

The relationships between master degree students' online academic information search behaviors and online academic help seeking

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Abstract: The purpose of this study is to explore master degree students' online academic help seeking (OAHS) via their online academic information search behaviors (OAISB) and to compare their online academic help seeking between different groups. The participants were 386 master degree students in Taiwan, and we divided it into groups of major (science and non-science), including 210 science major samples and 176 non-science major samples. Take advantage of exploratory factor analysis, correlation analysis, and path analysis, this study found that some relationships existing between master degree students' online academic information search behaviors and their approaches to online academic help seeking. The results showed that the multiple sources as accuracy was a sufficiently reliable tool to assess master degree students' online academic help seeking. Non-science master degree students' deep as content could predict their using online resources appropriately but not science master degree students, content relevant to the goal might play a role in non-science master degree students' online academic help seeking.

Keywords: online, help seeking, searching evaluative standards

1. Introduction

In recent years, studying activities have been becoming more convenient and efficient because of the usage of the Internet, therefore, online academic help seeking has been growing into a tendency for adults' studying. Furthermore, researchers have expressed that help seeking is positive and beneficial for students during the past years (Lee, 2007). Cheng and Tsai (2011) exposed that students' functional web-based learning self-efficacy was related to their perceptions of information searching for online academic help seeking. As above, help seeking seemingly a fundamental portion in the studying process, and adults' self-standards of evaluation might play an important role in online academic help seeking. There were few research have paid attention to master degree students' online academic help seeking toward searching evaluative standards. Consequently, this study intends to explore the relationships between OAHS and OAISB of master degree students. To investigate the relationships between OAHS and OAISB may provide some ideas for future online academic articles searching system design.

2. Method

2.1 Participants

The participants of this study were 386 master degree students in Taiwan with no limits to major. The results of questionnaires were collected, 210 (54.4%) were major in science and 176 (45.6%) were major in non-science. The years they spent searching online academic articles was viewed as an indicator of their online academic help seeking. We only adopted those who have at least one experience

in online academic articles searching.

2.2 Instruments

For the purpose of investigating people's online academic information search behaviors and online academic help seeking, the instrument integrated questionnaires called online academic information search behaviors (OAISB) which was modified from Tsai's (2004) information commitments survey (ICS) and online academic help seeking (OAHS) developed by Cheng and Tsai (2011). And the developer were Wu and Liang (2013). ICS comprised three scales: (1) standards for accuracy, (2) standards for usefulness, and (3) searching strategy. OAHS were revised to assess the learners' learning environmental preferences and approaches to online academic help seeking. The rating range of the questions was from "strongly disagree" to "strongly agree" and was presented in a 1–5 Likert scale.

The OAISB survey aims to identify master degree students' online academic information search behaviors. There were six items including multiple sources as accuracy, authority as accuracy, deep as content, surface as content, usefulness as technical and usefulness as accessing. A detailed description for each scale is presented below:

- (1) Multiple sources as accuracy: Students evaluate the correctness of unknown online academic articles by comparing to other websites, printed texts or their prior knowledge.
- (2) Authority as accuracy: Students examine the correctness of unknown online academic article by the "authority" of the websites or sources such as a significant or famous journal.
- (3) Deep as content: Students evaluate the usefulness of academic articles through the detail content such as the abstract or results.
- (4) Surface as content: Students evaluate the usefulness of academic articles through the number of citations or downloads.
- (5) Usefulness as technical: Students evaluate the usefulness of academic articles through the ease of online retrieving or searching.
- (6) Usefulness as Accessing: Students evaluate the usefulness of academic articles through the purposeful ways of obtaining academic articles.

The OAHS survey aims to identify the behavior of online academic help seeking. There were four items including face to face as social network, online accessing as social network, using online resources appropriately and willingness. A detailed description for each scale is presented below:

- (1) Face to face as social network
- (2) Online accessing as social network
- (3) Using online resources appropriately
- (4) Willingness

3. Results

3.1 Factor analysis-Online academic information search behaviors (OAISB)

The results of the exploratory factor analysis indicated that six factors were extracted with a total of 24 items retained in the OAISB survey (shown in Table 1). Six factors of items correspond to Multiple sources as accuracy (3 items), Authority as accuracy (5 items), Deep as content (4 items), Surface as content (5 items), Usefulness as technical (3 items) and Usefulness as Accessing (4 items). The total variance of the factors is 61.66%. All eigenvalues of the six factors amount more than one, with the reliability (alpha) coefficients of the scales respectively at "Multiple sources as accuracy" (0.59), "Authority as accuracy" (0.88), "Deep as content" (0.72), "Surface as content" (0.81), "Usefulness as technical" (0.79) and "Usefulness as accessing" (0.68), overall alpha is 0.86, suggesting that these factors are sufficiently reliable for representing master degree students' online academic information search behaviors.

Table 1: Rotated factor loading and Cronbach's alpha values for the six subscales of the online academic information search behaviors (n=386).

	Factor1 MS	Factor2 AU	Factor3 DC	Factor4 SC	Factor5 UT	Factor6 UA
Factor 1: Multiple sources as accuracy (MS), $\alpha = 0.59$						
MS 2	0.58					
MS 3	0.79					
MS 4	0.76					
Factor 2: Authority as accuracy (AU), $\alpha = 0.88$						
AU 7		0.66				
AU 8		0.82				
AU 9		0.82				
AU 10		0.81				
AU 11		0.88				
Factor 3: Deep as content (DC), $\alpha = 0.72$						
DC 13			0.63			
DC 15			0.73			
DC 16			0.68			
DC 17			0.74			
Factor 4: Surface as content (SC), $\alpha = 0.81$						
SC 19				0.63		
SC 20				0.61		
SC 21				0.58		
SC 22				0.84		
SC 23				0.85		
Factor 5: Usefulness as technical (UT)), $\alpha = 0.79$						
UT 26					0.82	
UT 27					0.88	
UT 28					0.67	
Factor 6: Usefulness as Accessing (AT) $\alpha = 0.68$						
UA 29						0.66
UA 30						0.62
UA 32						0.69
UA 34						0.69

Notes: Loadings less than 0.50 omitted.

Overall alpha: 0.86.

Total variance explained: 61.66%.

3.2 Factor analysis - Online Academic Help Seeking (OAHS)

The results of the exploratory factor analysis indicated that four factors were extracted with a total of 12 items retained in the OAHS survey (shown in Table 2). Four factors of items correspond to Face to face as social network (3 items), Online accessing as social network (3 items) , Using online resources appropriately (3 items) and Willingness (3 items). The total variance of the factors is 61.66%. All eigenvalues of the four factors amount morethan one, with the reliability (alpha) coefficients of the scales respectively at “Face to face as social network” (0.69), “Online accessing as social network” (0.72), “Using online resources appropriately”(0.68) and “Willingness” (0.62), overall alpha is 0.86., suggesting that these factors are sufficiently reliable for master degree students'representing online academic help seeking.

Table 2: Rotated factor loading and Cronbach's alpha values for the four subscales of the online academic help seeking (n=386).

	Factor1 FS	Factor2 OS	Factor3 US	Factor4 WI
Factor 1 :Face to face as social network(FS), $\alpha= 0.69$				
FS 35	0.75			
FS 36	0.87			
FS 37	0.72			
Factor 2:Online accessing as social network (OS) , $\alpha= 0.72$				
OS 41		0.89		
OS 42		0.91		
OS 44		0.54		
Factor 3:Using onlineresources appropriately(US) , $\alpha= 0.68$				
US 46			0.75	
US 47			0.71	
US 48			0.83	
Factor 4:Willingness (WI) , $\alpha= 0.62$				
WI 49				0.69
WI 50				0.77
WI 51				0.71

Notes: Loadings less than 0.50 omitted.

Overall alpha: 0.73.

Total variance explained: 64.05%.

3.3 Correlations between OAISB and OAHS

Table 3 summarizes the results of correlation analysis between online academic information search behaviors and online academic help seeking. It was found that all factors of OAHS were significantly correlated with the factor of multiple sources as accuracy, and all factors of OAISB were significantly correlated with the factor of face to face as social network. That is to say, master degree students tend to acquire academic articles by face to face. When master degree students need academic help seeking, they would like to choose multiple sources as accuracy.

Table 3: Correlations between online academic information search behaviors and online academic help seeking. (n=386)

	MS	AU	DC	SC	UT	UA
FS	0.22***	0.14**	0.17***	0.11*	0.11*	0.12*
OS	0.19***	0.08	-0.51	0.17***	0.04	0.30
US	0.34***	0.04	0.28***	0.14	0.13**	0.23***
WI	0.21***	0.08	-0.00	0.69	0.00	0.42

Notes: * $p < 0.05$, ** < 0.01 , *** < 0.001 .

MS: Multiple sources as accuracy, AU: Authority as accuracy, DC: Deep as content, SC: Surface as content, UT: Usefulness as technical, UA: Usefulness as accessing, FS: Face to face as social network, OS: Online accessing as social network, US: Using online resources appropriately, WI: Willingness.

3.4 Path analysis of major difference in OAISB and OAHS

Major in science

The path analysis revealed that multiple sources as accuracy of OAISB were the predictor for all the factors of OAHS. Face to face as social network ($\beta = 0.27$, $p < 0.001$), online accessing as social network

($\beta = 0.26$, $p < 0.001$), using online resources appropriately ($\beta = 0.26$, $p < 0.001$), and willingness ($\beta = 0.21$, $p < 0.01$). Multiple sources as accuracy might play an important role in OAHS for science master degree students. Authority as accuracy of OAISB would be predictors to face as social network of OAHS ($\beta = 0.16$, $p < 0.05$), in other words, when searching the authoritative academic articles, science master degree students might tend to get it face to face. Surface as content of OAISB would be predictors to online accessing as social network of OAHS ($\beta = 0.24$, $p < 0.01$), science master degree students those pay attention to impact factor of articles might tend to access articles online. Usefulness as Accessing of OAISB would be reverse predictors to online accessing as social network ($\beta = -0.17$, $p < 0.05$) of OAHS, science master degree students only used the online articles which beneficial for them by evaluating.

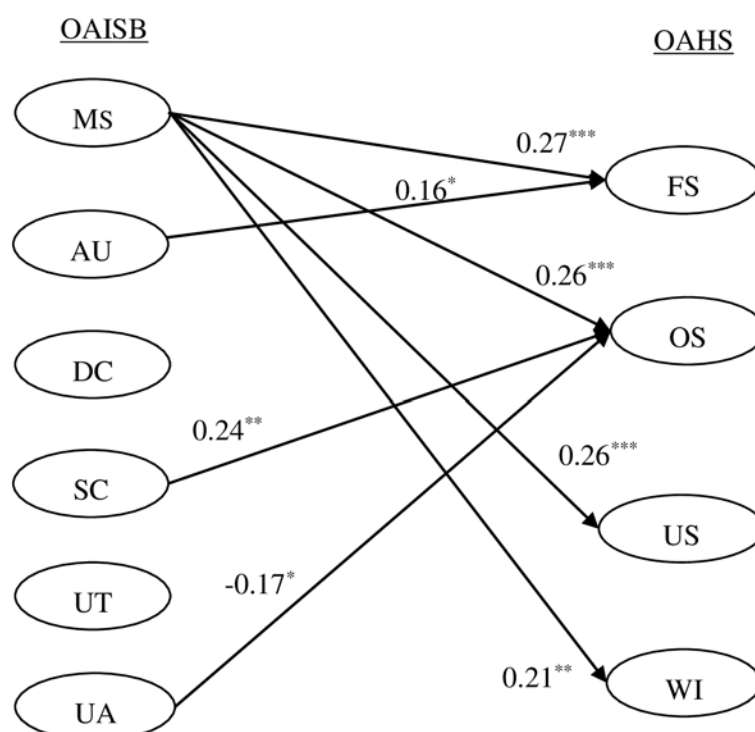


Figure 1. Path analysis for science master degree students (n=210).

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

MS: Multiple sources as accuracy, AU: Authority as accuracy, DC: Deep as content, SC: Surface as content, UT: Usefulness as technical, UA: Usefulness as accessing, FS: Face to face as social network, OS: Online accessing as social network, US: Using online resources appropriately, WI: Willingness.

Majorin non-science

The path analysis found that non-science master degree students' multiple sources as accuracy of OAISB would be predictors to the greater part of OAHS except face to face as social network. Online accessing as social network ($\beta = 0.17$, $p < 0.05$), using online resources appropriately ($\beta = 0.21$, $p < 0.01$), and willingness ($\beta = 0.22$, $p < 0.01$). The reason probably would be that non-science master degree students' less seeking other people's help when searching academic articles. Deep as content of OAISB would be a predictor to using online resources appropriately of OAHS ($\beta = 0.25$, $p < 0.01$), we could infer that non-science master degree students those pay attention to content of articles might tend to access articles online appropriately. Surface as content of OAISB would be predictors to online accessing as social network ($\beta = 0.19$, $p < 0.05$) and using online resources appropriately ($\beta = 0.19$, $p < 0.05$) of OAHS, non-science master degree students those pay attention to impact factor of articles might tend to access articles in person. Usefulness as accessing of OAISB would be reverse predictors to online accessing as social network of OAHS ($\beta = 0.18$, $p < 0.05$), non-science master degree students

used the online articles which beneficial for them by evaluating might tend to adopt online resources appropriately.

Non-science master degree students' deep as content could predict their using online resources appropriately but not science master degree students. The results could be referred to the non-science students emphasis more in if the content relevant to the goal during they were searching.

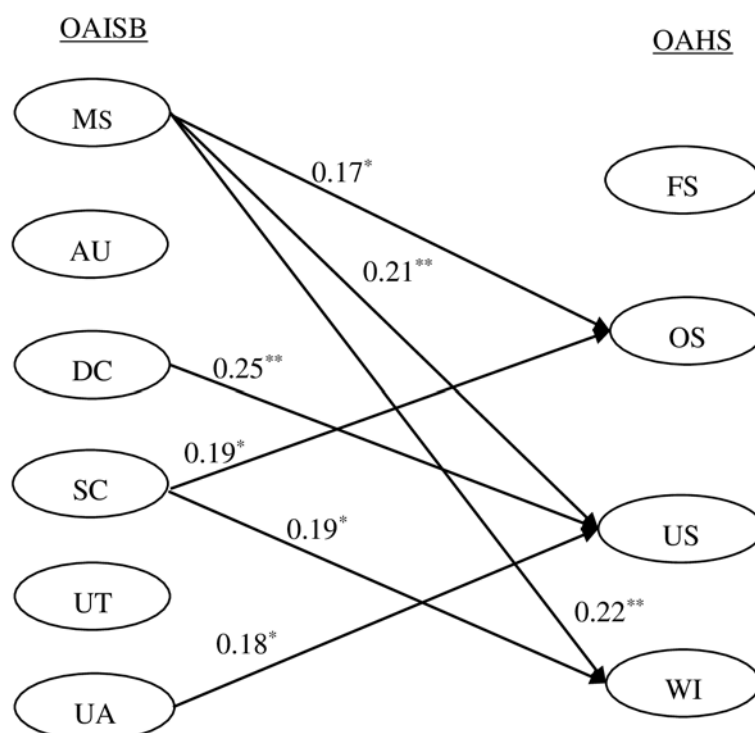


Figure 2. Path analysis for non-science master degree students (n=176).

Notes: * $p < 0.05$, ** < 0.01 , *** < 0.001 .

MS: Multiple sources as accuracy, AU: Authority as accuracy, DC: Deep as content, SC: Surface as content, UT: Usefulness as technical, UA: Usefulness as accessing, FS: Face to face as social network, OS: Online accessing as social network, US: Using online resources appropriately, WI: Willingness.

Both science and non-science master degree students, usefulness as technical of OAISB could not predict any OAHS factor, the reason might be those master degree students have lower evaluative standards. These results show that multiple sources as accuracy is one of the main predictor toward master referred students' OAHS, the reason might be those master degree students needs to be the multi-verification before accessing academic articles were much proactive. Non-science master degree students' deep as content could predict their using online resources appropriately but not science master degree students. The results could be referred to the non-science students emphasis more in if the content relevant to the goal during they were searching.

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