

Finding Their Way around: International Students' Use of Information Sources

Basil Alzougool and Shanton Chang

Department of Computing and Information Systems, University of Melbourne, Victoria, 3010 Australia

E-mail: b.alougool@gmail.com, slwc@unimelb.edu.au

Catherine Gomes and Marsha Berry

School of Media and Communication, RMIT University

E-mail: {catherine.gomes, marsha.berry}@rmit.edu.au

Abstract—There has been some research on the information behaviour of international students that is related to their academic issues (e.g. coursework and patterns of library use). However, little research has explored other non-academic issues (e.g. access health services and accommodation) of international student everyday life. This paper therefore explores the sources of information that international students rely on for academic and everyday living as well as the patterns students use in accessing these information sources. By analyzing interview data from a series of 7 focus groups, this study shows that international students rely on a wide range of information sources and display different patterns in using these sources depending on the source type, origin and amount as well as the students' education level. Some practical implications to effectively provide information to international students are suggested.

Index Terms—information behaviour, information sources, International students, social media.

I. BACKGROUND

Nearly all institutions that attract international students provide information on everyday living. However, this information is not well accessed by the students because of the lack of understanding on how international students search, access, use, rely on or share information. Disseminating crucial information to international students has been a challenge (e.g. [1] and [2]). Challenges range from providing relevant information in a timely manner, understanding information sources accessed regularly, and more recently, the use of social media in facilitating information exchange amongst international student communities. At various levels, key service providers and governments have tried to produce information portals specific to international students in the hope that they find these sites useful. Yet, there is very low

traffic or interest in these portals. Universities and other Educational Institutions are also aware that it is a challenge to get students to keep in touch with them and to get students to seek out information even within institutional websites. At the same time, there has been evidence that international students do not necessarily refer to host country sources of information because of a range of different social issues [2]. On the other hand, there are also various factors that affect the information behaviour of international students such as language [3], [4] and [5], educational level [1], cultural background [6] and [4], and length of stay in the host country [4].

In addition, there has been much industry driven research into where international students get their information on institutions prior to coming to Australia, though much of this does not necessarily focus on online information (for e.g., see [7]). There has also been some research on the information needs of international students (e.g. [4], [8], [1], [6], [9] and [10]) which focuses on the academic issues such as university, faculty, study programs, coursework and patterns of library use. In contrast, little research (e.g. [11] and [12]) has explored other non-academic issues (e.g. access health services, food, accommodation, and leisure activities) of international student everyday life. However, there is no in depth research on how international students access information online, especially since they are not living in their home country. This raises questions around how international students use the Internet to gain the information they need.

Furthermore, there are assumptions that "digital natives" are more internet savvy (e.g. [13]) and that they are more likely to look for and readily find information online. However, there is also literature that shows that internet savvy students are limited in their information seeking behaviour (e.g. [14]) and have been shown to possess a diverse range of technology skills and preferences [15] as well. This study extends the work of previous studies into the information seeking behaviors of international students in order to provide a clearer understanding of where students go to for information.

Manuscript received September 17, 2012; revised December 28, 2012.

This work was supported by the Australian Government and Universities Australia through Australian Education International (AEI), part of the Department of Industry, Innovation, Science, Research and Tertiary Education.

The focus of this paper thus is threefold: (i) explores the sources of information that international students rely on for academic (e.g. academic development and progress) and everyday living (e.g. health, accommodation and lifestyle), (ii) explores the patterns students use in accessing these information sources, and (iii) provides insights into way institutions can provide relevant information, particularly to international students.

II. METHODOLOGY

This study relied on focus groups as a way to elicit rich in-depth information from students about their information needs and sources. The rich qualitative

methodology enabled the researchers to probe further into the motivations and the reasons for using these particular information sources that respondents reported. It also allowed discussion within the group about the similarities and differences in using these sources. The interaction between group members allowed researchers to observe any differences between different groups of students. A range of issues was raised and discussed in the focus groups relating to (i) the students' experience in accessing, communicating, and using the information, particular in the areas of health and general lifestyle; and (ii) their preferred ways of more effective information sharing, dissemination and promotion.

TABLE I. FOCUS GROUPS' PARTICIPANTS BACKGROUND

	No. of Students	Gender	Educational Level	Discipline Areas	Countries
Focus Group 1	5	M (2) F (3)	Undergraduate	Commerce (4) English (1)	China (2) South Korea (1) Vietnam (1) Hong Kong (1)
Focus Group 2	3	M (2) F (1)	Postgraduate	Commerce (1) Communication (1) Architecture (1)	Iran (1) China (1) Singapore (1)
Focus Group 3	6	M (1) F (5)	Postgraduate	Public Health (2) Medicine (1) Teaching (1) Art (1) Psychology (1)	Japan (1) USA (1) Brazil (1) Sri Lanka (1) Bangladesh (1) Vietnam (1)
Focus Group 4	6	M (2) F (4)	Undergraduate	Commerce (2) Engineering (2) Law (1) Food Science (1)	Indonesia (2) Hong Kong (2) Malaysia (1) Brunei (1)
Focus Group 5	4	M (1) F (3)	TAFE/Private Colleges	Business (2) English Language (2)	Chile (2) China (1) Turkey (1)
Focus Group 6	5	M (1) F (4)	TAFE/Private Colleges	Business (2) IT (1) Design (1) Early childhood educated (1)	Brazil (1) China (1) Indonesia (1) Thailand (1) Kuwait (1)
Focus Group 7	6	M (1) F (5)	TAFE/Private Colleges	Business (2) General English (2) Marketing (1) Hospitality management (1)	Colombia (3) Brazil (1) Chile (1) Vietnam (1)

III. THE FINDINGS

Seven focus groups were conducted with international students from undergraduate and postgraduate programs at universities and with students from colleges by the research team. The details of the focus groups are indicated in Table I. The duration of the focus groups ranged from 70 minutes to 120 minutes, depending on the size of the group and willingness of respondents to go into more depth.

As indicated in Table I, the sample included students from a range of countries and across different educational levels (from vocational education and training (VET) to postgraduate studies (coursework and research higher degree). Notably, the main project did not manage to recruit any students from India for the focus group interviews. In addition, there were more women who responded to the calls for focus groups than men.

Focusing on country of origin as a way to differentiate international students from each other could provide very misleading and incomplete information about international students. For example, students from China and Vietnam were represented in all three educational levels (namely, college, undergraduate and postgraduate). In terms of information sources, the Chinese and Vietnamese students in each of the three educational levels displayed more commonalities with other students in the same educational level than with Chinese and Vietnamese students who are attending other educational levels. Therefore, this study found that it was more useful to look at the sources of information from the perspective of different educational levels than from the country of origin perspective.

As per the results, there were a number of factors that impact on the sources that international students rely on to get information relating to various academic and lifestyle contexts (Table II). As shown in the Table, these factors are; (i) source type (off-line vs. online sources), (ii) source

origin (i.e. home country, local and international sources), source amount (searching narrow vs. wide sources), and educational level (postgraduate, undergraduate and college students). The following sub sections highlight the results in terms of each of these factors:

A. Source Type (Off-line vs. On-line Sources)

Table II shows that although students extensively use both off-line and online sources of information, they vary in terms of the type of information. For example, online sources are used to find information relating to academic development (e.g. Google, Journals, Wiki, and Facebook) and news (e.g. Google, Yahoo, Nine News, BBC World Service, MSN, NY Times), whereas off-line sources are used to get information relating to academic progress (e.g. their department staff and/or student centre) and to some extent pre-arrival information (e.g. word of mouth through friends, family and educational agents). On the other hand, both off-line and online sources are used to find information relating to social activities (e.g. friends, That’s Melbourne), health (e.g. university health services /hospital, Google), accommodation (e.g. friends, housemates/classmates, Gumtree website, real-estate websites) and entertainment (e.g. posters, newspapers, YouTube).

B. Source Amount (Searching Narrow vs. Wide Sources)

Depending on the type of information Table II shows that students equally use the information sources either narrowly or widely. Narrowly means that students search few specific information sources and by widely, students search a wide range of information sources. Students in our sample rely on few sources to find information relating to academic (remedial) (i.e. their department staff and student centre), pre-arrival (i.e. family/friends, educational agents, That’s Melbourne and Universities’ websites), social activities (i.e. word of mouth and That’s Melbourne website) and health (i.e. university health services /hospital, friends/parents, health Insurance, their student diaries and Google). In contrast, they rely on a wide range of sources to find information relating to academic (development) (e.g. Google, Journals, Wiki, Facebook and database), news (e.g., Google, BBC World Service, Facebook, Malaysia Today, Hong Kong Portal, Nine News and the Age), accommodation (e.g., real-estate websites, university websites, gumtree website, housemates/classmates and university staff) and Entertainment (e.g. YouTube, type Melbourne in Google, Online games, That’s Melbourne website, posters, and newspapers).

TABLE II. A SUMMARY OF THE IMPACT OF VARIOUS FACTORS ON THE SOURCES THAT INTERNATIONAL STUDENTS RELY ON

Information needs	Educational level	Source type		Source amount		Source origin		
		Off-line	Online	Few	Many	Home-country	Australian (local)	International
Academic (development) information	College		√		√		√	√
	Undergraduate		√		√		√	√
	Postgraduate		√		√		√	√
Academic (remedial) information	College	√		√			√	
	Undergraduate	√		√			√	
	Postgraduate	√		√			√	
Pre-arrival information	College	√		√		√		
	Undergraduate	√		√		√		
	Postgraduate		√	√			√	
Social activities information	College	√		√			√	
	Undergraduate	√	√	√			√	
	Postgraduate	√	√	√			√	
Health information	College	√		√		√	√	
	Undergraduate	√	√	√		√	√	√
	Postgraduate	√	√	√			√	√
Accommodation information	College	√			√		√	
	Undergraduate	√	√		√	√	√	
	Postgraduate	√	√		√		√	
Entertainment information	College	√			√		√	
	Undergraduate	√	√		√		√	√
	Postgraduate	√	√		√		√	
News	College		√		√	√	√	√
	Undergraduate		√		√	√	√	√
	Postgraduate		√		√	√	√	√

A. Source Origin (Home Country, Australian (Local) and International Sources)

Table II shows that students extensively use Australian-centric sources (local sources) to find information relating to the students' academic and non-academic activities (e.g. Universities' websites, student centre, Nine News, the Age, That's Melbourne website, posters). However, students also often use information sources from both home country (e.g. Malaysia Today, Hong Kong Portal) and international sites (e.g. Google, BBC World Service, and Facebook) depending on the type of information needed. Furthermore, students use sources from both their home country and overseas to find information relating to their health and news. Students also use sources from their home country to find information relating to their pre-arrival and to some extent accommodation, whereas they use international sources to find information relating to their academic development and to some extent entertainment.

B. Educational Level (Postgraduate, Undergraduate and College Students)

As shown in Table II, students from all three educational levels are similar when it comes to the utilization of information sources relating to academic activities, while they are different in their use of information sources relating to non-academic activities such as their pre-arrival, social activities, news, accommodation, health and entertainment. In this regard, postgraduate students rely totally on online Australian-centric sources to find information relating to all academic and non-academic activities, while they mainly use off-line and online Australian-centric sources to find information relating to the same activities except information relating to academic development, pre-arrival, and news. They tend to equally use either narrow ranges of information sources or a wide variety depending on the type of information they seek. However, they rarely use international sources to get information (e.g. they use international sources to find information relating to their academic development, health and news). They only use sources from their home country to keep up with news.

Undergraduate students mainly rely on both off-line and online Australian-centric sources to find information relating to all academic and non-academic activities. They tend to equally use narrow or specific sites as well as wide varieties of information sources depending on the type of information. Additionally, they use both international sources and sources from their home country equally frequently to get information. They use international sources to find information relating to their academic development, health, entertainment and news. On the other hand, they use sources from their home countries to find information relating to their pre-arrival, health, accommodation and news.

College students rely mainly on off-line Australian-centric sources to find information relating to all academic and non-academic activities except for information relating to academic development, pre-arrival,

and news. However, they use online sources to get information less often. They tend to equally use a few or a wide variety of information sources depending on the type of information. College students rarely use international sources to get information about academic development and the news. They tend to use sources from their home countries to find information relating to their pre-arrival, health and news some of the time (neither often and not rarely).

IV. DISCUSSION

The findings of this research demonstrates that all four factors (i.e. source type, source origin, number of sources and educational level) do not impact on the sources that international students use in order to find information relating to academic activities (i.e. academic development and progress). However, the impact of these factors varies in terms of information sources relating to non-academic activities such as their pre-arrival, social activities, news, accommodation, health and entertainment is evident. Three factors (i.e. educational level, source type and source origin) impact on both pre-arrival and health information, while two factors (i.e. educational level and source origin) impact on both accommodation and entertainment information as well as source type and educational level impact on information about social activities. One factor (i.e. educational level) impacts on where student are looking for news.

The findings also demonstrate that a wide range of online Australian sources are used to find information relating to academic study and news, while few off-line Australian sources are used to get information relating to academic progress and to some extent pre-arrival information. On the other hand, a wide range of both off-line and online Australian sources are used to find information relating to accommodation and entertainment, as well as few off-line and online Australian sources are used to find information relating to social activities and health.

Moreover, the findings demonstrate that few off-line sources from home country are used to find information relating to pre-arrival and health, while a wide range of online sources are used to get news. On the other hand, a wide range of online international sources are used to find information relating to academic development and news, whereas few online and off-line sources are used to find information relating to health.

Based on the findings, a number of patterns amongst international students regarding the usage of sources to get information relating to their academic and non-academic activities can be drawn.

- To get academic (development) information, students from all three educational levels tend to use a wide range of online international (e.g. Google, Journals, Wiki and Facebook) and local (e.g. database) sources.
- To get academic (remedial) information, students from all three educational levels tend to use few off-line local sources ((i.e. their department staff

- (e.g. tutor, coordinator, lecturer, supervisor, instructor, chief examiner) and/or student centre).
- To get pre-arrival information, most undergraduate and college students tend to use a few off-line home country sources (e.g. family, friends, and educational agents), whereas most post graduate students tend to use a few specific online local sources (e.g. Universities' websites). The difference here is that undergraduate and college students reported using off-line sources whereas postgraduate students looked at University websites.
 - To get health information, most undergraduate and postgraduate students would mainly rely on a few specific off-line/online local/international sources (e.g. university health services /hospital, friends, Google), while most college students tend to use few off-line local sources (e.g. health Insurance, their student diaries).
 - To get information about social activities, undergraduate and postgraduate students tend to use a few specific off-line/online local sources (e.g. word of mouth from their friends, That's Melbourne website), while college students tend to use a few specific off-line local sources (e.g. word of mouth from their friends).
 - To get information about accommodation, post graduate and college students tend to use a wide range of off-line/online local sources (e.g. Gumtree website, real-estate websites, student services and staff, ask friends), while undergraduate students tend to use a wide range of off-line/online local/home country sources (e.g. home-country networks of friends or associations, university websites, Gumtree website and real estate).
 - To get information about entertainment, postgraduate and college students tend to use a wide range of off-line/online local sources (e.g. That's Melbourne, posters, local announcements, newsletters), whereas most undergraduate students tend to use a wide range of off-line/online local/international sources.
 - To keep up with news from their home country and locally, postgraduate and college students tend to use a wide range of online local, international and home country sources (e.g. Nine News, BBC world service, Yahoo international, Chilean websites), while most undergraduate students tend to use a wide range of online international and home country sources (e.g. Hong Kong Portal, MSN News, Naver.com (Korean), Facebook).

V. PRACTICAL IMPLICATIONS

The findings of the study have implications for providing relevant information particularly to international students and to take actions to improve it. These implications are as follows:

- First, it is clear from the findings of this study that international students use many sources and avenues to get relevant information and communicate with other students, friends and parents. This means that relevant information is not necessarily to be found by only depending on online sources but also on other more off-line avenues of information such as word of mouth. This applies not only to a group of students but also to individual students because they may require relevant information from different sources and media. Educational institution websites thus need to take account of this wide range of information sources accessed by students. This will facilitate better information provision, which will hopefully translate to improved student satisfaction.
- Second, the educational level, source type and origin provide insights into the delivery of information. The findings indicate that students within the sample varied considerably in terms of where they sought information from on a range of non-academic issues including pre-arrival, social activities, news, accommodation, health and entertainment. This suggests that there is a clear need for a diversified strategy, which takes into account the differences in educational levels and type, origin and number of information sources rather than simply grouping students according to countries or even regions of origin. The diversity of responses in terms of where international students go to for information strongly also suggests that there is benefit to be gained from closer ties between education providers and other service providers such as health and accommodation since students currently tend to go directly to those sources for information when they have serious life issues. Where support services are concerned, there needs to be closer collaboration and partnership between educational institutions, service providers, and the wider community to provide information to international students.
- Third, the findings indicate that off-line sources of information access and sharing are extensively used by students. This is particularly applicable to "word of mouth" information sharing patterns. Therefore, there is a need to enable and facilitate contact, communication and sharing relevant information between students. Social media could provide new opportunities in this regard. Social media strategy can harness the off-line sources (e.g. word of mouth) from existing students to engage with potential students. It could be incorporated into university and college communication strategies for international students particularly given that Facebook operates on similar levels of trust as some off-line sources (e.g. word of mouth). It is also important to explore the most popular non-English social media platforms such as Weibo,

Renren, and Orkut, even when institutions are looking to provide information for onshore students in Australia. Moreover, information websites for international students could draw a map of these off-line sources and to enable students to navigate these sources as well.

- Fourth, the findings demonstrate that students equally use the information sources with either a narrow or wide focus. Therefore, for narrowly focused searching, educational institution websites could include features that facilitate the finding of the exact information. The websites could include a smart search engine that allows students to get information accurately and rapidly, saving students' time and energy. On the other hand, for searching widely, educational institution websites could facilitate this diverse exploration and put international students into contact with many sources in order to be able to find relevant information. The websites could also include the ability to identify all sources that may benefit the students in their wide search exploration process.
- Fifth, the findings demonstrate that students extensively use wide ranges of Australian-centric sources. However, it is not necessary for these sources to be university or college centric. Therefore, educational institution websites could provide details of these sources (e.g. their emails, contact details and quality of their information) rather than re-creation of a 'one stop shop' site for information. This strategy could also include getting external information providers to link back to relevant sections of the educational institution websites. This is also true for other sources from home country and overseas as students use these are quite often.

VI. CONCLUSION AND FUTURE DIRECTIONS

The research reported in this paper is significant because few previous studies have identified the information sources that international students rely on to get relevant information, particularly in relation to non-academic issues. What is clear from our study is that students are similar in relying on information sources relating to academic activities, while they are different in relying on information sources relating to non-academic activities such as their pre-arrival, social activities, news, accommodation, health and entertainment. However, these commonalities and differences cannot be conclusive due to the sample size. This study is just a snapshot of the information sources international students rely on. Our research methodology relied on qualitative data collected from focus groups. While this is a significant strength of this study, in terms of uncovering and understanding some behavioral patterns, it also created limitations. In order to have a better understanding of the sources of information students seek and rely on, we need to have a bigger sample size, which does not include just focus group discussions

but also a nationally conducted survey. Hence, a large-scale survey testing our key findings as hypotheses would be part of a future investigation. A survey that is released to international students throughout Australia will not only provide us with a clearer understanding of the ways in which international students seek information for their basic, everyday and specific needs but it will also provide more data that allows us to inform international student service providers of better and effective ways of communicating with them. Interventions to facilitate communication strategies for information access could then be better designed to fit with the educational contexts.

REFERENCES

- [1] Z. Yi, "International student perceptions of information needs and use," *Journal of Academic Librarianship*, vol. 33, no. 6, pp. 666-673, 2007.
- [2] M. S. Andrade, "International students in English-speaking universities," *Journal of Research in International Education*, vol. 5, no. 2, pp. 131-154, August 1, 2006.
- [3] A. J. Onwuegbuzie and Q. G. Jiao, "Academic library usage: A comparison of native and non-native english-speaking students," *The Australian Library Journal*, vol. 46, no. 3, pp. 258-269, 1997.
- [4] M. Liu and B. Redfern, "Information-seeking behavior of multicultural students: A case study at san jose state university," *College & Research Libraries*, vol. 58, no. 4, pp. 348-354, July 1997.
- [5] D. M. Bilal, "International students' acquisition of library research skills: Relationship with their english language proficiency," *Reference Librarian*, vol. 10, no. 24, pp. 129-145, 1989.
- [6] Y. Liao, M. Finn, and J. Lu, "Information-seeking behavior of international graduate students vs. american graduate students: A user study at virginia tech 2005," *College & Research Libraries*, vol. 68, no. 1, pp. 5-25, January 2007.
- [7] R. Lawrence and T. Adams, "Marketing and recruitment : Enabling the industry," in *Proc. Making a Difference : Australian International Education*, edited by Dorothy Davis and Bruce Mackintosh, Sydney: University of New South Wales Press, 2011, pp. 188-216.
- [8] B. Mehra and D. Bilal, "International students' perceptions of their information seeking strategies," presented at the 35th Annual CAIS/ACSI Conference, Montreal (Quebec), Canada, 2007.
- [9] H. Safahieh and D. Singh, "Information needs of international students at a Malaysian University," in *Proc. Asia-Pacific Conference on Library & Information Education and Practice, Singapore*, pp. 479-485, 2006.
- [10] H. Hughes, "Actions and reactions: exploring international students' use of online information resources," *Australian Academic & Research Libraries*, vol. 36, no. 4, pp. 169-179, 2005.
- [11] Y. H. Gu, S. Lee, and H. Ushijima, "A study on the needs of medical, maternal and child health care in chinese women students at the university of tokyo," *The Tohoku Journal of Experimental Medicine*, vol. 204, no. 1, pp. 71-78, 2004.
- [12] M. Smith, R. Nayda, and G. Ramia, "Assisting international students' adjustment to a new culture," *NURSE EDUCATOR*, vol. 36, no. 3, pp. 93-95, 2011.
- [13] V. Pattingale and K. Silkstone, "Communicating change: Engaging prospective students with mobile technologies," presented at the Australian International Education Conference, Adelaide, 11-14 October, 2011.
- [14] T. S. Judd and G. E. Kennedy, "Expediency-based practice? Medical students' reliance on google and wikipedia for biomedical inquiries," *British Journal of Educational Technology*, vol. 42, no. 2, pp. 351-360, 2011.
- [15] G. Kennedy, T. Judd, B. Dalgarno, and J. Waycott, "Beyond natives and immigrants: Exploring the characteristics of net generation students," *Journal of Computer Assisted Learning*, vol. 26, no. 5, pp. 332-343, 2010.



Dr Basil Alzougool received his Bachelor's and Master's degrees in Public Administration from the University of Jordan, Jordan, and his PhD from the Department of Information Systems at the University of Melbourne, Australia in 2010. Now, he is a Research Fellow in the Department of Computing and Information Systems, The University of Melbourne, Australia. He has extensive research interests in information needs and behaviour, online social networking, health informatics, and e-commerce. He has several international academic publications including journal and conference papers.



Dr Shanton Chang is a senior lecturer of Information Systems at the Department of Computing and Information Systems, University of Melbourne. He completed his PhD at Monash University. His current primary areas of research include online behaviour and social networking, information security culture, information needs and the relationship between cultures and information technology. He is particularly interested in the role of social media and information needs in education and health.



Dr Catherine Gomes lectures in Asian Studies and communication theory in the School of Media and Communication at RMIT University (Melbourne). She has published widely on ethnicity, identity, memory and gender in Asian media with a focus on Chinese and Singapore cinemas. Catherine is also currently working on a collaborative project that examines the social and cultural networks of transient international students in Australia.



Dr Marsha Berry is a Senior Lecturer in the School of Media and Communication at RMIT University where she lectures in digital media and creative writing for undergraduate degrees. Marsha supervises postgraduate research students across a range of topics concerned with new media arts, narrative, design and mobility. She has numerous publications in digital media and has won international competitive research grants. Her art practice includes poetry, video art, and new media. Recently she has explored notions of memory, place and displacement through video art, photography and poetry. Marsha's current research investigates social media cultures, perceptions of place and landscape, and poetic expressions. Her approach is ethnographic.