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To cite this article: Hajar Ghadirian, Keyvan Salehi & Ahmad Fauzi Mohd Ayub (2017): Analyzing the Social Networks of High- and Low-Performing Students in Online Discussion Forums, American Journal of Distance Education, DOI: 10.1080/08923647.2018.1412570

To link to this article: https://doi.org/10.1080/08923647.2018.1412570

Published online: 26 Dec 2017.

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Analyzing the Social Networks of High- and Low-Performing Students in Online Discussion Forums

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ABSTRACT
An ego network is an individual’s social network relationships with core members. In this study, the ego network parameters in online discussion spaces of high- and low-performing students were compared. The extent to which students’ ego networks changed over the course were also analyzed. Participation in 7 weeks of online discussions were analyzed for 12 high-performing students and 9 low-performing students. Results suggested that ego networks’ compositions of high- and low-performing students were significantly different. Particularly, high-performing students had denser ego networks and tended to exhibit a higher level of centralities than low-performing students. Results of network visualization indicated that high-performing students increased and kept their networks stable over the course in comparison to low-performing students, who had fragmented networks. Several networks’ change mechanisms for high- and low-performing groups are also identified and discussed.

Introduction
There is an increasing number of courses delivered utilizing course/learning management systems (C/LMS) such as WebCT, Blackboard, and Moodle. In these systems, an online discussion forum, being an asynchronous tool, is the basis for collaborative learning (Rabbany, ElAtia, Takaffoli, & Zaïane, 2014). A review of literature suggested reasons for the universality of discussion forums’ usage in learning, including higher order level of learning (Buraphadeja, 2010) and promoting self-regulated learning (Palmer, Holt, & Bray, 2008). On the other hand, and from a teacher’s perspective, discussion forums are helpful in analyzing, monitoring, and assessment of students’ participation and learning progress in distance courses (Lopez, Luna, Romero, & Ventura, 2012) and provide insight into the quality of teaching and learning (Rabbany et al., 2014).

Despite the advantages associated with the usage of discussion forums, the instructors’ view of a threaded forum is normally limited to reviewing the statistical information in the C/LMS’s databases such as frequency of postings and log-ins and content analysis of the dialogue constructed by learners. These types of learners’ data known as “learning analytics” (Hernández-García, González-González, Jiménez-Zarco, & Chaparro-Peláez, 2014) are not useful measures of interaction activity (Romero, Lopez, Luna, & Ventura, 2013). Without interactivity measurement, the decisions made on how to direct the class...