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Experiences of Academics and Undergraduate Students on Research-Based Learning: A Tale of Two Institutions

Abstract

This study aims to explore the experiences of academics and students at undergraduate programs at two schools of business, one in Australia and the other in Finland, regarding the process of research-based learning (RBL) and the accompanying development of students' skills. Employing an ethnographic case study method, data is collected through semi-structured interviews with seven students and four academics from the two institutions. Results suggest that RBL is challenging for undergraduate students but equally rewarding for developing their work readiness and professional identity skills. Moreover, findings also reveal that the supervisor has a central role in managing the complexities of the RBL process.

Keywords: Research-based learning, higher education, undergraduate program, ethnographic case study

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Introduction

Research-based learning (RBL) is a student-centric pedagogy, where students undertake research projects under the guidance of supervisors: they raise and frame research questions, review literature, collect and analyze data, propose answers and explanations, and communicate the results (Spronken-Smith & Walker, 2010). RBL is expected to improve students' work readiness (Timiyó & Sriram, 2021) by developing their cognitive skills, growing their autonomy and independence, and facilitating their thinking with the mindset of a researcher (Brew & Saunders, 2020). It implies a significant change from traditional lectures in that students are consumers and producers of ideas and knowledge, and teachers are co-learners (Lambert, 2009). It emphasizes the research process and research problems rather than content, and it treats students as participants rather than the audience (Healey, 2005). This results in creating an inclusive research-based academic community, improving the learning of especially low-achieving students, and establishing close relationships between academics and students (Brew & Jewell, 2012). Last but not least, RBL facilitates active student engagement and fosters deep learning (Archer-Kuhn, Wiedeman & Chalifoux, 2020). However, as the focus shifts from content to process, some teachers may feel insecure and apprehensive about their success in adopting RBL (Justice, Rice, Roy, Hudspith & Jenkins, 2009). This is due to the additional workload existing in the coordination and development of research projects and the challenges encountered in teaching research skills. Some students resist undertaking RBL because it demands more cognitive efforts, patience, frustration tolerance (Gormally, Brickman, Hallar & Armstrong, 2009), and self-regulation.

Effective learning experiences of RBL are mostly evidenced in science, technology, engineering, and mathematics disciplines, leaving room for more research in other disciplines (Wessels, Ruess, Gess, Deicke & Ziegler, 2020). RBL research in higher education is at the

graduate level, where the greater maturity of the students may strengthen their capacity to undertake research projects (Brew & Saunders, 2020). Hence, there is a need to explore experiences of RBL at the undergraduate level of different disciplines. This study addresses this need and reports on the RBL experiences of academics and students at two undergraduate business programs, one at Western Sydney University (WSU hereafter) in Australia and the other at Jamk University of Applied Sciences (Jamk hereafter) in Finland. At WSU, RBL is integrated into the curriculum in three ways: an obligatory capstone project in the final year in collaboration with industry, an elective research project, or a voluntary summer research program. At Jamk, RBL is mainly manifested within the bachelor's thesis, a compulsory 15 ECTS research project, supervised by an academic and usually in collaboration with regional companies. This makes the undergraduate degree at Jamk similar to an honours degree. At both institutions, students are supervised by academics at all stages of their research which is defining the research problem, reviewing the literature, conducting the empirical study, and presenting the results. This study aims to unveil the complexities and success factors of the RBL process at these institutions for developing undergraduate work-readiness skills. The rest of the paper reviews the relevant literature, outlines the methodology, details the results, and concludes with a discussion of the findings.

Literature review

The process of RBL

RBL starts with the aim to solve a real-world problem through research and stimulates learning by taking a student-centric approach (Spronken-Smith & Walker, 2010). Whereas Levy and Petrulis (2012) divide the process simply into the learning and discovery paradigms, Spronken-Smith and Walker (2010) conceptualize it as a more detailed process, starting from framing research

questions and ending with communicating results. During this process, students continuously reflect on theoretical and practical knowledge in the light of their existing socio-cultural knowledge and capacity for self-regulation (Tynjälä & Gijbels, 2012). These reflections occur in discussions with the supervisor, other students undertaking research projects, and representatives from the industry. The trust that develops over time is an essential element of this process (Archer-Kuhn & MacKinnon, 2020).

The RBL process is long, and it places significant pressure on all stakeholders (Vasilienė-Vasiliauskienė, Butviliene & Butvilas, 2016). The supervisor's guidance and support from other students are essential throughout the process (Frank, Lavy & Elata, 2003; Spalek, 2014). RBL demands from students high levels of self-motivation (Timiyo & Sriram, 2021), self-management (Zhu & Doo, 2021), engagement, resilience, and the ability to navigate change (John & Creighton, 2011). Students can easily lose motivation when they encounter challenges or lack clarity regarding the steps involved in undertaking research (Edelson, Gordin & Pea, 1999; Fernandes, 2014).

There are differences in academics' conceptions of RBL, guidance strategies, and commitment to the process (Brew & Saunders, 2020). While some supervisors offer more support at the beginning of the process and less towards the end, others see failure as a possibility to learn and provide more freedom already from the start (Brew & Saunders, 2020). The lack of commitment can arise because RBL demands a heavier academic workload than traditional teaching (Vasilienė-Vasiliauskienė et al., 2016). This is because most undergraduate students lack the appropriate skills and knowledge for the research task, or they find it challenging to organize and manage complex information (Vasilienė-Vasiliauskienė et al., 2016). In industry-commissioned research, the commissioner can sometimes have unrealistic expectations (Danford, 2006), or the commissioner

can lack resources to mentor students (Jackson, Rowbottom, Ferns & McLaren, 2017). Both situations set extra demands on the supervisor's workload.

Developing students' skills for work-readiness through the RBL process

The competitive nature of workplaces has increased challenges for graduates. Employability is a broad concept that considers multiple supply-side and demand-side factors (McQuaid & Lindsay, 2005). The Guilbert, Bernaud, Gouvernet and Rossier (2016, p. 80) model reflects the broadness, including organizational strategies, governmental and educational policies, and personal attributes to explain the concept. Employability skills are also broad, covering planning and personal development skills and transferrable skills including teamwork, problem-solving, competency with computer and information technology, oral and written communication, and analytical critical thinking (Grice & Gladwin, 2004). Such variety in employability skills is also observed in the literature review commissioned by the Higher Education Academy (see Artess, Hooley & Mellors-Bourne, 2017, p. 17).

RBL 'develops the ability to ask questions, plan and conduct investigations, think critically and logically about relationships between evidence and explanations, construct and analyze alternative explanations, and communicate scientific arguments' (National Research Council, 1996, p. 105). Students develop their communication, time management, problem-solving, decision-making, self-efficacy, leadership, project management, self-management, self-motivation, analytical thinking, and critical thinking skills (Fernandes, 2014; Frank et al., 2003). Furthermore, open, discovery-focused, and team-based inquiry can enhance students' capacity to innovate (Acar & Tuncdogan, 2019).

The theoretical framework that underpins this empirical study assumes the active involvement of students in knowledge construction through reflective practice in RBL (see Figure 1). Adapting

from Tynjälä and Gijbels (2012), the framework suggests that students link theory to practice in interactions with the supervisor, other students, and representatives from the industry, and students' knowledge construction and burgeoning work readiness are core learning outcomes of the process of RBL. The framework also recognizes the significance of students' socio-cultural knowledge and capacity for self-regulation. What makes RBL distinguishable from traditional learning is the greater student-centric focus on developing work readiness throughout the research journey and the ongoing reflective practice by integrating a triad of stakeholder interactions (see Figure 1).

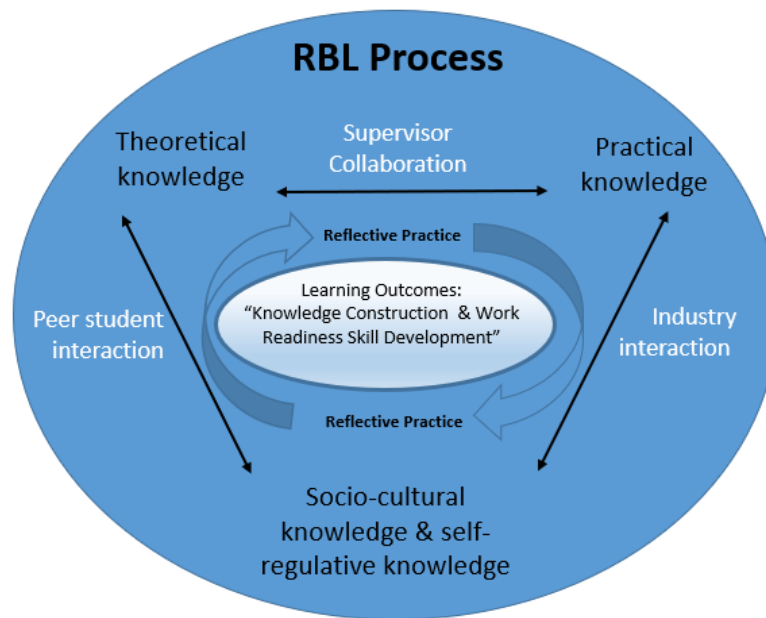


Figure 1. The theoretical framework for the empirical study (adapted from Tynjälä & Gijbels, 2012).

Methodology

This qualitative case study explores the experiences of academics involved in coordinating and teaching RBL, and students undertaking RBL projects at two higher education institutions. The applied interpretive paradigm and the chosen research design enhance, widen, and enrich the

inquiry process (Genzok, 2003) while investigating the RBL phenomenon within its real-life context (Yin, 2003). The RBL process was evaluated through the lens of academic-led student skill development for work readiness. The interview selection criteria for students required them to be in their second year and have experienced an RBL activity. Academics were selected based on their extensive degree of involvement in RBL initiatives. The undergraduate business programs of the two institutions were chosen as cases for three reasons. First, both programs have RBL embedded in their curriculums. Second, business education often offers work-readiness learning opportunities (Danford, 2006). Third, business undergraduates do not always meet employer expectations in the workplace (Artess et al., 2017).

Universities of applied sciences were established in the 1990s in Finland with the strategic goal of developing tighter collaboration between academia and regional industries. Jamk has four schools with a total of 8,500 students, and the School of Business has 2,500 students. WSU has 11 campuses, and the School of Business is one of its four schools, serving 6,600 students. The mission of the School of Business is to be a distinctively student-centered, research-led university integrating industry practice with theoretical knowledge to enrich learning (Western Sydney University, n.d.).

We conducted 11 semi-structured interviews. We had five students and two academics, both female with more than 10 years of teaching experience, from WSU, and two students and two academics, both male with more than 10 years of teaching experience, from Jamk. We constructed an interview protocol to create consistency between interviews, allowing a high degree of focus and ensuring internally valid comparability. Using semi-structured interview questions in individual interviews and focus group settings encouraged the participants to share their

experiences freely. Interviews lasted between 45 and 60 minutes, and they were audio-recorded and verbatim transcribed. Ethics approval was obtained at both institutions before data collection.

We used Leximancer 4.51 qualitative data mining software for data analysis due to its ability to map the interview transcripts to help us with the conceptual and thematic analysis (Wilk, Soutar & Harrigan, 2019). The conceptual and thematic analysis was followed by a comparative refutational investigation of the insights gained from student and academic perceptions. Due to the limited sample size, reliability and validity were ensured through reciprocal translational analysis, linking concepts from one case to the other by assessing their similarities and differences (Noblit & Hare, 1988).

Results

Contextualizing the approach of RBL delivery to undergraduate students

RBL deepens the students' content knowledge gained in previous courses through a reflective and interactive process. There are different approaches to RBL at the two business schools. The bachelor's thesis is the main RBL activity at Jamk, conducted under the guidance of supervisors mostly in collaboration with regional companies. Students first develop their research plans and present them. The research process continues with undertaking a literature review, conducting an empirical study, writing the thesis, and presenting it to an audience. Students are guided throughout the process by their supervisors. WSU no longer offers an honors program, thus students can experience RBL in three ways, all under the guidance of supervisors. First, students can enroll in a final year capstone unit requiring them to research in teams to complete a consulting project for an industry partner. Second, an elective research-devoted unit is also available for students to experience individual research in a traditional academic format. The third opportunity is a

university-wide competitive summer research scholar program to promote student-academic collaboration, allowing students to take on research assistant tasks and be paid for the eight-week summer break. Such learning initiatives engage students in practical research experiences. The supervisor provides the project scope in all three approaches and is also the main interface between students and the industry.

Students at both institutions submit a finished project in a written report format and present their findings to an audience, including academics, peer students, and possibly industry representatives. Students become active participants taking ownership of their research and the process involved, as expressed in the following quote by a student.

“I have learned to use my research as a catalyst to think out of the box and be better organized timewise. I was able to report back to my supervisor about the progress I make with more confidence and clarity. I felt it is my project, so I better do it right.”

Students organize meetings with supervisors and seek clarification to meet the deliverables. Despite differences in the RBL approach, the skills students require and enhance due to such an active learning experience are similar in whichever format. The student-led, reflective, interactive, and collaborative practice allows students to focus their project scope and refine their research design with the supervisor. Students get more confident in developing their problem-solving approach and feel more comfortable in taking ownership while driving the process. These findings are presented in the following propositions.

Proposition 1: The RBL process can be of different types and lengths at the undergraduate level.

Proposition 2: Despite variations in its type and duration, RBL demands active ownership of the process by students through the reflective, interactive, and collaborative practice of a research project.

Supervisor as a central actor in managing the RBL process

Our findings suggest that engaging academics in RBL is challenging and time-consuming. As RBL employs a student-centric learning strategy, it requires more effort from academics than any traditional course. From the students' perspective, undertaking RBL activities as part of their degree provides a dual incentive: undertaking a research project, and receiving course credit for completing it. However, not all students understand what research entails until they engage in the RBL experience. Feedback from students identified the lack of adequate research skills and not having any background knowledge of the research question as potential barriers to RBL. In managing these barriers, the role of a continuing relationship with the supervisor is essential, as reflected in the following student quotes:

“What I think important is that you experience very close supervision in the sense that you regularly meet with your supervisor, have the opportunity to exchange ideas, and get a lot of feedback. I feel that supervisors are the most important part of research-based learning.”

“You do not know what you gain and get yourself into until you finish your research, and without your supervisor, there is no way you can complete this journey”.

Students further emphasized the need for proactively engaging in continuous interaction with the supervisor in the quotes below. The supervisor's experience of guidance in research projects was mentioned as a trigger for successful engagement.

“The best supervisors give guidance to students when it is needed... They explain what needs to be done and make it clear for them.”

“...and constant ongoing interaction is key. Getting to know the supervisor and keeping him in the loop about the progress is very important.”

Thus, the supervisor guides the RBL process and drives the students' knowledge creation and development of work readiness. The supervisor should also be research-active and have the research expertise to provide students with various viewpoints, essential sources, and thought-provoking questions. Additionally, when discussing the traits of the supervisor, students felt that the supervisor should be prioritizing the needs of students over their own research objectives. They

referred to the supervisor as somebody who facilitates access to materials or is available to solve any questions that might arise without doing most of the work for the students. These findings are reflected in the following proposition.

Proposition 3: Continuous cooperation with a committed and experienced supervisor, who has a caring and student-centric approach, is the most important factor for successfully implementing RBL activities at the undergraduate level.

Development of skills for work-readiness and professional identity through RBL

Participants defined RBL as an engaging student learning process comprised of opportunities to develop research skills. This type of experience allows them to decide on the scope of the research, to publish and present the study in a forum outside of the home institution, and to work with a supervisor they can not only relate to but who can assist them in every stage of the research journey. The majority of the participants recognized the RBL experience as a unique and novel mode of learning in the undergraduate curriculum. Students referred to the opportunity to develop and reflect critically on one's position as a researcher and contributions to knowledge and practice as novel skills attained from RBL. Students suggested that RBL improved their cross-cultural awareness and confidence, as stated in the following quote from a student.

“I feel the research project taught me to speak up. Saying my opinion needs confidence and courage. And this is what I gained during my research experience. I have now the confidence to say what's on my mind and how I want things to go, even though it's not the same as what others say. So not just agreeing with others, but saying your ideas out loud and then finding ways to justify them.”

RBL was referred to also by academics as a pathway for students, motivating them to undertake further research opportunities in the industry or even pursue an academic career. Alongside recognizing RBL's impact on acquiring work-readiness skills, RBL was commended further for developing research and writing skills in a formal context, advancing presentation skills, and

expanding on students' inter-and intrapersonal skills. Students' reflective practices on their skill-sets to advance the research project and the management of their progress assist students' intellectual growth and self-management.

Students identified skill gaps before engaging in RBL including a lack of confidence, a lack of presentation skills, networking incompetence, and a certain lack of project and time management skills. After engaging in an RBL activity students at both institutions articulated that it significantly reduced these gaps. Students emphasized that allowing them to experience independent learning and undertake research, from start to finish, let them experience a degree of flexibility, complexity, and difficulty in managing their projects. Holding students accountable for their actions and overall projects made them more task-focused. In addition, allowing students to present their research in a forum to a professional and academic audience boosted their confidence and capacity. In particular, students highlighted that discussing their findings' theoretical underpinnings, complexity, and implications helped build their self-assurance in the subject matter. Acquisition of expertise and skills in communication, presentation, problem-solving, and critical thinking contributed to developing students' professional identities and increased their work readiness. The academics' observations confirmed the development of complex, technical, and soft skills for the ever-changing job market, as expressed in the following quote by an academic.

“...communication skills can be taught, but the feedback received throughout RBL can improve skills like on-the-job training. I have also noticed that students who do research improve their active listening and organizational skills. They are more focused and try to get the project finished.”

Program coordinators also denoted self-efficacy as a key skill in partaking in RBL initiatives. Students needed to manage themselves, their projects, and the overall outcomes via adequate project planning and reflections. They were motivated to adapt and find ways to accomplish their

research project as they had control over it. As a result, students have been developing their professional identities, as expressed in the following student quote.

“It’s your personality that grows once you work within an international collaboration on a research project. I think you need to be aware of so many different perspectives that you look at in your research project... So dealing with the number of different perspectives and being open-minded makes your personality grow.”

These findings are reflected in the following proposition.

Proposition 4: RBL contributes to the development of undergraduate students’ expertise and skills in research, networking, presentation, project management, and cross-cultural awareness; thus, it improves their work readiness and contributes to their professional identities.

Discussion

RBL is a transformative and active learning process that facilitates students' acquisition of skills and develops their work readiness while exploring projects of interest to them. It is demanding from all stakeholders in all stages of the process, but in the end, it is highly rewarding for undergraduate students. Our findings agree with Fernandes (2014) and Frank et al. (2003) that RBL develops students’ research skills, managerial skills, and soft skills, regardless of the program format. Our findings also suggest that RBL can shape students’ professional identities, which is highly important for employability through a reflective, interactive, and collaborative practice. Our study found that in RBL projects, the continuous interactions in the socio-cultural environment with the supervisor, industry representatives, and other students while reflecting between theory and practice are vital in developing their expertise, skills, and professional identity (Sevig, Higlen & Adams, 2000; Tynjälä & Gijbels, 2012). We concluded that RBL experiences, which provide the first contact with the industry for many students, can be considered in this respect as a signature pedagogy in work-integrated learning (Wayne, Bogo & Raskin, 2010).

The second contribution of our study is the finding regarding the critical role of the supervisor in providing successful RBL experiences, which was not as evident in earlier research (e.g., Frank et al., 2003). The supervisor carries responsibilities for collaborations with industry and other academics in international RBL projects. Balancing expectations that RBL projects bring valuable results to the industry and simultaneously contribute to students' development is the supervisor's responsibility. Hence, integrating reflective practice into the RBL process by encouraging students to write a reflective memo or journal as part of their assessment tasks or keep a record of their thoughts in line to meet the desired research outcomes, assists students' self-development. Organizing the participation of students in international forums to present their research findings also requires the supervisor's close collaboration with academics from global networks. Finally, the supervisor develops close relationships with students as their career mentors. Some of these relationships last even after students' graduation. RBL leads to student interaction, friendship, and bonds when students endeavor and take on research projects. Student peer support helps them cope with stressors to meet timelines and other project management aspects aligned with research projects.

Our findings suggest two practical implications. First, we encourage RBL experiences in undergraduate programs no matter which format. Our results indicate that acquiring research skills builds on students' pre-existing skills and content knowledge in previous course units. Students gain a deeper understanding and appreciation of their already existing knowledge content. Students' knowledge and skills are thus, developed further by being exposed to and immersed in applied inquiry-based learning initiatives. The RBL process shapes students' professional identity through the interactive stakeholder engagement and reflective process of progressing their research, resulting in greater self-confidence in evaluating and engaging in project work.

Our findings also inform that academic commitment is driving such student-centric learning. However, designing and implementing RBL initiatives is full of challenges. These include collaborating with industry, selecting committed academics to take on student supervision, fostering student engagement, and motivating and supporting novice students with no knowledge of what research entails. At the same time, the academic needs to encourage ongoing reflective practices for students to apply their know-how, gain self-efficacy and build self-management skills. Our second practical implication is with regards to overcoming these challenges. The commitment of qualified supervisors is crucial for the success of RBL activities. Therefore, we recommend training supervisors to develop their RBL process management competencies. Communication strategies to inform students about the benefits of RBL can also assist the process. In addition, we believe that it is vital for management to provide necessary resources and incentives for faculty to commit themselves to RBL.

This study is subject to the limitation that its insight comes from the business schools of only two higher education institutions. Furthermore, data is collected from a small sample of seven students and four academics. As a result, the findings are preliminary, calling for similar future qualitative research in other contexts with larger sample sizes. There is also a need for future quantitative research to test our propositions with a survey carried out with students and academics. The second limitation of the study is that it reflects only the perspectives of students and academics. There is no objective evaluation of the skill development of students. Future research could also study the views of industry representatives to bring valuable insights into the work-readiness aspect. Hence, future follow-up research could take a longitudinal approach and review the same cases as employed alumni after a couple of years. Retrospective insights from these cases would shed more light on the connection between RBL experiences and graduate work readiness,

helping to understand the extent to which traditional research skills are useful after graduation. Finally, comparative studies with other disciplines could further refine the RBL process.

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