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Networking to learn by learning to network: Social networking among students

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Abstract

The positive effect of social networking, particularly social networking sites (SNSs), on improving the process of learning has been acknowledged by many recent types of research. The relationship between features and characteristics of SNSs and the development of students' social networking was of interest to past researchers. As social networking is primarily perceived as intelligent thought and action in both real and virtual environments, there seems to be a need for a qualitative exploration of the influential factors of students' social networking. The study has been conducted using the case study method to look at the identified factors retrieved from previous research. A semi-structured in-depth interview was used to investigate the viewpoints and experiences of socially proactive and successful students at Iranian universities. Findings explain students' social networking due to three factors categorized as central, causal, and contextual. The personal learning system has a critical position among the various factors affecting students' social networking. Therefore, despite the facilitating role of social networking in promoting the learning process, students' social networking would be useless without utilizing a personal learning system. We can see a dynamic and interactive cycle of learning and social networking in the university context. The research has been founded on critical consideration of previously studied factors affecting social networking that were mainly limited to online technologies according to qualitative exploration. As a result of this research, different learning and social networking levels regarding diverse meaning, function, and complexity were identified.

Keywords: Social Networking, Networked Learning, Higher Education, Personal Learning System.

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Introduction

The necessity and positive function of students' social networking on educational success and outcomes have been argued by theoretical literature (Sivakumar et al., 2023; Tafesse, 2022; Ashraf et al., 2021; Berthelon et al. 2019; Porter & Woo, 2015; Girard et al., 2015). Along with theoretical debates, most previous research has emphasized the positive role of social networking on students' educational achievement and learning improvement (Wakefield & Frawley, 2020; Elshami et al., 2020; Ansari & Khan, 2020; Yu, 2019; Anders, 2018; Hassan, 2014).

There are many challenges to developing social networks (Jemielniak, 2020; Morrison-Smith & Ruiz, 2020; Gerard, 2012), despite the efforts of universities to enhance students' social networking (Bateman, 2021) and their engagement in the learning ecology (Scott et al., 2016). Sure, here's the revised version of your text with proper APA 7th edition formatting:

Previous studies have concentrated on the functional and structural position of social networking on higher performance. There is not enough research literature investigating the psychological dynamics (Porter & Woo, 2015) and influential factors of social networking. In other words, the challenges and motivators of students' social networking have not received enough attention. However, some theoretical debates have considered identity (Raj et al., 2017), perceived value (Liu et al., 2018), and the design of learning activities (Zgheib & Dabbagh, 2020) as influential factors of social networking.

Past researchers have identified various factors as motivating students' networking, ranging from individual to organizational ones, including "population characteristics and parental background," such as age, gender, and past experiences (Kılıç & Güzeller, 2017; Girard et al., 2015), "similarity" (Vătămănescu et al., 2018; Girard et al., 2015), "identity" (Raj et al., 2017; Ghatak et al., 2019), "study approach and academic self-efficacy" (Zander et al., 2018), "motivation and positive attitude" (Rothstein, 2021; Pollack et al., 2015), "learning online networking principles" (Gerard, 2012; Tauginienė & Kalinauskaitė, 2018), "technology characteristics" (Florenthal, 2015; Kim et al., 2015; Asiedu & Badu, 2018), and "university characteristics" (Zhou & Zhang, 2023; Tauginienė & Kalinauskaitė, 2018).

Despite the positive function of the above factors, a few studies found that some have an insignificant or negative impact on social networking. These include "motivation for safety and security" (Pollack et al., 2015), "superficiality" (Buckley et al., 2010), "learners' age, preference" (Victor, 2012), "learners' learning style" (Balakrishnan & Gan, 2016), and "institutional affiliation" (Al-Daihani, 2010). Consequently, contradictory findings have been observed on the elements that motivate students' social networking in the university context. Another essential point is that the meaning of social networking is often limited to SNSs. For this reason, a vast amount of studies has concentrated on the role of related technologies and applications. Dominant approaches represent a concept of networking that is strongly intertwined with the characteristics of ICT over the years. For example, Nyíri (2008) described the "network individual" as the new type of personality who is a person reintegrated from the relative isolation of the printing press into the collective thinking of society.

However, the concept of social networking considers the dynamic aspects of making connections with critical actors, not focusing solely on the virtual aspects of social networks, which is like the concept of "networked learning"—a human ability that uses ICT as supportive tools along with other devices and skills (Bagheri & Yamani Douzi Sorkhabi, 2020). Thus, social networking reflects particular complexities and motivating factors essential for effective learning in the academic context of the university, which needs exploratory research.

As a result of critical gaps in the theoretical framework and past research, we may conclude that there has been no deep investigation into the influential factors of students' actual networking in the learning context of the university. With most of the research concentrated on social networks' role in improving learning, few studies have investigated the proper conditions for developing social networking. According to this claim, Porter and Woo (2015) explain that little research has been conducted on how and why individuals build social networks. Consequently, this study aims to explore vital factors motivating students' networking in the academic and social context of Iranian universities. By critically reviewing previous research in this area, the study aims to gain a deeper understanding of the motivations that underlie students' networking activities. The main goals of this research include identifying the factors that influence students' decisions to network, examining how networking behaviors may vary across different academic and social contexts, and providing insights that can inform strategies to support and enhance students' networking experiences in Iranian universities. Ultimately, this study seeks to contribute to the existing body of knowledge on student networking and inform initiatives aimed at promoting a positive networking culture in academic settings in Iran.

Generally, the main goals of this study include:

- Identifying the vital factors motivating students' networking in Iranian universities' academic and social context.

- Providing insights that can potentially improve networking opportunities and experiences for students in Iranian universities.

Social networking

Undoubtedly, one of the most critical skills in a dynamic and complex world is social networking. Saviotti (2009) confirms that the formation of human networks begins according to the most fundamental aspects of human behavior: environmental adaptation. Additionally, it must be acknowledged that collective adaptation precedes individual adaptation. Al Omoush et al. (2022) define networking as "awareness of who has the required knowledge and resources." Cote (2019) argues that it refers to the systematic creation and use of internal and external connections between individuals, teams, and organizations to improve performance.

Hoy and Miskel (2005) defined networking as "the communication process with those who often have access to useful information." Thus, the primary purpose of networking is to access something special through forming relationships with various people. In this regard, Camarinha-Junaidi et al. (2020) believe that networking is about transforming information to reach mutual benefit. Different scholars have implied exchanging various resources through networking, such as private information, access to multiple skills, and power (Jacobs et al., 2019).

Porter and Woo (2015) defined networking as a dynamic psychological phenomenon as opposed to the structural analysis of social networks. They conceptualized networking within four different approaches: (1) networking for performance, (2) networking as a career strategy, (3) networking as a job search strategy, and (4) networking as behaviors to develop professional networks. They describe networking as a purposeful activity in the first three approaches, while the last defines networking as a facilitating action without a specific purpose.

Despite the various concepts of social networking in the academic context, one of the students' critical skills is learning in cooperation with related actors, including faculty members and professors, classmates and peers, staff members, and external actors. On the other hand, networking is not necessarily a positive function of educational achievement (Bagheri & Yamani Douzi Sorkhabi, 2020). It may cause negative results or dynamic features that require more investigation in the complicated and evolving environment of the university. Additionally, social networking is not restricted to virtual spaces and related technologies. It moves beyond cyberspace and encompasses the most interconnected conditions retrieved from both virtual and actual aspects.

Methodology

Earlier, we described some different predictors of students' social networking, which are mostly limited to social networking sites (SNSs) and technologies that improve students' abilities. These factors are categorized into eight groups, as in Figure (1). Social networking to learn in the university is a dynamic and complicated process that necessitates a critical consideration to explore the factors affecting students' social networking as a complex behavior in the actual and virtual context through evaluating the stated categories and viewing the concept of social networking. Consequently, researchers decided to deeply explore the networking behavior of students in the context of Iranian universities using the case study method. The study was conducted based on the qualitative evaluation of stated categories relying on social networking. This paper aims to qualitatively investigate some remarkable students who are supposed to be successful and socially proactive in Iranian universities and are recognized as informative cases. Figure 1 is considered as the methodological base for the qualitative investigation of the mentioned cases.

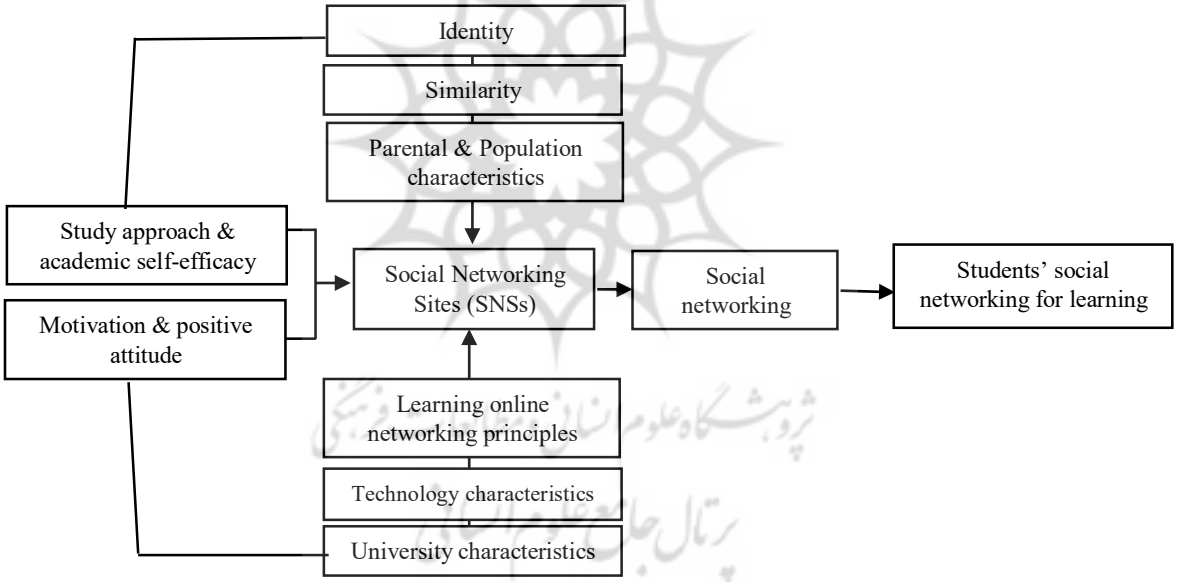

Figure 1. The past factors affecting students' social networking

Participants

According to theoretical sampling, the purposive method was employed to select informative cases that include these characteristics: (1) the students who achieved top ranks of formal educational evaluation systems (grade point average), (2) the students who succeed in scientific competitions at university, national and international levels, (3) the students who are socially engaged in extracurricular activities and/or succeed in annual festivals of students' scientific associations, (4) the students who are involved in entrepreneurship and start-up events. As researchers tried to study different views, they selected required cases of various

groups of students who are brilliant in educational, research, innovative, and social fields. About 47 students were selected from the following universities that are some of the best ones in national rankings: Shahid Beheshti University (A), Shahid Beheshti University of Medical Sciences (B), Sharif University of Technology (C), and Tehran University (D). The students were selected from different disciplines such as humanities, natural sciences, engineering, medicine and health, and Environmental Design among various academic degrees including Bachelor, Master, doctorate, and Ph.D.

Data collection and analysis

As in Figure (1), the data collection process was based on critical consideration of previously studied factors affecting students' social networking by using semi-structured in-depth interviews. Thus, the interviews were going to ask three kinds of questions.

At first, the students were asked to describe their methods of studying and reading the learning contents, emphasizing their social activities. As every participant has a unique story, all students are not expected to completely know the concept of social networking. In the first stage, some general and open-ended questions were structured for interviewees to explain how they developed social networking during their learning process. In other words, they were asked to describe learning conditions, the environmental situation, and various factors that improve learning.

In the second stage, the interviewees were directly asked to describe the role of stated actors and factors mentioned in past studies in developing social networks. Also, the questions were about each category's positive or negative role during students' communication with peripheral actors. So, they were asked to describe their relationship experiences during learning, emphasizing eight categories.

At the final step, interviewees were asked to discuss and finalize their views and experiences on learning conditions and critical actors who assisted them in this way.

Some interview questions were as follows: How was the last time you discussed a subject with your friends or classmates? How do you resolve a problem or look for an answer when you face a problem during learning? What is your opinion about peers in the learning process? Do you have unique communities with your friends or classmates for learning in the context of university? Have you had any exceptional experiences participating in student scientific associations?

In other words, participants were asked to talk about their learning experiences during courses and programs based on social engagement and academic interaction with the relevant actors such as other students, peers, teachers, professors, and administrators. For this purpose, semi-structured in-depth interviews were used to collect students' viewpoints. Every student

has her/his unique experiences during social networking. Asking straight questions – such as "What factors help you to make the connection with your peers?" - may lead to artificial arguments, which damage the reliability of collecting evidence. Instead, clear views of the participants about their living experiences lead to valuable and reliable findings.

The process of analyzing and concluding the factors affecting students' social networking was done using the systematic approach of Strauss & Corbin (1998) as a qualitative technique. The resulting data were embedded in the proposed framework of Strauss & Corbin, which consists of three elements, including central factors, causal factors, and contextual factors that will be described at the beginning of the next section of the paper. The analysis process is performed without using any special software and under the following stages: first, transcribing audio recordings of interviewees' answers. Second, understanding the prominent conceptual statements of the text and determining recognized concepts for each of them, and third, categorizing identified concepts according to their similarities and differences. After that, the existing subcategories were grouped into main categories, and finally, the main categories were incorporated into three predictors of social networking: central, causal, and contextual categories. The aforementioned process was conducted according to open, axial, and selective coding. The sampling, collecting, and data analyzing processes, considered interconnected, were terminated upon theoretical saturation. The frequency of the resulting conceptual statements and categories has been presented in Table 1.

Table 1. Frequency of resulted concepts and categories

Predictors of Social Networking	Main Categories	Subcategories	Concepts
Central factor	4	-	53
Causal factors	7	34	308
Contextual factors	7	25	237

Results

What are the factors affecting students' social networking?

Students' social relationships with other actors and making their social networks are suited to multivariate factors of personal to interpersonal. According to the grounded theory of Strauss & Corbin (1998) and as the result of this research, these factors have been divided into three main categories: (1) central factor (Table 2), (2) causal factors (Table 3), and (3) contextual factors of social networking (Table 4). The causal factors directly influence social networking, but the contextual factors are usually developed through the action/interaction of causal factors in the environment of social networking (Strauss & Corbin, 1998). However, both casual and contextual factors lead to the central category that fundamentally constitutes students' social networking for learning in the university context. In other words, each of the causal factors can improve or decrease the level of social networking. However, these effects

would be transformed in the context of the university. So, it is hard to draw apparent boundaries between the two main groups.

Central category

The personal learning system is developing a personal system for planning and management of professional learning based on personal philosophy and by use of various human capacities. So, managing the learning system considers conscious thought and action along with a specific plan to acquire the required knowledge and skills, which is based on the following four key elements:

Personal philosophy and perspective: students need a unique perspective to develop various strategies of learning based on personal philosophy for their lives.

Holistic planning: personal philosophy leads to the holistic view of planning for learning which mentions the various aspects of education.

Professional learning: holistic planning requires a professional approach to learning that considers the use of dynamic methods and mechanisms for acquiring specialized contents distinct from linear reading and memorizing a scattered set of subjects.

Various human capacities: effective implementation of the above elements requires the best use of human capacities and abilities.

Table 2. The central factor of students' social networking

Main Category	Subcategories	Examples of Conceptual Statements
Personal learning system	Personal philosophy and perspective	The learning system is a common yet flexible framework that answers these questions: what path will you take? Which way should you go? What abilities do you need? What channels of connection can you use to acquire these abilities? What are the vulnerable weaknesses, and how can you overcome them? (A.1.1.62).
	Study planning based on the learning system	
	Professional learning	
	Various human capacities	First, determine the end you want to reach. I am going to get to that point. Now, what do I need? You are determining these points for yourself: how should I study the lessons? Starting to read basic concepts and after that specialized subjects (B.4.4.18).

The personal learning system can be based on the "constructivist theory," emphasizing the learner-centered approach of building knowledge against memorizing isolated facts (Ismail et al., 2023). It is done according to "self-regulated learning" by students' control and engagement in his/her learning (Brenner, 2022). It also acknowledges learning as a dynamic but nonlinear process of social change with community partners, which is named "transformative learning" (Maiese, 2017). However, a personal learning system is a thought foundation that results from personal philosophy and leads to active actions of professional learning in the social context. Therefore, students' active approach to social networking is made by the meaningful personal learning system.

Causal categories

The causal factors have been divided into four main characteristics that can improve or impede the students' social networking during academic learning in the social context of the university. Students' characteristics, teachers' features, interactive characteristics of teachers and students, and curriculum characteristics are some of the causal factors that are considered to have either positive or negative effects.

1. Students' characteristics

Learning motivation: Internal motivation can direct and stimulate behavior: "Students are passive and do not seek their rights. They do not talk at all, sitting in front of a professor offering old and irrelevant knowledge, they write their notes and finally get their grades" (D.1.4.45). In contrast, "Learning-based behavior implies that student has an insatiable hunger for learning and is not easily satisfied with learning subjects and debates and does not simply fail in her/his performance." (A.5.2.5).

Communication and social skills: Some motivated students desire to learn, but they are not equipped with social and communicative skills. So, they are unable to interact effectively. "We do not know how to deal with a teacher" (D.1.4.30). "I feel weak in interacting with senior and junior students. I was embarrassed when asking my questions from senior students" (D.4.6.22).

Academic acceleration: One of the main characteristics of the modern era is the speed and velocity of students in the process of studying. "Some students are just trying to complete a course. They try only to pass the master and doctoral courses without any purposes" (B.2.1.36). "All the purpose of the students is to get faster to the higher educational levels without enjoying the process" (A.4.1.7).

Students' union and collaboration: A dominant culture in some students' thoughts and actions prevents them from cooperating with other actors. There are some examples of these properties in Table (3). "I have always tried to do the university research and projects individually. It is not because I am an isolated person. Rather, teamwork requires a lot of energy and time, while individual activity will work better concerning this." (A.5.3.7).

2. Teachers' characteristics

In addition to individual characteristics, the teacher's action plays a critical role in developing students' social networking. This feature, called "administration of students' learning process," is, in fact, the ability of teachers to logically manage the learning process of students through actions such as self-assessment and continuous improvement, paying attention to students, as well as constructive interaction with them to teach conceptual knowledge, motivating and leading the studying process of students. Some examples of participants' answers have been offered as follows.

"In an optimal class, the teacher considers the consistency in presenting the learning content. For example, she/he knows that this concept is the basis of what he/she will say later. So, he/she firstly must teach it so that the students can understand the next topics. It is a special ability for a good teacher" (D.4.1.4). On the other side, "there is a special view in which, the teacher says why should I spend time with these students. I cannot do my job. However, it's not true to let some complaining students gather around me. So, I don't let them waste my time" (D.1.1.25).

3. Interactive characteristics of teacher and student

The last two factors that explain the distinct role of students and teachers in stimulating social networking will lead to unique characteristics resulting from their continuous interaction. This new feature called "linear and non-critical interaction between teacher and student" is constructed of several subcategories that can be seen in Table (3). Some examples of participants' views are provided to describe this category clearly. "Some students are interested in learning, but their professors are not welcoming it. On the other hand, the professors have found that some students are not interested, making them lose their enthusiasm. It is a defective cycle in which they reinforce each other for negative results " (C.4.2.23). "Professors and students are looking for everything except scientific activities" (A.2.1.31). " Students usually prefer and like teachers who are easygoing, and it could not be expected to reach any special evolution until they change their attitudes" (A.4.1.21).

Table 3. Causal factors of students' social networking

Characteristics	Main Categories	Subcategories
Students' characteristics	Learning motivation	Internal motivation
		The weak motivation for academic activity
	Communication and social skills	Communication and social skills
		Shyness and social introversion
		Inability to constructive interaction
		The weakness of international second language
	Academic acceleration	Academic acceleration
	Students' union and collaboration	Weak social responsibility
		Teamworking difficulties
		Challenges of agreement with different people
		Decreased motivation to collaboration
		Weakness in cooperative learning
Teachers' characteristics	Administration of students' learning process	Conceptual and analytical teaching
		Logical administration of learning process
		Constructive communication for teaching
		Continuous self-assessment and improvement
		Weakness in teaching up-to-date knowledge
		Interacting with students and academic advising
		Demotivating students
		Ignoring students
Interactive characteristics of teacher and student	Linear and non-critical interaction between teacher and student	Cooperative and critical learning
		Mutual motivation
		Taboo of questioning and criticizing the teacher
		Conventional relationships separated from teaching-learning

		Narrow-mindedness and academic selfishness
		Academic individualism
		Negative academic competition
		Scientific waste
		The tendency to easygoing professors
Curriculum characteristics	The one-dimensional and linear approach to the curriculum	One-dimensional educational approach
		Linear and non-dynamic curriculum
		The gap between theoretical and practical education
		Training one-dimensional graduates
		Strange and unattractive classes
		The weakness of socialization in the formal education

4. Curriculum characteristics

The final category influencing students' social networking is the "one-dimensional and linear approach to the curriculum," which is defined as an approach to education that leads to changes such as linear and non-dynamic curriculum, a gap between theoretical and practical education, as well as unattractive and useless classes, which cause inconsistency between social training and formal education and training some one-dimensional graduates. In addition to the role of former characteristics, curriculum -as a different factor- can affect the students' actions toward social networking. Some examples of related views are as follows. "The existing university wants to be one-dimensional. The spirit of this university is only to test the students. It takes the best students from society and delivers the best ones to that. If the best means multiple areas of knowledge and ability, it would be commendable. However, as students enter the university through a limited test and go to the higher levels with the same tests, it wouldn't be profitable" (C.1.4.16). "The university trains people only theoretically and never trains capable people for the market" (A.3.1.38). "The students have not learned enough to get ready for entering society" (C.1.3.41). "The university curriculum is still based on the traditional models; a series of lesson charts that must be passed every semester" (C.3.1.14).

Contextual categories

In addition to causal factors that directly affect students' social networking, some contextual factors transform students' actions, classified into three general categories: university structure and climate, environmental motivation, and cyberspace.

- **University structure and climate**

1. **Lack of extracurricular and formal curriculum integration:** the conflict between extracurricular activities and formal learning process.

"Anyone who engages in extracurricular activities sacrifices formal education. He/she may spend less time on studying, and his/her academic result and status will be weak" (C.1.1.19). "The scientific community of students is something distinct, like an isolated island from the university system" (D.1.4.13).

2. **The insular context of the university**: It represents an educational system that is highly focused on individualism and lacks a systematic internal and external communication network; it is more like a large school.

"No part of the system is correct, and they are not interconnected properly. For example, A professor may not know that there could be a department (x) in the university. A decision might be made at the super level of the university, but faculty members may not know anything about it" (D.1.4.44). "The course of undergraduate is just like going to class and reading some texts. Someone is teaching us a certain subject in the class, and after that, we are coming back to our home or dormitory. Most of the days in university are not distinct from those in high school. So why do we name it a university?" (D.1.6.9). "I have never heard about the collaboration of GIS students with students of other faculties such as mathematics or computer science, or vice versa. Alternatively, physics students need numerical analysis. However, I have seen few students who had made such a connection" (C.4.2.43).

3. **Multidimensional dynamics of the educational environment:** It represents an environment in which the learning system is multifaceted and based on perspectives and academic or professional pathways that provide opportunities for learning from mistakes and errors.

"Students have different perspectives. Some are looking for research, and some are looking for entrepreneurship" (C.1.2.9). "Students have different concerns that require diverse paths. Therefore, you cannot design only one route and force them to follow it. I think a dynamic environment can meet most of the students' concerns" (C.3.2.30). "The scientific association and our faculty have provided trial and error opportunities. University must be patient with students and accept their mistakes, as well as having the courage to support them." (D.1.1.24).

4. **Various educational and professional environments:** Looking for professional learning in multiple spaces of the university such as classrooms, dormitories, laboratories, and computer sites, as well as other universities in the national and international context.

"I have had the greatest impact and experience in dormitories" (C.3.2.28). "Students do most of their group projects on computer sites. A computer site is a place where students spend most of their time talking to each other, exchanging videos, playing computer games, and doing group assignments of the course" (D.4.5.12). "Many kinds of research and student projects can be conducted in the laboratory. I can learn most of the methodological points and research skills in the laboratory. Overall, there is a good opportunity to exchange information with other students" (B.4.7.20). "It is heard that university lobbies full of students working together are more valuable than the classrooms without cooperation. However, some classes are precious to some." (C.3.2.2).

- **Environmental motivation**

1. **The motivational impact of the environment:** Motivational influence of the various settings and atmospheres on students ranging from stimulation of thinking to poor environmental acceptance.

"The academic climate of the university is very influential. I do many different and scattered things with the computer and the Internet when I am at home. But I am doing more academic job when I am at university" (A.2.3.7). "You are often being ridiculed by others while studying, especially when you emphasize thinking and studying. In this case, the value is transforming to counter-value and vice versa" (B.4.3.24). "I think the reason for the lack of dynamism is that the student is not taken into account by the community and university" (A.5.4.11).

Table 4. Contextual factors affecting students' social networking

Category	Main Category	Subcategories
University structure and climate	Lack of integration between extracurricular and formal curriculum	The conflict between extracurricular learning and curriculum
		The futility of extracurricular activities
	Insular context of the university	The weakness of the internal communication network
		The weakness of external communication network
		The educational system based on individualism
		University as a big school
	Multidimensional dynamics of the educational environment	Variety of perspectives and academic paths
		Opportunity to learn from the mistakes
		Designing a multidimensional learning system
	Various educational and professional environments	Dormitory environment
		Laboratory and computer site
		Diverse classrooms
		Combined and diverse spaces
		International environments for learning
Environmental motivation	The motivational impact of the environment	University Campus
		Thoughtful student atmosphere
		Non-thoughtful student atmosphere
		Family environment
		The weakness of environmental acceptance
	Reality shock in the face of the university environment	
Cyberspace	The weakness of learning on social networking sites	Cyber and virtual addiction
		Information and entertainment
		Surface and non-systematic learning
		Online self-exhibition and learning
		Displacement of teacher and Internet during learning
		Social isolation in cyberspace

2. **Reality shock in the face of the university environment:** The impact of the university environment on students during socialization. Some brilliant students forget their personality, thoughts, and goals and undergo inappropriate changes when entering the university and during socialization.

"In my opinion, ten percent of students are those who are being destroyed when they enter the university, the issues such as cigarettes, drugs, and so on. They lose their personality when they are separated from their parent and are coming to the university" (C.1.5.15). "I was being discouraged from studying for a while, so much so that I decided to drop out of the university, especially in the first and second semesters. I couldn't communicate with classes at all. I mean, I liked the lessons, but I read alone and outside of the class. I couldn't adopt the style of education such as teaching, managing classes, and evaluations" (C.4.2.1).

- **Cyberspace**

1. **The weakness of learning in social networking sites:** Another factor that highly influences the students' social networking is how to take advantage of cyberspace opportunities and their limitations.

"Social networking sites have both positive and negative features. On the one side, they waste our time and are highly addictive. On the other hand, they are representing the informant and recreational aspects of social networking" (C.1.1.51). "Social networking sites have made everything superficial, and no one is in the mood to read in-depth. Few people read content that is more than two paragraphs because he/she wants to read and pass as fast as possible" (D.1.5.53). "My best teacher is the internet, and I can learn whatever I want by searching the internet" (A.3.1.20). "I think the new generation couldn't build their life according to the actual frames of real life. So, cyberspace offers a world that is more like their desire and expectations. Thus, they feel better in a virtual context than in a real one. In addition, they would be able to communicate in the virtual world better than the actual world" (A.1.1.75).

All the categories affecting students' social networking are depicted in the following Figure (2).

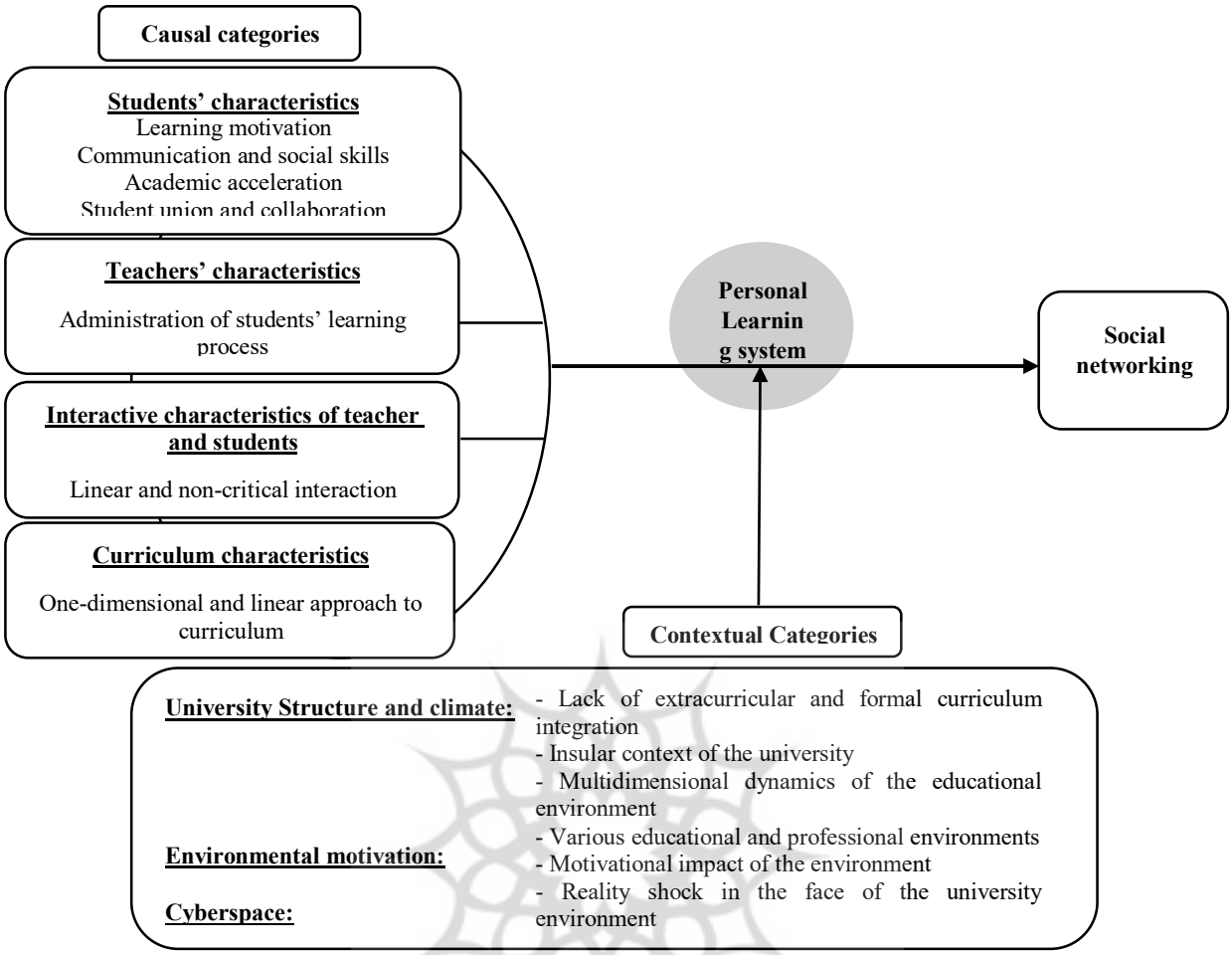

Figure 2. Factors affecting students' social networking

Discussion

According to the research findings, learning was identified as a critical factor in developing students' social networking. Therefore, if students have no meaning for their learning, their social activities will not be necessary. This finding may contrast with many previous studies that view learning as the result of social networking. In other words, we should consider learning as the driving force for engagement in social networks rather than view it as the result of social networking. Learning leads to a kind of social networking, which ultimately causes the emergence of deeper learning in the social context.

However, there is a critical question what is the meaning of this finding? Some examples and arguments can be given in answer. Some students have the will, effort, and remarkable creativity in social interaction with peers, classmates, professors, and experts. However, their social presence would be fruitless since the learning has made no sense to them, and they have not developed a systematic learning process. Bagheri & Yamani Douzi Sorkhabi (2020) describe this condition as "social wandering." Students' networking during the process of learning will be formed by beginning to know and understand the unknown. Once the student

begins to learn, he/she is trying to seek knowledge in different directions and by connecting to key actors of the socio-cultural context.

Social networking would be a joke or something useless to study for teachers and students when learning becomes a kind of pastime in higher education. In contrast, if the learning is supposed to be a specialized and professional matter of thinking about social issues, the students will be systematically willing to develop social networking. Therefore, students' social behavior is nurtured and developed because of the meaningful learning system. In this regard, in his study of Iranian students, Yousefi Aghdam (2015) found that students' social networks are under the influence of their professional identity. He identified that indeterminate professional identity leads to the formation of large and wide social networks, without a specific purpose and plan.

There is a significant difference between the findings of this paper and previous studies that focus on the central position of the personal learning system relative to other factors affecting students' networking. As in Figure (1), previous researchers have considered the role of one or more variables in networking development. Some findings are like personal learning systems such as the study approach (Anders, 2018; Kim et al., 2015; Zander et al., 2018) or identity (Raj et al., 2017; Ghatak et al., 2019). Other factors include motivation (Rothstein, 2021; Pollack et al. 2015) and university characteristics (Zhou & Zhang, 2023; Tauginienė & Kalinauskaitė, 2018) that are like causal and contextual categories. However, this research has reached a unique combination of influential factors highly distinct from those in related research. For example, Gibson et al. (2014) found a classification of individual, organizational, and job characteristics of social networking in the organizational field. In addition, researchers found prior experience, student and faculty relationships, finances, language, gender, and ethnicity as the factors affecting student engagement with experiential learning (Kedia & Mishra, 2023; Kong, 2021; Ryser et al., 2009), which some of them are similar but some are different from findings of this study.

A personal learning system, defined as networked thought to develop social networks, is under the influences of the factors regarded as causal and contextual categories. Some causal categories - the central one- directly affect the personal learning system, while some contextual categories indirectly improve or impede social networking. The findings of causal factors explain particular points:

- As a unique actor during the learning process needs some special features that motivate him/her to start learning and making social connections.
- Nevertheless, the personal characteristics are not enough, and the learner requires effective interaction with related actors and exceedingly competent teachers in the field of learning.

- The communicative context of the university has specific dynamics and complexity. New characteristics because of students' and teachers' interaction lead to the emergent evolution of the students' learning system, especially social engagement.
- In addition to human players in the learning environment, students' learning system is highly dependent on the curriculum as one of the nonhuman actors affecting the systematic social connections.

A particular inference is formed as "the cycle of learning-social action" considering the personal learning system and the influence of causal factors on students' social networking development (Figure 3).

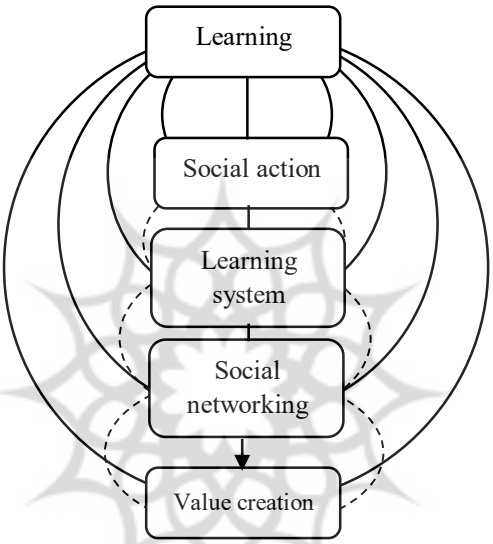

Figure 3. The intertwined cycle of learning-social action

In this cycle, two stages of social action and three levels of learning can be observed. First, the learner feels the need to learn and establish social interaction with other actors, based on his/her awareness of the known and unknown -the first level of learning and social action. This level is not exploratory but is focused on the functional role of social networks in facilitating and improving learning. During the elementary stage, the learner understands his/her unknowns and the necessity of more learning. In addition, he/she learns some social skills and gets acquainted with new communication paths to learning specialized subjects. Hence, the learner constitutes a developed and systematic learning system to improve his/her action at the second stage of learning. Thereby, social networks are transforming into social networking as an active exploration of specialized learning in the social context -the second level of learning and social networking. As a result of this networking, learners reach valuable learning findings called "value" at the third level of learning. Therefore, students are learning social networking skills through social interactions and cooperative learning with related actors.

Based on the direct influence of causal factors, students develop their social networks by creating intelligent learning systems for themselves. In other words, students are trying to deal with the social environment and academic field by constituting their learning system. However, in the university and professional learning environment, more factors change the development process of social networks. These factors have earlier been reported as contextual categories. Some points have been identified by a critical consideration of resulted categories (university structure and climate, Environmental motivation, and cyberspace):

1. **Diversity:** As stated earlier, the university structure consists of various elements, spaces, and actors, and each of them has unique features. As classrooms and computer sites, some are concrete, but some are intangible, like various perspectives of different stakeholders in the university ecosystem.
2. **Conflict:** It may be due to diversity or a weak definition of roles and positions of the university. For instance, there is a conflict between formal curriculum and extracurricular activities because defining different tasks for students in each system impedes their academic interaction and constructive networking.
3. **The weakness of communication channels:** Taking diversity, and conflict into account, the communication routes among most university elements are not as logical and well-defined as they seem to be. Therefore, relational networks inside the university -among students, departments, and colleges- and outside the university -such as university-industry communication- are less systematic. University development as an integrated unit and students' social networking as a unique component are both dependent on the well-defined routes of communication among every part of the university and environmental components.
4. **The unique islands:** As a result of the above features, fragmented islands have been formed in the university context. Therefore, every person, college, and department are working without a steady relationship, and the interdisciplinary nature of the knowledge is mainly ignored. Therefore, there are many isolated islands composed of persons, groups, and elements in the university context, that each of them has gone in their unique direction.
5. **Organizational immaturity:** The above set of characteristics can be described as organizational immaturity. This issue may be explained by the weakness of scientific and intellectual development. Universities have expanded physically and tangibly in recent years; however, students' patterns of academic action and communication have not been improved due to the weakness of scientific growth. For this reason, the connection between students' learning systems and universities' macro learning systems is highly disintegrated.
6. **Environmental motivation:** the learner's inner motivation for learning and social action is intertwined with environmental motivation, which considers a wide range of internal and external contexts of the university and critical events during the process of education.

7. **Cyberspace:** The findings of this study consider different roles and positions for cyberspace in developing students' social networking than the previous research. Against the positive or negative function of SNSs on learning achievement, the facilitating role of technology in improving the learning process depends on the student's knowledge and ability to use the existing capacity properly.

Conclusion

The current study delves into the positive impact of social networking, specifically on the learning process, shedding light on the intricate relationship between features of social networking sites (SNSs) and the development of students' social connections. Through a qualitative exploration of the influential factors affecting students' social networking, the study brings to the forefront three key categories of factors - central, causal, and contextual - highlighting the pivotal role of the personal learning system in enhancing students' networking in Iranian universities' academic and social context.

By conducting in-depth interviews with socially proactive and successful students, the research underscores the interplay between learning, social networking, and personal development, emphasizing that while social networking can facilitate the learning process, it is the integration of a robust personal learning system that truly amplifies its effectiveness. The findings of the study portray a dynamic and interactive cycle of learning and social networking within the university context, illustrating how these elements intricately intertwine to enrich the overall educational experience.

According to findings, students' social networking is highly dependent on two factors: a personal learning system that reflects the self-regulating process of learning in the environment and a university learning system that reflects the process of developing organizational characteristics of the university. Therefore, instead of extensive development of SNSs or social structures that cause academic wandering, universities must concentrate on active learning challenges directing students' actions to develop networked learning.

Expanding on this study could involve conducting surveys or interviews with students to gather firsthand insights, analyzing case studies of successful networking initiatives, and exploring the correlation between networking and academic performance or career outcomes. Further research can delve into the effectiveness of networking strategies, the role of social media in student networking, and how networking activities vary across different disciplines or student demographics.

Conflict of interest

The authors declare no potential conflict of interest regarding the publication of this work. In addition, the ethical issues including plagiarism, informed consent, misconduct, data fabrication and, or falsification, double publication and, or submission, and redundancy have been completely witnessed by the authors.

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References

Al Omoush, K. S., Ribeiro-Navarrete, S., Lassala-Navarré, C., & Skare, M. (2022). Networking and knowledge creation: Social capital and collaborative innovation in responding to the COVID-19 crisis. *Journal of Innovation & Knowledge*, 7(2), 100181. https://doi.org/10.1016/j.jik.2022.100181

Al-Daihani, S. (2010). Exploring the use of social software by the master of library and information science students. *Library Review*, 59(2), 117-131. https://doi.org/10.1108/00242531011023871

Anders, A. D. (2018). Networked learning with professionals boosts students' self-efficacy for social networking and professional development. Computers & Education, 127, 13-29. https://doi.org/10.1016/j.compedu.2018.08.009

Ansari, J. A. N., & Khan, N. A. (2020). Exploring the role of social media in collaborative learning the new domain of learning. *Smart Learning Environments,* 7(1), 9. https://doi.org/10.1186/s40561-020-00118-7

Ashraf, MA., Khan, MN., Chohan, SR., Khan, M., Rafique, W., Farid, MF., & Khan, AU. (2021). Social Media Improves Students' Academic Performance: Exploring the Role of Social Media Adoption in the Open Learning Environment among International Medical Students in China. *Healthcare*, 9(10), 1272. https://doi.org/10.3390/healthcare9101272

Asiedu, N. K., & Badu, E. E. (2018). Motivating issues affecting students' use of social media sites in Ghanaian tertiary institutions. *Library Hi Tech*, 36(1), 167-179. https://doi.org/10.1108/LHT-10-2016-0108

Bagheri, A., & Yamani Douzi Sorkhabi, M. (2020). Looking for value through networked learning in a social context. *Education + Training*, 62(7/8), 897-916. https://doi.org/10.1108/ET-10-2019-0223

Balakrishnan, V., & Gan, C. (2016). Students' learning styles and their effects on the use of social media technology for learning. *Telematics and Informatics*, 33(3), 808-821. https://doi.org/10.1016/j.tele.2015.12.004

Bateman, T. S. (2021). Using Academic Social Networks to Enhance the Student Experience in Online Education. *Online Learning Journal*, 25(4), 296-323. https://doi.org/10.24059/olj.v25i4.2532

Berthelon, M., Bettinger, E., Kruger, D. I., & Montecinos-Pearce, A. (2019). The structure of peers: The impact of peer networks on academic achievement. *Research in Higher Education*, 60(7), 931-959. https://doi.org/10.1007/s11162-018-09543-7

Brenner, C. A. (2022). Self-regulated learning, self-determination theory and teacher candidates' development of competency-based teaching practices. *Smart Learning Environments,* 9(1), 3. https://doi.org/10.1186/s40561-021-00184-5

Buckley, C. A., Pitt, E., Norton, B., & Owens, T. (2010). Students' approaches to studying, conceptions of learning, and judgments about the value of networked technologies. *Active Learning in Higher Education*, 11(1), 55-65. https://doi.org/10.1177/1469787409355875

Cote, R. (2019). The Evolution of Social Network Theory: Perceived Impact on Developing Networking Relationships. *American Journal of Management*, *19*(3), 19-34. https://doi.org/10.33423/ajm.v19i3.2187

Elshami, W., Abuzaid, M., & Abdalla, M. E. (2020). Radiography students' perceptions of Peer-assisted learning. *Radiography*, 26(2), e109-e113. https://doi.org/10.1016/j.radi.2019.12.002

Florenthal, F. (2015). Applying uses and gratifications theory to students' LinkedIn usage. *Young Consumers*, 16(1), 17-35. https://doi.org/10.1108/YC-12-2013-00416

Gerard, J. G. (2012). Linking in with LinkedIn®: Three exercises that enhance professional social networking and career-building. *Journal of Management Education*, 36(6), 866-897. https://doi.org/10.1177/1052562911413464

Ghatak, A., Ray, A., & Mukherjee, D. (2019). The Interplay of Identity and Social Network: A Methodological and Empirical Study. *Social Network Analytics*, 183–201. https://doi.org/10.1016/B978-0-12-815458-8.00010-4

Gibson, C. H., Hardy, J. H., & Buckley, M. R. (2014). Understanding the role of networking in organizations. *Career Development International*, 19(2), 146-161. https://doi.org/10.1108/CDI-09-2013-0111

Girard, Y., Hett, F., & Schunk, D. (2015). How individual characteristics shape the structure of social networks. *Journal of Economic Behavior & Organization*, 115, 197-216. https://doi.org/10.1016/j.jebo.2014.12.005

Hassan, O. A. B. (2014). The role of peer-learning and formative assessment in effective engineering learning environments: a case study. *Journal of Applied Research in Higher Education*, 6(2), 285-294. https://doi.org/10.1108/JARHE-04-2013-0015

Hoy, W. K., & Miskel, C. G. (2005). *Educational Administration: Theory, Research, and Practice* (7th ed.). New York: McGraw Hill.

Ismail, H., Hussein, N., Harous, S., & Khalil, A. (2023). Survey of Personalized Learning Software Systems: A Taxonomy of Environments, Learning Content, and User Models. *Education Sciences*, 13(7), 741. https://doi.org/10.3390/educsci13070741

Jacobs, S., De Vos, A., Stuer, D., & Van der Heijden, BIJM. (2019). "Knowing Me, Knowing You" the Importance of Networking for Freelancers' Careers: Examining the Mediating Role of Need for Relatedness Fulfillment and Employability-Enhancing Competencies. *Frontiers in Psychology,* 10, 2055. https://doi.org/10.3389/fpsyg.2019.02055

Jemielniak, D. (2020). Researching Social Networks: Opportunities and Challenges. *Frontiers in Human Dynamics,* 2, 1. https://doi.org/10.3389/fhumd.2020.00001

Junaidi, J., Chih, W. H., & Ortiz, J. (2020). Antecedents of Information Seeking and Sharing on Social Networking Sites: An Empirical Study of Facebook Users. *International Journal of Communication,* 14, 5705-5728.

Kedia, P., & Mishra, L. (2023). Exploring the factors influencing the effectiveness of online learning: A study on college students. *Social Sciences & Humanities Open*, 8(1), 100559. https://doi.org/10.1016/j.ssaho.2023.100559

Kılıç, A. F., & Güzeller, C. O. (2017). Demographic Factors Affecting Internet Using Purposes of High School Students. *Malaysian Online Journal of Educational Technology*, 5(1), 34-45.

Kim, J., Lee, C., & Elias, T. (2015). Factors affecting information sharing in social networking sites amongst university students: Application of the knowledge-sharing model to social networking sites. *Online Information Review*, 39(3), 290-309. https://doi.org/10.1108/OIR-01-2015-0022

Kong, Y. (2021). The Role of Experiential Learning on Students' Motivation and Classroom Engagement. *Frontiers in Psychology*, 12, 771272. https://doi.org/10.3389/fpsyg.2021.771272

Liu, L., Zhang, L., Ye, P., & Liu, Q. (2018). Influencing Factors of University Students' Use of Social Network Sites: An Empirical Analysis in China. *International Journal of Emerging Technologies in Learning*, 13(3), 71-86. https://doi.org/10.3991/ijet.v13i03.8380

Maiese, M. (2017). Transformative Learning, Enactivism, and Affectivity. *Studies in Philosophy and Education,* 36(2), 197–216. https://doi.org/10.1007/s11217-015-9506-z

Morrison-Smith, S., & Ruiz, J. (2020). Challenges and barriers in virtual teams: a literature review. *SN Applied Sciences,* 2, 1096. https://doi.org/10.1007/s42452-020-2801-5

Nyíri, K. (2008). The networked mind. *Studies in East European Thought*, 60(1-2), 149-158. https://doi.org/10.1007/s11212-008-9044-0

Pollack, J. M., Forster, W. R., Johnson, P. D., Coy, A., & Molden, D. C. (2015). Promotion- and prevention-focused networking and its consequences for entrepreneurial success. *Social Psychology and Personality Science*, 6(1), 3-12. https://doi.org/10.1177/1948550614543030

Porter, C. M., & Woo, S. E. (2015). Untangling the networking phenomenon: A dynamic psychological perspective on how and why people network. *Journal of Management*, 41(5), 1477-1500. https://doi.org/10.1177/0149206315582247

Raj, M., Fast, N. J., & Fisher, O. (2017). Identity and professional networking. *Personality and Social Psychology Bulletin*, 43(6), 772-784. https://doi.org/10.1177/0146167217697299

Rothstein J. D. (2021). Motivation of Networking Behavior: A Study of Novel Interventions. Doctoral dissertation, The City University of New York.

Ryser, L., Halseth, G., & Thien, D. (2009). Strategies and intervening factors influencing student social interaction and experiential learning in an interdisciplinary research team. *Research in Higher Education*, 50(3), 248-267. https://doi.org/10.1007/s11162-008-9118-3

Saviotti, P. P. (2009). Knowledge Networks: Structure and Dynamics. In A Pyka and A Scharnhorst (Eds). Innovation Networks: New Approaches in Modelling and Analyzing (pp.19-41), Heidelberg: Springer. https://doi.org/10.1007/978-3-540-92267-4_2

Scott, K. S., Sorokti, K. H., & Merrell, J. D. (2016). Learning "beyond the classroom" within an enterprise social network system. Internet and Higher Education, 29(1), 75-90. https://doi.org/10.1016/j.iheduc.2015.12.005

Sivakumar, A., Jayasingh, S., & Shaik, S. (2023). Social Media Influence on Students' Knowledge Sharing and Learning: An Empirical Study. *Education Sciences*, 13(7), 745. https://doi.org/10.3390/educsci13070745

Strauss, A. L., & Corbin, J. M. (1998). *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory* (2nd edition). London: Sage.

Tafesse, W. (2022). Social networking sites use and college students' academic performance: testing for an inverted U-shaped relationship using automated mobile app usage data. *International Journal of Educational Technology in Higher Education*, 19, 16. https://doi.org/10.1186/s41239-022-00322-0

Tauginienė, L. & Kalinauskaitė, R. (2018). Participation of doctoral students in online social networks. *Studies in Graduate and Postdoctoral Education*, 9(2), 144-164. https://doi.org/10.1108/SGPE-D-18-00002

Vătămănescu, E. M., Andrei, A. G., & Pînzaru, F. (2018). Investigating the online social network development through the Five Cs Model of Similarity: The Facebook case. *Information Technology & People*, 31(1), 84-110. https://doi.org/10.1108/itp-06-2016-0135

Victor, S. P. (2012). An investigation of the relationships among learner generation, learning style, and preference for using social networking for learning. A Dissertation Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy, Capella University.

Wakefield, J., & Frawley, J. K. (2020). How does students' general academic achievement moderate the implications of social networking on specific levels of learning performance? *Computers and Education*, 144, 1-15. https://doi.org/10.1016/j.compedu.2019.103694

Yousefi Aghdam, R. (2015). The temporary" and developing the theory of doctoral student professional identity in Iran. *Journal of Science and Technology Policy*, 7(2), 65-82.

Yu, S. (2019). Learning from giving peer feedback on postgraduate theses: Voices from Master's students in the Macau EFL context. *Assessing Writing*, 40(4), 42-52. https://doi.org/10.1016/j.asw.2019.03.004

Zander, L., Brouwer, J., Jansen, E., Crayen, C., & Hannover, B. (2018). Academic self-efficacy, growth mindsets, and university students' integration in academic and social support networks. *Learning and Individual Differences*, 62(3), 98-107. https://doi.org/10.1016/j.lindif.2018.01.012

Zgheib, G. E., & Dabbagh, N. (2020). Social Media Learning Activities (SMLA): Implications for Design. *Online Learning Journal,* 24(1), 50-66. https://doi.org/10.24059/olj.v24i1.1967

Zhou, J. & Zhang, C. (2023) Characteristics of Class-Scale Social Network Structures of College Students over Time, Driving Factors and Their Implications for Chinese Higher Education. *Creative Education*, 14(4), 716-728. https://doi.org/10.4236/ce.2023.144047

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