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## HOW DOES STUDENTS' LEARNING (ACHIEVEMENT) RELATE TO THEIR LEVEL OF WE-INTENTION AND THEIR LEARNING METHODS ON FACEBOOK?

Ali Akkaya

Tuğrul Cabir Hakyemez

Ekrem Kutbay

Birgöl Kutlu Bayraktar

### Abstract

Over the past decade, collaborative learning environments on Social Network Sites (SNSs) has become more widespread than ever before across the world. Yet, there is still lack of well-established methodologies that approach the learning process from pedagogical, group and social network perspectives. In this study, it is aimed to develop a framework and also a roadmap for evaluating the impact of a pedagogical model, namely Jigsaw model, on the participation behaviors and successive achievements of the students. Here, the students are grouped based on their We-Intention levels (high and low) and status of participation in the Jigsaw learning process in Facebook groups. As a result of the study, a theoretical model is proposed towards the use of Jigsaw model on Facebook groups. This model is assumed to help educators make use of social network sites efficiently.

**Keywords:** Social Network Site, Facebook, Education, Collaborative learning, Jigsaw model, computer network

## **1.INTRODUCTION**

Recently, there has been a growing interest in designing virtual learning platforms in which learners and instructors are separated by space and / or by time. In this respect, usage of Social Network Sites (SNSs) in education has become a hot topic among the researchers (Bicen & Cavus, 2011; Brady et al., 2010; Ellison et al., 2007; Griffith & Liyanage, 2008; Roblyer et al., 2010). Although the primary purpose of SNSs is social interaction, its structure and various features allow them to be used for educational purposes. SNSs can also be used as a collaborative learning tool owing to its interactive features and its popularity among young learners. Collaborative learning can be described as a learning approach that is a situation in which more than one person learn or attempt to learn something together (Dillenbourg, 1999). In order for a collaborative work or learning process to be successful, many researchers (Kansanen, 2003; Gaggioli et al., 2011) consider achieving We-Intention among participants as a critical factor.

In spite of a great number of research conducted on the issue of integration of SNSs into education, few are based on pedagogical background. Studies mainly focused on the perceptions and social network uses of students and faculty members (Cheunga et al. 2010; Roblyer et al. 2010; Shiu et al., 2010) but there is a lack of research on the issue of collaborative learning with SNS. Although Jigsaw model(Aronson, 1978) is one of the most popular collaborative learning methods, the implementation of Jigsaw model into virtual platforms, such as Facebook, has not been fully explored.

Taking all aforementioned points into consideration it can be stated that Facebook is very popular among students and therefore its educational uses started to be considered by researchers. Although this topic has recently become quite popular, there is a lack of theoretical background to support Facebook's use on educational purposes. Therefore by taking steps of Jigsaw Model as a basis of constructing a learning environment on Facebook, this study propose a theoretical framework which aims investigate the relationship between the achievement scores of the students who have different levels of we-intention and who attend computer networks courses with different methods namely as collaborative learning with Jigsaw Model on Facebook, and group learning on Facebook.

## **2.LITERATURE SURVEY**

### **2.1. Social Network Sites And Education**

According to Boyd and Ellison (2007) social network sites are web-based services in which users can construct a public or a semi-public profile, have a connection with other users, and view profiles of other users. Facebook has more than a billion active users and it is the most popular SNS in the world.

According to the quantitative content analysis by Kolek and Saunders (2008), vast majority of students at public universities have Facebook accounts. College students use their Facebook accounts about 30 minutes throughout a day for one-to-many communicational purposes, and spend more than 30 minutes to observe the shared content of other Facebook users in their network (Pempek et al., 2009). Due to Facebook's rapid growth and current popularity among students, it is started to be studied whether or not it can be used as an instructional tool (Karl & Peluchette, 2011). According to Shiu et al. (2010) Facebook can be used for educational purposes, because it can be used via different platforms like smart phones, desktop computers, tablets, etc., and it has features like group, page privacy, notifications, etc. that are suitable for educational purposes. Roblyer et al. (2010) conducted a study in which college faculties' and students' uses of SNS were examined. Results of the study suggested that university students are more open to the idea of integration of Facebook into education than do faculty members. On the contrary, Violino (2009) states that school administration finds social network sites as a promoting factor on students' achievement on campus. A similar study was conducted on exploring the students' education related use of Facebook (Selwyn, 2009), and five main uses of Facebook emerged from the study; reflecting on the course experience, changing information about courses, exchange of academic information, seeking moral support, and expressing humorous ideas.

Lampe et al. (2011) analyzed the impacts and importance of the factors affecting the effectiveness of a collaborative learning, and it is found that Facebook can be used as a tool to support collaborative learning and may lead to a change in time and space-bound nature of the class as an organization.

Although aforementioned research showed that the integration of SNS into education is examined by the growing number of researchers, there is no guide as a reference for instructors and teachers to develop a learning environment in SNSs such as Facebook. According to Bucci et al. (2003) if technology use in education does not take into account the theoretical foundations of learning, it will probably not help to meet learning goals. Therefore in this study a collaborative learning method that is called Jigsaw Model will be used as the pedagogical basis of designing a learning environment in a SNS called Facebook.

## **2.2. Jigsaw Model**

There are some beneficial collaborative learning methods, such as students team achievement division method (Slavin, 1980), teams-games-tournaments (De Viries & Slavin, 1978), team-assisted individualization (Slavin, 1985), Jigsaw (Aronson, 1978), and reciprocal questioning strategy (Brown & Palincsar, 1982) and so on. Jigsaw, one of the most popular, was designed by Elliot Aronson and his students in 1970's. In this technique, firstly, students are divided into groups of 4-6 people, namely "Jigsaw groups". The learning material is also divided in 4-6 parts. Each member of Jigsaw group chooses a part of the learning material to learn and teach to other group members. The students from different Jigsaw groups who are responsible for the same part of the learning material to learn and to teach come together and regroup to study under the name of "Expert Group". In the expert groups, learning parts should be described and discussed in depth, and a document about the strategy of teaching method of these parts should be prepared. Expert students can return their Jigsaw group after they learn their subjects exactly and they try to teach these to other members of their Jigsaw group. After that students are assigned with some educational product to be performed together and individually (Senemoğlu, 2007).

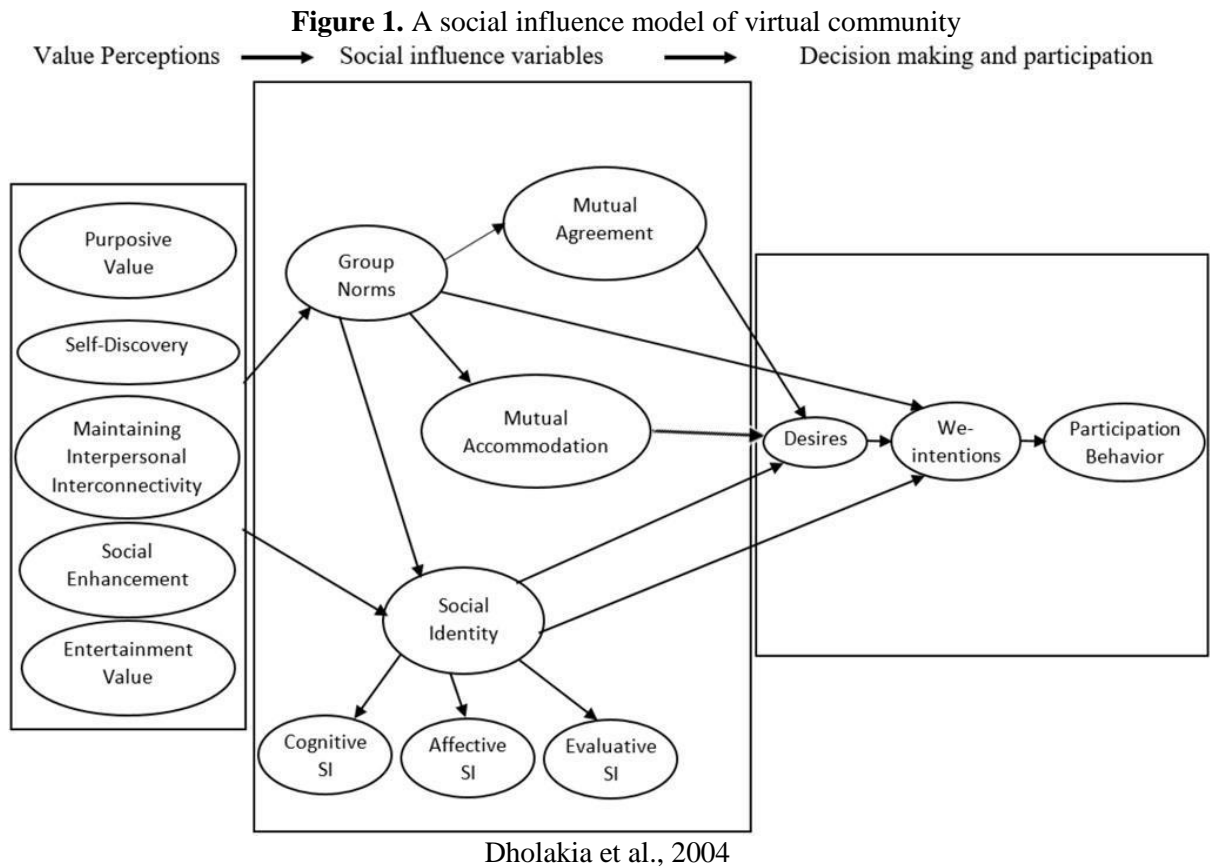
Although there are many experimental studies about Jigsaw collaborative method within traditional classroom settings (Flish, 2005; Kılıç, 2008; Carpenter, 2006), Jigsaw collaborative method within online computer environments relatively a new research area. Liao et al. (2015) have explored that learners' recognition and usage of SNS as a collaborative learning environment. For this reason, they used a Jigsaw-based collaborative learning method via Google+ with 321 students about understanding of the ecological environment of the waters in Taiwan. After the analysis of questionnaires, the empirical data shown that Jigsaw-based collaborative learning process increased the amount of interaction among students, enhanced learning intention of theirs, raised their learning motivation, and helped for achieving their learning objectives.

As can be concluded from the findings of the researches above, Jig-Saw model seems to be a reasonable pedagogical basis for the current study.

## **2.3. We-Intention**

As one of the pillars in this study, We-Intention was described as commitment of an individual to participate in joint action, and to involve in an implicit and explicit agreement between the participants to engage in that joint action (Tuomela, 1995) in which actions of the individual and those of the collective are in the balance, and a sense of mutual trust, sharing and empathy is established (Gaggioli et al., 2011). We-Intention is considered as one of the basic explaining constructs of participation behavior which affects the final product as a result of the collaborative working process. Considering the educational environment, We-intention can be viewed as an ideal condition for working in the teaching-studying-learning process (Kansanen, 2003). In this process, the stakeholders (instructors and students) have to act in a collaborative manner.

Dholakia et al. (2004) proposed a model that defines the consumer's participation in a virtual community (Fig. 1). Based on the model, consumers' desires, We-Intention and participation behavior are shaped mainly by value perceptions and social influence variables.



Purposive value and self-discovery are rather self-related concepts whereas maintaining interpersonal interconnectivity, social enhancement and entertainment value have a lot to do with the interaction amongst other members of the group. As for social influence variables, social identity that captures the main aspects of the individual’s identification with the group in terms of the sense of “belonging” involves cognitive, affective and evaluative components. Group norms signifies the gradual process for a participant to reach a common ground with the other members of the community. Both mutual agreement and mutual accommodation represent mechanisms through which the participant moves from rather general and broadly defined goals and conventions of the group, toward actualizing specific episodes of online social interactions (Dholakia et al., 2004). Consequently, it is hypothesized that all the variables included in the model are hypothesized to directly or indirectly affect the desires, We-intentions and thus participation behavior. The model seems very applicable to educational environment and was exploited by many researchers (Mazman & Usluel, 2010; Cheung et al., 2011).

Gaggioli et al. (2011) stresses “We-Intention” as a premise for “networked flow” concept which is a modified version of the “group flow” concept (Sawyer, 2007) which manifested the conditions for creative collaboration such as definition of a common mission, the development of close listening skills. According to Gaggioli et al. (2011), in order for a group to enter the creative state of flow, whole members must develop “We-Intention”. They also stated that the students participated in networked flow model shows a better creative performance than the control group does according to the preliminary results of their ongoing research.

Shen et al. (2010), conducted an empirical study with 482 students in Mainland, China who use instant messaging in social network-facilitated team collaboration as an intentional social action and further investigated the effect of gender differences in the development of we-intention. The results show that factors differ depending on gender. For example, effects of social identity and negative anticipated emotions are more important for women than that for men.

Mazzoni and Gaffuri (2009) used a special SNA index, the Clique Participation Index (CPI), to measure the level of social presence within each group on a web platform called Synergia. The findings showed that the projects, corresponding to the concept “artifact” declared by Gaggioli et al. (2011), that received higher creativity ratings were produced by those groups characterized by higher level of social presence measured through CPI index.

Consequently, employed by many researchers to shed light on the collaborative behavior of the groups, We-Intention poses a key factor for successful collaborative studies, especially in educational environment.

To summarize, it can be said that in recent years research focused on the potential value of the integration of SNS platforms into education. However, research mainly concerned with the perceptions and social network uses of students and faculty members (Cheunga et al. 2010; Robyler et al. 2010; Shiu, Fong, and Lam 2010), and few are have a pedagogical basis. Therefore this study proposes a theoretical framework which aims to investigate the relationship between the students’ learning, We-Intention level (high and low) and the method of learning on Facebook groups. The main hypothesis of the study is that students who learn collaboratively with Jigsaw Model on Facebook groups will have higher achievement scores than students who learn as a group without a pedagogical basis on Facebook groups based on the level of We-Intention of students.

### **3. PROPOSED METHODOLOGY**

This study firstly examines how the students’ level of We-Intention relates to the type of learning method (collaborative learning with Jigsaw Model on Facebook or group work on Facebook) that is provided on an SNS platform. The second problem this study addresses is how We-Intention level of students’ relates to students’ achievement scores on computer networks topic. In order to answer these research questions, a pre-post test quasi experiment will be conducted.

The research population of the study is the students in Computer Education and Educational Technologies Department of Boğaziçi University. Convenience sampling will be used for the selection of students. Junior class students taking an existing computer network class will be divided into four sections. All participants will be informed about the aim of the research and volunteerism is essence. Data are collected from approximately 120 students. The survey method is employed to determine We-Intention levels of the students and a pre-test is used to measure their prior knowledge on computer networks. The survey is adapted from the instrument developed by Dholakia et al. (2004), and the pre-test will be prepared by the instructor of the course. According to the results of the survey, students will be divided into two categories: students with high level of we-intention and students with low level of we-intention. Half of the students with high level of we-intention will be randomly assigned to group one, collaborative learning with Jigsaw Model on Facebook group, and the other half will be assigned to group two, group learning on Facebook group. The same sampling procedure will be used for the students who have low level of we-intention to form the groups three and four. At the end of sampling procedure there will be four experimental groups namely as;

- Group-1: Collaborative learning with Jigsaw model on Facebook with students who have high level of we-intention
- Group-2: Group learning without Jigsaw on Facebook with students who have high level of we-intention
- Group-3: Collaborative learning with Jigsaw model on Facebook with students who have low level of we-intention
- Group-4: Group learning without Jigsaw on Facebook with students who have low level of we-intention.

The collaborative and non-collaborative group works on Facebook continue for a duration of 3 weeks.

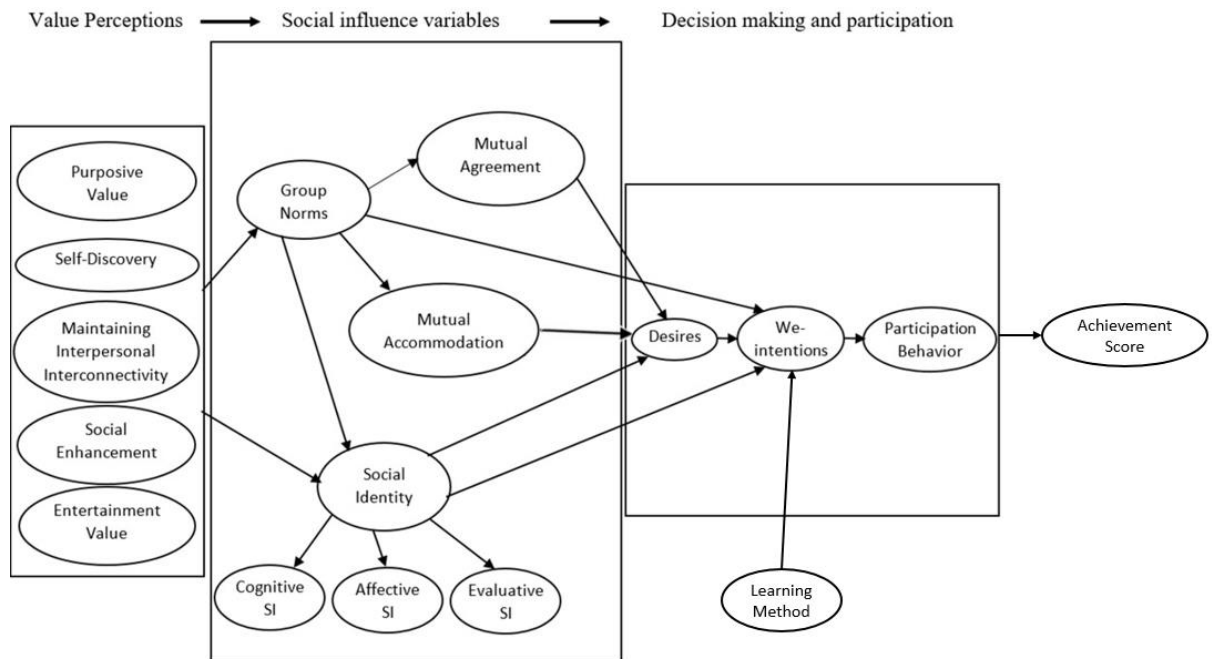
In the collaborative learning with Jigsaw Model on Facebook groups, students are divided into groups of five. These five groups are students’ initial groups, and in these groups each student is

considered an expert of a subtopic of their current topic according to their choices. After the formation of the initial groups and determining who is to be the expert of which subtopic, of the five Facebook groups, the secondary groups, are created for each expert group. Therefore experts from all six initial groups work with other experts who have chosen the same subtopic to work with. After working with other experts on Facebook groups, each expert return to their initial groups, and teach their subtopic to other members of the group.

In the group learning without Jigsaw on Facebook groups, students are divided into groups of five, and a Facebook group are created for each group to work as a group. Unlike the collaborative learning with Jigsaw Model on Facebook groups, students in these groups work as a group, and there is not be any other Facebook groups for each expertise on the current topic.

The proposed framework aims to investigate the relationship between the achievement scores of students who attend computer networks courses with different learning methods, therefore two new constructs namely as Achievement Score and Learning Method are integrated into the social influence model of virtual community proposed by Dholakia et al. (2004). By doing so, it is aimed at evaluating the impacts of Jigsaw model on Facebook groups on students’ achievement scores with different levels of We-Intention. The developed model based on the proposed methodology can be displayed as in Figure 2.

**Figure 2:** The developed model of the social influence model of virtual community



Dholakia et al., 2004

At the end of the experiment students’ individual computer network knowledge are measured by conducting a post-test to determine the achievement scores. During the learning process on Facebook groups, unlike the existing literature, participation behavior of students are assessed through objective measures such as number of posts, number of comments and number of resources that are used by the student. For data analysis two-way ANOVA tests will be conducted on IBM SPSS Statistics software.

**4. CONCLUSION**

The stakeholders (e.g. students, instructors etc.) in educational environment has realized that use of technology obviously becomes imperative in educational settings, hence must be employed as a tool in efficient ways. While seeking that efficient ways, Social Network Sites stands out as a reasonable option with its incredibly suitable features for educational purpose such as ubiquity, huge amount of document sharing, improved communication channels. Besides it becomes more and more popular amongst these stakeholders. However appealing using technology seems, there must be a theoretical background in order

to avoid the misuse. So this study aims to synthesize the power of SNSs with a generally-accepted traditional method along with the controlling variable We-Intention, also known as shared intentionality.

As indicated earlier, in recent years, many research have been conducted on the potential value of the integration of Facebook into education (Bicen, & Cavus, 2011; Brady, Holcomb, & Smith, 2010; Ellison, Steinfield, & Lampe, 2007; Griffith, Liyanage, 2008; Roblyer et al., 2010), but few have a pedagogical basis for that kind of integration. The most straightforward contribution of this work is to provide a practical guide for instructors and teachers to develop a collaborative learning environment in Facebook by taking Jigsaw Model's steps as a basis. While providing such a guidance, this study also takes the students' level of We-Intention into consideration in this collaborative learning environment design because research indicated that achieving We-Intention among participants is a critical factor in collaborative learning processes' success (Kansanen, 2003; Gaggioli et al., 2011).

As far as the practical implications of this study are concerned, it seems clearly that future work is needed to determine whether the expected results would be obtained from the provided framework. The framework in this study can be harnessed by the instructors who want to integrate Facebook into their lesson. One of the most important aspect of this framework is that it is flexible in its nature. In other words this framework can be, and should be, applied in different learning subjects apart from computer networking. The comparative analysis to be conducted for these subjects in different departments is thought to provide useful insights for different environments.

As far as the limitations of this study are concerned, it should be pointed out that with a larger sample size, the number of the experimental groups can be increased by creating new experimental groups like collaborative learning with Jigsaw model in traditional educational setting with students who have different levels of We-Intention.

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