



Empowering and Engaging Students in Learning Research Methods

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The capacity to conduct research is essential for university graduates to survive and thrive in their future career. However, research methods courses have often been considered by students as “abstract”, “uninteresting”, and “hard”. Thus, motivating students to engage in the process of learning research methods has become a crucial challenge for lecturers. This paper reports a study which incorporates students’ prior (international) experiences into learning academic research in order to enhance relatedness, engagement, and a sense of empowerment. The findings indicate that student attitudes to learning research methods are closely related to the level of their engagement in the learning process. While intrinsic motivation appears to be a powerful driver for learning, this study argues that intrinsic and extrinsic motivations are positively correlated, rather than orthogonal as proposed in some previous research. Outcomes of this study have implications for improving teaching and learning in research methods courses.

Introduction

Developing knowledge and skills of research constitutes a crucial part of university education, since the capacity to utilize higher-order thinking processes is important not only for completing academic programs but also for students’ future career beyond university. However, how to teach research methods to university students and evaluate their research ability remains a challenge for lecturers. Evidence from student feedback in teaching evaluations for our research methods course in the past years has shown that students consider the subject “abstract” and they experience a lot

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of difficulties in identifying an appropriate research project to work on as their major assignment in the course. The concepts and theories taught in class through the traditional lecture format often results in inert knowledge which students find hard to relate to concrete professional problems that they may encounter in their future career. Moreover, international students often feel disadvantaged in the learning process because their repertoire of cultural knowledge often cannot be utilized in their assessments and they are not certain whether what they learn in Australia is transferable in their home culture context when they return to home country after graduation. The challenge is how to translate “textbook” learning into more authentic learning (Stein et al. 2004) and align assessment tasks with authentic learning experience. The present research aimed to address this issue, using our postgraduate research methods course as a case.

Kuh (2008) contends that influential high-impact educational practices are characterized by students experiencing diversity, reflecting and integrating learning, and discovering relevance of learning through real-world applications. Problem-based learning, for example, is an approach to professional education that stresses the use of real-life problems as a stimulus for learning, resulting in constructive and contextually meaningful learning. The motivating effect of problem-based learning was proven in Van Berkel and Schmidt’s (2000) study where students reported that being involved in reality and not just learning “abstract” theory fostered commitment, which was a determinant of students’ success in their programs. Similarly, more recent research by Balster and colleagues (2010) showed that students enrolled in a beginning research course indicated enhanced research experience by engaging in research projects that were of relevance to them. The goal of research methods course is to enable students to become critical consumers and knowledgeable producers of research; the development of such ability requires active participation. Therefore, it is of critical importance to engage and empower students in the learning process and design appropriate assessments to evaluate their learning.

Self-determination theory, intrinsic and extrinsic motivations

Compelling research evidence suggests that learning cannot take place unless students are motivated to learn “because learning is an active process requiring conscious and deliberate effort” (Stipek 1988, p. ix). Self-determination theory proposed by Ryan and Deci (2000) describes motivation as the “energy, direction, persistence...aspects of activation and intention” that addresses the determinants underpinning human behaviour (p. 69). Contemporary views of intrinsic motivation include both cognitive and affective components. Interest, excitement, and the flow of deep task involvement are the hallmarks of intrinsic motivation (Amabile et al. 1994). Extrinsic motivations, on the other hand, are represented by meeting the demand of the environmental factors such as obtaining higher grades, doing better than others in an assignment and pressure from family to do well in one’s study. A plethora of studies have been devoted to uncovering what motivates students to learn, and research evidence has confirmed that intrinsic or more internalized forms of motivation is associated with increased interest, engagement, effort, learning, and satisfaction with education (Vansteenkiste et al. 2006).

Deci and Ryan (1985) identified three basic needs conducive to the development of intrinsic motivation. They are autonomy, competence, and relatedness. Autonomy is an internally perceived locus of causality (Ryan and Deci 2000). Competence is conceptualized as a sense of self-efficacy, vital in motivation because people adopt activities that make them feel their actions affect outcomes (Amabile et al. 1994). Relatedness is described as the need to feel belongingness and connectedness with others. Researchers have noted that learning environments that promote a sense of relatedness to teachers, parents and peers can strengthen motivation and have a positive effect on learning outcomes (Chen and Jang 2010). Further support came from Beachboard and colleagues’ (2011) study which revealed that relatedness, a sense of belongingness and connectedness with others constituted the single most influential variable predicting student perception of their institution’s contribution to their educational development. These results are consistent with previous research on belongingness and student persistence (Hausmann et al. 2007) and

are aligned with literature on high impact educational practices (Kuh 2008).

The present study aimed to build research capacity of postgraduate students in journalism and communication programs by making abstract concepts real to them. We planned to achieve this goal by implementing a teaching approach that required students to “enter research” by each working on a research problem of direct relevance to themselves and/or their local community (Australian or overseas). We believe that such an approach would develop research skills through empowering and engaging students in the learning process. Previous research illustrates that student engagement constitutes a substantial means of building positive learning experience and improving learning outcomes in higher education (Paulsen and Feldman, 2005). If students are not motivated to learn, little learning is likely to occur because learning is an active process requiring conscious and deliberate effort. Therefore, creating a learning environment where students can work on research projects (as evaluation of their learning) of direct relevance to them is believed to enhance learning experience and outcomes.

Informed by the literature on the relationship between motivation and learning outcomes, it is important for us to assess the extent to which individuals’ intrinsic and extrinsic motivations are strong and salient to them and the extent to which people differ in those motivations. Such knowledge will enable us to better understand and predict motivational behaviour (Beachboard et al. 2011). In the educational environment, students who see themselves as strongly intrinsically motivated may strive to select assignments that allow them to develop new skills, exercise creativity, engage in critical thinking, and become deeply involved in their work. On the other hand, students who are strongly extrinsically motivated may view their study in terms of responding to external controls, such as fulfilling parents’ expectations or peer pressure, and they are less willing to go beyond what is written in the literature to challenge existing knowledge. Previous research found that intrinsic and extrinsic motivation scales are essentially orthogonal (Deci and Ryan 2000). Although there are both theoretical and empirical foundations for the expectation that intrinsic and

extrinsic motivations are distinct from one another, the empirical question about the relationship between them remains open (Amabile et al. 1994). Under some circumstances, intrinsic and extrinsic motivation might not work in opposition, and this study intended to test this assumption in addition to exploring the extent to which a sense of relatedness contributes to empowering students in learning research methods. The overarching research question is: How can we engage and empower students in learning research methods by creating a sense of relatedness in their assessments?

Method

Data were collected by two surveys: (1) a pre-survey at the beginning of the course to scope student attitudes to research methods course in general and what motivated them to learn; (2) a post-survey at the end of the course to evaluate change (if any) in attitudes, competence and confidence in academic work since the pre-survey as a result of engaging in designing research projects of relevance to their communities. The post-survey also examined the extent to which a sense of belonging and relatedness contributed to their learning. Two open-ended questions were asked in the post-survey to further drill down into the factors that facilitated or impeded the learning of research methods. Most of the items were adopted from existing scales in the literature.

Participants

All coursework postgraduate students enrolled in the journalism and communication research method course ($n = 58$) in semester 1, 2012 were invited to participate in the study. Students were provided with a briefing of the study in the first week of the semester, detailing the purpose of the study, procedures, voluntary participation and anonymity. Eventually, 49 students (84%) completed the pre-survey. The pool of the participants comprised of 18% journalism majors, 78% communication (PR) majors, and 4% was from other programs (e.g., sociology). More than half of the students were non-native English speakers (67%) but with balanced distribution in terms of their experience of residing in other countries (Yes 49%; No 51%). Their work experience

varied, ranging from half a year to 20 years; however, most of them had limited prior experience of academic research. Approximately 55% ($n = 27$) of those who completed the pre-survey also completed the post-survey. The demographic distribution of the participants of the post-survey was similar to that of the pre-survey, with 30% ($n = 8$) native English speakers and 70% ($n = 19$) non-native-English speakers.

Measures: Pre-survey

The pre-survey consisted of 39 items, assessing attitudes, intrinsic motivation, extrinsic motivation, competence, confidence, and demographics.

Attitudes. Informed by the widely used model of theory of planned behaviour (Armitage and Conner 1999), we used seven items to assess attitudes to research methods course (e.g., 1 pointless, 7 rewarding; 1 boring, 7 interesting). The seven items were computed to form a construct of attitudes ($\alpha = .71$).

Intrinsic motivation. This was assessed by 12 items ($\alpha = .92$; e.g., “I enjoy tackling problems that are completely new to me”; 1 strongly disagree, 7 strongly agree).

Extrinsic motivation. This was also assessed by 12 items ($\alpha = .76$; e.g., “I’m strongly motivated by the grades I can get”; 1 strongly disagree, 7 strongly agree). All 24 items measuring motivation were adopted from Amabile et al.’s (1994) study which assessed individual differences in intrinsic and extrinsic motivational orientations of college students and working adults in the USA. Competence and confidence were each assessed by a single item (e.g., “How would you rate yourself in terms of levels of competence in your academic work”; 1 no competence, 7 very competent).

Demographic information. This was collected by six questions asking about students’ first language, length of experience of residing in other countries, prior research experience, the programs they were in, and prior experience with other research courses.

Measures: Post-survey

The post-survey consisted of 30 items including six demographic questions, one question on competence, one question on confidence, and seven items assessing attitudes – all these questions were identical to those in the pre-survey.

Engagement with project. According to the literature on self-determination theory (Ryan and Deci 2000), factors that contribute to intrinsic motivation are: autonomy (initiative), competence (self-efficacy), and relatedness (the need to feel connected). Informed by this literature, we used five items to assess how the students felt that working on a research project that they were able to engage with helped them to learn ($\alpha = .84$; e.g., “I learned by working on a project that interests me”; 1 strongly disagree, 7 strongly agree);

Engagement with peers. Four items assessed how students felt engaging with peers helped them to learn ($\alpha = .93$; e.g., “Discussing my project with my classmates and other people improved my communication skills”; 1 strongly disagree, 7 strongly agree).

Relatedness. Four items assessed students’ sense of belonging and relatedness to the project they worked on ($\alpha = .80$; e.g., “I feel personally related to the project that I worked on”; 1 strongly disagree, 7 strongly agree).

In order to obtain further information on what helped students to learn research methods, we asked two open-ended questions to solicit benefits and challenges or frustrations they experienced when working on the project (“What do you feel is most beneficial to you when working on your project”; “What do you feel is most challenging or frustrating to you when working on your project”).

Procedures

The pre-survey was distributed to all postgraduate students enrolled in the research methods course at the beginning of the semester. Following the pre-survey was the implementation of the

teaching approach where students were required to identify a research problem relevant to their communities. They were encouraged to contact their local communities, organizations, or individuals to identify three problems where journalism or communication research was needed. International students were encouraged to contact people from their home country. Each student eventually identified one real problem for his/her project and presented the problem statement, research rationale, and benefits to the researched in their first assignment (research problem and justification). The goal of this assignment was to create an opportunity for the students to utilize their prior knowledge (cultural, social, and linguistic) in identifying a research problem to which the student could relate and with which s/he could engage. Students were required to design a valid research project to solve the problem as the major end of semester assignment of the course, by drawing upon concepts, theories, and methods learned throughout the semester. Such problem-based assignment is in line with the principles of high-impact educational practices, in that it not only accommodates student interest and local perspectives but also addresses authentic research needs that prepare students for resolving research issues in their future career. In the final week of the semester, the post-survey was distributed to the students in order to obtain information on change in attitudes, confidence, and competence as well as information how working on a research project that they could relate to contributed to their learning about academic research.

Data analysis

Data from the pre- and post-surveys were summarized and compared. Correlation coefficients were calculated and inferential statistical tests (e.g., *t*-tests) were performed to compare differences between students who were native English speakers and those who were non-native English speakers (mostly international students) as well as differences in attitudes, competence, and confidence assessed in the two surveys. Answers to the two open-ended questions were summarized by themes to shed light on the benefits and challenges of learning research

methods as experienced by the students when working on their respective research projects.

Results

The pre-survey

Table 1 provides a summary of ratings on the five measures in the pre-survey at the overall level and by native and non-native English speakers. In Table 1 we can see that, on a 7-point scale, students' ratings on attitudes to research methods course in general were somewhat positive ($M = 5.04$, $SD = .80$). In relation to what motivated them to learn, intrinsic motivation ($M = 5.40$, $SD = .97$) was rated higher than extrinsic motivation ($M = 4.84$, $SD = .81$), and paired sample t-test revealed significant difference ($t = 4.04$, $p < .001$). However, non-native English speaking students rated extrinsic motivation more highly ($M = 5.09$, $SD = .64$) than native English speaking students ($M = 4.30$, $SD = .88$), and this difference was statistically significant ($t = 3.60$, $p < .01$). These results showed that non-native English speaking students were more likely to be driven by extrinsic motivation in learning. No significant difference was found in ratings on intrinsic motivation or attitudes to research methods course.

Table 1. *Descriptive data for variables of the pre-survey*

Variables	Total ($n = 49$)		NES ^a ($n = 16$)		Non-NES ^b ($n = 33$)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Attitude	5.04	.80	5.08	.91	5.02	.76
Intrinsic motivation	5.40	.97	5.29	1.38	5.46	.72
Extrinsic motivation	4.84	.81	4.30	.88	5.09	.64
Competence	4.61	1.09	5.25	1.12	4.30	.95
Confidence	4.59	1.29	4.87	1.45	4.45	1.20

Note: a. NES = Native English speakers; b. Non-NES = Non-native English speakers

The reported overall competence ($M = 4.61$, $SD = 1.09$) and confidence ($M = 4.59$, $SD = 1.29$) in academic work were similar in Table 1. When we compared the ratings between native and non-native English speaking students, we found that non-native

speakers rated themselves significantly lower in competence ($t = 3.08, p < .01$), although no significant difference was found between the two groups in their ratings on confidence. This pattern of association was neither affected by the programs the students enrolled in (journalism or communication) nor the amount of their prior experience with academic research. These findings indicated that native English speaking students felt more competent in their academic work, although they were not necessarily more confident than non-native English speaking students. These results might also suggest that competence and confidence constitute different domains of academic ability.

We next conducted Pearson correlation analysis of the five measures in the pre-survey. Table 2 summarizes the results (based on $n = 49$). Table 2 shows a positive relationship between intrinsic and extrinsic motivations ($r = .40, p < .01$). This pattern of association held when separate correlation analyses were conducted on native and non-native English speaking students. This finding supported the view that intrinsic and extrinsic motivations might be complementary rather than in opposition. In terms of attitudes, results showed that more positive attitudes to research methods course in general could boost confidence in academic work or vice versa ($r = .44, p < .01$). Interestingly, attitudes did not seem to be related to either motivator at the overall level.

Table 2. *Correlations among variables in the pre-survey*

Variables	1	2	3	4	5
1. Attitude	--	.05	.04	.25	.44**
2. Intrinsic motivation		--	.40**	.20	.21
3. Extrinsic motivation			--	-.16	-.04
4. Competence				--	.65**
5. Confidence					--

Note: ** $p < .01$

The post-survey

Table 3 summarizes ratings on the six measures in the post-survey at overall level and by native and non-native English speaking

students. In Table 3 we can see that, on a 7-point scale, students' ratings on attitudes to research methods course in general remained unchanged ($M = 5.12$, $SD = .97$). Project engagement and project relatedness were rated positively at the overall level and across native and non-native English speaking student groups, and statistical analyses revealed no significant difference between groups on those two measures. However, peer engagement was rated more highly by non-native English speaking students ($M = 5.63$, $SD = .99$) compared to the ratings from native English speaking students ($M = 4.09$, $SD = 2.12$), and this difference reached marginal significance ($t = 1.96$, $p = .08$). One explanation was that non-native English speakers were mostly international students, who tended to form "ethnic" groups to help one another in their assignments. Moreover, many international students lived in shared accommodations with fellow students, which increased opportunities for peer engagement. It should be noted that this result needs to be interpreted with caution, due to the small number of native English speaking students (mostly domestic students) in the sample of the post-survey ($n = 8$).

Table 3. *Descriptive data for variables of the post-survey*

Variables	Total ($n = 27$)		NES ^a ($n = 8$)		Non-NES ^b ($n = 19$)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Attitude	5.12	.97	4.96	1.16	5.18	.90
Project engagement	5.84	.87	5.82	.98	5.85	.87
Peer engagement	5.17	1.55	4.09	2.12	5.63	.99
Project relatedness	5.84	.93	5.81	.92	5.85	.96
Competence	5.07	.87	5.87	.64	4.73	.73
Confidence	4.85	1.09	5.25	1.28	4.68	1.00

Note: a. NES = Native English speakers; b. Non-NES = Non-native English speakers

Similar to results obtained from the pre-survey, non-native English speaking students still rated themselves significantly lower in competence as compared to native-English speakers in the post-survey ($t = 3.81$, $p < .01$). That non-native speakers felt less competent in their academic work could partially be due to their lack of English language proficiency when functioning in an

English speaking environment. No significant differences were found in their ratings on confidence, further indicating that competence and confidence could constitute different domains of academic ability.

In Table 4, Pearson correlation coefficients at the overall level ($n = 27$) showed that project relatedness had a strong positive relation with attitudes ($r = .55, p < .01$), project engagement ($r = .61, p < .01$), and peer engagement ($r = .55, p < .01$). Interestingly, separate correlation analysis for native and non-native English speaking students showed that this pattern of association at the overall level only held for non-native English speaking students, but not for native speakers. In other words, it is likely that being able to work on a project that they could relate to tended to benefit international students more than domestic students. One explanation for this finding was that the opportunity to utilize existing experience and background knowledge might have mitigated the language difficulty experienced by non-native speakers, and hence, enhanced their positive attitudes towards learning research methods and encouraged engagement in research.

Table 4. *Correlations among variables in post-survey*

Variables	1	2	3	4	5	6
1. Attitude	–	.74**	.61**	.55**	.00	.08
2. Project engagement		–	.51**	.61**	.01	-.08
3. Peer engagement			–	.55**	-.18	.14
4. Project relatedness				–	.07	.17
5. Competence					–	.73**
6. Confidence						–

Note: ** $p < .01$

When we compared the pre-survey and post-survey ratings on competence and confidence, we found an increase in competence in the post-survey ($M = 5.07$, compared to $M = 4.61$ in the pre-survey), the difference reached marginal significance level ($t = 2.01, p = .05$). No significant difference was found in the students' ratings on confidence in the two surveys. These results showed that as students gained more knowledge and skills about research

methods, their competence was likely to increase, but not necessarily confidence. No significant difference was found in attitudes between the two surveys (see Table 5).

Table 5. *Differences between pre- and post-survey*

Variables	Survey	<i>n</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>
Attitude	Pre-survey	49	5.04	.80	.35	n.s.
	Post-survey	27	5.11	.96		
Competence	Pre-survey	49	4.61	1.09	2.01+	.049
	Post-survey	27	5.07	.87		
Confidence	Pre-survey	49	4.59	1.29	.88	n.s.
	Post-survey	27	4.87	1.09		

Note: + $p < .10$

Benefits and challenges of learning to do academic research

Answers to the two questions about benefits and challenges of learning research were summarized by themes (e.g., critical thinking, engagement, etc.). The 23 students who provided answers to these two questions were each assigned a number as an identifying code to protect confidentiality when reporting the data. Qualitative data clearly identified relatedness as a strong beneficial aspect of the learning process, not just in terms of completing the assignment for the course but also for possible future applications. One student commented, “I could give suggestion/proposal to my superior for the betterment of the organization I work with” (06). Similarly, another student wrote, “I feel my project could be a very good tool to solve a particular problem in my country” (07). A student who designed a project to investigate reasons underlying library shortages for school children in Papua New Guinea stated that the project “will be beneficial to my area of work which needs survey and works to help my country in terms of school library development” (12). She also expressed intentions to speak with government officials about the possibility of implementing the project when returning to her home country, as school children’s access or lack of access to library facilities has been an urgent problem in Papua New Guinea.

Data from answers to the open-ended questions also illustrated that being able to work on a project that students were able to engage in and relate to empowered them in the learning process. Students felt that being able to work on a project relevant to their own community, experience, and country made them feel “interested and related to the project” (10, 18, 19); enabled them to “learn so much about research methods” (08); and empowered them in “helping my future studying” (14); and gave them skills to resolve problems “in a real life” (23). Working on a project that was of relevance to the students also motivated them to engage in critical thinking, as they could question and critique the literature by drawing upon their existing knowledge and skills and “think through different points of view” (03), rather than taking what was in the literature for granted.

The challenges that students identified included: “research is quite intimidating” (02); searching and finding “the right and relevant articles” (06); “narrowing down on passion, goal and purpose”; and “logical order or thinking” (14). Some international students also encountered the problem of thinking in another language and translating their thought into English. One international student wrote, “I cannot express well my ideas I know, think more in English, but it is too difficult for me; always better ideas come to my mind in my native language and I don’t know how to express [them] well in English” (03). Table 6 summarizes benefits and challenges as revealed by the students ($n = 23$).

Discussion

The present study examined the extent to which designing and working on a research project that the students were able to relate to can empower and engage students in learning research methods and make their experience more concrete to them. The research projects ranged across domestic and international contexts: investigating the transmission of weaving crafts to young generation of women in the Philippines as a means of cultural preservation, improving library access for school children in Papua New Guinea, utilizing the social media to improve communication in time of natural disaster in Japan – to mention just a few examples.

Table 6. *Benefits and challenges of working on research projects*

Benefits	Illustrations
Relatedness	Resolving an urgent problem of one's country. A project one can relate to stimulates interest and passion.
Empowerment	Equipped with knowledge of how research should be conducted. Increase in academic competence. Learning good techniques to do proper academic research.
Critical thinking	Finding solutions to problems through different views. Evaluating arguments in literature. Formulating a research problem.
Future application	Application of the project in resolving real problems in one's own organisation or country. Beneficial to future studying.
Challenges	Illustrations
Literature review	Finding relevant literature. Gaining participants' input. Difficulty in finding indigenous literature on the topic area.
Narrowing down project scope	Not able to narrowing down on passion, goal and purpose. Inadequate consideration of feasibility of the project.
Logical thinking	Structure thinking, logical thinking. Logical development of study.
Language use	Thinking in native language and expressing ideas in English. Choice of proper language to write about research.

Results from this study clearly identified the importance of relatedness in engaging students in the learning process. For learning to be sustainable, it is important to provide students with an authentic learning experience which builds on their prior experience, community needs and employer demand. This study makes a theoretical contribution by testing the application of the assumptions of self-determination theory, i.e. the extent to which

higher levels of autonomy, competence, and relatedness contribute to improved learning experiences. Intrinsic motivation was identified as a stronger motivator to learning. However, our findings also showed that intrinsic and extrinsic motivations are complementary rather than in opposition, as presented in some previous studies (Amabile et al. 1994).

The present study shows that working on a research project that addresses a real problem in the community enhances students' feelings of relatedness, as emphasized by the self-determination theory (Ryan and Deci 2000). The sense of connectedness, in turn, provides greater opportunities for students to question existing knowledge as critical consumer of research, as revealed in answers to the open-ended questions. Authentic learning experience is conducive to developing critical thinking, independence and self-directed learning (Stein et al. 2004) – essential qualities in postgraduate students. This practice models the high-impact educational practices in that it provides the opportunity for students to apply knowledge and return their learning to the community. Encouraging students to identify research problems from their communities instead of simply relying on reading literature builds connection between what is learned in the classroom and application in real life. By directing students to linking what they learn in the course to what they know about their communities, we provided opportunities for students to engage with the broader community and prepared them for partnerships with stakeholders in their future career.

Many educators and industry-sponsored consortia have questioned whether higher education is adequately preparing students to meet 21st century challenges (Amabile et al. 1994; Balster et al. 2010). Higher education institutions are evaluating their educational practices and seeking to demonstrate that they are indeed providing students with the knowledge and skills required to survive and thrive in society (Carle et al. 2009). Developing knowledge and skills of research is an extremely important component of postgraduate programs, as research is not only required for fulfilling academic requirements but also for students' career advancement beyond the university. One way to achieve this goal is to identify a high quality research problem defined by

Sockalingam and colleagues (2011) as relevant, realistic, engaging, challenging, and instructional (built upon prior knowledge). The emphasis on indentifying a research problem based on community needs, as shown in this study, constitutes a step towards this goal. Moreover, the opportunity for international students to draw upon their experience in home countries creates an international learning environment. International students are occupying an increasingly important place in postgraduate education in universities across Australia and the world, and the sharing of international knowledge will foster an in-depth appreciation for the applicability of academic research.

Limitations and Further Study

The present study has adopted survey to assess students' attitudes to learning research methods, their intrinsic and extrinsic motivations in learning, and how relatedness is associated with engagement in learning research methods. While cross-sectional studies like this one provide insight into the relationship among variables, the complexities in assessing learning processes call for a multi-method approach. In addition, the small sample size and the unbalanced sample of native and non-native English speakers suggest that results need to be interpreted with caution. Future study may consider using a larger and more balanced sample as well as adopting a combination of multiple assessment types, formats and strategies, including self-report questionnaires, interactive activities, and field tasks. Moreover, future study may consider using longitudinal studies, useful in capturing change over time as a result of educational intervention.

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