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Identifying Influential Users of College Sports Teams' Social Media Accounts

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대학스포츠팀 SNS의 영향력 있는 사용자의 분석

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Abstract This study tried to identify the influential users of college sports teams' Twitter accounts and categorize them into three groups including an official account, media account, and layperson account. A total of 14 Twitter accounts at NCAA Division 1 universities were selected through convenience sampling method. In men's sports, the greatest number of influential users was layperson account followed by media account and official account. In women's sports, the greatest number of influential users was layperson account followed by official account and media account. The results provided the insight of college sports online social network and will expand the growing literature on social media in sport and offer practical data for marketers to use social media more effectively.

요 약 이 연구의 목적은 대학 스포츠팀의 SNS의 사용자를 분석하여 어떠한 사용자가 온라인상에서 정보공유와 전달에 있어서 영향력이 있는지를 규명하는 것에 있다. 이를 위하여 영향력 있는 사용자는 대학의 공식 계정, 미디어 계정, 비전문가·일반인 계정으로 구분되었다. 이를 위해 NCAA Division 1에 속해있는 대학교들을 대상으로, 편의표본추출법을 이용하여 총 14개의 공식 트위터 계정이 선정되었다. 분석결과, 남자 스포츠에서는 비전문가·일반인 계정이 영향력 있는 사용자 중 가장 높은 비율을 차지하였으며, 미디어계정과 대학공식 계정이 뒤를 이었다. 여자 스포츠에서는 비전문가·일반인 계정이 영향력 있는 사용자 중에 가장 높은 비율을 차지하였으며, 대학의 공식계정과 미디어계정이 뒤를 이었다. 이 연구의 결과는 스포츠시장에서 점차 중요도가 높아지고 있는 SNS를 활용한 다양한 마케팅 전략과 후속연구를 위한 기초자료를 제공한다.

Key Words : College sports, Influential user, Social media

1. Introduction

Social media is the internet-based application that is the technological foundation of Web 2.0, allowing users to exchange useful information, pictures, and the video[1,2]. Based on a report from PEW Internet and the American Life Project, 75 percent of adults use social media[3]. Twitter is one of the most popular social media platforms worldwide. Used by 36 percent of all internet users worldwide, Twitter possesses several distinctive features including brevity, mobility, and pervasive access[2,4,5,].

Twitter allows users to post a message, called a "tweet", which is limited to 140 or fewer characters. By choosing the "follow" function, users can read and subscribe to the tweets from other users[6].

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"Following" is referred to users or brands that an individual chooses to follow, while a "follower" refers to users that choose to follow an individual. Thought of another way, a follower is a subscriber of tweets and the more followers an individual has, the more audience that individual has. Fans of athletes often follow athletes' Twitter accounts. As Kassing and Sanderson[7] suggested, online communication between athletes and fans through social media can develop the close relationship and affect fans' actual behavior on offline. For example, famous cyclist Lance Armstrong tweeted an invitation to followers to join him for a ride. Amazingly, over 1,000 people showed up to join him within a few hours[8]. Thus, many famous athletes and sports organizations, as well as collegiate athletic departments, actively adopt Twitter for their marketing and public relations strategy[7,9-16].

Meanwhile, the process of identifying influential users on Twitter through social network analysis is important for sport communicators to establish a more effective public relations and marketing strategy since information diffusion on social media is supported by a few influential users[6,17,18]. Prior studies employing social network analysis have allowed researchers to visualize the patterns of information diffusion and analyze the relationship between users in a broad population, as well as identify various user aspects on social media[6,17-21].

According to Mitchell[22], a social network is defined as "a specific set of linkages among a defined set of persons, with the additional property that the characteristics of these linkages as a whole may be used to interpret the social behavior of the persons involved" (p. 2). Previous studies suggested many different dimensions for conducting social network analysis including transactional content, nature of links, and structural characteristics[23]. Centrality explains the importance and influence of network members and can be measured by several different criteria, such as betweenness centrality, closeness centrality, eigenvector centrality, and degree centrality[20]. Each centrality criterion has pros and cons based on different algorithms[20,24]. Degree centrality measures a total number of connections directed to the network member and it indicates the popularity of a member[20,25]. In sport, degree centrality was used by previous studies to identify influential users on Twitter[6,17]. Therefore, the user with a high level of degree centrality indicates that a lot of information passes through that user in the information diffusion process[20]. In Twitter, the number of followers that a user has is referred to degree centrality[6,17].

Hambrick[17] tried to identify how sporting event organizers and users spread information through a social network by examining two bicycle race organizers' Twitter accounts. Results revealed that a few influential users with a greater number of followers helped race organizers spread information through their respective followers. Thus, Hambrick[17] suggested that sporting event organizers can leverage Twitter and influential users to share information and promote the events. Hambrick and Sanderson[7] analyzed sport journalists' social network on Twitter. They also found that a few influential journalists having a greater number of followers drew the issues from the offline to online and spread it to peers. In addition, Hambrick and Sanderson[7] suggested that Twitter is an essential platform for journalist to talk about sport stories. Similarly, Sanderson and Hambrick[26] found the active ways of Twitter usage in sports journalists including offering commentary, breaking news, interactivity, linking to content, and promotion. They also suggested that journalists use Twitter to spread the sport issues by undermining the professional and personal boundaries of journalists. On the other hand, Clavio and his colleagues[19] analyzed a college football social network on Twitter by applying systems theory constructs of input, transformation, and output components. They focused on the Big Ten Conference football teams' Twitter accounts. A total of 139 users were identified and analyzed from teams' Twitter accounts. The

researchers analyzed the re-tweet, which is similar function to forwarding in email, pattern to see the interaction between users. They found that only 21.5% of the users interacted with each other. Fans tended to communicate only with fans, and there was not a lot of direct feedback from the teams' official Twitter account. Media accounts also tended to interact only with other media accounts. Based on these results, it seems that the role of teams' official Twitter account needs to be emphasized to link fans and media.

Therefore, based on the detail above, Twitter has become one of the more effective methods for college sports teams to interact with fans and distribute information through fans, and the media[6,7,9,10,17-19,26,27]. However, the study of social network analysis and influential users are relatively limited in spite of the importance of this emerging area. Thus, this study tried to analyze the college sports teams' social network with following research objective. First, this study tried to identify the influential users of college sports teams' social media. Second, current study tried to categorize influential users into three groups including teams' official account, media account, and layperson account.

2. Methods

The current study utilized social network analysis and content analysis. This study focused on a single university to provide fundamental data and description for further research as a case study since little academic research has been conducted in this field[28]. Through a discussion with expertise in college sports and social media analysis, a total of 14 college sports teams' Twitter accounts at NCAA Division 1 university were identified from the official athletic websites, including athletic department (n = 1), men's sports (n = 5) and women's sports (n = 8) with convenience sampling method. This NCAA Division 1 university was selected for this study since it actively uses social media for public relations and marketing strategies with the internal social media use policy and regulations for athletes and various promotional event on social media.

NodeXL and SPSS 20.0 were used to collect and analyze the data. NodeXL is an open source social media network analysis program add-in for Microsoft Excel[20]. NodeXL was used by previous study examining online social network [18]. Descriptive statistics included the total number of followers,

[Table 1] Descriptive Statistics

Gender	Sports	Followers	Followings	Tweets	Signup Date
-	Athletic Department	54,140	194	26,838	07/12/2008
Men	Football	28,629	94	1,779	06/28/2012
	Baseball	20,657	154	3,970	06/12/2012
	Basketball	6,545	122	1,288	06/28/2012
	Golf	597	65	318	06/28/2012
	Tennis	255	39	207	06/29/2012
	Total	110,823	668	34,400	-
Women	Softball	1,608	55	996	06/28/2012
	Volleyball	1,135	75	940	06/29/2012
	Soccer	1,042	108	729	02/21/2012
	Gymnastics	1,036	71	465	06/28/2012
	Basketball	833	79	1,038	06/28/2012
	Swimming and Diving	719	70	747	06/28/2012
	Golf	353	17	389	06/28/2012
	Tennis	206	71	258	06/29/2012
	Total	6,932	546	5,562	-
	Grand Total	117,755	1,214	39,962	-

followings, tweets, and signup date. Complete lists of users from each Twitter were drawn through NodeXL on November 27, 2013. Top 10 influential users from each Twitter were identified by ranking the number of their followers. Next, type of influential users was categorized into three groups; (1) official accounts: University of Arkansas official Twitter, (2) media accounts: journalists, reporters, and other media related Twitter (e.g., magazine, news channel), and (3) layperson accounts: Twitter that is categorized into neither group 1 nor group 2. User profiles on Twitter were primarily used to categorize the influential users. Twitter provides a service, called profile verification, which authenticates the identities of users. Most official and media accounts were verified with a blue verified badge on their Twitter profile. However, to ensure the reliability of coding with non-verified profile, each researcher analyzed and categorized all influential users separately. Inter-coder reliability between researchers ranged from 89% to 96%, which exceeds the acceptable level of 80%[29]. Discordant codings between researchers were re-coded through repeated discussion.

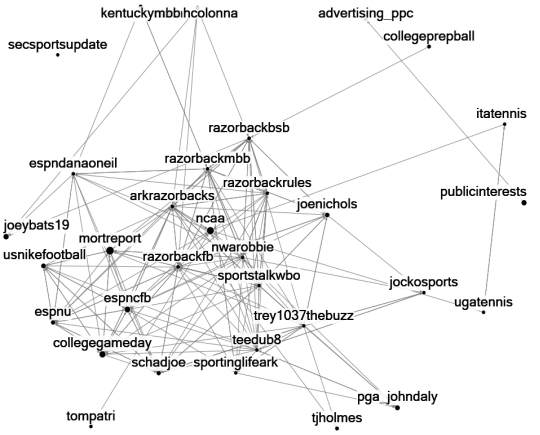
[Table 2] Correlations for the Number of Followers, Followings, Tweets, and Signup Date

Measure	Followers	Followings	Tweets
Followers	1.00		
Followings	.80*	1.00	
Tweets	.88*	.75*	1.00

*p<.05

3. Results

Descriptive statistics of college sports teams' Twitters are presented in Table 1. The mean ratio of following to followers was about 1:97. Athletic department had the greatest number of followers (n = 54,140) followed by men's football (n = 28,629) and men's baseball (n = 20,657). On the contrary, women's tennis had the fewest number of followers (n = 206). In addition, the total number of followers from men's sports (n = 110,823) was greater than women's sports (n = 6,932). The Athletic Department joined Twitter in 2008, which was earlier than others.



[Fig. 1] Visualization of influential users' network from men's sports

The correlations between the numbers of followings, followers, and tweets were presented in Table 2. In detail, the number of followings was significantly correlated with the number of followers (r = .80, p< .05). In addition, the number of tweets was significantly correlated with the number of followers (r = .88, p<.05) and followings (r = .75, p< .05).

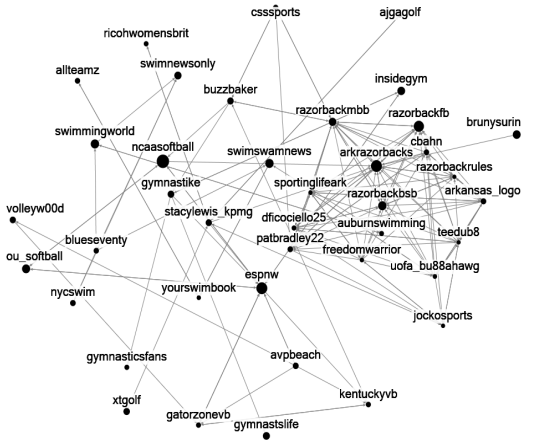
A complete list of users from each college sports teams' Twitters was drawn through NodeXL. Top 10 influential users by the number of their followers in each Twitter were identified[Table 3 and 4]. FoodNetwork (layperson account; n = 1,815,382), had the greatest number of followers followed by mortreport (media account; n = 1,235,133) and NCAA (layperson account; n = 989,493). On the other hand, UGAtennis (layperson account; n = 2,464) had the fewest number of followers.

More specifically, in men's sports, 26% (n = 13) of influential users were media accounts, 18% (n = 9) were official accounts, and 56% (n = 28) were layperson accounts excluding overlapped users. In women's sports, 26% (n = 21) of influential users were

[Table 3] Influential users in Men's Sports

Athletic Department		Men's Tennis		Men's Football	
Accounts	Followers	Accounts	Follower	Accounts	Follower
FoodNetwork[L]	1,815,382	CollegeGameDay[M]	524,557	ArkRazorbacks [O]	50,645
mortreport[M]	1,235,121	Bottom2thatop [L]	390,876	RazorbackBSB [O]	20,101
NCAA[L]	989,493	ESPNCFB[M]	353,940	ITATennis [L]	7,932
AnthonyGemma[L]	843,556	CountryMusic [L]	292,291	RazorbackMBB [O]	6,545
NOH8Campaign[L]	569,867	usnikefootball [L]	254,604	TheRealAPeters [M]	6,006
CollegeGameDay[L]	524,538	Pappychris1 [L]	237,637	TeeDub8 [L]	3,678
PublicInterests[L]	418,868	schadjoe [M]	197,445	RazorbackRules [O]	3,423
Bottom2thatop[L]	390,872	JoeNichols [L]	189,479	SportingLifeArk [M]	3,253
ESPNCFB[M]	353,914	countryradiocom [L]	140,500	Jockosports [M]	2,810
PGA_JohnDaly[L]	340,569	ESPNU [M]	132,920	UGAtennis [L]	2,464
Men's Basketball		Men's Baseball		Men's Golf	
Accounts	Follower	Accounts	Followers	Accounts	Followers
LeBronJames [L]	359,006	mortreport[M]	1,235,133	ArkRazorbacks[O]	50,646
JoeNichols [L]	178,367	JonahLupton [L]	670,591	advertising_ppc[L]	48,330
123talent [L]	108,556	JoeyBats19 [L]	408,330	RazorbackBSB[O]	20,101
Tjholmes [M]	86,557	PGA_JohnDaly [L]	340,572	TomPatri[L]	12,346
TonyOcean [L]	79,501	Pappychris1 [L]	237,638	Jannsexy[L]	9,769
ArkRazorbacks [O]	50,644	JoeNichols [L]	189,475	SiRobertson65[L]	8,762
KentuckyMBB [L]	39,588	sarahcolonna [L]	146,371	NWARobbie[M]	7,941
ESPNDanaOneil [M]	33,189	countryradiocom [L]	140,502	RazorbackMBB[O]	6,545
SportsTalkwBo [M]	22,046	CollegePrepBall [L]	130,022	TheRealAPeters[M]	6,006
RazorbackFB [O]	21,586	SECSportsUpdate [L]	120,343	trey1037TheBuzz[L]	5,279

[O]Official account, [M]Media account, [L]Laypersonaccount



[Fig. 2] Visualization of influential users' network from women's sports

media, 33% (n = 26) were official account, and 41% (n = 33) were layperson account excluding overlapped users.

For reference, Fig. 1 and Fig. 2 present the visualization of influential users' network from men's and women's sports. In the figure, each node indicates influential user, each edge indicates follower or following relationship between influential users. In addition, size of the node was decided by the number of followers that influential user has.

4. Discussion

The purpose of this study was to identify the influential users of college sports teams' social media accounts and categorize them into three groups including official account, media account, and layperson account. First, descriptive statistics indicated that the total number of followers from men's sports was greater than women's sports. It supports prior research from Fink, Trail and Anderson[30] who analyzed spectators from men's and women's college basketball games. They found that spectators from men's game showed stronger feelings about following their teams in the media than spectators from women's game. This study's finding suggests organizers of college sports teams need to put more effort into attracting spectators from women's sports to social media through various

promotional events.

An examination into the relationship among Twitter variables revealed the number of followings was significantly correlated with the number of followers. In addition, the number of tweets was significantly correlated with the number of followers and followings. This result supports prior studies[17,31]. Thus, the organizers of college sports teams' Twitter should post tweets regularly and follow more users to drive more return followers. Furukawa, Ishizuka, Matsuo, Ohmukai, and Uchiyama[32] suggested that regular subscription to other users' social media increases the possibility of information diffusion. Therefore, having more followers on Twitter can boost the dissemination of information which college sports teams provide. Furthermore, tweets need to be focused on providing unique insight into teams since the purpose of followers from a college sports teams' Twitter account is for an affinity for an aspect of the athlete's persona[33].

Based on the degree centrality, the number of followers, top 10 influential users from each sports team's Twitter were identified. Layperson accounts indicated greatest percentage of influential users in both men's (56%) and women's sports (41%). It supports previous from Blaszka, Burch, Frederick, Clavio, and Walsh[34] who analyzed the usage of Twitter hashtags, simple descriptive keywords allowing people to find specific interests easily, during the 2011 World Series. They concluded hashtags were mainly used by laypersons to express fanship and interact with others. Thus, they suggested that laypersons take an important role for information diffusion in Twitter[34]. Subsequently, Clavio and his colleagues[19] noted that official Twitter accounts need to link fans, media, and teams for more effective information diffusion on social media. In this study, 18% of influential users from men's sports and 33% of influential users from women's sports were official accounts. Some college sports teams' official Twitter accounts were influential users of another official

[Table 4] Influential users in Women's Sports

Women's Basketball		Women's Golf		Women's Softball		Women's Volleyball	
Accounts	Followers	Accounts	Followers	Accounts	Followers	Accounts	Followers
ESPN3 [M]	75,045	ArkRazorbacks [O]	50,723	JohnKruk_ESPN[M]	172,947	WordsOf_Emotion [L]	552,225
ArkRazorbacks [O]	50,724	BunkerShotGolf[M]	21,808	123talent [L]	103,753	ArkRazorbacks[O]	54,146
RazorbackBSB [O]	20,137	RazorbackFB [O]	21,738	NCAAsoftball [L]	61,101	espnW[M]	50,279
FullCourtWBBall [M]	18,793	RazorbackBSB [O]	20,135	ArkRazorbacks[O]	54,146	RazorbackBSB[O]	20,659
Buzzbaker [M]	13,967	Xtgolf[L]	13,144	OU_Softball [L]	23,597	avpbeach [L]	12,660
NWAMatt [M]	11,114	StacyLewis_KPMG[L]	10,459	RazorbackBSB[O]	20,659	Volleyw00d [L]	11,796
RazorbackMBB [O]	6,897	AJGAGolf[L]	7,728	clipperdarrell [L]	13,103	PatBradley22[M]	8,438
Csssports [M]	6,592	RazorbackMBB[O]	6,895	PlayBall2020 [L]	11,108	RazorbackMBB[O]	8,333
TheRealAPeters [M]	6,022	TheRealAPeters[M]	6,022	AllTeamz [L]	9,081	KentuckyVB [L]	7,466
Freedomwarrior [L]	4,768	RICOHWomensBrit[L]	4,471	RazorbackMBB[O]	8,333	GatorZoneVB [L]	6,572
Women's Tennis		Women's Soccer		Women's Swimming & Diving		Women's Gymnastics	
Accounts	Followers	Accounts	Followers	Accounts	Followers	Accounts	Followers
ArkRazorbacks [O]	50,724	ArkRazorbacks[O]	54,146	ArkRazorbacks[O]	54,146	ArkRazorbacks[O]	54,146
RazorbackBSB[O]	20,137	espnW [M]	50,279	SwimmingWorld [M]	24,369	InsideGym [M]	26,325
BrunySurin [L]	14,626	RazorbackBSB[O]	20,659	swimswamnews [M]	19,681	GymnastsLife [L]	22,350
ITATennis [L]	7,945	cbahn [M]	10,406	swimnewsonly [L]	17,401	RazorbackBSB[O]	20,659
RazorbackMBB [O]	6,897	RazorbackMBB[O]	8,333	RazorbackMBB[O]	8,333	gymnastike [M]	15,938
RazorbackEquipm [O]	4,594	DFicociello25 [L]	7,237	blueseventy [L]	7,967	RazorbackMBB[O]	8,333
TeeDub8 [L]	3,678	TheRealAPeters [M]	6,366	TheRealAPeters [M]	6,366	Gymnasticsfans [L]	7,595
RazorbackRules [O]	3,430	UofA_Bu88aHawg [L]	5,661	nycswim [L]	6,097	TheRealAPeters [M]	6,366
SportingLifeArk [M]	3,265	RazorbackEquipm [L]	4,894	AuburnSwimming [L]	5,280	UofA_Bu88aHawg [L]	5,661
Jockosports [M]	2,819	Arkansas_Logo [L]	4,498	YourSwimBook [L]	5,127	RulesofGymnast [L]	5,294

[O]Official account, [M]Media account, [L]Laypersonaccount

Twitter accounts. For instance, the official Twitter of men's baseball was an influential user in men's golf and men's football. Moreover, men's baseball was also influential users in women's sports (e.g., women's gymnastics and tennis). It indicates that each sport teams' Twitter account needs to increase its visibility and link to other sports by sharing tweets or generating conversations. Men's sports can mention women's sport and vice versa. Lastly, 26%(n = 13) of influential users from men's sports and 26%(n = 21) of influential users from women's sports were media accounts. Media accounts included journalists, reporters, and other media related Twitter accounts (e.g., magazine and sport channel). Having journalists as a follower on Twitter could be advantageous for sports teams to provide information and casual statements directly to the media which could then be spread through journalists' social network. Sheffer and Schultz[35] also suggested that "younger and broadcast journalists were more likely to see Twitter as having stand-alone value and use it in forward-thinking ways" (p. 480). Therefore, sport teams need to use Twitter as one of several public relations strategies since journalists frequently adopt it for an informal information exchange method.

In terms of practical implication, the marketers of college sports could establish more effective marketing and public relations strategy through a more targeted use of Twitter. This study provided evidence of influential users by sport and team gender. Influential users refers to individuals who have greater numbers of followers. In other word, messages on these influential users' Twitter accounts have a higher possibility of reaching greater audiences. Therefore, communicators of college sports teams can directly request influential users to re-tweet team related message or try to make a conversation with influential users since most conversation on Twitter is opened to the public. This will increase visibility and awareness of the teams, as Funk and James [36] stated that media is an effective way of increasing team awareness. Team awareness is one of important factors related to fans' perception of teams[37]. Tajfel[37] suggested that team awareness is the first step of team identification process. In addition, Twitter hastags are mainly used by laypersons and hashtags usage is positively related to team identification[34,38]. Thus, the marketers can encourage influential users with layperson accounts to use hashtags more actively through various promotional events or give away. Ultimately, marketers can develop fans' team identification through increased team awareness on Twitter. In addition, marketers would get opinions from these active and influential users about the games or media usage that can increase the quality of teams' social media and the games.

5. Conclusion

In conclusion, this study was a first attempt to analyze the college sports teams' Twitter accounts in the context of influential users since influential users play a vital role in various marketing areas with information diffusion. This study tried to identify the influential users of a single college sports teams' Twitter accounts and categorize them into three groups. In men's sports, the greatest number of influential users were layperson accounts followed by media accounts and official accounts. In women's sports, the greatest number of influential users were layperson accounts followed by official accounts and media accounts. We found that most of influential users were laypersons and many influential users overlapped between men's and women's sports. These users could be mobilized to connect the men's and women's sport teams Twitter accounts. Results of this study provide insight into a college sports online social network that will expand the growing literature on social media in sport and offer practical data for marketers to use social media more effectively. In addition, this study will widen the research methods of sport research field,

in particular, by introducing online social network analysis.

6. Limitations and Future Studies

The first limitation of this study was the limited categories of account type. The current study used only three groups including layperson account, media accounts, and official accounts. Especially, layperson accounts were defined as Twitter users that are categorized into neither official accounts nor media accounts. However, some layperson accounts need to be re-categorized with more detailed categories. For example, although NCAA is one of the biggest organizations in college sports, it was categorized into layperson. Moreover, there was athlete celebrity that is hard to be seen as layperson. Therefore, future studies need to include more diverse categories to define influential users. In addition, this study did not analyze what messages are exchanged or posted by influential users. Thus, further research should analyze the Twitter messages generated by influential users. It will provide more valuable data for both markers and researchers.

A second limitation is the study was focused on the case of one university, and attempts to generalize this study's findings to other universities should be undertaken with caution. Future studies should consider a broader sample of university athletic department Twitter accounts to build a stronger knowledge base regarding influential users within college athletics.

Third, in terms of gender difference, this study didn't match the number of sports teams and Twitter accounts by gender. Thus, future study needs to include the same number of sports teams by gender to analyze the gender difference more clearly.

Fourth, this study identified who influential users are in college sports teams' online social media. However, current study didn't focus on actual message what they are interested in or exchanged each other. Thus, future study could employ the content analysis to provide more in-depth data.

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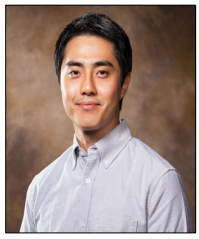

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