08	.060	.09	.054	.04	.390	.04	.350
SES	.13	.006	.11*	.010	.09*	.030	.06	.160
Course grades	1.0	.300	.08	.080	.06	.196	.09*	.020
High school level	-.02	.700	-.02	.720	-.02	.650	.01	.780
No home internet <sup>a</sup>			-.12*	.007	-.05	.300	-.04	.290
Slow home internet <sup>a</sup>			-.06	.200	-.04	.410	-.02	.540
Info Seeking: health					.13**	.005	.11**	.009
Info Seeking: news					.10	.051	.10*	.035
InfoSharing: creative					.14**	.004	.01	.770
InfoSharing: comments					.13**	.008	.06	.200
Facebook visit frequency							.07	.170
Total Facebook friends							.02	.620
“Actual” FB friends							.09*	.035
Facebook friends’ instrumental support							.35***	.000
<b>Adjusted R<sup>2</sup></b>	.03		.04		.15		.28	

$\beta$  = Beta, the standardized regression coefficient. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

<sup>a</sup> Note: The reference group is “High speed Internet access”.

## 6. Discussion

### 6.1. Course grades and academic collaboration on Facebook

Our first research question (RQ1) was about the relationship between using Facebook for academic collaboration and self-reported grades. We wanted to learn whether students who reported attaining higher grades in school (As and Bs) were more likely to collaborate for educational purposes on Facebook in comparison with those with lower grades or whether Facebook-enabled collaboration was more likely to be reported by those with higher grades. The regression analysis (see [Table 4](#)) shows that in the final model, students who reported higher grades were more likely to engage in class-related Facebook academic collaboration.

Since these are cross-sectional data, we are not able to claim whether students who perform better academically are better at finding novel ways of online academic collaboration (including Facebook) or if engaging in online collaboration via Facebook actually contributes to higher grades. Future studies that use longitudinal data may be able to determine the directionality of these effects.

### 6.2. Explaining the role of SES

Our first hypothesis concerned the relationship between and student class-related academic collaboration on Facebook. When only model 1 (demographics), model 2 (home Internet access), and model 3 (Internet skills) are considered, higher SES predicted higher levels of class-related Facebook academic collaboration. However, in model 4, the SES variable becomes insignificant when Facebook use variables were included. It may be that certain resources accessible via Facebook, as assessed by measures such as number of actual Facebook friends, compensates for lack of resources in one's immediate family. There is some research suggesting that students from disadvantaged social backgrounds can benefit from the support offered by Facebook friends. For instance, the low-income teens considered in [Greenhow and Robelia \(2009\)](#) felt that SNSs facilitating emotional support, relational maintenance, and self-presentation.

Relatedly, in a more recent study by [Wohn et al. \(2013\)](#), Facebook use was associated with higher feelings of efficacy around the college application process and higher expectations of college success for first-generation high school students, but not for students who had at least one parent who graduated from college, which is strongly correlated with SES. In our results, we see that the effect of SES on classroom collaboration becomes non-significant once Facebook factors, such as number of actual friends and instrumental support from friends, are taken into account. This suggests that even students with low SES, should they have a strong support system via Facebook, are just as likely to engage in classroom-related academic collaboration on Facebook as their higher SES peers. Further investigation is needed, however, to explain this phenomenon.

### 6.3. Internet access and internet skills

For the second hypothesis (H2), we had hypothesized that the availability of faster home Internet would be positively associated with Facebook class-related academic collaboration. The response items for Internet access were “No home Internet” and “Dialup or slow Home Internet,” with “High speed Home Internet access” as a reference variable. Our results show that home Internet access does significantly predict Facebook class-related academic collaboration, but once Facebook-related variables and Internet skill variables are added to the model, the effect dissipates. These results suggest that skills and network factors are stronger variables associated with collaboration in comparison to actual access, but it could also be due to other reasons.

While Internet access is likely to be available outside the home, such as in libraries or friends' houses, for many adolescents, having home Internet access is far more convenient and accessible. The home remains “the territorial core” around which an individual's life is structured ([Dholakia, 2012](#), p. 46). As shown in [Table 4](#), having no home Internet, in comparison to fast Internet, is negatively associated with use of Facebook for class-related academic collaboration. However, having slow Internet versus fast Internet does not have a significant effect. The importance of Internet access at home, however, becomes insignificant once higher order skills and Facebook use is introduced into the model. We know from past literature that lack of Internet access constrains opportunities, as captured by the concept of a digital divide. The findings of this study suggest that speed is relatively less important than access, but that since the home Internet access factor becomes insignificant in models 3 and 4, it could mean that having access to the Internet in other places can make up for lack of access at home.

Our third set of hypotheses (H3a & H3b) were about higher-order Internet skills, especially information seeking (H3a) and information sharing (H3b) skills, as being positively predictive of class-related academic collaboration on Facebook. These two hypotheses were partially supported in model 3 without accounting for the variable related to actual Facebook friends. In the final model, the two questions about information seeking skills stand significant, but information-sharing skills do not. These findings regarding the lack of support for information sharing as an important skill predicting Facebook academic collaboration warrants further research. At first glance, information seeking and sharing seem to be very similar, but they operate differently in our models suggesting that academic collaboration may be motivated more by the ability to find help as opposed to the desire to help others.

### 6.4. Actual Facebook friends matter

Our fourth set of hypotheses (H4) concerned the number of friends in predicting Facebook class-related academic collaboration. Hypothesis H4a posited that the “actual” number of friends would be a positive predictor of class-related academic collaboration. This hypothesis was supported. The results show that indeed “actual” number of Facebook friends (H4a) predicts Facebook class-related collaboration. On the other hand, the total number of friends was not significant in predicting class-related academic collaboration on Facebook.

These findings are evocative of those reported in [Ellison et al. \(2011\)](#), who found that actual friends were predictive of social capital levels, but not total friends. In sites like Facebook, where the total number of friends can be in the hundreds or thousands, “actual” friends may be a better measure of those connections who are active, visible, and salient. In this study, having more “actual” friends was associated with



higher levels of academic collaboration, which makes intuitive sense given that more actual friends may increase one's chances of getting a response and having a wider set of connections to tap.

### 6.5. The instrumental role of Facebook friends

Our fifth hypothesis (H5) regarding Facebook friends' instrumental support being positively related to class-related academic collaboration on Facebook was supported. Facebook friends' instrumental support was highly significant in predicting class-related academic collaboration on Facebook. This is not surprising given that this measure assesses the extent to which participants felt they could access informational resources and other help from their Friends on Facebook (e.g., "My Facebook Friends help explain things that I don't understand"). The sense that help is available from one's network is a natural foundation for collaborating on schoolwork and requesting help from one's connections. In concert with other work on social capital and social media, this finding highlights the role that Facebook can play in helping young users mobilize the resources of their network.

## 7. Limitations

Like all survey-based research, our data are self-reported and therefore subject to bias. Our sample was not randomly selected and thus our findings may lack generalizability. In addition, our question regarding Internet use at home was not specific to land-line, and may or may not have accounted for Internet use via smart phones. Future studies should incorporate more sophisticated measures of digital literacy in order to provide a more comprehensive picture of how students share and obtain information especially via social media. In other words, a more comprehensive view of skills (both information access and sharing) will help in further understanding class-related academic collaboration on Facebook. Our measure of academic collaboration focused on requesting help from other students. Future studies should also consider the aspect of providing and not just requesting help in an academic context.

## 8. Conclusion

The aim of this research was to have a clearer understanding of the factors that contribute toward informal academic collaboration on Facebook. As established earlier, because teens are spending increasing amounts of time on SNSs, there is great potential for academic collaboration in an informal capacity. This study contributes to the literature highlighting the role of information search skills as an important factor in explaining class-related Facebook academic collaboration.

Friends do matter. In the increasingly networked world, the availability of the Internet especially at home is important, but beyond access and skills, the perceived ability to mobilize one's social resources is the strongest factor predicting academic collaboration. We found that those who reported that their Facebook friends provided information, ideas, or explanations were more likely to seek academic help. Instrumental support from Facebook friends was by far the most powerful factor in our model predicting class-related academic collaboration. Such support from Facebook friends dwarfed traditionally salient factors such as Internet access, skills and demographic variables such as SES.

This work also suggests that information-seeking skills are important in explaining how much high school students engage in informal class-related academic collaboration. In particular, these higher order skills overcame limitations of technology, such as Internet access at home. Interestingly, even though recent work has highlighted the importance of producing content as a critical component of Internet literacy, in this study sharing creative content and commenting in online communities was not related to an individual's proclivity to seek academic help. It may be that asking help from a Facebook friend is the first step toward more sophisticated kinds of content production online. Perhaps asking a question about schoolwork on Facebook is a safe training ground for more sophisticated forms of creative sharing.

This research highlights the importance of enhancing students' information search skills.

Such Internet search skills may often be taken for granted, since it is often assumed that since most adolescents are adept at Internet use. Many schools do not provide formal mechanisms for educating students about how to best obtain the needed information from the Internet in an efficient manner. Such an investment in building student information search skills could prove fruitful for advancing class-related academic collaboration outside formal school environments and, in turn, honing the kinds of information literacy needed in today's workplace.

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