# Online academic help seeking behaviors and online information searching strategies: a study of undergraduate students in Taiwan

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**Abstract:** Previous research has indicated that the Internet has an influence on the learning behavior learners adopt. The measured responses were gathered from 401 university students in Taiwan. This study surveyed through three questionnaires: the Online Information Searching Strategy Inventory (OISSI), the Online Academic Help Seeking scale (OAHS), and the academic self-efficacy from the Motivated Strategies for Learning Questionnaire (MSLQ). By means of exploratory factor analysis and correlation analysis, the relationships were found between students' online information searching strategies and their online academic help seeking. It was also found that the students used mixed strategies to search online information for academic help and usually employed metacognitive searching strategies to select main ideas or evaluation and then turn to seek for the formal query through path analysis. Furthermore, the students with more academic self-efficacy would focus on procedural online searching strategies such as problem-solving skills and find the answers through the formal way, like asking teachers or experts, in the Internet.

**Keywords:** online information searching strategy, online academic help seeking, self-efficacy

## Introduction

During this recent decade, due to the rapid development of information technology, the Internet ecology has been more matured. Nowadays, students are used to search for information on the Internet. Several studies revealed that online information searching and processing is complex cognitive process involving multifaceted cognitive and metacognitive strategies (Tsai, 2009; Tsai & Tsai, 2003; Wu & Tsai, 2006). In order to analyze the students' online searching information strategies, Tsai and Tsai (2003) figured out that information searching strategies were divided into three domains: (1) behavioral, (2) procedural, and (3) metacognitive domains.

In the past, it's not easy to get information because the restricted communication, but now communication is widespread through by the Internet. Students' online information searching for their academic goals has become the trends, and most of studies claimed that it would usually be called "online academic help seeking" (OAHS) (e.g., Sung, 2006; Cheng & Tsai, 2011). Help seeking is usually an important activity of students' learning process. Moreover, Cheng & Tsai's study (2011) particularly focused on students' online academic help seeking (OAHS) and then stated that OAHS consists of three approaches: (a) information searching, (b) formal query, and (c) informal query.

To explore learners' online information searching strategies and their online academic help seeking and the relationships between them may further provide some ideas for future instructional design. Therefore, this study was conducted to examine both the students' online information searching strategies and their approaches to online academic

help seeking and the relationships between them. Moreover, students' academic self-efficacy as their outcome would also be examined in this study. Altogether, this study was undertaken to investigate the following questions:

1) What are the relationships between students' online information searching strategies, their online academic help seeking, and their academic self-efficacy?
2) Does students' online searching strategies would be predictors of their online academic help seeking?
3) And both students' online searching strategies and online academic help seeking would be predictors of their academic self-efficacy?

## 1. Method

### *1.1 Participants*

The study group consisted of 401 college students in Taiwan. 201 (50.1%) were male and 200 (49.9%) were female. 192 (47.9%) were freshmen or sophomores, and 209 (52.1%) were juniors or seniors or more elder students.

### *1.2 Instruments*

To meet the purposes of this study, three developed questionnaires, Online Information Searching Strategy Inventory (OISSI) developed by Tsai (2009), Online Academic Help Seeking (OAHS) developed by Cheng and Tsai (2011) and the third questionnaire named "Self-efficacy scale" which is based on the "Motivated Strategies for Learning Questionnaire" (MSLQ) has been developed by Pintrich and DeGroot (1991), were revised to assess the students' online information searching strategies, their approaches to online academic help seeking, and their academic self-efficacy.

The OISSI survey aims to identify the types of online information searching. There were three major domains. The three domains in the online information searching strategy inventory (OISSI) are described below:

1) Behavioral domain was required for basic Internet manipulation and navigation skills, for example, control and disorientation aspect strategies.
2) Procedural domain, concerned with content-general searching approaches on the Internet, included trial & error and problem-solving aspect strategies.
3) Metacognitive domain, involved in higher-order and content-related cognitive activities on the Internet, such as purposeful thinking, select main ideas and evaluation aspect strategies.

The OAHS survey aims to identify the behavior of online academic help seeking. There were three major behavior patterns. A detailed description for each scale is presented below:

1) Information searching: Learners will seek the answer and relevant information independently on the Internet for academic problems.
2) Formal query: Learners will ask their teachers or assistants via the Internet for academic problems.
3) Informal query: Learners will seek help from their peers or unknown experts via the Internet for academic problems.

Self-efficacy is defined as people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances (Bandura, 1986). All of the items were presented in 1-7 Likert scale, from "strongly disagree" to "strongly agree."

*1.3 Data Analysis*

First by using exploratory factor analysis to clarify the factor structures of OISSI, OAHS and self-efficacy questionnaires respectively. Moreover, correlation analysis was utilized to examine the relationships among OISSI, OAHS, and self-efficacy. Finally, through a path analysis, the students' online information searching strategies were viewed as predictors to explain their online academic help seeking behavior and their academic self-efficacy. Moreover, their online academic help seeking behavior were also viewed as predictors of their academic self-efficacy.

## 2. Results and Discussion

*2.1 Factor analysis on Online Information Searching Strategy Inventory (OISSI)*

The results by applying the exploratory factor analysis method revealed three factors with a total of 17 items of the OISSI (shown in Table 1). These three factors have an explained variance of 62.53%. The Cronbach's α coefficients for three factors were 0.83, 0.90, and 0.83, respectively, and the overall alpha was 0.92, suggesting that these factors have high reliability in assessing students' online information searching strategies.

**Table 1 Rotated factor loadings, Cronbach's α values, factor means and standard deviations for the three factors of the OISSI (n=401).**

| | Factor 1 | Factor 2 | Factor 3 |
|---|---|---|---|
| Factor 1: Behavioral, α=0.83, mean=5.90, S.D.=0.60 | | | |
| Behavioral1 | 0.84 | | |
| Behavioral2 | 0.79 | | |
| Behavioral3 | 0.62 | | |
| Behavioral4 | 0.75 | | |
| Factor 2： Metacognitive, α=0.90, mean=5.58, S.D.=1.14 | | | |
| Metacognitive1 | | 0.68 | |
| Metacognitive2 | | 0.76 | |
| Metacognitive3 | | 0.70 | |
| Metacognitive4 | | 0.61 | |
| Metacognitive5 | | 0.67 | |
| Metacognitive6 | | 0.75 | |
| Metacognitive7 | | 0.73 | |
| Metacognitive8 | | 0.68 | |
| Factor 3: Procedural, α=0.83, mean=5.59, S.D.=0.17 | | | |
| Procedural1 | | | 0.79 |
| Procedural2 | | | 0.67 |
| Procedural3 | | | 0.82 |
| Procedural4 | | | 0.52 |
| Procedural5 | | | 0.59 |

Loadings less than 0.50 were omitted. Overall α = 0.92; total variance explained = 62.53%.

*2.2 Factor analysis on Online Academic Help Seeking (OAHS)*

The results of the exploratory factor analysis indicated that three factors were extracted with a total of 12 items retained in a final version of the OAHS survey (shown in Table 2). These three factors have an explained variance of 64.84%. The Cronbach's α coefficients for three factors were 0.69, 0.86, and 0.77, respectively and the overall alpha was 0.82, suggesting that these factors are sufficiently reliable for representing online academic help seeking behavior.

**Table 2 Rotated factor loadings, Cronbach's α values, factor means and standard deviations for the three factors of the OAHS (n=401).**

| | Factor 1 | Factor 2 | Factor 3 |
|---|---|---|---|
| Factor 1: Information Searching (IS), α=0.69, mean=5.72, S.D.=0.86 | | | |
| IS1 | 0.79 | | |
| IS2 | 0.59 | | |
| IS3 | 0.80 | | |
| IS4 | 0.53 | | |
| Factor 2: Formal Query (FQ), α=0.86, mean=4.27, S.D.=1.07 | | | |
| FQ1 | | 0.89 | |
| FQ2 | | 0.82 | |
| FQ3 | | 0.64 | |
| FQ4 | | 0.86 | |
| Factor 3: Informal Query (IQ), α=0.77, mean=4.12, S.D.=1.18 | | | |
| IQ1 | | | 0.80 |
| IQ2 | | | 0.71 |
| IQ3 | | | 0.74 |
| IQ4 | | | 0.71 |

Loadings less than 0.50 were omitted. Overall α = 0.82; total variance explained = 64.84%.

*2.3 Factor analysis on Self-Efficacy*

The results of the exploratory factor analysis indicated that self-efficacy factor was extracted with a total of 8 items retained in a final version of the Self-Efficacy survey (shown in Table 3). The factor has an explained variance of 69.01%. The overall alpha was 0.94, suggesting that these factors are sufficiently reliable for representing online academic help seeking behavior.

**Table 3 Rotated factor loadings, Cronbach's α values, factor means and standard deviations for the three factors of the Self-Efficacy (n=401).**

| | Factor 1 |
|---|---|
| Factor 1: Self-Efficacy (SE), α=0.94, mean=4.78, S.D.=1.17 | |
| SE1 | 0.85 |
| SE2 | 0.89 |
| SE3 | 0.83 |
| SE4 | 0.86 |
| SE5 | 0.82 |
| SE6 | 0.65 |
| SE7 | 0.85 |
| SE8 | 0.87 |

Loadings less than 0.50 were omitted. Overall α = 0.94; total variance explained = 69.01%

*2.4 Correlations among the OISSI, OAHS, and Self-Efficacy*

Table 4 summarizes the results of correlation analysis among the OISSI, OAHS and their academic self-efficacy. There are positively correlations between "Behavioral" of the OISSI and the "Information Searching" factor of the OAHS ($r = 0.53$, $p < 0.001$). There are also positively correlations between the "Metacognitive" factor of the OISSI and the two factors of the OAHS such as "Information Searching" ($r = 0.54$, $p < 0.001$) and "Formal Query" ($r = 0.25$, $p < 0.001$). Moreover, positively correlations can be identified between "Procedural" of the OISSI and two factors of the OAHS such as "Information Searching" ($r = 0.47$, $p < 0.001$) and "Informal Query" ($r = 0.21$, $p < 0.001$). Finally, "Self-Efficacy" is positively correlated with the "Metacognitive" ($r = 0.29$, $p < 0.001$) and

"Procedural" ($r = 0.32$, $p < 0.001$) of the OISSI, and positively correlated with all the factors of the OAHS ($r = 0.27$, 0.43, and 0.26, $p < 0.001$).

The results showed that the students with more "behavioral" online searching strategies tended to adopt the approaches of searching on the website for help. Students with more "metacognitive" online searching strategies tended to search online resources and also use the formal way to ask for help. Students with more "procedural" online searching strategies tended to adopt the approaches of searching on the website and via the informal way to ask for help. Moreover, students with more "metacognitive" and "procedural" online searching strategies tended to have more confidence with to their academic self-efficacy. In addition, students who seek for help via the Internet tended to have more academic self-efficacy.

**Table 4. The correlation among the factors of the OISSI, OAHS and Self-Efficacy (n=401).**

| | Behavioral | Metacognitive | Procedural | Self-Efficacy |
|---|---|---|---|---|
| Information Searching | 0.53*** | 0.54*** | 0.47*** | 0.27*** |
| Formal Query | 0.11 | 0.25*** | 0.16 | 0.43*** |
| Informal Query | 0.08 | 0.17 | 0.21*** | 0.26*** |
| Self-Efficacy | 0.15 | 0.29*** | 0.32*** | 1 |

***: $p < .001$

*2.5 Path analysis among the OISSI, OAHS, and Self-Efficacy*

As shown in Fig. 1, "Information Searching" of OAHS was directly predicted by the"Behavioral"($\beta = 0.29$, $p < 0.001$), and"Procedural"($\beta = 0.28$, $p < 0.001$) of OISSI. The results indicated that the students would use mixed strategies to search for online information for academic help. Moreover, "Metacognition" of OISSI directly predicted the students'"Formal Query"($\beta = 0.26$, $p < 0.001$) of OAHS. The results indicated that the students usually employed "Metacognition" as a searching strategy to select main ideas or evaluation and then turn to seek for the formal query that the information they requested from teachers via the Internet.

It was also found that students' "Procedural" factor of the OISSI and "Formal Query" factor of the OAHS would be predictors to their academic self-efficacy ($\beta = 0.22$, and 0.36, $p < 0.001$). In other words, the students who set their learning goals according to the needs of their academic problems would focus on procedural online searching strategies such as problem-solving skills and find the answer such as asking teachers through the Internet.

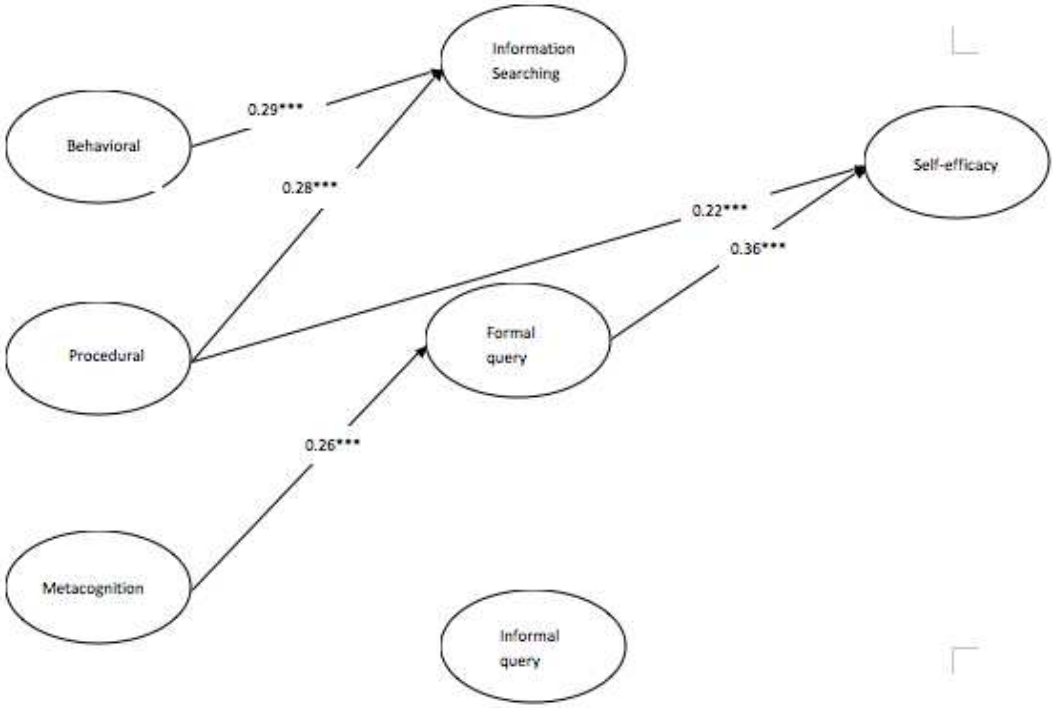


**Fig. 1. Path analysis among OISSI, OAHS, and self-efficacy.**

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