A conceptual model incorporating Twitter as a Language Tool in ESL/EFL Learning

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Abstract

In this paper, the author proposes a conceptual model with reference to the usage of Twitter as a language tool to enhance the learning of ESL/EFL. Due to the advancements in the technology and social media applications, teaching and learning of ESL/EFL have gone beyond the physical boundaries. This paper discusses the importance of microblog application-Twitter in ESL/EFL learning. The readers will find interesting ways of utilizing Twitter and its various features such as tweets, re-tweets, poll, etc for improving ESL/EFL scenarios. It will also be revealed that the ESL/EFL learning parameters derived from social network indicators – degree, in-degree, centrality, density, and degree centralization play a critical role in evaluating the ESL/EFL learning. The participation level based on the social network analysis will affirm the improvement in the ESL/EFL learning. Finally, further research insights into the usage of the conceptual model in various settings are described.

Keywords: ESL, EFL, Social network analysis, Twitter, Computer-assisted language learning

Introduction

Dashtestani and Samoudin (2014) examine the technology usage in imparting English language knwoledge in the Foreign language context in Iran. Further, the authors develop the effective EFL educational practices for EFL students' and teachers'. Huynh and Tran (2018) suggest integration of technology in the learning environemnt to teach/learn EFL. The authors successfully validate the EFL learning/teaching for Environmental Engineering course at Danang University of Science and Technology. The contribution of the web 2.0 tools to the teaching and learning of English as Second Language (ESL)/English as Foreign Language (EFL) is widely acknowledged (Aydin, 2014). It is paramount for the students to rely on social media technologies for more interactive learning (Junco, 2011; Davies, 2011). Dunleavy and Milton (2009) advocate the usage of technology for intrinsic social interaction contributing to effective learning experiences. Dogoriti and Pange (2004) aim at extending collaborating and communicative learning experience through interaction with social media applications. Melor (2007) claims that social networking sites (SNS) and interaction technologies provide a lifelong learning environment. The participants feel engaged while interacting over SNS and claim to achieve an enhanced learning environment. The social networking parameters are important to gauge the level of the learner or an actor who participates in the learning environment. Twitter supports the community of practice (CoP), and thus it is crucial for the instructor to find the (sub-)communities' or individuals' learning behavior to impart the learning artifacts for reinforcing learning. Microblogging platforms with respect to Twitter have shown a promising benefit in education. The current paper presents an integration of social network parameters with Twitter CoP learning analysis with an aim to provide several benefits to the stakeholders and also to drive the success of ESL/EFL learning ecosystem.

The paper is organized as follows: firstly, benefits of microblogging and social network analysis are presented, later a systematic conceptual model of SNA is proposed which is followed by the discussion for its adoption and usage to utilize Twitter for EFL/ESL learning. Finally, the paper lists out the major findings and future directions.

Microblog for ESL/EFL

Microblog is an extension of the traditional blog. While maintaining the purpose of disseminating the information, the microblogs are useful in precisely rolling out or sharing the information due to the inherent constraint of the size of the content. Selwyn (2007) finds that the presence of SNS and microblogs helps individuals to create, find and share knowledge. Rachtham and Firpo (2011) explore the usage of Facebook to improve the education level of the students. Ebner et al. (2010) and Yunus et al. (2013) discover that teaching and learning of EFL improve due to the presence of process-oriented learning, continuous and transparent communication in microblogging. In a research study performed by Dhir et al. (2013), it was found that microblogging helped students to improve their writing, reading, comprehension and creative skills. Dunlap and Lowenthal (2012) throw light on how Twitter helped students to achieve the ability to ask questions, articulation and effective writing.

In a study undertaken by Forkosh-Baruch and Hershkovitz (2012), it was found that use of Twitter enhanced informal learning among the participants who formed the community of practice. Lomicka and Lord (2011) and Koneig (2011) have used Twitter for EFL and second language acquisition (SLA). They found the microblogging is a useful educational tool to impart education and to help participants to acquire skills for EFL and SLA. Aydin (2014) in his research concludes that Twitter empowers the participants to improve their learning, writing and reading skills. There are few studies that have researched the issues with regards to EFL and ESL learning and teaching through microblogging applications. There exists various challenges associated with the (sub-) community and the individual who can dominate the network and deviate from the unified goal of learning and teaching. Manzo (2009) highlights concerns with regards to cyberbullying and sharing of inappropriate content and violent content.

Social Network Analysis

Social network analysis has emerged as new areas of research in both social and behavioral sciences to study the relationship among social entities (Boyd 2007). There exists varied types of networks for the social network analysis. The first stage of performing any network analysis is to construct a (social) network graph. The next stage deals with the visualization and characterization of the established network graph. The last stage utilizes various metrices to perform operations on it.

Constructing a Network Graph

First thing required for any network analysis is the establishment of the relationships among the participation entities of the network. Normally, for the understanding of a network, each relationship is represented by a line, known as an edge or an arc, while two interacting entities, known as nodes, are joined by an arc. The network begins to grow when the social entities start participating in the communication or knowledge sharing. When there are a number of nodes involved in the network it is anticipated to have a complex and dynamic network. These networks, depending upon the conversation or theme of interest, tend to grow or shrink and thus the analysis of such network is paramount to understand diffusion or effectiveness of participation or otherwise. In order to understand the information-sharing pattern formulated in the Twitter CoP social network, it is important to identify (sub-)communities and learning clusters. This clustering behavior helps to find the potential influencer and (sub-community) that impacts the learning in the sub-network. There are several benefits of creating the networks. One can see easily in the network who is interacting with whom and what content is being shared. Also, it is possible to find out the nature of the clusters, the learning behavior and other peculiar habits of the participants. For example, what is the most likeable content and information, participants are getting involved with or what are the traits of the learners. It is advisable to follow the given set of guidelines to develop the interaction and influential social network graph for the analysis of EFL/ESL learning diffusion:

- Create a relationship among the ‘interacting units’ each time a Twitter user tweets to other users of the Twitter CoP for ESL/EFL.

- Represent tweet by an edge such that each edge (→) in a network represents a tweet that goes from one CoP user to another CoP user. It is important to note the following necessary case scenarios when this relationship is established:
  - CoP user X replied to a post of CoP user Y, where such action is triggered by the User X by using Twitter 'reply' functionality;
  - CoP user X retweeted a post of CoP user Y, where user X by retweeting the post meant that the original author of the tweet is user Y;
  - CoP user X mentioned CoP user Y in their post by utilizing Twitter's conventional symbol '@'.

Visualization and characterization of the Network Graph

One of the typical analyses of the network graph is achieved with the help of descriptive modeling and inference. Further, the numerical summaries are the add-in value to the overall analysis. Once the EFL/ESL network graph is formed it is advisable to develop the (sub-) communities based on the themes of the EFL/ESL learning - writing, reading, listening and speaking or on the information shared and liked. One may also be interested in identifying why some (sub-) community or (sub-) network arises. Also, the moderator or instructor involved in ESL/EFL teaching can schedule and initiate the ESL/EFL teaching strategies and content.

Network Graph Metrics

There exists three main level of metrics by which one can get the detailed level of analysis for the social network of ESL/EFL learning and teaching CoP. Firstly, we can analyze the whole ESL/EFL CoP network. It is possible to understand the density of the ESL/EFL CoP which signifies the total number of links/relationships established for ESL/EFL learning. The density can be used to identify the connectivity of the participants for any ESL/EFL learning. However, it is advisable to decentralize the network to avoid any single point-of-failure or dependency in ESL/EFL learning environment. Secondly, we can study the network on the specific community level (Rodriguez et al., 2011). For instance, one can identify the participant orientation to any ESL/EFL topics forming or dissolving CoP. Thirdly, from an individual perspective, one can study the social networks. Such analysis is essential as one can find out the ESL/EFL learning level of the individual based on an individual's involvement in CoP activities – tweeting, retweeting, liking, replying etc.

Degree centrality measures the popularity of an individual by counting the number of relationships one has. Betweenness centrality (Brandes, 2001) tells us as to what extent someone is 'needed' regarding information flow: How often is someone in-between two other people? Closeness centrality provides information about how easily someone can reach others; how may hops in the network does it take (on average) to reach someone?
Some typical metrics for social graphs for ESL/EFL are shown in table 1.

Table 1 Metrics for ESL/EFL social network graph

Metric	Purpose
Modularity	It provides the detail of the formulation of the network. It helps in identifying whether the whole network is responsive to the ESL/EFL learning or there is a deviation in the interest depending on the potential ESL/EFL learning.
Centrality	It provides the detail of the influential regarding ESL/EFL contributor.
Betweenness	It deals with the shortest route between the potential interaction entities in the ESL/EFL CoP social network. A node with high betweenness centrality has greater potential influence over the ESL/EFL learning
Degree	It provides the detail of the number of social entities connected to an individual interaction entity. Degree centrality in the ESL/EFL social network to identify the potential "information-flow" entity.

Conceptual Model

To address the gaps in the existing literature and practices on the microblog applications, such as Twitter and their integration with social network analysis for ESL/EFL, a systematic conceptual model is proposed. This conceptual model provides a continuous and just-in-time updates to the stakeholders of the ESL/EFL community. In this section, the components of the conceptual model and their contributions to the overall effectiveness of the ESL/EFL community are presented. Table 2 describes the components and description of the components of the conceptual model. Figure 1 shows the conceptual model for ESL/EFL learning

Table 2 Conceptual model components description

Component	Description
Moderator	*Moderator* is responsible to identify and drive the CoP for the success of the ESL/EFL community.
Reader	*Reader* reads the posted and shared content by the EFL/ESL community. The metadata such as time taken to read the posts/tweets; opening of the hyperlink; playing, pausing and scrolling of the video/audio contribute in profiling the CoP.
Author	*Author* generates the post/tweets ESL/EFL community. The moderator moderates the content shared by the author. The metadata such as time taken to post/tweet; reply or like posts contribute in profiling the author's interest in ESL/EFL CoP.
Artifact	The *artifact* component is critical to generate the metadata and corpus to develop the deep insights of the ESL/EFL CoP. The corpus consists of fundamental elements such as – tweet, retweet, likes, quote, message, share, survey.
Pre-processing	The pre-processing component contributes to the pre-processing of the data before it undergoes mainstream analysis. Some of the pre-processing performed over the data are- cleaning of the data, removing of unwanted characters [or emoticons], tokenizing of the data and transforming the data to the context for further processing.
Knowledge	The *knowledge* component contributes to the development of the understanding of CoP participation towards the unified vision. The component comprises two focus elements- Sentiment and Thematic.
Sentiment	The *sentiment* component of the model helps to identify the sentiments of the ESL/EFL CoP at all points of transaction and learning. The *moderator* can intervene at any time to control or drive the participation of the *readers* and *authors*, based on the outcome of the sentiment component.
Thematic	The *thematic* component of the model helps the moderator to devise strategy to prioritize and reinforce the ESL/EFL learnings and discussions.
Visualization	The moderator can track and monitor the CoP status of participation, involvement and learning through the *Visualization* component of the model.
Insights	The *Insights* component amalgamates and synergizes the overall learning goal of the ESL/EFL community.
Feedback	The *feedback* component gives feedback of the insights of the model as the "raw data" and then integrates it with other metadata and corpus to enrich and improve the ESL/EFL community learning process.
Metrics	Metrics provide measurement at the level of network, community, and individual. Some typical metrics are – modularity, betweenness, centrality, degree. The density can be used to identify the connectivity of the participants for any ESL/EFL learning. It signifies the total number of links/relationships established for ESL/EFL learning

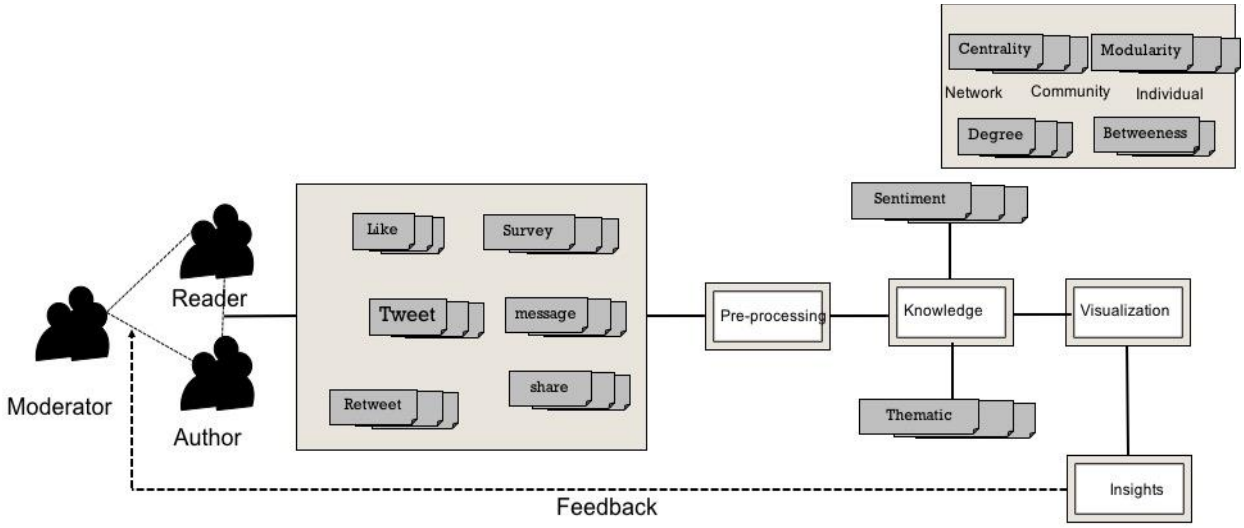

Figure 1 Metrics driven Conceptual model for ESL/EFL learning

Conclusion

This paper proposes a conceptual model considering the usage of Twitter as a language tool to enhance ESL/EFL ecosystem which is integrated with social network analysis. The paper details out the aspect related to microblog application for ESL/EFL and covers the importance of social network analysis. It proposes that the ESL/EFL learning parameters; derived from social network indicators – degree, in-degree, centrality, density, and degree centralization which play a critical role in evaluating the ESL/EFL learning. The participation level based on the social network analysis will affirm the improvement in the ESL/EFL learning.

Several pedagogical implications such as finding the nature of the clusters, the learning behavior and other peculiar habits of the participants can be derived from the research work. The (sub-) communities and learning clusters help to understand the information-sharing pattern formulated in the Twitter CoP social network. More specifically, educationists, instructors and moderators can control and drive the clustering behavior of the potential influencer and (sub-community) that impacts the learning in the sub-network. The content and curriculum designers can design and deploy modules of the EFL/ESL learning.

In future work, this model will be executed and validated against the ESL/EFL ecosystem considering cross-cultural aspects.

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