



Faculty of Education

Doctor of Philosophy in Educational Sciences

Thesis

Research-based learning and gender in higher education in Mozambique: a case study of
students from the Faculty of Education at UEM

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Maputo, December, 2025



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Samuel Benjamim Matlombe

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Declaration

I, **Samuel Benjamim Matlombe**, PhD candidate, declare that the thesis that I herewith submit for the Degree of Doctor of Philosophy in Educational Sciences at the University of Eduardo Mondlane, Faculty of Education, is my independent work, and that I have not previously submitted it for a qualification at another Institution of Higher Education.

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DEDICATION

To my parents, Elixá Eduardo Aaron Jhoni Matlombe and Carolina Nyabanga (in memory), who always encouraged me to pursue my studies. For my father, this was the watchword!

To my brothers (manos), who, as my guardians, always provided me with everything I needed to study.

To Ximely (Ivone Custódio Cavele Matlombe), my dear wife; my daughters Tsakan and Rindzela; and their respective sons, Maleek and Samuelson, who sacrificed so much during my training.

To all those who, directly or indirectly, contributed positively to my success on this journey.

ABSTRACT

This thesis constitutes a contribution to the operationalization of the UEM's Strategic Plan 2018 - 2028 regarding the adoption of innovative and flexible teaching-learning approaches and gender mainstreaming issues, in line with the UEM's vision of transforming the institution into a research university. The main objective of this research was to explore how gender affects students' research-based learning (RBL). This study is predominantly qualitative, drawing on semi-structured interviews and, as a complement, a questionnaire on students' attitudes towards RBL. It is an empirical and theoretical study, epistemologically based on phenomenology. Participants were selected through convenience sampling, but based on specific criteria. For the data analysis of the semi-structured interviews, I used inductive content analysis that led me to an interpretative approach and, for the questionnaire responses, I counted the frequencies and then summarized these in terms of their implications.

Generally, the results of my study revealed that students had both normative and non-normative dispositions regarding gender and these impacted on how they dealt with RBL. The study contributes theoretically to higher education and gender studies by raising awareness regarding the need for considering the impact of gender on new pedagogical approaches such as RBL. It also produced original empirical data on how gender affects students' RBL. The results also show that RBL presents itself as an effective teaching-learning approach that leads to autonomous work and stimulates the spirit of research. Hence, RBL might contribute to the materialization of UEM's vision of becoming a research university.

Keywords: Research-based learning, gender, higher education, research skills acquisition, critical thinking.

RESUMO

Esta tese constitui uma contribuição para a operacionalização do Plano Estratégico da UEM 2018 - 2028, no que diz respeito à adoção de abordagens de ensino-aprendizagem inovadoras e flexíveis e à integração das questões de género, em consonância com a visão da UEM, de transformar a instituição numa universidade de investigação. O objectivo fundamental desta pesquisa foi explorar de que forma o género afecta a aprendizagem baseada na pesquisa (ABPe) dos estudantes. O estudo foi uma pesquisa predominantemente qualitativa, utilizando principalmente entrevistas semi-estruturadas e, como complementar, um questionário sobre atitudes dos estudantes em relação à ABPe. É um estudo empírico e teórico, epistemologicamente baseado na fenomenologia. Os participantes foram seleccionados por amostragem de conveniência, mas com base em critérios específicos. Para análise de dados das entrevistas semi-estruturadas, usei a análise de conteúdo indutiva que me levou a uma abordagem interpretativa e, para as respostas do questionário, contei as frequências e depois, condensei-as de acordo com as suas implicações.

Geralmente, os resultados do meu estudo revelaram que os estudantes tinham disposições normativas e não normativas em relação ao género, e estas impactaram a maneira como eles lidaram com a ABPe. O estudo contribui teoricamente para o ensino superior e os estudos de género ao despertar a consciência sobre a necessidade de considerar o impacto do género em novas abordagens pedagógicas, como a ABPe. Também produziu dados empíricos originais sobre como o género afecta a ABPe dos estudantes. Os resultados também mostraram que a ABPe apresenta-se como uma abordagem de ensino-aprendizagem eficaz que conduz ao trabalho autónomo e estimula o espírito de pesquisa. Portanto, a ABPe pode contribuir para a materialização da visão da UEM, no seu desiderato de se transformar numa universidade de pesquisa.

Palavras-chave: Aprendizagem baseada na pesquisa, género, ensino superior, aquisição de competências de pesquisa, pensamento crítico.

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ABBREVIATIONS

APA	American Psychological Association
CP	Complexo pedagógico
CSPS	Center for studies and psychological support
EGUEM	UEM's gender strategy
EGUM	Estudos gerais universitários de Moçambique
EL	Experiential learning
FacEd	Faculty of Education
FRELIMO	Frente de libertação de Moçambique
GSPP	Gender-sensitive pedagogical practices
HE	Higher education
HEIs	Higher education institutions
HES	Higher education studies
ICT	Information, communication and technology
INED	Distance learning national institute
ISP	Instituto Superior de Pedagógico
ISRI	Higher Institute of International Relations
MHE	Mozambican Higher Education
MINED	Ministry of Education
PBL	Problem-based learning
PEUEM	UEM's strategic plan
Ph.D.	Doctor of philosophy
POL	Project-oriented learning
RBL	Research-based learning
SCL	Student-centred learning
SIGA	Sistema de informação e gestão académica
SNE	National Education System
St	Statement
STEM	Science, technology, engineering and mathematics
TBL	Team-based learning
TCL	Teacher-centred learning
UEM	University Eduardo Mondlane

ULM Universidade de Lourenço Marques
UNESCO United Nations Educational, Scientific and Cultural Organization
UniLúrio Universidade Lúrio
UniZambeze Universidade Zambeze

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CHAPTER 1: INTRODUCTION

This research focuses on the nature and impact of innovative learning methods, more specifically, research-based learning (RBL), and gender in higher education in Mozambique, at the Faculty of Education at Eduardo Mondlane University (UEM). The research seeks to analyze how gender affects students' research-based learning, which is its fundamental objective. The test case is a psychology course for undergraduate students at the Faculty of Education. According to Ikhsan *et al.* (2019) RBL “is a constructivism approach that requires a class or small group of students to be responsible for their [learning] decisions” (p. 2).

In RBL, students have opportunities to practice their metacognitive skills, foster critical thinking, and problem-solving skills in a critical manner in order to become strategic, motivated, and independent learners (Paris & Paris, 2001; Susiani *et al.*, 2017, 2018). This research seeks to create within the classroom, manners of resistance to homogenization and normalization, in order to generate less unequal and excluding social relations (Rojas, 2016), sparking some gender consciousness among the students. In gender studies, and this is a position found in many Humanities and Social Sciences disciplines now as evidenced, for example, in the writing style used in many international peer-reviewed journals, standpoint theory argues that the researcher is the one who sets the parameters for a study, and that therefore all research is partial and conducted from a specific perspective (Hartsock, 1998; Harding, 2004, 2009). Therefore, the researcher is encouraged to use the first singular person. Thus, in the present study, the researcher will be using the first singular person “I” or “my” when talking about the research he conducted. In the next section, I briefly outline the context of the research problem.

1.1. Context of the research problem

The history of higher education in Mozambique has already been variously summarized (see Tambe *et al.*, 2019; Nota, 2022; Bene *et al.*, 2022) and I shall not rehearse it again here. As the only higher education institution in Mozambique between 1975 and 1985, UEM acted as a national university, with access for students from all the different regions of the country and supposedly equally promoting the access of women and men. Since 2013, UEM has sought to transform itself into a university whose teaching-learning and outreach processes are based on research (UEM, 2013). In 1993, the first higher education law allowed the creation of

private higher education institutions and galvanized the expansion of higher education, both private and public (Tambe *et al.*, 2019). As part of this expansion, two further public universities were created: the Universidade Lúrio (UniLúrio), in 2006, and in 2007 Universidade Zambeze (UniZambeze). The national higher education system in Mozambique has thus gradually expanded and reformed. In 2022, the country had 53 higher education institutions (HEIs). These HEIs are classified into the following sub-categories: (i) universities, (ii) higher institutes, (iii) polytechnic higher institutes, (iv) academies and (v) higher schools with the following distribution (Table 1):

Table 1

Distribution of higher education institutions in Mozambique by type and sector.

Institution type	Public	Private	Total
Universities	9	10	19
Higher institutes	4	19	23
Polytechnic higher institutes	4	0	4
Academies	3	0	3
Higher schools	2	2	4
Total	22	31	53

Table 1 clearly shows that the opening up of higher education to the private sector resulted in the creation of private sector education which, in sheer numbers of institutions, outstrips the public sector. This has had several consequences such as the commodification of higher education and elitism. Subsequent to the entry into the market economy in Mozambique, the Ministry of Education (MINED), then the Ministry responsible for HEIs designed, in 2012, the Strategic Plan for Higher Education 2012 - 2020. This, among other aspects, established that HEIs should promote equitable participation and access (Alberto *et al.*, 2012; Bene *et al.*, 2022). This measure aimed to ensure that every student who had completed secondary education could enter higher education (HE), regardless of their socioeconomic class, gender, tribe, etc. This led to the creation of the Distance Learning National Institute (INED) so that those who lived in areas far away from the existing HEIs could also access HE. In addition, the government granted financial autonomy to HEIs and they were advised to adopt the Chilean model that consists of diversifying funding sources and institutional differentiation (Goncalves, 2018) as a way of self-financing and at the same time to increase access. One of

the consequences of the financial autonomy and diversification of funding sources, on the part of public HEIs, was the opening of after-work (= evening) education and the payment of monthly fees by students to cover the associated expenses. In this way, the government exempted itself to some extent from its responsibility to finance HE, passing the responsibility for seeking funding to the HEIs themselves.

Despite the opening up of higher institutes, academies and higher schools to date relatively few Mozambicans have access to higher education due to the financial issues arising from defraying the education costs onto the students and the persistent limited capacity of the (public) HEIs to take in students (Bene *et al.*, 2022). In fact, the expansion of higher education in Mozambique has not been accompanied by the construction of an adequate infrastructure, nor by the provision of sufficient material, human and financial resources, something that negatively affects all associated processes, including the quality of teaching-learning, research and outreach.

One of the fundamental characteristics of HE in Mozambique is that, as stated by Langa (2014), it is geared towards teaching, to the detriment of research. This is unsurprising, given the educational deficit in the country caused by the previous colonial education policies (see Nota, 2022, p. 28). The country's aim continues to be to educate its population to higher levels, and teaching is thus of foremost importance. As a result, more than 95% of the HEIs have research as a secondary activity (Tambe *et al.*, 2019), particularly the private ones which lack both the means and the strategic vision to support research.

Thus, part of my concern is to raise students' interest in developing a culture of investigation, assigning them tasks that will provide them with moments of interaction, cooperation and collaboration, in the construction of their own knowledge, so that they become engaged with the experience of research. In this sense, my research is guided by the following main question: How do students respond to RBL and how does gender manifest itself among students, in the context of the Faculty of Education at UEM? Generally, there is under-representation and asymmetrical distribution of women and men in higher education due to the stereotyped idea that some tasks are only for men and others only for women. This is reflected in the choices of courses made by both women and men, which causes an imbalance of representation in Psychology courses where women are over-represented at undergraduate level. But, according to UNESCO (2018) women are under-represented in energy, engineering, computing, among others. Additionally, Amirthan S and Kumar (2021) argue

that in Asia Pacific and Australia there is an imbalance of gender in STEM to the disadvantage of women.

Mabica *et al.* (2025) and Uamusse *et al.* (2020) point to the strong male dominance in STEM. However, in the social sciences (see the section on “Gender in education”, Chapter 2, p. 21), there is a strong female dominance. Although the arguments to explain these asymmetrical positions may be different, they are based on the same principles, that is, the same conventional gender norms, which establish and protect gender stereotypes (Acker, 2006). This means that while we seek to “promote... female engagement in STEM and support mechanisms” (Mabica *et al.*, 2025, p. 1021) that contribute to women’s enrollment in STEM, we must also discourage negative views that men have toward social science majors and encourage their participation in them. In this way, we help both women in STEM majors and men break free from the stereotypes surrounding social science majors.

In fact, considerations of gender at UEM are relatively recent and this is evident in the uneven distribution of women and men at UEM. The total number of students enrolled in 2020 at UEM was 40554 of whom only 15758 were women, corresponding to 39% of the total¹. At the Faculty of Education (FacEd) in particular, although there is a predominance of women (see Table 2) at the undergraduate degree level. But at subsequent levels of Master's and Ph.D., the numbers of women and men decrease unequally, and very few women progress to the highest educational level. At doctoral level, the number of men surpasses, albeit slightly, that of women. This situation is worrying insofar as the number of women entering at degree level is about twice that of men. In other words, at higher levels, many more women than men drop out, suggesting that it is much easier for men to continue in education than for women.

Table 2

Student population at FacEd, by academic level and by gender.

FACED	Female	Male	Total
Bachelor	1939 (68%)	910 (32%)	2849
Master	98 (57%)	75 (43%)	173
PhD	16 (47%)	18 (53%)	34
Total	2053	1003	3056

¹ Annual Activity and Financial Report, 2020.

In terms of teachers, FacEd had 111 teachers in 2020. Of these, only 39 were women and 72 were men. Table 3 shows the distribution of teachers by academic degree and by gender.

Table 3

Number of teachers at FacEd, by academic degree and by gender.

Academic degree	Female	Male	Subtotal
Bachelor	9	18	27
Master	20	34	54
Ph.D.	10	20	30
Total	39	72	111

Table 3 shows that the teaching staff of FacEd is dominated by men at all academic levels, including in terms of qualifications. This reveals that there is still much to be done to promote women's advancement in the discipline of Education and in higher education more generally. In summary, the proportion of women in HE as a whole is very low, and increasingly so the more advanced the education and a career in education is. To address this imbalance at UEM, Uamusse *et al.* (2020) suggest the adoption of strategies that can contribute to arousing interest in research, developing curiosity and creativity, demystifying gender stereotypes and encouraging the participation of women in education and careers. UEM's Annual Activities and Financial Report of 2020 states that of a total of 126 researchers at UEM, 61 (48%) were women and 65 (52%) men. This means that there is a certain gender balance among the researchers. But research is under-valued at UEM (Nota, 2022) compared to teaching which is remunerated much better. Teaching is still considered more prestigious than research and it provides a better income than research (Nota, 2022). Hence men move into teaching and of 1786 teaching staff at UEM, only 516 are women. This, of course, impacts the gender models that students have when they study. In the next two sections (1.2 and 1.3), I present the objectives and research questions, respectively.

1.2. Research objectives

Since the present study aims to explore the impact of gender on students' RBL, the objectives are as follows:

1. To understand undergraduate Psychology students' gendered responses to research-based learning;
2. To analyze undergraduate Psychology students' views of RBL;
3. To identify the challenges arising from the impact of gender on undergraduate Psychology students' attitudes and practice of RBL in terms of implementing RBL.

1.3. Research questions

In order to investigate the research objectives, this research addresses the following research questions:

1. How does gender relate to undergraduate Psychology students' attitudes towards research-based learning?
2. What is the impact of gender on undergraduate Psychology students' practice of RBL?
3. What are the challenges arising from the impact of gender on undergraduate Psychology students' attitudes and practice of RBL in terms of implementing RBL?

In my research I understand gender as a driver for how students engage with the learning opportunities they are exposed to, as will be discussed in subsequent chapters. In the next section, I briefly discuss the relevance of my research.

1.4. Research relevance: Justification of the study

This research is timely because, in addition to operationalizing UEM's Strategic Plan 2018-2028 with regard to teaching-learning and gender issues, it is in line with the UEM's vision of transforming the institution into a research university (UEM, 2013) and is a response to the old and growing criticism of the design and implementation of the undergraduate curriculum as it currently stands. UEM's Gender Strategy (EGUEM) highlights, in its strategic action 3, the integration of gender issues into the curricula of undergraduate and postgraduate courses. In their study on "Putting on and taking off the capulana: a grounded theory of how Mozambican women manage gender oppression" Tomm-Bonde *et al.* (2021) contend that if gender issues are not taken into consideration in the classroom, education might be a failure mainly because of the culture of silence that can undermine the responsibility of both teachers and students to address these issues. There is also a need to consider teaching-learning approaches that foster students constructing their own knowledge and awakening students' gender consciousness. Thus, in "Embedding research-based learning early in the

undergraduate geography curriculum” Walkington *et al.* (2011) contend that “students feel better prepared for undertaking the independent research that is required as part of undergraduate theses, dissertations and capstone courses if given the opportunity to practice research skills in advance” (p. 327). In their study, these authors highlight the advantages of incorporating research into undergraduate students because, in addition to providing “a much deeper understanding, through experiential learning, about the way in which data are generated, analyzed, and interpreted, [it provides] the sense of self-esteem as a result of a student becoming a producer rather than simply a consumer of knowledge” (p.327). The same vision is shared by Thiem, Preetz and Haberstroh (2023) in their study on “How research-based learning affects students’ self-rated research competences: evidence from a longitudinal study across disciplines” when stating that “students become active producers of knowledge” (p. 1024). Despite the potential recognized by the authors for the effectiveness of RBL in both students’ learning and in developing their research skills, at no point do these authors discuss the impact on gender on RBL. Instead, Walkington *et al.* (2011) emphasize the benefits of early incorporation of research opportunities for undergraduate students. The importance of RBL in fostering student-centered learning is highlighted by many authors (Bowyer & Akpınar, 2024; Huet, 2018; Iksan *et al.*, 2019; Wessels *et al.*, 2021). Nonetheless, these authors also do not refer to anything related to gender issues.

According to Wessels *et al.* (2021), there have been many studies in the STEM field confirming the effectiveness of RBL. However, it is difficult to find any in the field of social sciences, such as psychology. Thus, to fill this gap, RBL “needs to be continuously applied in other fields” (Ikhsan *et al.*, 2018, p. 7), as RBL “places research and inquiry at the center of teaching-learning” (Huet, 2018, p. 732). There are therefore two gaps in the literature that my thesis aims to address: one is the lack of discussion of gender and its impact on RBL, the other is the use of RBL in Psychology courses.

The PEUEM 2018-2028 calls for the development of an organizational plan that addresses and integrates cross-cutting issues such as gender and culture, and promotes gender equity. This means that we need curricula that emphasize equality, equity, mutual respect and consideration of ideas of others, whether female or male. The content should also address issues from a variety of perspectives that indicate gender awareness. Additionally, there may be a need to promote the active participation of women, with a view to achieving a gender balance in schooling, research, and careers, thus enabling both women and men to participate effectively in shaping the future of our society. In this regard, the pedagogical practices of

teachers are important in promoting gender equity, which means that teachers must be concerned with establishing, in the classroom, relationships that encourage the participation of women and men equally. In the next section, I outline the structure of the thesis.

1.5. Structure of the thesis

In the present chapter, Chapter 1, I outline the thesis, discuss the context of the research problem, and detail the research objectives, and research questions. I then provided the justification for my research, and now outline the structure of my thesis. Chapter 2 contains literature review, and includes the elaboration of the theoretical framework I use in this thesis. Chapter 3 deals with the Methodology. There, I discuss the research design, the collaboration with a colleague delivering RBL in her classes, the selection of the participants, and the participants' demographic information. I then discuss the research methods and the research setup, and following on from that, I describe the data collection process in general and in the three classes in which RBL was undertaken. After that, I present the data analysis process. Finally, I discuss my position as researcher in this study and the ethical aspects of the research. Chapters 4-6 centre on the presentation of my findings in line with my research questions. Chapter 4 deals with the results of the interviews and the questionnaire as a complementary method; here I detail the findings related to undergraduate Psychology students' gendered responses to research-based learning. Chapter 5 discusses the views of undergraduate students of the RBL experience from a gender perspective. Chapter 6 presents the challenges regarding the implementation of research-based learning from a gender perspective. In Chapter 7, I discuss the research findings. In Chapter 8, I draw conclusions and, finally, offer some recommendations and potential future research topics.

I now move on to Chapter 2 to present the literature review and the theoretical framework.

CHAPTER 2: LITERATURE REVIEW AND THEORETICAL FRAMEWORK

Since my primary concern is RBL and gender in higher education, I begin my literature review with an overview of RBL from around the world. While a substantial body of literature on RBL can be found in western and Asian countries, the same is not true for Sub-Saharan Africa, including Mozambique. Furthermore, in general, the literature on RBL and gender across the world remains very scarce and, particularly in Mozambique, there is very little literature on RBL in education and almost none that includes gender. Therefore, I first discuss the literature on RBL in relation to its geographic distribution and subsequently address RBL and gender. Then, I discuss RBL and the concept of the teaching-research nexus. Next, I briefly provide an overview of gender in education in Mozambique and in some parts of the rest of the world. I also include a short discussion of experiential learning, since RBL is a form of experiential learning. Finally, I briefly discuss the theoretical framework of my research

2.1. Research-based learning across the world

In general, there are many studies (Huet, 2018; Noguez & Neri, 2019; Apaivatin, Srikoon & Khemkhan, 2021; Reyk *et al.*, 2022; Thiem *et al.*, 2023; Wessels *et al.*, 2021) on RBL highlighting its effectiveness as an instructional model, particularly in STEM. Some of those studies come from western countries such as Germany, Spain, the Netherlands, Norway, United Kingdom (UK), United States of America (USA), Mexico and, others from South America (Ecuador) and Asia, such as Indonesia, Kazakhstan, and Thailand. Huet (2018) in the UK concluded that their study provides a good understanding of how the research environment can promote an RBL approach in STEM disciplines, meaning that the environment created by educational institutions and the degree of commitment of all those involved in the process can contribute to the success or failure of the approach. Walkington *et al.* (2011), when talking about the integration of RBL in geography courses at an international level, consider RBL so useful in student learning that they advocate its integration into the teaching-learning process from the earliest levels of schooling. In their study on “Developing students as researchers” Healey and Jenkins (2009) from the UK also state that “undergraduate research and inquiry should be an important part of the

curriculum from the day students start studying at University, and perhaps before then” (p. 10). This stance represents a recognition that early involvement of students in research activities can contribute to helping students develop their research skills. These results are corroborated by Wessels *et al.* (2021), also from the UK, in their study on “Is research-based learning effective? Evidence from a pre-post analysis in the social sciences”. In this study they conclude that “RBL courses proved especially effective when students [think] the RBL experience [is] useful for their later career” and that, although evidence of the effectiveness of RBL in research and teaching has been demonstrated in the STEM field, in the social sciences it still needs to be proven (p. 2607). Furthermore, the authors argue that although the “chosen procedure was suitable for extending existing evidence in the field [of social sciences], a range of open questions remain that should be addressed in future research endeavours” (p. 2607). The authors are concerned with studying RBL regarding its effectiveness as an instructional model in the social sciences, since there are already many studies that confirm its effectiveness in STEM. But they do not discuss anything related to gender.

Studying “Research-based learning: a case study for engineering students,” Noguez and Neri (2019) from the Technological School of Engineering and Sciences in Monterrey, Mexico, state that RBL, among many other advantages, is also useful in applying teaching-learning methods that connect research and teaching, as research activities enable undergraduate computational engineering students to develop research competencies while learning specific content. In turn, Espinoza-Figueroa *et al.* (2021) in their qualitative study on “Research-based learning: added-value in tourism education” carried out at the University of Cuenca in southern Ecuador concluded that RBL contributed to the development of students’ critical thinking skills, a position shared by many other authors from other parts of the world (Reyk *et al.*, 2022; Stroth *et al.*, 2018; Susian *et al.*, 2018; Wessels *et al.*, 2021). From Thailand, Apaivatin, Srikoon and Khemkhan (2021) conducted a study on “Effects of research-based learning integrated with cognitive training for enhancing critical thinking skill”, the results of which corroborate the results of Espinoza-Figueroa *et al.* It is interesting to note that this experimental study was conducted at Phayamen Grai School in Thailand with 9th-grade students. The authors concluded that students in the experimental group slightly improved their critical thinking skills compared to those in the control group, suggesting that integrating RBL into teaching may be beneficial even at lower levels of education, not just at higher levels of education.

However, no gender impact is mentioned. Therefore, it is also important to consider how gender is viewed amid this debate. Thus, in the next section, I provide a brief discussion on RBL and gender.

2.2. Research-based learning and gender

Generally, RBL that addresses gender issues is quite scarce. Thus, when searching for RBL and gender on Google Scholar, many articles come up. However, it soon becomes clear that they are not relevant to my research topic. Indeed, the articles frequently do not focus on RBL at all but instead reference other kinds of learning approaches. To illustrate, although they are about gender, the first five articles that came up when I did the search, and not just those five but the vast majority of the results, related to: (i) web-based learning; (ii) game-based learning; (iii) digital-based learning; (iv) problem-based learning and; (v) inquiry-based learning. RBL was not mentioned in any of these, suggesting that the search engines group together different approaches not always directly related to one's search terms.

I found only one text from the University of Jember in Indonesia that discusses gender issues overtly (Ikhsan *et al.*, 2019). In their study entitled “The research-based learning approach in environmental education”, Ikhsan *et al.* (2019) argue that “there was no gender difference in environmental care attitude” (p. 1). In Sub-Saharan Africa, and particularly in Mozambique, there is also very little literature on RBL (Covele *et al.*, 2017; Uaciquete & Valcke, 2022) and even less on gender. The study by Covele *et al.* (2017) focused on engineering students, where the majority are male, and the Faculty of Education, which is predominantly female. The authors consider RBL an effective instructional approach but also recognize that the fact that they did not take gender aspects into account constitutes a limitation of the study. The study by Uaciquete and Valcke (2022) took place at the Faculty of Arts and Social Sciences, where the majority of students are female, although in this case, there is a considerable number of men compared to the Faculty of Education. However, in both cases, participants were treated without any gender differentiation. More precisely, gender issues were not discussed.

It is important to recognize the existence of other approaches that, similar to RBL, are inquiry-based learning and promote student-centered learning, such as problem-based learning, although there are very few even of these that address the issue of gender. In general, many studies on RBL have been conducted in the STEM field and very few in Social Sciences. Some are qualitative (e.g. Bowyer & Akpınar, 2024; Timiyo & Sriram,

2021; Huet, 2018) and others quantitative (e.g. Noguez & Neri, 2019; Reyk *et al.*, 2022; Thiem, Preetz & Haberstroh, 2023; Wessels *et al.*, 2021; Yermekbayeva *et al.*, 2024). Some studies using mixed methods can also be found (Ciraso-Calí *et al.*, 2022; Ikhsan *et al.*, 2019). Unlike the majority of the studies on RBL focusing only on STEM, Thiem, Preetz, and Haberstroh (2023) from the University of Oldenburg in Germany conducted a study on “How research-based learning affects students’ self-rated research competences: evidence from a longitudinal study across disciplines”. This is one of the few examples of those that cover a wide range of disciplines, from STEM to Social Sciences. The results of this study show that, studying in an RBL environment, students “increased self-rated skills in reviewing the state of research, methodology, reflection on research findings, communication, and content knowledge” (p. 1043). The results also indicate that there were "differences in the effectiveness of RBL" between undergraduate and Master's students (p. 1048). Indeed, while undergraduate students gained experience of the entire research process at a basic level, Master's students did not, as they were more focused on "developing a research design that included the use of advanced methods" (p. 1048). This may possibly explain why undergraduate students improved their communication skills and content knowledge, while Master's students showed no improvement in these skills. Master's students experienced more complex research processes and, therefore, developed greater skills in reflecting on research findings. The authors also argue that undergraduate students still revealed a lack of improvement in reflecting on research findings, as they were focused on developing basic research competences. Here there is an indication that there should be differentiation in the treatment of undergraduate and postgraduate students, since the former are at the first stage of a university education and the latter already have some experience of higher education. Thiem, Preetz, and Haberstroh (Ibid) distinguish between educational levels but not by gender. Consequently, although women constitute approximately 73.4% of the studied sample, the authors do not refer to the possible impact of gender on RBL, and the lack of this discussion constitutes a gap that needs to be addressed. In general, it has been very difficult to find studies on RBL that also discuss gender.

Sharing the same view as Munthe and Rogne (2015) when discussing the concepts of RBL and inquiry-based learning (IBL), Apaivatin *et al.* (2021) state that RBL can elaborate a general question, an overview of a research literature, define the question, plan research activities, clarify methods, conduct research, analyze data, interpret and consider results, and

report and present results, while IBL is a dynamic learning approach that, like RBL, also leads to student-centred learning (SCL) and develops critical thinking and reasoning skills, all resulting from students' engagement in exploring, questioning, discovering, and testing findings to seek new insights. But in my thesis, I focus specifically on RBL.

According to Reyk *et al.* (2022) and Yeoman and Zamorski (2008), RBL is IBL that bridges research and learning in an academic setting. Reyk *et al.* (2022) contend that “RBL is a combination of critical thinking and inquiry that encourages students to be active in the learning process in the classroom” (p. 24). Gess *et al.* (2018, in Ciraso-Calí *et al.*, 2022) when highlighting the "relevance and specificity of the acquisition and development of competence in research in Social Sciences", argue that the same should occur in educational sciences. RBL is one of the educational approaches that stands out in developing students' critical thinking skills (Reyk *et al.*, 2022) and therefore can be useful in educational sciences. Thus, educational sciences teachers should stimulate students' critical, reflective and self-regulated thinking (Ciraso-Calí *et al.*, 2022) through the adoption of teaching-learning strategies that allow students' active, free, independent and autonomous participation.

Although the results of Ciraso-Calí *et al.* (2022) reveal that the curriculum includes the stimulus, tools and organization of reports, there does not seem to be a clear indication of what it means to do research in educational sciences and its importance, as well as “the systematic review of literature as a source of knowledge and as a basis for quality research and education” (p. 9). In the next section, I discuss RBL exploring the connection between research and teaching.

2.3. Research-based learning and the concept of teaching-research nexus

The underpinning of RBL can be found at the University of Warwick, UK, in a study on “Supporting high-level learning through research-based methods: a framework for course development” in which Roach *et al.* (2001) provide summaries of the relevant policies, practices and approaches with the aim of strengthening institutional strategies to link teaching and research. RBL is an approach that presents itself as a complementary learning model to other learning approaches such as PBL and project-oriented learning (POL). These contribute to the move from teacher-centred learning (TCL) to student-centred learning approaches. They develop students' critical thinking skills, allowing them to interpret, analyze, synthesize, evaluate, infer, explain, and enable students and teachers to improve their assimilation and application of knowledge (Susiani *et al.*, 2018). Authors such as Apaivatin *et al.* (2021),

Reyk *et al.* (2022), and Susiani *et al.* (2018) point out that RBL is constructivist and covers four aspects, namely: (i) learning which constructs students' understanding; (ii) learning through developing prior knowledge; (iii) learning which involves social interaction processes; (iv) and meaningful learning which is achieved through real-world experience. They argue that (i) RBL provides opportunities for students to actively participate in learning and students implement collaborative learning during the research and the obtained knowledge; (ii) RBL is useful for students to develop inquiry skills that include searching for literature, constructing hypothesis, collecting and analyzing data, and drawing conclusions; (iii) students practice their metacognitive abilities and foster critical thinking, and problem solving skills in a critical manners. The authors conclude that the RBL model can be implemented in learning, specifically in Susiani *et al.*'s (2018) study, of future primary school teachers, because the implementation of RBL develops their critical thinking skills, important for the emergence of creativity. Due to its characteristics, RBL can also be implemented at all educational levels, especially because, according to Susiani *et al.* (2017), RBL provides a wide set of research-related skills.

However, RBL's effectiveness has not yet been systematically examined across all academic disciplines. Even in STEM, it is not clear whether the research experience itself is effective or whether RBL's effectiveness is the result of the type of student who participates in RBL courses (Linn *et al.*, 2016; Wessels, 2017). Some authors argue that students who engage in RBL courses have higher academic abilities and are more motivated than other students in the first place (Carter *et al.*, 2016; Wessels, 2017). If so, we need to provide such motivation to other students through actually introducing them to RBL.

According to Wessels *et al.* (2021), RBL is currently seen as a panacea for addressing a range of demands within higher education. Some claim that RBL should be incorporated into the curriculum of many, if not every, academic study program, and in fact, a growing number of programs have attempted to implement RBL as, for instance, the REU program by the US National Science Foundation (Wessels *et al.*, 2021).

According to Stroth *et al.* (2018), RBL is a learning approach that can be considered as a very complex form of active and cooperative learning in which learners conduct a real research process or at least parts of a complete research cycle. Thus, RBL activity is important for the students in understanding field work methodology, research data, and supporting theories which are aspects of their emotional and intellectual development as researchers in the field (Stroth *et al.*, 2018).

This literature review suggests that RBL is an effective instructional approach for enhancing research process knowledge. RBL courses have proved to be especially useful when students thought the RBL experience was relevant to their later careers (Carter *et al.*, 2016). As mentioned in the section on “Research-based learning and gender”, in Mozambique, I identified only two studies on RBL. One was conducted at the Faculties of Engineering and Education (Covele *et al.* 2017) and the other at the Faculty of Arts and Social Sciences (Uaciquete & Valcke, 2022). Without discussing gender-related aspects, which constitutes one of the gaps that this thesis addresses, both studies confirm the effectiveness of RBL and the need for its implementation to promote learning and the development of research skills among students.

In their paper entitled “Re-inventing research-based teaching and learning” presented at the meeting of the European Forum for Enhanced Collaboration in Teaching of the European University Association (EUA) held in Brussels, Dekker and Wolff (2016) state that one of the concerns of many universities in Europe was to increasingly promote the integration of research into teaching, given that research plays an important role in students’ active and deep learning. From their study, Dekker and Wolff (2016) concluded that although RBL is of paramount importance in making students responsible for their own learning, in a small dose lecture-based learning is still necessary for teachers to impart methodological and content knowledge to facilitate the student research process. Dekker and Wolf (2019) highlight the importance of research in the development of academic careers and the disciplinary and pedagogical demands that research-based learning imposes on teachers. One gap pointed out by the authors is the lack of sufficient data to confirm the benefits of engaging undergraduate students in research, although a wide range of literature indicates this. One important conclusion of these authors is that “education and research are equally important” (Dekker & Wolf, 2019, p. 12) and that there is a strong relationship between them.

This closer relationship between research and teaching is known as the teaching-research nexus (Dekker & Wolf, 2016; Thiem, Preetz & Haberstroh, 2023). The teaching-research nexus is an approach that provides students with more opportunities to learn from, to learn about and to learn through research but with particular emphasis on the latter. Although all three forms of learning can be observed (one might argue that they are interrelated), in my study, the focus is exclusively to the last form of the teaching-research nexus, which is learning through research, meaning that students’ learning is realized by doing research

(Bowyer & Akpınar, 2024) since, in addition to learning, the purpose is also to awaken interest in research in undergraduate students.

The need to link research and education was also highlighted by Iksan *et al.* (2019) when considering the expansion of RBL to many departments at the University of Jember, Indonesia, in order to implement research in education. The link between research and teaching can be described in four ways (Dekker & Wolf, 2016; Yermekbayeva *et al.*, 2024; Thiem, Preetz & Haberstroh, 2023): (i) research-led; (ii) research-tutored; (iii) research-oriented and; (iv) research-based. While on the one hand, in research-led learning students are just an audience and in research-tutored learning students are participants, both forms have one common aspect which is the focus on the research content. On the other hand, in research-oriented learning students are the audience and in research-based learning students are participants. In both modalities the focus is on the research process. Therefore, Healey (2005) states that there are two dimensions of the teaching-research nexus, namely: (i) the focus of research, whether on content knowledge or the research process; and (ii) the role of the student, in which the student can be just an audience or a participant. According to Healey *et al.* (2014, quoted by Dekker & Wolf, 2016, p. 2) a similar distinction can be made for curricula: (i) research-led curricula; (ii) research-tutored curricula; (iii) research-oriented curricula and; (iv) research-based curricula (see Fig. 1, and for more details see also Yermekbayeva *et al.*, 2024). At UEM, we seem to be more inclined towards the first three modalities, as our classes are more lecture-based and some are seminars (Covele *et al.*, 2017). As a consequence, students lack acceptable research skills (Uaciquete & Valcke, 2022). Below, Figure 1 illustrates the link between research and teaching through the four aforementioned forms of learning.

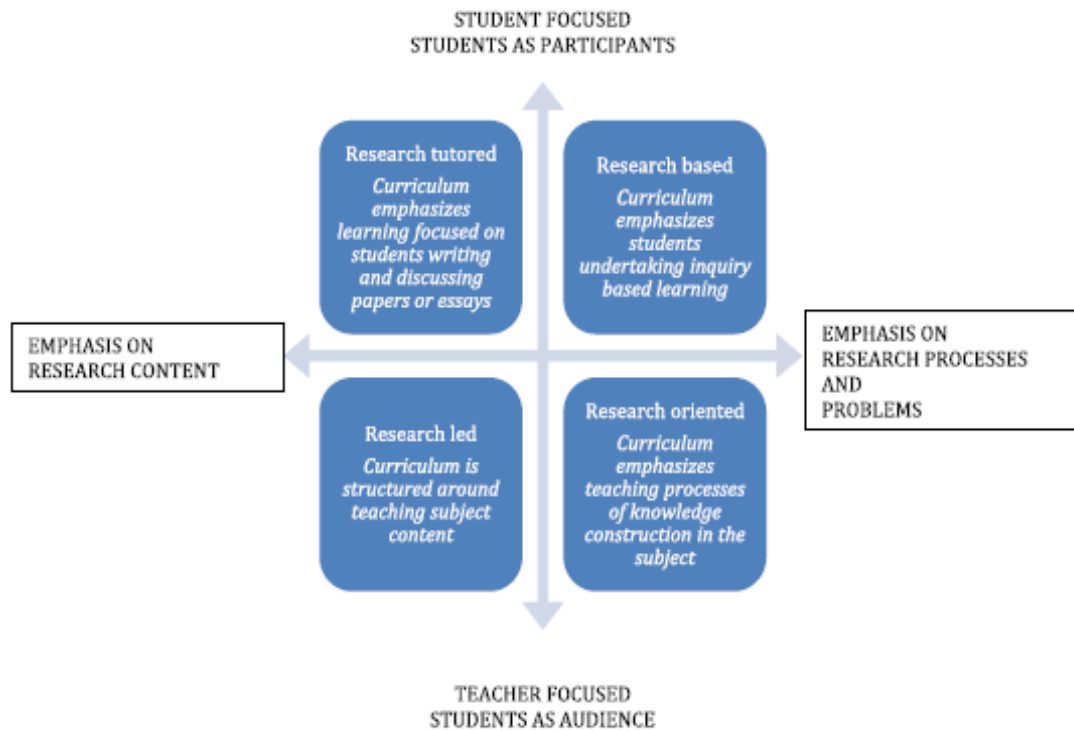


Fig. 1. The nature of undergraduate research and inquiry (Healey & Jenkins, 2009).

Source: Munthe and Rogne (2015, p. 23)

In “Toward an undergraduate research network in Europe and beyond” Mieg, Odebiyi and Haberstroh (2024) aiming at establishing a network for undergraduate research across Europe, argue that many universities in Europe have embarked on initiatives to introduce innovative teaching-learning approaches. To some extent, as Mieg, Odebiyi and Haberstroh (2024) state, “some German scholars understand [this approach] as a process of making and revising experiences through experimentation, overlapping with Kolb’s (1984) concept of experiential learning” (p. 35). Some authors such as Lee (2011), and Mieg, Odebiyi and Haberstroh (2024) consider that at university level, IBL and RBL are synonymous: “Most higher education institutions use the definition of a full research cycle approach to inquiry-based learning (or research-based learning) developed by Ludwig Huber (2009)”. Furthermore, Lee (2011) argues that in the Boyer Commission Report (1998), “Reinventing Undergraduate Education: A Blueprint for America’s Research Universities” sometimes inquiry-guide learning is referred to as RBL” and that, due to its importance, RBL “is often suggested as a universal answer for various teaching and learning ills...” (p. 149). This corroborates Wessels *et al.* (2021). Deicke, Gess and Rueß (2014) in their study on “Increasing students’ research interests through RBL at Humboldt University” in which they discuss the debate on research-based undergraduate education in Germany, state that there are

still “relatively few empirical studies on individual learners [students]” (p. 30). Their results led them to conclude that though RBL has been recognized as positively influential in students’ learning, there are still challenges for its implementation. These authors say nothing about gender.

The discussion about RBL in Germany dates back to the late 1960s and is linked to the rapid expansion of higher education and new pedagogical influences (Deicke, Gess & Rueß, 2014, p. 27). The results of this study indicate that the challenge is to develop strategies for its systematic implementation in curricula. The results also indicate that early and active involvement of students tends to increase students' willingness to do research. However, the effectiveness of RBL seems to be closely associated with the way it is implemented. Furthermore, Deicke, Gess and Rueß (2014) state that while the “Boyer Commission was concerned with the nature and quality of undergraduate learning, Humboldt’s main concern was the advancement of science” (p. 27). And scientific advancement is the result of the production of new knowledge, the basic premise of which is research. Hence the need to engage students in environments that encourage their active participation in learning and spark interest in research.

Focusing on the same subject, Wood (2003) in his study on “Inquiry-based undergraduate teaching in the life sciences at large research universities: a perspective on the Boyer Commission report” after noting that the quality of education at undergraduate degree was not satisfactory as a result of a predominance of lecture-based courses/teaching, states that the Commission suggested that universities “should take advantage of their unique research-related resources, integrating undergraduate education into the ongoing process of inquiry that already involves graduate students. This way, the universities were challenged to transform their undergraduate courses into a primarily inquiry-based curriculum” (p. 112). If for American and European universities the challenge is to transform existing resources to reorient them, for developing countries like Mozambique, the challenge is even greater, as they still struggle with a lack of resources for graduate education and, in particular, for research.

Neither the Boyer Commission Report nor the authors of the articles discussed above make any effort to address gender issues. Discussing gender-related aspects of RBL was clearly not part of the agenda. Timiyo and Sriram (2021) from the American University of Malta in their study on the “Role of research-based learning on graduates’ career prospects” state that “despite its numerous advantages, there is an absence of empirical evidence examining the

effectiveness of RBL in the social sciences” (p. 16). To fill this gap, there is a need to conduct research that can empirically demonstrate the effectiveness of RBL in the social sciences. On the other hand, highlighting the importance of RBL as an instructional approach, Yermekbayeva *et al.* (2024) from Kazakhstan Universities, in their study on “Implementing research-based learning in Kazakhstan’s pre-service teacher education” examine the effectiveness of RBL implementation in building pre-service teachers’ research capacity and find that RBL can be successfully incorporated into the training programs at different stages of the research process, as RBL contributes to enhancing the research capacity of these teachers and also promotes active student engagement throughout the research process.

However, the authors suggest a study to deepen teachers’ understanding of students’ perceptions of the incorporation of the RBL instructional model in educational sciences.

In “The research competence: acquisition and development among undergraduates in education sciences” Ciraso-Calí *et al.* (2022) from the Universitat Autònoma de Barcelona, Spain, argue that critical thinking skills, data interpretation and theoretical grounding, are the crucial aspects that students need to engage with. The authors note a difference between pedagogy and social education students. While the former demonstrated deficits in statistical knowledge and literature review skills, the latter had difficulty understanding the role of research. In addition to that, it is important to consider the improvement of students’ reflection and inquiry skills, with the aim of optimizing students’ research competences (Ciraso-Calí *et al.*, 2022). The results of these authors made evident that state-of-the-art review, content knowledge and communication skills are the least well-acquired skills. This justifies the adoption of approaches that help the development of the desired skills and RBL seems to be the most appropriate approach, as it involves all stages of the research process (Yermekbayeva *et al.*, 2024).

Consequently, the authors argue for the need to strengthen the acquisition of scientific knowledge, the search for reliable information and the development of scientific communication skills, something that is only possible with the adoption of approaches that stimulate research and the construction of knowledge. Again, just like the others, these authors, although they highlight the usefulness of RBL in the process of teaching-learning, never discuss any issue related to gender.

Noguez and Neri (2019) in their study on “Research-based learning: a case study for engineering students” at the Technological School of Engineering and Sciences in

Monterrey, Mexico, highlight the importance of early involvement of undergraduate students in research activities. In fact, their study “supports the contention that it is particularly important to start developing RBL competencies early in undergraduate engineering careers in order to prepare undergraduate students for future graduate studies as well as for their professional lives” (p. 1283). Corroborating these authors, Ciraso-Calí et al. (2022) argue that one of the skills that can help students navigate the complexities of an ever-changing world is research competency. Thus, it is pertinent that students begin developing scientific research skills as soon as they enter university. However, although Noguez and Neri (2019) present promising results regarding the effectiveness and development of students' research skills, like many others, they do not discuss anything related to gender.

Research-based learning is implemented by seeking the active participation of students with their peers and teachers, discussing and analyzing scientific advances or proposing their own contributions to the state-of-the-art of specific disciplines, that is, participating in the construction of new knowledge (Noguez & Neri, 2019).

Reyk *et al.* (2022) in “Research-based learning: added value in students’ critical thinking skills in science” conclude that learning through the RBL approach is significantly different from learning through conventional strategies and that, due to its usefulness, the results of their study could be “developed in a wider scope in Indonesia in the future, with similar variables or other more creative strategies to... improve the quality of learning, especially in science [STEM]” (p. 231). They recommend providing learning experiences to students by placing them in an RBL environment. Iksan *et al.* (2019), also from Indonesia, in their study on “The research based learning approach in Environmental Education”, aiming at developing students’ scientific thinking, find that RBL had a positive impact and that “students showed increased creativity, knowledge, benefit, and critical thinking through research activity, discussion, and brainstorming” (p. 1).

Kurniawan and Setyaningtyas (2024) from the Satya Wacana Christian University in Indonesia, writing on “The implementation of critical and creative thinking in research-based learning for sustainable language education” also advocate the effectiveness of RBL in improving students’ critical and creative thinking skills and emphasize that RBL is an appropriate approach to “equip both teachers and students with the information, abilities, and values necessary for the shift to sustainability issues” (p. 23). Bowyer and Akpinar (2024) based on their results, suggest encouraging RBL experiences in undergraduate

programs, regardless of format, and that students' knowledge and skills be further developed through exposure and immersion in inquiry-based applied learning initiatives.

Regarding RBL and gender in Mozambique, and continuing my search on Google Scholar, once again, there are no results available on my research topic. The results that do appear address gender, but nothing related to RBL. For example, the first five results were related to: (i) gender-based assessment; (ii) violence in and around schools in Mozambique; (iii) gender-responsive play-based learning training package for pre-primary teacher in Ruanda and Mozambique; (iv) gender inequality in Mozambique primary education and; (v) gender ideology and colonial education in Mozambique. The articles I found address interesting and current topics, but they are about other issues that I am not dealing with such as gender-based violence or primary/secondary education rather than higher education approaches, and are not related to RBL. Therefore, I provide a general understanding of how gender in education is addressed, in the next section.

2.4. Gender in education

An important contextual dimension that needs to be taken into account in the classroom is gender. Literature on education that focuses on gender (e.g. Chilisa & Ntseane, 2010; Hirshfield & Koretsky, 2018) tells us how important gender is in the classroom: from girls being prevented from coming to school or suffering bullying because they are pregnant (Chilisa & Ntseane, 2010), to girls with the same performance as boys in mathematics (Zakiri *et al.*, 2018) and English (Nurjanah *et al.*, 2019), to teachers giving disproportionate attention to boys relative to girls or, as Chilisa and Ntseane state, promoting the separation of girls' and boys' spaces because of girls' menstrual period, claiming to be common sense practices, based on their cultural and religion beliefs.

According to Giraldo and Colyar (2012) gender is a decisive contextual and social factor in teaching-learning, in that teachers' attitudes and beliefs about gender play an important role in students' construction of gender identity (see also Nurjanah *et al.*, 2019; Amirtham S & Kumar, 2021). Yet, in Mozambique, surprisingly, the few texts on RBL (Covele *et al.*, 2017; Uaciquete & Valcke, 2022) and PBL (Frambach *et al.*, 2017; Gomes *et al.*, 2010) say nothing about this. Teachers and students are treated as disembodied, de-contextualized figures whose specificities are unimportant except at some abstract level for the teaching-learning that is meant to occur.

Women have been discriminated against in education to such an extent that they are much less likely to have a good academic background than men. Consequently, women are less likely to have a professional or technical education that can guarantee a secure future. Roby *et al.* (2009), studying the “Barriers to girls’ education in Mozambique”, argue that every barrier to children’s education impacts girls much more negatively than boys and that some caregivers do not believe that education makes a difference to girls’ future. Therefore, these caregivers do not see any value in providing education for girls. Accordingly, though women are fairly well represented in some educational fields such as health, agriculture, environment management, they are still under-represented in areas such as energy, engineering, computing, etc. (UNESCO, 2018). Despite Munthali (2017) pointing out that female representation in engineering is quite high in Sub-Saharan Africa compared to other regions, in Mozambique only 34% of science graduates are women, which however is higher than in South Africa, where only 24% of science graduates are women.

The literature on gender in education often focuses on STEM courses because this is the area where women are less represented compared to other disciplines, such as medicine, languages, and psychology, among others. Particularly in Mozambique, there are very few studies that look at gender even in STEM and in psychology, almost no studies were found. Amirthan S and Kumar (2021) argue in “Gender parity in engineering and mathematics (STEM) higher education in India: a trend analysis” that education is a powerful mechanism to improve human capabilities, economic development, and social transformation, civil and democratic engagement, irrespective of religion, gender, location, ethnicity or social class, and as a fundamental human right it is to benefit everyone. There is a need for gender parity at all educational levels, and especially in science, technology, engineering and mathematics (STEM) in higher education, since it is an area in which women are consistently least represented.

Considering the need for gender parity in higher education, Chang and ChangTzeng (2020) in relation to Taiwan discuss the importance of the expansion of higher education for gender parity. But on the other hand, in Asia Pacific there is a decline in female participation in STEM higher education, and in Australia, in spite of the improvement of female representation in higher education, there is a gender disparity in STEM employment due to work and family demands (Amirthan S & Kumar, 2021).

Along with a few others, Malaysia is a good example of a country where the numbers of women and men in STEM have equalized, with large numbers of women employed as

university professors and in the private sector, because families tend to be supportive of their daughters' entry into this prestigious and highly remunerated industry, in the interests of upward mobility (UNESCO, 2018). The examples of Taiwan, India and Malaysia show that it is not a woman's inability to take engineering courses, but many other factors such as culture, politics, religion, etc. that influence the decision which subject to study.

Other good examples come from Bahrain, Iran, Jordan, Kuwait, Palestine, Saudi Arabia, the United Arab Emirates, countries that are at gender parity in STEM (UNESCO, 2018). The United Arab Emirates and Bahrain have the highest rates of all, at 83% and 84% of gender parity, respectively. However, in their study on "Gender disparity in STEM education: a survey research on girl participants in World Robot Olympiad" in countries such as Japan, Lebanon, Colombia, Saudi Arabia, etc., Chiang *et al.* (2023) found that there was a need to promote girls' participation in STEM fields even in countries such as Saudi Arabia, the United Arab Emirates and Malaysia. It is interesting to note that in Mozambique as in many other countries, there is a gender disparity in both STEM courses and Social Sciences, where while women are under-represented in STEM courses, men are under-represented in Social Sciences, such as in the Psychology course (see the section on "Context of the research problem", Chapter 1, p. 4).

Generally, I found few studies in the field of social sciences (Thiem *et al.*, 2023; Walkington *et al.*, 2011; Wessels *et al.*, 2021). Regarding the social sciences, particularly psychology, Ball and Pelco (2006) and Fitriani *et al.* (2022) developed studies aimed at developing research methodologies for undergraduate students and not exactly for RBL. Mastering research methods, or at least becoming familiar with them, is important both for students interested in doing research in the future and for those who are not considering becoming researchers, as they also need to make informed decisions regarding the outcomes of their academic competence and professional development (Ball & Pelco, 2006). In this context, Ball and Pelco (2006) conducted a study entitled "Teaching research methods to undergraduate students using an active cooperative learning approach" with the aim of promoting active participation of psychology students, teaching research methodologies through student involvement in research-based projects. The authors concluded that involving students in group-based research projects was an excellent way to teach research methodologies to students, because the method used was more interesting and stimulating as it encourages students' active and cooperative learning. Still in the field of psychology, Fitriani *et al.* (2022) from Indonesia, conducted a study to determine how to design research-

based modules for educational psychology courses that could contribute to enhancing student creativity. According to the authors, the module was designed "to meet the needs of RBL in the educational psychology course" (p. 608). Indeed, Fitriani *et al.*'s (2022) results show that research-based modules improve students' creativity, as they "[meet] valid, practical, and effective criteria" (p. 614). However, neither Ball and Pelco (2006) nor Fitriani *et al.* (2022) mention gender.

Greater awareness of gender interactions may enable teachers to better manage gender dynamics within any innovation curriculum such as RBL. Furthermore, students' experiences also play an important role in the learning process. Since RBL is a form of experiential learning, in the next section, I briefly present a literature review on experiential learning.

2.5. Experiential learning

In "Experiential learning: experience as the source of learning and development" Kolb (1984, p. 21) conceives experiential learning as "a holistic integrative perspective on learning that combines experience, perception, cognition, and behavior". Experiential learning (EL) was so called in order to highlight the central role that experience plays in the learning process (Coker, 2017). In tune with Kolb's concept, and based on the fact that "EL exists when a personally responsible participant cognitively, affectively, and behaviorally processes knowledge, skills, and/or attitudes in a learning situation characterized by a high level of active involvement" (Hoover & Whitehead 1975, p. 25), Gentry (1990) characterized experiential learning as "participative, interactive, and applied" (p. 20). This allows contact with the environment, and exposure to processes that are variable and uncertain. Gentry's arguments are based on the notion that EL involves the whole person, taking place affectively and behaviorally as well as cognitively. In EL students have an experience as a first step. Then they reflect on it and develop new concepts based on the reflection, and during the last step, students test the new concepts in an experiment that can lead to new understandings. This procedure makes it a cyclical process of learning (Kolb, 1984). Kolb concludes his reflection by offering what he calls a working definition of learning, stating that "learning is the process whereby knowledge is created through the transformation of experience" (Kolb, 1984, p. 38). Thus, it is important to consider the relationship between psychology and epistemology in the process of teaching-learning.

Learning is an experience, as is reflection which provides the necessary connection between experience and theory (Larsen, 2017). In learning approaches such as RBL, students are called upon to reflect during their interaction when solving a problem or conducting research. Kolb's model has been variously critiqued (e.g. Bergsteiner *et al.*, 2010). Morris (2020) concludes that there is a lack of clarity regarding what constitutes a concrete experience. Accordingly, Morris conducted a systematic literature review and argues that experiential learning consists of contextually rich concrete experience, critical reflective observation, contextually-specific abstract conceptualization, and pragmatic active experimentation. According to Karoff *et al.* (2017) and Morris (2020) students are placed physically in collaboration with others, in rich contextual learning environments that represent in the present moment, uncontrived experience. However, not all educational contexts offer such rich environments. Further, good planning by the institution is necessary, including the training of teachers, the adequacy of the curriculum, because as in RBL, experiential learning is time consuming (Coker *et al.*, 2017). EL is challenging for students since they are required to respond and accept challenges and behave with spontaneity in a novel learning situation that involves unpredictability and experimentation (Davidson *et al.*, 2016; Karoff *et al.*, 2017; Whittington *et al.*, 2017; Fuz, 2018). For Eileen O'Connor *et al.* (2021) in their study on "Exploring student satisfaction in experiential learning at the University of Ottawa" EL is a form of hands-on learning whereby students learn from structured experiences and reflection in both academic and nonacademic settings. According to O'Connor *et al.* (2021) EL is recognized for its resultant knowledge acquired through doing, but also for its role in building participants' confidence to learn in different settings. EL is purposeful and demands that students take responsibility to find solutions through an inquiry process to specific real-world problems.

When addressing EL in their study on "Teachers' attitudes on the development of critical thinking by EL", Pongračić and Marinac (2021) from Vilnius University, Croatia, stress that students learn by coming to knowledge through their own research, observation and experience. Thus, RBL and EL share at least one common aspect, the development of students' critical thinking through the research process. The potential of EL in developing critical thinking was emphasized in the results of Pongračić and Marinac's (2021) by indicating that teachers really work on developing students' critical thinking through EL strategies and that teachers know these strategies well. Another important result of this

research was that no differences could be observed in regard to gender, level of education, grades, or environments in which teachers work.

Kolb's cyclical model of EL is characterized by four stages, namely: (i) the concrete experience, a hands-on experience in a new situation, immersing oneself in concrete reality; (ii) reflective observation, whereby one reflects back on this experience; (iii) abstract conceptualization, the way in which one links experience to theory or creates new ideas; (iv) active experimentation, the doing phase (O'Connor *et al.*, 2021). Analyzing the four stages proposed by Pongračić and Marinac, (2021) and O'Connor *et al.* (2021) I suggest one with six stages, which directly results from the combination of their proposals for Kolb's model, namely: (i) identifying and learning problems by being in a concrete experience, immersing oneself in a concrete reality; (ii) reflective observation; (iii) hypothesis formulation; (iv) active experimentation; (v) data collection, and monitoring; and (vi) drawing conclusions. In the next section, I briefly discuss the theoretical framework of my research.

2.6. Theoretical framework

My research is empirically and theoretically driven. It is empirically driven in the sense that it is based on direct observation of individuals' interactions in the classroom, on interviewing students using semi-structured interviews, and on a questionnaire about students' attitudes. My research is also theoretical in that I rely on a series of concepts to help me analyze what occurs in the classroom.

Since I aim to understand how gender manifests itself among students in an RBL environment, the present research is underpinned by phenomenology (Brown & Danaher, 2019; Wilhelmy & Köhler, 2022). My research has its phenomenological basis in subjectivity, in so far as my positionality influenced my interpretation of the students' responses in semi-structured interviews and their opinions in the attitude questionnaire (Carvalho & Vergara, 2002). Andrade and Holanda (2010) argue that phenomenology "as an exceptional perspective of looking at" teaching-learning and gender relations enables one to "discover and unveil this particular phenomenon of reality" (p. 267). As part of this, the teacher in the classroom should, in a balanced way, promote and value both female and male participation in the tasks assigned and in the debates. Teachers should pay equal attention to women and men, and encourage participatory approaches.

Linked to this, and according to Harding (2004), feminist standpoint theory explains how knowledge is influenced by the position one is in. It is not independent of the researcher.

Thus, a feminist standpoint aims to change practices of science to produce empirically and theoretically more accurate research, recognizing that knowledge is partial and determined by the position from which that knowledge emanates. Standpoint theory also suggests that an oppressed group should understand that each member is oppressed because she/he is a member of that group and not because he/she deserves to be oppressed. Harding (2004) argues that standpoint theory points toward a world where truth and power do not necessarily issue from the same social locations. In other words, more powerful people do not necessarily produce more accurate knowledge. The knowledge of oppressed groups is as important as that of the dominant groups and should be treated as such. Chilisa and Ntseane (2010) contend that standpoint theory requires describing particular national or regional trends, while simultaneously raising awareness of contextual variations in order to foster an ethical research framework.

On the other hand, I also conducted this research in the light of the notion of inequality regimes. Inequality regimes are “defined as a loosely interrelated practices, processes, actions, and meanings that result in continuing inequalities within particular organizations” (Acker 2006, p. 443). Such inequality regimes have promoted the preponderance of men in Mozambican higher education. To counteract these, in this study students will be given tasks that ask them to engage with gender issues directly in their interactions with each other. This is to foster students’ understanding of gender.

The present study is exploratory and predominantly qualitative. One of the reasons for choosing this method is that I am dealing with a small number of participants. Qualitative research allows for the production of rich data (Wilhelmy & Köhler, 2022). Qualitative research is an umbrella term used to refer to a range of methods based on narrative, phenomenology, grounded theory, case studies, content analysis, among others, and it allows the researcher to explore and better understand the complexity of a phenomenon (Mohajan, 2018).

The importance of qualitative methods in exploring individuals’ experiences, perceptions, thoughts, beliefs, attitudes, has been widely discussed (Dadzie *et al.*, 2018; Maxwell 2020; Thompson, 2022; Wilhelmy & Köhler, 2022). Wilhelmy and Köhler (2022) argue that qualitative research is an inductive method which develops insights from empirical data. Additionally, Maxwell (2020) states that qualitative research is essential for understanding meanings, contexts, and processes. Thus, qualitative method is particularly suitable for the present research.

I would also like to make a final point about my own writing practice in this study since it is based on my adoption of standpoint theory. Given that this theory highlights the fact that knowledge always comes from somewhere, not from nowhere, in other words, from a particular position, this theory also suggests that one should use the first person singular ('I' or 'my') when discussing one's research since it is the researcher who produces the knowledge in question rather than some disembodied abstract or all-knowing figure. In many Social Sciences disciplines it has therefore become common practice to use the first person singular when discussing one's research and this is what I do here. My writing practice therefore reflects my epistemological stance. I now move on to Chapter 3, my Methodology.

CHAPTER 3: RESEARCH METHODOLOGY

This study is based on qualitative research in the form of semi-structured interviews, and a complementary Likert-scale type questionnaire. The purpose of the interviews, my main empirical source, was to gain a deeper understanding of impact of gender on students' perceptions and views of RBL (Mahat-Shamir *et al.*, 2021). Semi-structured interviews allow researchers to generate nuanced accounts of the respondents' reported experiences and interpretations (Dazie *et al.*, 2018). The purpose of the questionnaire was to gather supplementary information about the students' views, and possibly fill in some gaps in the interview data. Therefore, and unlike is common in some social science research, the questionnaire was not intended to produce generalizable data, but rather to reinforce or not what was revealed in the interviews. The combination of these two methods allows me, as researcher, to explore the phenomenon under study through different lenses, cross-checking findings, insights, and conclusions (Maxwell, 2021). In the next section, I briefly discuss the research design.

3.1 The immediate research context

The collection of my empirical data took place at UEM's FacED in the undergraduate Psychology course. FacEd has five undergraduate degree courses: (i) Early childhood education; (ii) Mozambican sign language; (iii) Organization and management of education; (iv) Environmental education and; (v) Psychology. These courses last for four years. In particular, the Psychology course, on which the research focused, has three specializations, namely: (i) Social and Community Psychology; (ii) School Psychology of Special Educational Needs and; (iii) Psychology of Organizations. Although from the first year (level) students are organized according to their specialization, the three strands have a common core in the first and second year. In the third and fourth year, students take specialization courses only. The RBL intervention was carried out in two first- and one second-year class, in Statistics 1 and in the Educational Psychology course, respectively. The two classes were chosen as convenience samples, as they were the ones running at the time of the intervention. Typically, they are taught through lectures, group

work assignments, and coursework, but without any perspective related to the initiation of research activities. As my concern was to provide an initiation into RBL to students from the first years of university education, I decided to do the intervention in the first and second years.

3.2 Research design

In this qualitative study on gender and RBL I employed a staged approach of introducing RBL as an intervention on three Psychology undergraduate courses, followed by interviews and a questionnaire to explore students' experiences of this teaching-learning approach. Theoretically this design was motivated by the issues already discussed in the literature review in Chapter 2, namely that as a university aspiring to be a world-class, research-led, UEM needs to induct its students early into how research works so as to encourage them to pursue research, and RBL is one key pedagogical way in which one can pursue this. Secondly, the asymmetrical gender distribution at research grade level within academe (doctoral students and upwards), with men by far outnumbering women, calls for understanding what, from women's and their male classmates' viewpoint, hinders most women from progressing academically beyond junior levels. Third, engaging with RBL encourages students to bring their own standpoint to bear on the work they do and to experience what that means as each standpoint is both an epistemological one (e.g. what do I know?, how do I know?, etc.), a material one (how do I get to the resources I need to do the task?), and a social one (how do I interact with others?, how do others' interactions with me impinge on my work and the work of the group, etc.).

Three-hour long RBL sessions took place once a week over an 8-week term (see Appendix I). Due to difficulties explained below in accessing the classes at the beginning of the semester (see the section on "Data collection", in this Chapter, p. 38), it was not possible to complete the 12 weeks initially planned for the intervention. However, the 8-week term proved to be sufficient to implement the intervention. Note that the emphasis in this thesis is not on the intervention as such but on the students' perceptions of RBL. Hence, rather than detailing the intervention itself at length, my focus is on the students' perception of the RBL experience. The description of the intervention therefore also

centres on the process of the intervention rather than on its content which, in any event, would be different for every RBL context.

The first session consisted of an explanation of the learning approach used and an introduction to Task 1. Students worked in groups of, on average, five, depending on the total number of students in the class. They formed these groups according to their own criteria. This procedure was intended to allow me as researcher to observe how sensitive students were in relation to gender when forming groups of same-sex or mixed-sex students. This has to be seen, however, in a context where the women in each class outnumbered the men, as is common in Psychology undergraduate courses. To make the learning process more efficient, each group was supposed to have a group leader, a moderator, and a rapporteur. These roles were to rotate on a weekly basis so that by the end of the semester, all students had performed every one of these roles at least once. This was to allow all students to develop the skills or competences related to each role on an equal basis. For each piece of work delivered to the teacher, all group members were to be identified, with a clear indication of the roles played by each member.

Since there were five hours available per week, the remaining two hours of the week were used for lectures. This gave the students enough time to accomplish the task assigned, and to ensure the accomplishment of the programme, since RBL sessions are time-consuming. In each RBL session, one group of students randomly selected by the teacher made a presentation and after that there was a debate in class about the presentation content. The debate was chaired by the teacher (see next section on “Working with a colleague on my research”, in this Chapter, p. 32), and at the end she/he gave feedback to the students and provided a summary of the session. This was to clarify and deepen students’ understanding of the acquired knowledge. For the accomplishment of the tasks, a student guide in which all the instructions regarding the relevant tasks were explained, was developed (Appendix II). Students from three different classes participated in the study, as described further in the section on participant selection. Next, I discuss how I came to work with a colleague on this research.

3.3 Working with a colleague on my research

In order to gain more insight into how well RBL could contribute to the teaching-learning process and how this approach could help promote research skills and gender awareness, I decided to run the intervention not only in my class but also in another teacher's class, with students at a different level. One could argue that this complicated the study because it introduced a different cohort at a different learning stage, as well as a different teacher, but it also allowed for the possibility of new insights. In any event, in this qualitative study, as is the norm in qualitative research, the emphasis was on getting rich data and not to work with a 'representative sample'. So, I asked a colleague to collaborate so that I could run the intervention in her class as well. And, as I was going to work with first-year students, I sought the collaboration of second-year students from a sub-discipline different from mine to see how students at both levels, first and second year, deal with this approach, knowing that first-year students do not yet have university learning experience and that second-year students already have some experience and may even have already studied research methodology. It might have been that at one of the levels, the approach would arouse more interest than at the other, or that the interest would be the same at both levels (see the section on "Conclusions", Chapter 8, p. 129).

To follow up on how the process took place in my colleague's class, I was present at all the sessions there. In the first three weeks of the intervention, my colleague had to combine two classes: hers and that of a colleague on maternity leave. But as soon as the latter returned and started teaching, the two amalgamated classes were separated again. After the separation of the two classes, as I was no longer able to provide in-person monitoring because the two groups had classes at the same time, I decided to continue with the intervention in one class, that of the colleague who had been collaborating with me.

Shortly before the beginning of the intervention, I provided my colleague with the students' handbook, consisting of information about the learning cycles, a student guide, and also a guide for the report they had to write. This was to allow my colleague to familiarize herself with how the teaching-learning was going to occur, and also with what was expected from the students. I also asked my colleague to feel free to make any

observations she deemed necessary regarding the approach including on the student handbook.

Four weeks later, in my colleague's class, seminars were introduced which, similar to what I had proposed, consisted of assigning tasks. The difference was that these were presented in all classes, and were also used for student assessment, and each group had a different topic. The figure of the debate moderator was also introduced by the teacher after the presentation of a certain group (see the section on "The intervention in the educational psychology class", in this Chapter, p. 40) for every presentation. However, students were advised to continue to follow the instructions in the student guide relating to the RBL sessions. The interviews were conducted at the end of the intervention and the questionnaire was administered at the end of each interview (for more details see the section on "Data collection", in this Chapter, p. 38). Next, I will discuss the process of participant selection.

3.4 Participant selection

The study was carried out in the spring of 2023 in two first-year classes and one second-year class of the Psychology course at the Faculty of Education. The course selection where the RBL intervention took place was convenience based: convenience because the selection of the courses was based on ready availability (Passmore & Baker, 2005). Convenience sampling is a common method in qualitative research. All students of the three classes were taught using the RBL approach. From the total number of students across the three classes, 30 were then selected for follow-up interviews, and to complete the Likert-scale attitude questionnaire. To select these participants, I used criterion-based sampling, which includes all cases that meet a specific criterion or more (Creswell 2007; Turner III, 2010). The specific criteria in this case were that the participant had taken part in the RBL in one of the three classes in which the intervention was conducted and that overall the group of participants reflected the gender distribution in the classes as a whole. Since interview participation was voluntary, and with these two criteria in mind, participants were selected on a first-come-first-served basis including with a view to achieving a gender balance among the interviewees in line with the gender distribution in

the seminars, as already indicated. Thus, the number of women and men was determined proportionally, relative to the absolute number of women and men in the class. This allowed for some gender representativity whilst basically remaining faithful to the qualitative research paradigm underlying this study.

The interview sample was composed of first and second-year students in Psychology, making up a non-probabilistic sample. Both women and men were invited to participate. For reasons unknown to me, four women did not come to the interview, despite having confirmed that they would participate in the research. Thus, 26 participants in total, 20 women and six men, were interviewed. This means that all the selected men participated in the study, since two men were selected from each class.

All students of the three classes were informed that this was part of my PhD research and they were asked for their consent to participate in the study prior to its commencement (Appendix IV; see also the section "Research ethics", in this Chapter, p. 44). As already indicated, all participation in the interviews and questionnaire was voluntary and also unremunerated. In order to ensure that the participants understood the study and their participation in the research, I explained the relevance of learning through research during the first RBL session, because this was an opportunity for them to acquire the necessary skills for doing research while learning at the same time. I now move on to the presentation of the participants' demographic information.

3.5 Participants' demographic information

Most participants were aged between 18 and 20, with some outliers such as four women aged 25, 26, 30 and 33, and two men aged 33 and 43. Table 4 summarizes the participants' key demographic data.

Table 4*Participants' age range, marital and employment status by sex.*

Age range	Participants		Total	Married		Workers	
	Female	Male		Female	Male	Female	Male
[18-23]	16	3	19	1		1	
[24-29]	2 (25,26)	1 (24)	3				
[30-35]	2 (30,33)	1 (33)	3	2	1	2	1
[36-41]	0	0	0				
[42-47]	0	1 (43)	1		1		1
Total	20	6	26	3	2	3	2

A very interesting fact is that in the three classes there were similar numbers of working and married participants. Indeed, in the Statistics after-work class there were only five workers when one might have expected many more, and only two were married. In the two work-period classes, there were seven workers, five in the Statistics class, and two in the Educational Psychology class. In the work-period Statistics class, only two participants were married, and in the Educational Psychology work-period class, just one participant was married. There were two married women in the after-work Statistics class, two women in the work-period Statistics class, and one woman in the work-period Educational Psychology class. The same distribution occurred in relation to workers in all three classes. Marital status, having or not having children, being or not being a worker, are some of the aspects that can negatively influence students' engagement and dedication to studies, due to partner interference, the attention that has to be given to children, or due to professional obligations. In other words, someone's freedom of action may be limited because of these factors. Therefore, when analyzing student participation in the assigned tasks, these aspects must also be taken into account. However, it should be noted that only about 20% of my participants were working and/or married, meaning that around 80% were not. This may be due to the age of these participants. It also indicates, as has been observed elsewhere, that those seeking higher education are more likely to marry later and to have children later than average.² The demographic data

² According to the CIA World Factbook, as of 2015 (latest data) 52.9% of women in Mozambique were married by age 18 (see <https://www.cia.gov/the-world-factbook/countries/mozambique/#people-and->

suggest that all three classes had similar demographic characteristics regardless of whether the class occurred during or after the work-period. This may in part account for the fact that there were significant similarities in the participants' responses in the interviews and to the questionnaire. Next, I briefly discuss the research methods.

3.6 Research methods

As already indicated, I undertook both one-on-one thematic interviews and a questionnaire. According to Cheron *et al.* (2022) interviews are a versatile tool for data production through the use of multisensory channels such as verbal and no-verbal cues, speech, and listening, during the interaction between the interviewee and the researcher. My data were collected through semi-structured interviews. Semi-structured interviews are a qualitative method in which the interviewer develops an interview guide with topics to explore and questions to ask during the interview, while being open to the cues provided by the interviewee in the interview process (Evans & Lewis, 2018; Brown & Danaher, 2019; Adeoye-Olatunde & Olenik, 2021). Evans and Lewis, (2018) and Adeoye-Olatunde and Olenik (2021) argue that semi-structured interviews allow the researcher to explore subjective viewpoints, to gather participants' in-depth accounts of their experiences, and that this type of interview can be used as much to consider the meanings of participants' reported experiences as it can be used to explore how these experiences and meanings might be informed by discourses, assumptions or ideas which exist in wider society.

These interviews were the main way of operationalizing my theoretical framing in my research since they work explicitly to elicit the standpoints of the participants on the given topic, in this instance the experience of undertaking RBL. My concern was to understand their articulated perceptions of RBL and what that suggested about the related gender issues. Their standpoints became clear in the ways in which they recounted their experiences, and in the differences and similarities that emerged in these accounts.

society, accessed 28/8/2025). This is in line with the fact that the vast majority of Mozambican women still cannot or do not access higher education (see Miguel et al., 2021).

I conducted the interviews first as they were the main research instrument. The interviews took place at the end of the first semester, after the intervention which occurred from March to June 2023 (see the section on “Data collection”, in this Chapter, p. 38). Students were asked to provide written consent prior to being interviewed and filling in the questionnaire. At the end of each interview, I asked the participant to fill in the questionnaire (Appendix VI) which was supplementary. This Likert-scale questionnaire concerned students’ attitudes towards RBL. According to Nayak and Singh (2015) a questionnaire is a systematic compilation of questions that capture responses to a particular issue. With the semi-structured interviews I sought to understand how the students thought about RBL and how gender manifested itself in relation to RBL. With the questionnaire I wanted to cover possible gaps in the interviews and detect possible divergences and/or convergences in relation to the data provided in the interviews. I should emphasize that I am aware that often questionnaires precede interviews but I chose to conduct my research in this order because in this case the questionnaire was a supplementary data collection method.

Although I was taking notes during the interviews, in order to capture all the data, and be faithful to the answers of the interviewees, I asked permission from the interviewees to audio-record all interviews. I was aware that with this procedure there would be a risk that some participants would feel uncomfortable knowing that they would be recorded. But everyone responded positively to my request. The interviews and questionnaire were conducted and administered in Portuguese since this is the language of instruction at the university. I then transcribed the interviews verbatim and then translated them into English. Likewise, I also translated the answers to the questionnaire into English. Both the interviews and the questionnaire were carried out after the two planned assessments, and before the examination period, to make sure that all selected students could participate in the inquiry. I shall now move on to discuss the research set-up.

3.7 Research set-up

The research data were collected through semi-structured interviews as the main method, and a questionnaire on attitudes with 30 students as participants. The intervention was

conducted in three classes of the first (two) and second year, over eight weeks (see the following section on “Data collection”). Three hours of RBL sessions occurred once a week in a seven-day cyclical process (Appendix I). The first day of the RBL session consisted of an explanation of how the lessons were organized, and some documents such as (i) the subject program; (ii) the learning cycles; (iii) the student guide; and (iv) a guide for the work report and, at the end, the first task was assigned. Students presented the first task during the following RBL session, the second week and, the second task was then assigned. Therefore, in each session a given task was presented, and the following task was also assigned at the end, and so on.

In the very first session, students were instructed to form groups at their discretion consisting of five students. As the number of men on the psychology course was quite small, there was usually only one man in each group. Even so, there were three groups in which there were only women. Although these groups also performed roughly similarly overall to the mixed groups, nothing can be said in terms of the gender impact regarding these non-mixed groups. All groups remained the same throughout the intervention. This was intended to ensure that all students could play all the roles defined in the student guide. For the interviews, 10 participants were selected from each class. The number of women and men interviewed was proportionally determined based on the total number of participants (see the section on “Participant selection”, in this Chapter, p. 33). Thus, in the next section, I discuss the data collection process.

3.8 Data collection

In this section on the process of the data collection I begin with the structure of the classroom intervention. As already stated, the intervention took place in three classes, two first-year classes, and a second-year class. All classes were made up of three specialization groups, namely: (i) social psychology; (ii) psychology of organizations; and (iii) school psychology for special educational needs. Of the two first-year classes, one was held during working time (daytime) and the other was held in after-work time (evening). The third class, from the second year, was run by a colleague whose collaboration I had requested to allow me to collect the data; this also took place during

working time (daytime). Working time and after-work time are literal translations of “laboral” and “pós-laboral” in Portuguese, in reference to the classes that take place in the daytime (day shift) and in the evening (night shift), respectively. A small difference in relation to the classes that take place during the evening is that the after-work time starts relatively earlier, at 5:30 pm, and the night-shift classes start a bit later, at 5:45 pm.

Each of the three classes averaged about 40 students, of whom only an average of 10 in each class were men. In the two first-year classes, the subject was “Statistics” and in the second-year class, the subject was “Educational Psychology”.

In all classes, the first session consisted of the researcher explaining how the classes would take place, that is, the approach that would be used and the assignment of tasks, what the students would be asked to do, in groups or individually, in a seven-day cycle. Then, a handbook was distributed with information about: (i) the learning cycles that consisted of three hours of RBL sessions, occurring once a week; (ii) the student guide explaining how to carry out the tasks with the aim of providing them with basic research skills. This guide also contained a description of the three roles that should be played by all members of the group in turn, namely that of coordinator, moderator and rapporteur (see “Appendix II”). They also received (iii) the report guide, describing how to prepare the reports regarding the tasks they had performed. Therefore, in addition to content learning, tasks were assigned with the aim of making students familiar with the basic principles of scientific research and stimulating social interactions between students and, at the same time, fostering gender relations among women and men, especially during group work.

In the subsequent RBL session, students made presentations followed by discussions, and they were assigned the next task. The presentations and discussions in the classroom aimed to explore the content of the questions that were part of the tasks and to promote students' confidence in speaking to an audience. National holidays, the adjustment of the classes (the division of one class into two classes) due to the late arrival of the first-year students to the university (see the section on “The intervention in the statistics class”, in this Chapter, p. 41), and the need to split the second-year class affected my original research plan. Therefore, of the 12 planned RBL sessions, it was only possible to carry

out eight sessions. Even so, the sessions provided a good idea of the impact of gender when students encounter an RBL environment.

Towards the end of the intervention, individual one-on-one thematic interviews were conducted, and a questionnaire was used immediately after the interview with each of the 10 participants from each class. The number of women and men who participated in the study was roughly proportionate to the gender distribution in the classrooms: eight female and two male students from each class were expected to participate in the interviews and questionnaires. All students selected (see the section on “Participant selection”, in this Chapter, p. 33) from the Statistics classes participated in the study. From the Educational Psychology class, only six students, four women and two men, participated in the interviews. This means that all selected men participated in the study, since two men were selected from each class. Overall, as already explained, I had 26 participants. In the next section, I discuss the intervention process in the Educational Psychology class.

3.9 The intervention in the Educational Psychology class (working-time classes)

This was a second-year class in which I collaborated with a colleague. At the beginning of the semester, there were approximately 80 students, originally from two classes, which were combined. The two classes were put together because one of the teachers was on maternity leave. Six weeks later, when she came back, the class was divided again into two, and the class in which I then collected my data had approximately 40 students, of which only seven were men. Before splitting into two classes, 12 groups of five, one group of six, and two groups of seven members had been created. The creation of the groups was at the discretion of the students. Each group had a set of tasks to be assigned within the group, and carried out in groups or individually, over a seven-day cycle. After splitting the initial class into two, new groups were created because, in the initial ones, there were students from both classes. So, after that, eight groups of five members each were created. In this class, there were three groups with only women, two groups had two men in each one, and three groups had one man each.

Contrary to what happened before the splitting into two classes, the assigned tasks for the seminar sessions were different for each group. Each group was to provide a copy of their

work to the other groups within the class. This was done to ensure that everyone could have access to the content addressed by the others in their class. In each session, two groups were asked to make presentations. Within each group, students took it in turn to present. Both the presentation and the debate were moderated by a student selected by the teacher. The other students of the class were invited to ask questions of the presenting group, make observations, and/or add something to the group's presentation. After the presentation, before giving the floor to the class, the moderator made some brief comments (summary) regarding the group's presentation and only after that opened the space for debate, giving the floor to the class and then to the teacher. In addition to giving feedback, the teacher also asked some questions that would help clarify certain concepts. Before answering, the group was given 10 minutes to prepare the answers while the rest of the class had a break (see the subsection on “The figure of the debate moderator and the 10-minute break”, Chapter 4, p. 73). Overall, this process was somewhat different from that in the Statistics class which I discuss next.

3.10 The intervention in the statistics classes (working time and after-work time classes)

These were the first-year classes and at the beginning of the semester, each class had an average of around 80 students. However, four weeks into the semester, more specifically in the first week of April, the classes were both divided into two. According to the course director, the cyclones and floods that had occurred in Mozambique at the beginning of 2023 contributed to the late arrival of students at the university. And, according to him, the existing number of students did not justify the creation of separate classes. The classes in which I did the intervention were about special educational needs and social psychology. With the division of the class into two, some groups were reduced to three or four members and the students themselves preferred to keep these groups because they used them in other disciplines in which they had to carry out group work.

However, some groups did not function properly due to relationship problems between group members. Just to give one example, in a group made up of two women and a man, the man was punished by excluding his name from the report they delivered to me

because he had not participated in the group work. Asked what had happened, the man said he preferred not to be part of that group anymore because he did not relate well to one of his colleagues, in this case a woman. When asked, the class as a whole thought that this group should remain together because in other subjects the group would be the same. As their teacher, however, I took the decision to integrate the different members into other groups. I did this to find out what would happen to these students in the new groups. In other words, I wanted to find out if these problems would persist across other groups. However, no further problems were reported. This means that the man considered problematic functioned better in his new group. Or, whoever was problematic, the man or one of the women in the group, this person was now better integrated.

In general, the groups worked well. However, it is the case that they did not always follow to the letter the instructions they had been given, for a variety of reasons discussed in the data analysis chapters. It is worth noting that in the after-work class, two groups had two men in each group and in the remaining six groups there was one man in each group. In the working-time class, one group had only women, one group had two men and the remaining seven had one man in each group. I shall discuss the gender impacts in these groups further in the analysis chapters. My data analysis process will be discussed in the next section.

3.11 The data analysis process

This research is epistemologically based on phenomenology in that it seeks to understand the observed phenomena, to interpret them and their meanings (Vergara, 2000; Carvalho & Vergara, 2002). In order to analyze the data of the semi-structured interviews, I used partly deductive and partly inductive content analysis, an iterative process of coding in which the codes I used to label the data were developed during the process of coding, based on the content of the data collected (Vears & Gillam, 2022). The coding was partly deductive because I had designed the research and framed the interviews through the questions I raised, and partly inductive because I took my cue from what the interviewees actually said in interview. In my analysis I use an interpretive approach which also indicates how my positionality may have influenced my research and my interpretations

of the students' responses and views (Carvalho & Vergara, 2002). This is a standard procedure in gender research.

The data were analyzed manually. So, after reading the interviews thoroughly, I developed a grid analysis. This is a useful technique to analyze interview data by comparing responses to different subcategories of information. I adapted a grid template from the internet according to my research needs³. Thus, I defined categories and subcategories, e.g. students' RBL attitudes: negative or positive; gender issues in RBL: normative or non-normative; work preference: in group or individually; observations on group or individually work; importance of RBL; learning experiences, and usefulness of the student guide. From the semi-structured interviews, I selected some “units of analysis” which are parts of text (Vears & Gillam, 2022) that make up the data, such as phrases or expressions that were related to the research questions. I used the coding units to extract clauses and sentences from the data (Stemler, 2001).

In my analysis, I took into account the manifest content of the interviews as well as some latent content, that is, I analyzed the articulated content, mainly related to RBL, and also the implied content related, for example, to gender issues. Since I asked all the interviewees similar or indeed the same questions, I identified sections of the data that were related to the research questions.

As this is predominantly qualitative research the purpose of the questionnaire (Appendix VI), as a complementary method, was to compare the answers given by the participants during the interviews through checking (counting) the participants' frequencies (responses) regarding disagreement, indecision or agreement with the statements (St) in the questionnaire, according to the Likert scale. In the discussion, the questionnaire results in columns one and two are collapsed into one (disagreement) and the results from columns 4 and 5 also into one (agreement), with some exceptions in cases where the results deserved some attention (see “Tables 9 and 10”, Appendix VII). It is important to note that, of the 26 participants, one female participant did not return the questionnaire and that two female participants did not complete the questionnaire from statements 14 onwards. I now move on to deal with the research ethics.

³ See <https://www.google.com/search?q=grid+analysis+template&oq%20>.

3.12 Research ethics

My research falls within the field of social sciences and gender research. In Mozambique, at the time of my research project submission, research ethics requirements were mandatory for certain fields, such as those involving experiments with living beings/organisms (Nota, 2022), for instance in medicine, health sciences, chemistry, just to name some, but not yet for social sciences. I started my research in 2022 and at that time, although research ethics was part of the UEM Code of Conduct and Good Practices (2020), the mandatory submission of research projects to the Ethics Committee only began in 2024 at which point my empirical research had been almost completed. In any event and notwithstanding this, as I explain below, I conducted my research in line with the ethical requirements of the Swedish Ethics Authority (<https://etikprovningsmyndigheten.se/en/>) since my main supervisor for the majority of my work and part of my research training were located in Sweden. My research did not involve vulnerable people. Even so, to protect my research participants, I always sought to adopt procedures that ensure compliance with international ethical research standards.

As I processed personal data as part of my research, I first explained my research to my participants, what it was about, and that it was aimed at obtaining a doctoral degree. Before the start of the interview, each participant was asked to read and sign a consent form (Appendix IV). In line with the ethics requirements mentioned above, the consent form specified the terms of their participation, such as: (i) that the participation was voluntary and unremunerated; (ii) the duration of the interview; (iii) requesting permission to record the interviews and to use the data for publications arising from the research; (v) that the data collected were for research purposes only; (vi) that no unauthorized person would have access to the data provided; (vii) that participants could choose to withdraw from the research without explanation at any time; (viii) that the use of the data provided was subject to UEM's research policy. For the protection of the research participants and the data, the data collected both from the interviews and the questionnaire were coded and stored in a secure location, that is, on an external disk protected with a password.

Since the intervention would involve teaching-learning experiences new to the students, I explained that it would require a significant commitment from students and teachers to

adapt themselves regarding this new approach, a change in behaviour and attitudes but, at the same time, it would provide the students with opportunities to undertake the first steps in scientific research. After the explanation, I orally requested permission from the three classes to conduct the lessons under the proposed terms, to which all agreed.

In recognition of the power differentials between research participants and myself as researcher during the intervention and the interview process (Iosifides, 2018), and since my positionality could affect the ways in which I related to them, I now propose to reflect on my participation as researcher and teacher in the research in terms of three dimensions: (i) power asymmetry; (ii) gender asymmetry; and (iii) research context and research participants. Next, I briefly discuss all three dimensions, starting with the power asymmetry.

3.12.1 Power asymmetry

Power asymmetry occurs when the different parties in an interaction have different degrees of power within that interaction (Golan, 2011). In traditional hierarchical societies such as Mozambique women are considered subordinate to men and younger people are subordinate to older people. This means that men and older people are often more powerful than women or younger people. Such asymmetry is important because it can lead those with less power to do the bidding of those with more power in order to be accepted by them or to avoid conflict. In interviews it can mean that the interviewee tries to give the answers s/he thinks the interviewer wants to hear. Recognizing power asymmetry and taking concrete actions to eliminate it can contribute to the harmonization of gender interactions based on egalitarianism as a principle of equal rights and opportunities for the individual, regardless of gender (Rajapbayevna, 2022).

There was a clear power asymmetry between myself and the students which meant that as an older man, and as their teacher and the researcher in this project I was in a privileged position in relation to them. This produced a situation of role conflation (teacher and researcher) because on one level I was in charge of both the classes and the research, and as teacher I also judged their performance whereas such judgment was not part of the interviews.

At the same time and on another level I was dependent on the students for my research data and as such also vulnerable to that situation as became clear when the planned research became subject to the vagaries of the weather and when interviewees failed to turn up. It meant that participants could potentially provide answers they thought I wanted to hear, just to please me. This power asymmetry which has to be acknowledged could not be changed but to mitigate it during the classes and the interviews, I always tried to create a climate that would help the students feel at ease, while also adopting pedagogical practices that would ensure epistemic justice such as giving equal attention to female and male students, and encouraging all students, no matter what their gender, to take on all the different roles specified in the guide.

I was also in the position of “outsider-insider” (Nota, 2022, p. 70). I was an outsider because I was a researcher and the teacher and hence different from the students, but I was also an insider because I was in the same institution and discipline as they, and shared their national identity. And I was aware that for the success of my research I would have to count on the collaboration of all parties involved. Consequently, I had to create an atmosphere that would inspire my students to trust me, especially when they spoke out against teachers and/or the institution. And I think that I achieved this purpose, taking into account the sincerity with which they answered the questions during the interviews, which revealed that they felt comfortable, as can be seen from the following statement:

I have heard several reports of teachers who are absent a lot. It is necessary that the teachers are also serious and...speaking seriously there are teachers that, for example, we had only the grades of last year, of the first semester, only this year. So, we realized that there is little seriousness...on the part of the institution, the problem is with SIGA [abbreviation in Portuguese that means ‘academic information and management system’]. Until today, we only have two verified marks there [recorded grades of two subjects]. We don’t know if it is the fault of the teachers who have not delivered [registered] it yet or it is SIGA’s problems (MaleB11).

In this extract there is a direct criticism of both teachers and the institution, something that can only be articulated where trust reigns or the issue is well understood and widely

agreed upon. And this criticism was corroborated by participant FemaleC21 when stating that:

Some teachers who pressure...they even humiliate students in the midst of that, the pressure, and this somehow ends up lowering self-esteem because I think that if it is a wake-up call that a teacher wants to give, mainly to correct an error, I think that should be aside. But there are teachers who talk in front of the class and somehow that leaves the person feeling down and I think that teachers must also have a bit of manners...I think they [the institution] should charge the teachers themselves. Maybe supervise some classes (FemaleC21).

These two examples constitute a clear demonstration that the environment I established did enable the participants to speak freely. But in my research, I also paid attention to the fact that women have been treated unequally. Therefore, in the following section I briefly address the issue of gender asymmetry.

3.12.2 Gender asymmetry

Gender asymmetry refers to the inequalities that contribute to women being in a disadvantaged situation compared to men. Typically, women have had less access to many opportunities, including in education. To address this gender asymmetry, my research was designed in such a way that it would promote participatory (Snijder *et al.*, 2023) and democratic learning (Rajapbayevna, 2022), participatory because all students were encouraged to actively participate in the learning process in equal measure, and democratic because they could determine who, what, where, and how to perform the assigned tasks. As a researcher, my concern was to ensure that both women and men had the same learning opportunities when carrying out tasks in groups. Carrying out tasks in groups was intended to make students aware that everyone is equally capable of learning, regardless of whether they are women or men. I will come back to how gender played out in the task performance in my analysis chapters.

To present the results, I gave the interviewees pseudonyms with the purpose of protecting the participants, including the colleague who collaborated with me, and the classes

themselves. Classes were designated A, B, and C. Next, I briefly consider the research context and the research participants.

3.12.3 Research context and research participants

The research was carried out in a classroom context, involving first-year students in working-time and after-work time classes. But the research also involved second-year students during working hours, whose classes were taught by a colleague of mine. And trust between the researcher and participants was crucial for the research to be successful. Therefore, on the first day of classes, I explained to the students in the three classes how the classes would take place, and that the research fell within the scope of my doctoral studies (see above, p. 43). Additionally, I explained to all of them that the data collected would only be used for research purposes and that anonymity would be guaranteed to all those who would participate in the interviews. It should be noted that the interviewees also filled in the questionnaires that served as a complementary instrument. In my interview guide, the last part was about demographic information and some of the data I collected such as age and marital status are sensitive. Therefore, before asking I had to explain to everyone the importance of collecting such data for my research. Thus, I sought to respect all aspects related to ethics. Next, I briefly present the research limitations.

3.13 Research limitations

Shortly after this research study began, the world was shaken by COVID-19 which to some extent affected its normal course. Against this situation, very little could be done. Furthermore, my initial supervisor at UEM fell ill, leaving him unfit to provide proper supervision. Due to work overload, the co-supervisor also did not have enough time to perform his role properly. Consequently, I was assigned my current supervisors - a main supervisor at Uppsala University in Sweden who was co-coordinator of the UEM-SIDA sub-program in which I conducted my research, and a co-supervisor at UEM - with whom my studies have gone wonderfully well.

I also faced the challenge of writing my thesis in English, as my primary supervisor is an English speaker. But this challenge provided me with a unique opportunity to improve my English skills. The research topic itself is so new that it is very difficult to find appropriate literature, and from Maputo it was even more difficult because of the difficulties of accessing resources easily. This fact contributed to part of my studies being developed and conducted in Sweden, thus to some extent overcoming the related difficulty.

There are many other limitations that I could discuss but here I shall just mention three. One, as with all qualitative research, my study did not attempt to produce a generalizable or representative sample, instead aiming to get bottom-up, rich insights into how gender impacted students' experiences of RBL. The possibilities for this research were partly circumscribed by the gender distribution in my discipline where women constitute the majority. Research on the same topic in a discipline where numbers of women and men are equal, or where men constitute the majority, might yield different results and is definitely to be recommended.

Second, I was not in a position to explore the long-term effects of being exposed to RBL in terms of what impact gender might have here. But it would be useful to find out if exposure to RBL increases women's likelihood of conducting research and advancing in academe. For this to be possible, and this is my third point here, however, one would need to introduce RBL more systematically and more comprehensively across courses and disciplines to reinforce its impact. If RBL is only utilized in one course or discipline, it may not have long(er)-lasting effects. Again, this is something that needs to be discussed and researched further.

In the next three Chapters 4, 5 and 6, I present my research findings in accordance with the defined research objectives, following the same sequence. Therefore, I now move on to Chapter 4 which addresses understanding the gendered responses of undergraduate Psychology students to RBL.

CHAPTER 4: RESEARCH-BASED LEARNING: INTERESTING BUT NOT WITHOUT PROBLEMS

In this chapter, I discuss undergraduate Psychology students' attitudes towards research-based learning and its gendered implications, more specifically: (i) the students' views of research-based learning (RBL) through task accomplishment; (ii) the students' perceptions regarding gender in relation to RBL; and (iii) the degree to which gender played a role in students' organization of carrying out their tasks.

My study is centred on how gender manifests itself in the RBL context, aimed at fostering students' active participation in the learning process. The assigned tasks were mostly carried out in mixed-sex groups to the extent that the numbers of women and men in the classes allowed. This was already discussed in Chapter 3, the Methodology chapter. Groups enable more possibilities to develop cooperative learning (Susiani et al., 2017), to interact, plan, organize, divide tasks, discuss, write the report, and present it in the classroom and debate with the rest of the class, with the teacher's guidance.

The participants' demographic data, such as age, marital status and so on (see the section on "Participants' demographic information", Chapter 3, p. 34), suggested that the students in all three classes had similar demographic characteristics, regardless of whether it was a working-time or an after-work time class. As already mentioned, this may in part account for the fact that there were significant similarities in the participants' responses in the interviews and to the questionnaire. As a consequence of the similar participants' responses across the three classes and to avoid repetition, the results from the three classes are presented together. The classes were coded A, B, and C.

With the questionnaire I also sought data about the students' attitudes, aiming to cross-check the results from the interviews with the questionnaire. I therefore discuss the results of both together. The questionnaire (Appendix VI) had two sections, one on the learning strategy (task assignment) and the other on RBL as an instructional model. Each section had a series of statements (reproduced in the tables in Appendix VII) which the participants had to rate on a 1-5 Likert scale. For presentation and analysis purposes, the data collected are presented in two tables, each corresponding to a section. Specifically, I

sought to obtain from students their opinions regarding RBL's potential to stimulate learning, the spirit of research and the awakening of gender awareness due to its interactive nature (Walkington *et al.*, 2011; Thiem *et al.*, 2023). I start by discussing the students' views of RBL through task accomplishment.

4.1 Students' views of RBL through task accomplishment

For all three classes' participants, the assignment of tasks to students contributed to motivating their engagement in the learning process as it was positively appreciated and "...taken very seriously" (MaleB11). The participants were largely unanimous in considering the assignment of tasks as a strategy that provided them with an opportunity to search for information autonomously and independently in a process that enabled them to better understand and master the content. Learning this way, the students themselves had to find ways to search for information that allowed them to build new knowledge. As one participant argued:

I think the tasks help a lot...from the moment we have the ability to produce work [knowledge] a little more diligently, we learn from ourselves that we can do something useful and we can't just wait for the teacher. The student is more [responsible] for seeking information to bring and debate in the room (FemaleC17).

The assignment of tasks made these students aware that they should take responsibility for their own learning. The students expressed satisfaction in recognizing that learning was more effective as a result of the research they carried out, and because of that, the knowledge acquired was less likely to be forgotten as the following participant contended: "...good way of learning, we learn better; researching, it is difficult to forget" (FemaleA03).

The participants stressed that assigning tasks must be a continuous practice (not one-off), otherwise students relax and become lazy. By assigning tasks to students, the teachers kept the students' attention on learning. As a participating student stated: "I think it [tasks] also helps us to study more because if we are too relaxed we get lazy...at least that way they manage to keep our attention..." (FemaleA05).

The questionnaire data were consistent with this participant's statement, since of the 25 participants, 15 women and four men said that learning through assignment of tasks was better than learning through lectures (St 4). Three women and one man denied that the first was the best and one woman and one man did not take any position. Reinforcing this view, 20 participants, of which 16 were women and four were men, stated that the assignment of tasks made learning more interesting, but one man completely disagreed, and one woman and one man were undecided (St 16). However, despite the preference for learning through tasks, almost the same number of participants, 15 women and three men, considered lectures (St 19) necessary to complement learning; one man thought they were not necessary. Two women and two men remained undecided.

Thus, overall learning through tasks accomplishment was positively appreciated. One after-work time class A female participant suggested that it should be implemented from secondary school onwards because students learn better through doing research. As she put it: "researching is very fundamental; it should be used from secondary schools; we learn better this way of research. I think it should be used more often in all subjects..." (FemaleA07).

In the last part of this excerpt, the participant recognizes research as important and suggests its application in all disciplines. In turn, another female participant from working-time class B suggested: "[Research] ...should be applied from primary school to university, [that is, at all levels, since]...we seek to delve deeper into the subject, students learn to seek information without depending on the teacher" (FemaleB15).

Certainly, regarding university curricula, there is the suggestion that RBL should be incorporated into the curriculum of many, if not every, academic study program (Wessels *et al.*, 2021) to facilitate student independence as learners. RBL helps students to build a strong intellectual background, and connects research principles with the student's learning process (Ahdika, 2017).

The tasks made the participants enthusiastic about the presentations and the debates they had in each learning session because, according to their statements, in conducting research, they brought knowledge to the classroom and in this process they had to ensure that they understood the content, to better explain it to their colleagues, as stated by the following participant:

This form of learning we have, it has...it puts the student present. I don't know if the teacher understands me. It enlightens us...this brings us up to date with the theme, we get into the subject itself, why, because we, we feel like teachers; feeling like a teacher we study in a way that we should teach others. We are prepared. This form of learning prepares us to enlighten anyone who comes and asks us about something we have learnt. We are, we are prepared to clarify because we study in order to understand. Not only to understand but also to clarify (FemaleA07).

Here FemaleA07 emphasizes the change from a student to a teacher position as a function of having to explain what they found to others. This shift in position seems to help in the learning process.

One of the aspects that was also positively appreciated by students in this approach, was the fact that with the skills developed during the presentation sessions, students lost the fear of having to face an audience. Interview participants reported that this strategy enabled them to develop a capacity for research and the production of knowledge, which they then brought to the classroom to share with colleagues through presentations. From the questionnaire and regarding the potential of the assigned tasks to promote research skills, 22 participants, of which 17 were women and five men, agreed that the assignment of tasks enabled them to learn how to conduct research personally; only one man completely disagreed (St 17). As for the presentation sessions (St 18), again all 17 women and four men agreed that they were very useful for their learning. One man ticked that the presentations were absolutely not useful, and another remained undecided. Participants also mentioned that the tasks assigned, which constitute a means through which RBL materializes in this research, were quite demanding but that, if the objective is to train professionals capable of, in the future, serving their country, there is a need to identify a strategy (method/approach) that guarantees quality training, requiring students to be more demanding of themselves and develop a reflective and responsible attitude, as argued by the following participant:

If the objective here is to train people to work for the country, then a method [approach] should be created that charges these people to be qualified to work for the country...by making students true professionals and by making them

reflect...if the institution used this method it would lead students to explore more for themselves (FemaleA08).

RBL appears to be highly appropriate for this purpose as Pongračić and Marine (2021) contend. The tasks develop the ability to produce content independently. This demonstrates that students are capable of learning on their own, using different means, as the following passage illustrates: "...we were looking for different ways, you know, and it was a way to also study, to learn, and it also shows us that we are capable of learning on our own..." (FemaleA09).

The following excerpt illustrates participants' views about this teaching-learning strategy:

It is necessary for us to have this type of work so that we can investigate, that we are, eh, the individual who is active, so we are going to look for information, we research for ourselves and bring here knowledge that we better understand. They [teachers] will give you [us] exactly what is basic and fundamental and we will deepen [the knowledge by doing research] (MaleB11).

So, students wanted to take a lead in their learning process, and they thought that with RBL they were able to learn independently. In fact, students' learning thus proceeded from "experiencing and learning through hands-on practice and reflection" (Hill, 2017:934). And, both women and men considered the experience of learning through research an effective learning approach.

4.1.1 Some difficulties with task accomplishment

Despite the success of this approach, there were some difficulties in performing group tasks. A key one concerned the logistics of working as a group. The main difficulty that students had was getting together in person to perform the group tasks (see the section on "The role of gender in students' organization of carrying out the organization of tasks", Chapter 4, p. 67). This difficulty was due to two main reasons: (i) some students were workers and therefore not readily available at all hours; and (ii) students lived far from each other. To overcome this situation, the alternative adopted was the creation of WhatsApp groups.

However, although everyone had smartphones, the poor internet quality in some areas and students' financial problems with purchasing internet data constituted major difficulties. Regarding internet instability, nothing could be done. In relation to internet data acquisition, there was solidarity on the part of group colleagues who contributed some money to help those who were too poor. On campus, there is some internet, but it is unevenly distributed and irregularly available, and to access it requires students to be present on campus which was not always possible for all of them.

Besides these logistical and fiscal issues, there were also students who were simply lazy and thus did not participate effectively in group work. Due to this weak collaboration and involvement of some colleagues, some students felt overburdened by the tasks.

Regarding the participation of members in group work, one female participant stated that the only man they had in her group was very lazy. She said that she had previously been in a group where there were men and they were also all lazy. She had punished a male fellow student because he had not participated by not including his name on the work, as a way of drawing attention to him that the work was to be carried out by everyone, regardless of whether they were women or men. As she said:

They [men] are very lazy. In one of the tasks I ended up punishing a colleague. I took his name off. He was very angry but I think that it served to wake him up because it wasn't in the bad sense. I wanted him to wake up and show him that group work is not just...it is not just for women who do it. But I believe he will change (FemaleA06).

On the other hand, a male participant mentioned that he did not have a good memory regarding collaboration with women, stating that:

I actually did not have a good experience. Whenever I do a job, whether with men or women, but mainly with women because they already see me as someone who can do everything at work and they end up staying relaxed. This does not happen with all women, but it usually does (MaleB11).

FemaleA06 and MaleB11's statements might be related to the loosely interrelated practices found in inequality regimes referred to by Acker (2006), as they are manifestations of gender prejudices and experiences on the students' part, who do not actively participate in work because they do not feel comfortable in working with

colleagues of different sexes, or expect others to do the work for them. Still others may think that their opinion will not be valued and therefore not accepted, just because they belong to a certain gender.

Some students were annoyed with fellow students who did not participate, yet others revealed “protectionism” by not indicating, during the course of the classes, that there were students who had not participated, simply because they did not want their colleagues to think badly of them. For instance, FemaleC21 stated that “in practice, not everyone participates, but because I don't want my colleague to think badly of me, I'm going to put her name there because she's part of the group...” Such solidarity was laudable but also reinforced the status quo as it did not encourage those who did not contribute to change that practice. It may be that teachers have a greater role to play here in reinforcing the idea that everybody should contribute.

Further, it is important to consider students' life circumstances such as whether or not they are working and therefore not always available and how far away from campus they live. A useful piece of research would be to investigate if students using WhatsApp groups and working together at a distance were actually as effective in their learning as those who got together in person.

Although some participants pointed out some disadvantages regarding the carrying out of tasks in groups, some interviewees were in favour of this practice as they thought it easier to work this way. In fact, there were also cases of positive appreciation from both sides, with women and men praising each other because they were very engaged in the work. As one female participant said: “Specifically the colleague we worked with was super responsible, super organized and it was...I enjoyed working with him” (FemaleA05). In the same vein, a male participant stated: “I appreciated the colleague I worked with. She is extremely professional. She does not wait to be told” (MaleA02).

FemaleB15 discussed the disadvantage of a lack of collaboration on the part of some group members, but at the same time she recognized the good collaboration of male colleagues who, despite not belonging to her group (they were classmates), helped through “...a sharing of knowledge, exchanging of experiences and so on”. She also stressed that in her group all members participated actively and thus there was

satisfactory collaboration, and that for her, group work and individual work were complementary.

As for the positive aspects, despite some students preferring individual work, those interviewed were unanimous in recognizing the merit of group work. In a group there were more possibilities for students to make fewer mistakes because in sharing views students could moderate each other's opinions and thus improve the work. Group work promoted collaboration, social interaction among students, fostered active learning, promoted gender relations development during interactions in the group, and students helped each other. They learnt to develop teamwork by listening to and accepting the opinions of others, recognizing the merit of other people's ideas. One female participant thought: "in a group it is easier to learn...difficulties are overcome much faster than when work is done individually..." (FemaleB14).

While students from all three classes, both women and men, recognized the value, importance and the need of learning through task accomplishment, they complained of a certain amount of task overload and pressure to carry out consecutive tasks. As one female participant stated: "It is true that it is hard work, there is a lot of pressure, but we also gain a lot from it...there is no way to learn without performing tasks..." (FemaleB13). Although RBL is demanding, according to FemaleB13 some students preferred to invest in this form of learning, since they understood it as a sacrifice worth making.

One other reason for some female participants to complain about the overload was that the pressure to perform consecutive academic tasks throughout the week ended up affecting the students' performance negatively. As the following participant argued: "we have felt the pressure of doing consecutive tasks, almost the whole week. This ends up blocking the mind and the student no longer cares about doing the task and understanding it" (FemaleC23).

Another one, from the same class, put it this way:

It was a bit tiring. This somehow prevented us from actually integrating or assimilating the material in a way that we could present correctly. We did everything in a hurry mainly because some presentations took place on the day we had auditions (FemaleC24).

However, in a somewhat contradictory stance in relation to their female classmates, the two male participants of the same class had different views: one stated that he did not feel pressure since the tasks were assigned on a Friday, to be presented the next Friday. The other suggested that teachers should increasingly give this type of work to the students because, after all, they were in academia.

It is significant that the women were more likely to complain about colleagues not doing their work whilst some men were more relaxed. More research needs to be done to understand properly whether this is because male students tend to rely on female colleagues to do the work, thus replicating certain heteronormative gender structures in the classroom. Generally, the students' opinion shows the need to take into account their heterogeneity, by assigning group tasks as well as individual tasks, as a way of balancing the different interests, promoting socialization, teamwork, the development of individual capabilities and skills, and also to awaken gender consciousness among students.

To understand why women may have complained about this issue more than men we need to consider their socio-domestic situation. In the Mozambican context, women have to carry out more domestic tasks than men such as taking care of children, husbands and/or siblings, among others. This perhaps explains the fact that this concern was raised more by women than by men. Nevertheless, the situation described in the quotes from FemaleB13, FemaleC23, and FemaleC24 above demonstrates the need for good coursework organization across the institution and courses, and good coordination among teachers.

The students' third complaint was about the lack of coordination across classes such that teachers, independently of each other, set work to be completed simultaneously. Students found this difficult. This is one of the aspects claimed by those, to whom I belong, who advocate gender-sensitive pedagogical practices (Rojas, 2016) in order to recognize the students' heterogeneity, and to pay equal attention to all students regardless of their gender or social class. This aims to influence students' gender awareness, as Muasya and Kazungu (2018) argue, through practices that require teachers to be more sensitive to each student's needs (Canen & Santos, 2014). Canen and Santos (2014) and Muasya and Kazungu (2018) argue for practices that take into account students' cultural differences

and diversity. A university-wide discussion of how we set coursework so as to prevent the bunching of tasks would be highly desirable.

The critical position taken by the last three female participants above is important for improving the implementation of RBL. Their statements caution teachers to consider the need to balance the activities assigned to students across as well as within classes.

Beyond this, students reported that with the tasks they felt better prepared for the next sessions and gained more motivation for learning. The classes were more interactive and more dynamic. As one student said: “the ability to reason, analyze...the tasks were dynamic, and the classes were also very interactive because it allows students to express themselves. It makes the person retain knowledge for much longer” (FemaleB14). Linked to this, one participant argued: "...having this habit of doing research...not just waiting for the teachers...you know, we can read it ourselves, for example, an article, reading the books and wanting to write an article..." (FemaleB16). When students develop their intellectual abilities, to relate, to reason, to analyze, to synthesize content, they are developing critical thinking, one of the characteristics of RBL (Susian et al., 2018).

To highlight the importance of RBL, one of the male participants said that he had seen, in one of the Faculty's showcases in the corridor, the mission and vision of UEM which states that the institution wants to dedicate itself to research. Accordingly, he said that the assignment of tasks would enable the students to develop this spirit of research. This is evidence that RBL can contribute to the materialization of the institution's vision.

4.1.2 Summary

The interviews in the three classes and their questionnaire responses suggested that the implementation of RBL was generally positively appreciated by the students, regardless of gender. They thought that it provided them with effective learning through the active involvement. They learnt the early stages of research such as searching for information, summarizing information, discussing ideas, but also reasoning, and analyzing, that is, critical thinking (Susian *et al.*, 2018; Wessels *et al.*, 2021). The research results showed that RBL also provides the acquisition of other skills such as digital literacy, communication, and presentation. While carrying out tasks in groups, students developed

the spirit of teamwork, at the same time recognizing that they have a lot to learn from each other, no matter their gender or social class, and discovering that they could ultimately learn autonomously and independently. Below, Table 5 illustrates some characteristics of research-based learning that emerged from the empirical data.

Table 5

Characteristics of RBL that emerged from the empirical data.

Nr.	Characteristics	Nr.	Characteristics
1	Learning in an autonomous and independent way	9	Mastery of knowledge
2	Seeking of information	10	Building one's own knowledge
3	Enhances students' responsibility	11	Demanding but fruitful
4	Fosters active learning	12	Better learning
5	Lessons are dynamic and interactive	13	Ability to reason and analyze
6	Effective learning	14	Developing research orientation
7	Draws students' attention on learning	15	Connects research principles with students' learning process
8	Helps students to build strong intellectual background	16	Develops ability to produce content independently

These characteristics, to a certain extent, resemble the characteristics found in the literature (e.g. Susian *et al.*, 2018). In the next section, I discuss the students' perceptions regarding gender in relation to RBL.

4.2. Students' perceptions regarding gender in relation to RBL

Students' perceptions of gender and RBL are related to the sociocultural norms of the society to which they belong. In other words, their perceptions are linked to normative and non-normative conceptions of gender in their community. Generally, people's conceptual knowledge about gender includes sexual and biological factors related to gender, such as sex, sexuality, the body, and also aspects related to gender performance

and performativity, such as gender role, norms and expressions, femininity and masculinity. These are intrinsically linked to sociocultural norms and people's experiences (Mazzuca *et al.*, 2020).

My findings suggest that there were normative and non-normative gender positions among the students. According to Mazzuca *et al.* (2020), normative gender emphasizes a conventional bi-genderist (male/female; women/men) perspective of gender, and non-normative gender refers to contextually dependent and social phenomena challenging these conventional assumptions. In a normative view, students tend to reproduce exactly what their society has defined as appropriate. Students' choice of courses, for example, is influenced by "societal gender norms" (Kuhn & Wolter, 2022:102). This was evident in the numbers of students of particular genders taking specific courses (in this instance, far more women than men studying Psychology) and also when students spoke about their choice of courses, such as women's choice of Psychology/Medicine or men's choice of STEM courses. In a non-normative view of gender, students tend to challenge already established sociocultural norms, such as the choice of doing a Psychology course by men or the option to pursue engineering by women.

The tasks carried out in groups involved the management of gender relations on the part of the students. From a non-normative gender perspective, since students understand that gender does not prevent anyone from understanding the subjects, 17 female participants and five male participants thought that if they dedicated themselves to their studies, they could understand the contents of the subject (St 14). Importantly, all women considered themselves capable of understanding the contents of the discipline, which challenges the conventional understanding and sociocultural norms that women have difficulties with disciplines such as science, statistics, and mathematics courses (Kuhn & Wolter, 2022). This has to be seen in a context where of the three classes in which the research was carried out, in two the subject was Statistics. The interview responses showed that some women were concerned about having to do Statistics as part of their degree. But, as time went by, and because of the approach adopted, they soon realized that they could deal with this on an equal footing with men. And, among the male participants (there were six), one stated that he could absolutely not understand the contents of the subject (St 14).

These statements by the students defy stereotypical gender ideas that there are courses only for women and courses only for men.

Generally, both women and men from the three classes in which the research was conducted tended to think that it is not the person's gender that determines the participation and/or degree of involvement of that person in accomplishing tasks, because as human beings everyone is capable of fulfilling education tasks, regardless of gender, as the following participant claimed:

Being a girl [woman] does not mean that she does not have the capacity to perform a certain role. For me anyone can perform any role, as long as he or she is capable of doing it. It has nothing to do with gender. No, there are no courses for women or men. All courses can encompass all people, regardless of gender (MaleB12).

In the same vein, a female participant said:

It does not matter if you are female or male, but being all together there is always an exchange of ideas and that, in a way, makes you get out of your comfort zone, and you are better able to work with people of different sexes or ages... (FemaleB14).

Sharing the same opinion as the first two participants quoted above, FemaleB15 argued that "we are human beings, right, and we can all do anything, yes, regardless of [gender]. It depends on our ability, right"!

Although each of these participants formulated it in their own way, in all three statements the idea that any student is capable of taking any course or playing any role, regardless of whether they are women or men, was present. However, even among these participants, who apparently think in gender-equal terms, at certain moments in their discourses there were traces of gender stereotypes. To illustrate this, let us look at what one male said when he referred to the initial moments of his integration into the group:

The beginning was embarrassing because there were too many women, because normally a man should not be in a group full of girls. Because I think I am just a man, I have to do all the work, all these things. I learnt to organize myself. Over time, I got comfortable. [Then I said to myself,] there is no harm. I have to contribute. It will be my daily routine. So, I ended up conforming (MaleB12).

In this excerpt, the student makes certain gendered assumptions, evident in the way that he does not think it normal to be around so many women, as he says. The issue for him was, how to deal with these women and what is more, he thought he would have to do everything because he was the man. This was a clear sign that he had gendered ideas about role distribution and possibly underestimated these women, as if they were not competent. In other words, he thought that because he was a man, all the work would fall on him, with the women possibly taking advantage of this. This student's assumptions reveal that he, and probably others too, remain under the influence of the gender-normative structures already defined by society.

FemaleB13 and FemaleB14 were aware that there are people who think that there are things that can only be done by women and others that are exclusively intended for men. This is why FemaleB13 claimed: “in our unconscious there are things, there are tasks for women and tasks for men”, while FemaleB14 argued, “there are courses for women and there are courses for men. I think we still have this wrong idea that there are courses that women cannot take. Men can. Some [men] are more qualified compared to others [women]”.

These students' thoughts reflect their understanding of gender norms, the division of tasks according to sex and the consequent definition of courses that might be taken specifically either by women or by men. Social science courses, considered the easiest, are reserved for women and those in science, technology, engineering, and mathematics (STEM) are reserved for men. Feminist theory shows that such dispositions are a matter of social construction rather than innate differences (Harding, 2004).

The student' varied responses detailed above also indicate the contradictions in their standpoints. These standpoints entailed both positions ascribed to society at large (“we still have the wrong idea...”) and simultaneously to the self, signified by the use of “we”. And, in some ways predictably, prejudice or conventional gender perceptions, were more commonly ascribed to others rather than to oneself. Working in groups required engaging with its members, whatever the composition of the group. And by and large this worked very well. For the men it meant experiencing themselves in a minority position; for the women it entailed taking possibly greater control than they were usually invited to do.

Performing tasks in groups, or learning in groups, contributes to the deconstruction of the idea that performing certain functions or carrying out certain activities has a correlation with being a woman or a man. Regarding this, FemaleC18 stated that working together “we will share different experiences, lived in different ways in terms of gender”. This is very important because in the job market women and men often work together and at some point or almost always, they will have to interact. As the same female participant stated: “maybe after training, a girl or a boy may not know how to deal with [a man or] a girl” if during their training they never had the opportunity to interact. Agreeing with this position, Female C19 stated that “we know that we are going to work with all types of gender...” Therefore, participants appreciated positively the idea of carrying out tasks in mixed-sex groups, in spite of some related difficulties.

Some participants stated that women are already ready to take whatever courses they like, without any reference to the notion that there are courses just for women and courses just for men. FemaleC20 for example stated that “the female gender is already eager to study what they could not study [before]. It is good because it also helps women to have more [willingness and] acquire more knowledge...there is knowledge sharing.” This participant was in favour of co-education for women and men because she thought that it benefits both, as can be seen when she says:

When they are separated, men think that way, women think that way, but when they are together there is a certain advantage because ideas arise at the moment, there are different points of views, the person already starts to reflect, but what he said, it even makes a certain sense, because I thought that way yeah, this point of view, it makes you think that yeah, this thing has to change, this thing I have to improve (FemaleC20).

However, her view that women and men think differently in single-sex groups also suggests that ideas of gender differences were deeply ingrained in her perspective.

FemaleC21 and FemaleC22 suggested that social constructions define the roles of women and men in society. FemaleC21, for example, put the issue in the following terms: “there is a profession for women and there is a certain profession for men. So, it has not yet been completely demystified that everyone [can do anything]”. This is a typical example

of the point about standpoints already made above, namely that among these participants some ascribed conventional gender norms to others rather than to themselves.

In the same vein, FemaleC22 stated that “maybe society has certain standards that say this course is not, it is not for women. It is for men.” Both participants contended that in putting together women and men,

women are being given opportunities because I believe for a long time there was that difference, discrimination that women had to...limit...just learn certain things. So, with this new curriculum that includes both women and men, they both have the opportunity to learn the same thing. Nowadays we can see professions [that were only for men] carried out by women that, in the past, it was not possible. There is no longer a specific profession for women (FemaleC21).

There is an implicit idea of gender discrimination. She proceeded to say that “when we say that this room is for men and this room is for women, we begin to understand that there is something that women cannot learn and that men cannot learn either.” FemaleC21 had an articulated understanding of discrimination which she also historicized by referring to the difference between “nowadays” and “the past”, as well as by her reference to “this new curriculum”. The latter clearly highlights the importance of curricula as a way of changing people's standpoints and perceptions.

FemaleC22 sought to bring to the surface the issue of non-discrimination when she contended that:

This [putting together women and men] brings me to gender equality. I think it is a positive point because we learn to deal not with women as a woman [but as a person because] we all have the same rights and duties. Not that there are courses just for men or women.

This participant also emphasized the good collaboration and strong engagement of colleagues by arguing that:

Equality in all the groups I was there, it is a privilege because the man who was in my group is a very straightforward person and he was always there to help and share the knowledge he had and we also shared what we knew, and he was also willing to learn from us (FemaleC22).

This FemaleC22's comment suggests that acting on equal terms is not something that has yet to be learnt by everybody but rather, that there are already people - both women and men - who understand the importance of this for the epistemological advancement of everybody ("sharing knowledge"). Equality was considered to follow from collaboration and co-presence in courses.

Participants considered it important to put women and men working and learning together because that way "we learn to live with another gender [and we acknowledge that]...we are indeed equal, regardless of what is created or made us see about this gender difference" (FemaleC24).

The participants revealed that although they understood that belonging to a certain gender does not make a person better or worse, stereotyped gendered views prevail in society. Nonetheless a female stated:

I think we can all compete, depending on each one's capability. Everyone has their own abilities to study. I think this depends more on the capacity that each person has to perform a task. I found it normal like anyone else [laughs] not the fact that he was a man changed or the fact that I worked with women changed anything, I found it all normal, like working with anyone else (FemaleB10).

FemaleA09 said that she did not think that being a woman or a man "influences much. At least for learning I don't think so. It doesn't influence much." Nonetheless, she clearly had gendered views of women and men:

We [women] like to write, to talk [in clear reference to social sciences], and maybe it is because of that. While men are more exact, they are more...one plus one equals two [in reference to science, technology, engineering and mathematics (STEM)], and women do not like mathematics...but maybe not because they cannot understand (FemaleA09).

With FemaleA09 there is a clear manifestation of gender stereotypes embedded in her mind. Moreover, she mentioned that perhaps women were shaped like that by society, "like we [women] are not capable, we cannot deal with mathematics. We ourselves have this prejudice that mathematics is not up to me [us]. We do not understand. I think that is it." Just like the last two female participants, MaleA01 also showed some contradiction in his thinking: "women shy away from mathematics, they do not like mathematics very

much, and most men do not like reading. They prefer working with numbers, more than doing a lot of reading” (MaleA01). Neither of these participants considered how the standpoints they were adopting were influenced by how they had been socialized in their society. They talked as if the gender differences they identified were a given and unalterable rather than the result of the context in which they had been socialized.

But this way of thinking, evidenced by FemaleA09 and MaleA01, is typical of people who were born and grew up in an environment where inequality between the sexes prevails. Some participants held contradictory views, expressed at different times during the interviews: they both denied and affirmed gender differences, based on gender stereotypes.

Summary

The interviews provided some opportunity to understand students' attitudes towards gender issues related to RBL. Carrying out tasks in groups enabled students to learn to relate to each other, including in relation to the gender with which they identified. However, at certain points, the normative gender structures, already established by society, constituted a barrier for some students of both sexes and emerged in the standpoints they articulated in relation to this issue. That is why, at first, some students, especially males, seemed embarrassed by working with women because they also carried with them a certain spirit of superiority in relation to women, which made it difficult for them to relate to the women in an equal manner. The women of course demonstrated that they were as capable as men. Many students stated that being a certain gender did not make them perform better or worse than the other gender. The results thus reflect both normative and non-normative gender positions in the students' standpoints.

4.3 The role of gender in students' organization of carrying out the organization of tasks

RBL was materialized through the assignment of tasks that were mostly carried out in groups. Carrying out group tasks aimed at promoting greater interaction between students, and also played an important role in reducing epistemic injustice, seen as the

persistence of gender disparities (Clavero & Galligan, 2021), as this was also where gender issues could arise. In this section, I discuss how the groups organized themselves to carry out the tasks. For some students, working in groups was beneficial, but for others not so much, for different reasons that I discuss below.

4.3.1 The organization of the groups

Some participants mentioned that the fact that students lived very far from each other contributed to preventing them from being able to come together to carry out the tasks. Others did not meet up for the tasks because they were workers and thus could not join the groups at the agreed time. As an alternative, all students in this situation created WhatsApp groups, through which it was possible to meet virtually. As one participant said: “all of us members of the group are living far from each other. We even organized in groups, in the WhatsApp group” (FemaleA04).

This meant that many students performed their tasks at a distance although some took advantage of the days when they did not have classes, to sit together and do their work. Some students also went to the library together to search for information, as indicated in the following excerpt:

All the members of the group don't have much time. Almost everyone works.^[4]
So, we opted more for using WhatsApp and, sometimes, we opted for the days that we didn't have, we don't have all the classes, for example, Wednesday and Thursday, we only had three classes, we sometimes went out, went to the library (FemaleA06).

For other groups it was easier to meet up and accomplish the tasks, and they organized themselves in this way: each member of the group searched for information individually, in the library, internet sites, and YouTube. Then they sat together and discussed the information in the group, and then they produced the final version that was presented in

⁴ It should be noted that whilst only a small minority of students declared themselves to be working on the questionnaire (see the section on “Participants’ demographic information”, Chapter 3, p. 34), it is quite possible that much larger numbers of students were engaged in some form of work, either formal or informal, remunerated or unremunerated.

the classroom. The group in which FemaleA10 was divided the tasks in the following way: one member was responsible for collecting the information; one was responsible for summarizing the information; and another one typed it all up. In other words, there was a division of labour and different group members had different tasks. But the division of labour varied across the groups.

To undertake the tasks, some groups in working-time class B divided them this way: they all searched for the information in the library and also on the internet, summarized the information and took it to the group discussion where it was analyzed and synthesized. After that, someone was appointed to type it all up. FemaleB13 thought her group was well organized and as a consequence they worked very well. This participant also highlighted the fact that, contrary to what she has observed before, the men who were in her class were dedicated to their work, and, in particular, the one who was in her group was very dedicated:

We understood each other well. Yes, he is a very dedicated person too, so that made it easier. The men we had in the class this semester, since the beginning of the course, are the few who are more dedicated (FemaleB13).

In terms of organization to perform the tasks she argued:

Generally we investigated the matter [literature searching], we put it together, each one with their own theme, we put it together and depending on who was available for scanning, then we went back to evaluate the work, we sat down, evaluated it and saw what we had to improve, to what extent it could be improved (FemaleB13).

In some groups of working-time class C, all group members were:

Responsible for searching for information, whether on websites, online, libraries and books, and then we divided the task of typing, printing, based on under the conditions that each one presented. Then, we just had to contribute money to print. But, on everyone's part, we had to look for information about the work. But, as far as possible, we changed the roles (FemaleC17).

In the group of FemaleC17, the students seem to have been well organized and everyone actively participated in carrying out the tasks, so much so that she preferred to work in groups rather than individually. This is clearly evident in her statement: "I liked being

there because everyone showed interest in doing the work” (FemaleC17). And she went on to say that, in a group, everything becomes easier because “we go deeper and that way we enjoy learning more” (FemaleC17).

In turn, FemaleC22 stated that in her group everyone searched for the information, then came together to discuss the concepts and selected the relevant information and, they always sought to obtain consensus from all group members. In the end, they appointed a member who would type the work. This was done on a rotating basis. This participant considered it better to work in a group because “I think that in a group it's better because individually you have, how can I say, no one to argue with. In a group you discuss and come to a right conclusion” (FemaleC22).

In all classes, there were both agreeing and disagreeing voices in relation to group work, for different reasons. Some advocated carrying out individual work and others opted for carrying work in groups, for various reasons. However, it is important to highlight that individual work and group work have different traits, each with its own characteristics, and the questionnaire results indicated that of the 25 participants who completed and returned the questionnaire, 22 ticked that the independent work enabled them to develop personal skills and competences (St 10). I therefore now discuss the preference for individual work.

4.3.2 Preference for individual work

In the after-work-time class C there were students who preferred individual work for two main reasons: (i) failure by some group members to contribute to the group work left them to do everything, which they resented; (ii) some wanted to work individually as a general matter of preference. So, regarding working individually, one female participant said: “wanting things to be done and done well is what influenced me towards this attitude” (FemaleA06).

Arguably, this participant's statement highlights a lack of trust in her colleagues, as well as confidence in her own competence. Other participants from working-time class B, despite confirming the valuable contribution of group work to student learning, preferred individual work for reasons such as: (a) lack of participation of other group members; (b) some group members being unable to access the materials, perhaps due to a lack of

resources such as the internet, while others, having information, were unable to send it to the group so that it could be systematized.

FemaleC24, for example, said that one of the reasons why she preferred individual work was that:

Individual work is easier. I just have to deal with myself... the issue of responsibility, from going to the library to typing, printing, organizing, is easier when done individually. Because when it's in a group, there are a lot of opinions, there's that clash, one wants this, one wants that, so it gets complicated... when the work is individual, I can do whatever I want, in my own way (FemaleC24).

Having complete control over her work made this interviewee more confident in the quality of her work. But it also deprived her of learning experiences within a group setting. The other issue that was referred to by participants, and which made them prefer individual work, was the fact that students sometimes wasted a lot of time talking about marginal issues. This meant that the groups did not complete their tasks in time and, consequently, did not meet the deadlines, as stated by the following participant: "we were not on time for the [task] delivery..." (MaleA01).

FemaleB13 saw disadvantages in both individual and group work, to the point that she stated that she did not like working in groups,

especially if it is a very large group [because] there is a lot of opinion and you end up taking too much of the focus away from what the objective is...[and] working individually you might find all the information you need, do the task in due time in your own way, but you might make mistakes without any possibility of correction because no one would call your attention to the errors you are making (FemaleB13).

Although she preferred working individually, FemaleB13 was aware of the disadvantages of working alone. This suggests the need to combine the two working strategies, as a way of compensating for their respective disadvantages. It is further evidence of the need to diversify teaching-learning strategies to meet students' diverse needs. Or at least to get closer to them. In fact, there were also students who thought that a combination of individual and group work would be advantageous, as there are advantages and disadvantages in both modalities. As one participant noted:

Working in a group, at first, it is a complicated thing because everyone has her/his own ideas, their own opinion and [but] it also helps us to develop a great ability to listen and understand to the point of accepting the other's opinion (FemaleA08). Group work was thus important for developing teamwork and paying attention to each other (Karoff et al., 2017). But it came at various kinds of cost and as such was not welcomed by everybody in equal measure. Next, I discuss the preference for group work.

4.3.3 Preference for group work

Although non-participation by some group members was an issue, nonetheless one participant said she preferred to work in a group because the learning was enriched by the contributions of the group members, and it became easier for everyone. For other participants, working in groups was advantageous because they could “share information and in terms of research it helps a lot because everyone reads something and we put it together...” (FemaleA10), “and explaining to others, we learn more...” (FemaleA09).

FemaleC23 also argued that “in a group it is better because we even sat down to explain it to each other...we enjoy debating, eh, exchanging information.” However, this interviewee, despite preferring to work in a group, thought that group work had the disadvantage that some students became lazy: “the negative side is that some people get lazy, they wait for others to do it [the work].” And she added that “the man who was, is in our group, hardly helped at all...he just waited. We were the ones moving around and so on, and we had to remind him, we have work, we have work, anyway [he] didn't do anything.” In other words, he did not collaborate.

Regarding the issue of group work, based on the results of the questionnaire, 23 participants indicated that group work enabled them to develop skills such as communication, interpersonal relationships, and teamwork (St 5). The students' opinion confirmed what the participants said during the interviews about the need to combine individual work and group work, as they are complementary. Even so, it is important to highlight that two women and one man did not agree that there was any benefit in working/studying in a group (St 9). Furthermore, four women and two men did not know whether they had benefitted or not, that is, they were undecided. Therefore, 13 women

and three men stated that there were benefits to working/studying in groups. The apparent contradiction regarding the participants' position in relation to the contradictory answers at different points in the questionnaire, can be explained by the responses of the same participants during the interviews, in which some, having a certain preference (individual or group work), did not fail to recognize the advantages of the other modality or the disadvantages of the modality of their preference.

Moreover, the students had been instructed to take on different roles for different tasks so that they would all gain experience in all roles. However, some roles such as typing ended up being carried out almost always by the same student, either because some group members were simply not collaborating or due to students not owning equipment such as a computer. Thus two areas of possible contestation emerged: one to do with the research content such as searching for information, discussing ideas, and preparing the presentation, and the other with the mechanics of working such as photocopying, typing etc. Failure to participate in the former was due to other factors than failure to participate in the latter which was usually related to adverse material conditions such as not having a computer or being too poor to pay for internet time or photocopying. Both produced forms of epistemic injustice, however; one by exploiting the labour of others, the second by being excluded from equal participation for material reasons. I will come back to this point later. Next, I briefly discuss the figure of the debate moderator and the 10-minute break.

4.3.4 The figure of the debate moderator and the 10-minute break

In working-time class B, two specific modifications were introduced by the teacher. One was the figure of the debate moderator. The role of the moderator was to focus students' attention during group presentations and develop the ability to select and synthesize the most important information, while contributing to providing communication skills. The second was a 10-minute break immediately after the end of the presentation and the posing of questions by classmates, and before the start of the responses session by the presenting group. Interviewees FemaleB13 and FemaleB15 positively appreciated these

innovations. Regarding the figure of the moderator of the debates, FemaleB13 referred to it in the following terms:

It was very good. Yeah, it is interesting...a methodology that I did not know but is very interesting, ...particularly, when it was my turn to, to do the moderation...you prepare yourself and want to be there at your best performance. It is impossible not to yield something. It is impossible! You do the preparation because you have to do the opening of the work, but also because then you have to summarize what the group presented (FemaleB13).

In turn, FemaleB15 stated that “it was very interesting, and...it was the only session where we had this as a moderator and I believe it was important...”.

With regard to the 10-minutes break, FemaleB13 stated that it was

interesting and, really, when there is a lot of pressure at the time of the presentation, people are sometimes not even due to lack of knowledge of, of, the content, but the need to be here at the front, ... those 10-minutes are enough to breathe a little, calm down, for me it worked, it calmed me down...I think it's a very good strategy... (FemaleB13).

FemaleB15 argued differently but also in favour of the break:

It is difficult for someone to ask a question, and for me to answer immediately, even if I know the answer to that question, but at that moment, as I see the public, the teacher, there's a lot of pressure. So, it was a good strategy for the teacher to give about 10 minutes to formulate the questions [to prepare the answers] because at that moment they [we] won't have that pressure that you would have at the time of question (FemaleB15).

Participants appreciated positively having to play the role of debates moderator and a moment for a brief reflection and consultation to better react to the questions asked.

Table 6 below summarizes some characteristics of the figure of the moderator and the 10-minutes break.

Table 6

Characteristics of the figure of the moderator and the 10-minutes break.

Nr.	Moderator	Nr.	10-minutes break
1	Promotes good student preparation	1	Contributes to reducing pressure
2	Fosters better student performance	2	Space to breathe and calm down students
3	Students develop the ability to select and synthesize relevant information	3	Allows students reflection and consultation
4	Improves communication skills	4	Students react better to the questions

4.3.5 Summary

Even though there are some disadvantages, carrying out tasks in groups was seen as useful by many participants, even by some who preferred individual learning. Though group work was beneficial for some students it was not for others. Those who preferred group work argued that collaboration with other group members made work easier and facilitated learning. Moreover, in groups students could improve or acquire other skills such as communication and digital literacy ones.

The students who preferred individual work contended that when working in a group, particularly when it was large, some students did not participate, there were too many different views to accommodate, and other students wasted time talking about marginal issues, taking too much of the focus from the main objective and thus leading to failure to meet deadlines. Performing the tasks individually was a matter of preference for some since they could work in the way they wanted, relying only on themselves. Though many recognized the importance of group work, due to the problems mentioned above, and the weak or non-collaboration of some group members, they felt unmotivated to work in a group. Group and individual work can be complementary, and therefore some participants suggested combining the two strategies. Table 7 presents a summary of some of the advantages and disadvantages of group and individual work.

Table 7

Some advantages and disadvantages of group and individual work.

Nr	Group work		Individual work	
	Advantages	Disadvantages	Advantages	Disadvantages
1	Promotes collaboration among students	Not all members join in	Performing tasks on your own	You might make mistakes with no one to correct you
2	Fewer mistakes may be made	Not all members collaborate actively	Performing tasks in your own time	More potential difficulties in learning alone
3	Promotes social interaction	Waste of time talking about marginal issues	Development of individual capabilities and skills	No social skills training
4	Fosters active learning	Taking the focus off the objective	Active learning	Dependence on one perspective
5	Can promote gender relations development	Persistence of gender inequalities and failure to meet deadlines	Can be much faster than group work	Lack of multiple perspectives
6	Promotes the spirit of teamwork	Protectionism by not indicating those who are not participating	Self-reliance	No challenge to individual perspective
7	Listening and accepting others' opinions	Reproducing (gender) stereotypes and inequalities	-	-
8	Sharing knowledge, experiences and views	No sharing in cases of non-participation	No sharing of knowledge with others	Absence of inputs from others
9	Learning enriched by the contribution of other group members	Non-participation reduces richness of learning	-	-

Table 7 shows that group work has certain specific advantages which may outweigh some of the advantages of working on one's own. I now move on to Chapter 5 to discuss working with RBL from a gender perspective.

CHAPTER 5: WORKING WITH RESEARCH-BASED LEARNING FROM A GENDER PERSPECTIVE

In this chapter, I employ a gender perspective to discuss: (i) undergraduate Psychology students' views of RBL; (ii) the students' guide on the implementation of RBL; (iii) information and communication technologies (ICT) as tools in facilitating RBL. Similar to Chapter 4, the results from the three classes are presented together. It is important to remember that there was an uneven distribution of women and men in the three classes. As a consequence, in the results presented in this chapter, there is a predominance of women's answers, since they surpassed the number of men. When drawing any conclusions regarding gender, it is necessary to take this imbalance into account.

As in Chapter 4, and for the same reasons, here I also discuss the results of the interviews and the questionnaire together. In general, the results of the questionnaire were consistent with the results obtained through the interviews, as will be seen throughout the chapter. I start by discussing the undergraduate Psychology students' views of RBL.

5.1 Undergraduate Psychology students' views of RBL

This section discusses undergraduate Psychology students' views of RBL from a gender perspective. I address issues related to task accomplishment, doing research, and working in groups since these issues are intertwined/interconnected. Overall, the results of my study suggest that when students are subject to the same conditions and benefit from the same opportunities, gender has limited influence on students' views regarding RBL. In other words, regardless of gender, students almost always reacted equally positively to RBL.

Regarding RBL the questionnaire showed that 20 participants, 15 women and five men, said they liked that way of learning (St 26). One woman and one man said they did not like it, and one woman remained undecided. As for working with colleagues, regardless of gender (St 27), 16 women and five men said they had no problem with that. Meanwhile, one woman and one man said they might have trouble working with colleagues. In terms of content mastery, 17 women and five men stated that they would

be able to learn the material if they studied properly (St 28) using this approach. One man stated that he would not be able to do so. Regarding the application of the knowledge acquired (St 29), 17 women and five men stated that they would be able to apply it to other disciplines. However, one man indicated that he would not be in a position to apply the knowledge acquired to other disciplines.

The responses to statements 28 and 29 confirm the effectiveness of RBL (Pongračić & Marine 2021) as an instructional approach. It is important to highlight that all the participating women responded positively to the two statements 28 and 29, about the mastery of the contents and their application in other circumstances, contrary to the few participating men. In a way, this attitude of the women opposes the conventional assumption that denies women opportunities, simply because they are women and, therefore, considered incapable. This demonstrates that if inclusive teaching approaches are adopted that encourage the active participation of all students in learning and gender-sensitive pedagogical practices (Rojas, 2016; Kilag *et al.*, 2024), many, if not all, students have the possibility to learn, regardless of gender (Bowyer & Akipinar, 2024).

According to Pongračić and Marinac (2021) students learn by acquiring knowledge through their own research, observation and experience. In general, students in all three classes said that RBL constituted a new and challenging learning experience. As one participant stated:

This way of learning was a challenge for me and a new experience and it was good because of all the topics I studied. Statistics, I understood that I can end up not having managed to do the test but I understood. I learnt to work in a group... how to reconcile information with my colleagues, I also learnt to listen to certain colleagues, certain points (FemaleA07).

This female participant highlights the issue of understanding and participation in the group and reconciling the information brought by each group member as a good learning experience for students. With this experience, students learnt to value their colleagues' opinions and to recognize that their own ideas might not always be the best. As another participant stated:

Of all the experiences I have had, the most important one I had is...not to despise the opinion of others. Do not underestimate what another person might be

thinking, and I ended up learning there that nobody knows more than anyone else. At least now, I think I am already a little qualified to work in a group and recognize that I do not know everything either, that other people know things that I do not (FemaleA08).

Through RLB the female participant learnt to consider her colleagues' opinions and that everyone can learn from others, regardless of gender. Also appreciating this issue of the learning experience, a female participant said:

It was productive above all. At least now I am not so scared anymore. I already feel that if I try hard I will continue to understand. I still do not feel perfectly prepared, but I have taken a step forward. I think I have been acquiring, learning more, but at least I am not where I started. Yes, I am not like I came in. The experience was positive and productive (FemaleA09).

In this statement, the female participant emphasizes how helpful the experience was. This is important because statistics is a subject traditionally associated with men. This was the reason for the fear the interviewee had at first, but then she realized that after all she could also do it. This indicates that being exposed to subjects that may be associated with the other sex helps people to understand that subjects as such are not gender-specific. Positive and productive was the experience, as she argued and, similar to this female participant who contended:

I do not know for others, but for me, ah, all the sessions were positive...the sessions were, for me, productive and good, despite the pressure. I gained experience of how to study. It is productive. At some point with this pressure, I can say that...in my way of analyzing it, how I behaved during class this semester will not necessarily be the same in the second semester because I will have developed some skills (FemaleA10).

This woman stressed the benefits of the learning experience despite the pressure associated with it. The experience served to learn something that would help her in her next semester. Meaning that for her, the experience might have changed her behavior, and possibly her attitude towards her own ability to respond to that pressure. Building self-confidence is very important, particularly for women who are often constructed as lacking this in situations that are intellectually or otherwise challenging.

Regarding the knowledge acquired (St 20) through RBL, 16 women and five men considered themselves confident and only one woman did not feel confident. One man remained undecided. And, when it comes to the ability to find the desired information (St 21) during their self-directed learning, 16 women and four men considered themselves capable, with one woman and one man thinking they would not be able to find the desired information and one man not knowing if he would be able to find it or not. Although there were apparently few students who said they are unable to find the desired information on their own, teachers should pay attention to these cases and provide them with the necessary help.

Although MaleB12 also positively appreciated this learning experience, he wanted the teacher to be more proactive in the learning context and also regretted the teacher's demand for an immediate response from the students, which in his opinion made the students feel uncomfortable, as per the statement below:

It is very good because based on these theories [the topics of discussion] we can understand that the student may like it, be active, you know, like participating in an investigative process, the experience was very good. It was a good experience because we were able to bring certain important content that was not planned. Ah, may the teachers be a little proactive. Do not arrive and sit down, ask the student to just talk, the teacher can, for example, be dynamic, [and say] this group could talk about this but in the end give a summary based on it and ask the class to also give their opinions about the subject to be addressed. I think this would be more dynamic and... ok, pressure is essential, yes, but we should, eh, teachers should, in my opinion, eh, not coerce students to respond [but] make them [students] feel comfortable with the processes because often they respond with fear. And other people are afraid of making mistakes, so they remain silent (MaleB12).

The participant starts by praising the approach and then calls on the teacher to be more active in their teaching. He also calls on the teacher to provide feedback in the form of a summary, but also offering space for students to give their opinions, and thus actively participating in classes.

In regard to feedback, when answering the questionnaire, 18 women and four men found that the teacher's feedback (St 7) was beneficial, and only one man stated that he had had

no benefit from the feedback. One woman and one man could not say whether they had had any benefit or not, that is, they opted for indecision. The participants also valued the feedback provided by colleagues (St 8), as 16 women and four men found the peer feedback beneficial, and only one man did not find the feedback valuable, and three women and one man were undecided. This means that slightly more respondents were undecided about peer feedback than about teacher feedback. However, peer feedback is a useful mechanism for which, however, students may need more support in learning how to give it productively.

MaleB12 was also against requiring students to give answers when the question has just been asked or when they were not prepared for it. As he said, some students are afraid of making mistakes when answering. In fact, this claim was also made by another participant when he contended that “as much as we do not have something to talk about. They [the teachers] want us to talk and, no, it should not be that way” (MaleB11). It is interesting that these comments were made by two male students. It might suggest that men are more afraid of losing face in front of other people and do not wish to be shown up. Although these two male students are also partly right, it is precisely here that I see the teacher's great contribution, in getting these students to talk because this fear needs to be eliminated. And one of the ways to do this is through group work and presentations in the classroom. Regarding this, students must be aware that they are required to respond, constantly being subject to challenges and to behave spontaneously in a new learning situation that involves unpredictability (Davidson *et al.*, 2016; Karoff *et al.*, 2017; Whittington *et al.*, 2017; Fuz, 2018). This, after all, is also what they may find in a work environment.

Being exposed to this experience is also potentially useful in challenging gender conventions regarding masculinity and men's expectations of how they should come across in class. While women might need more self-confidence to put themselves forward, men need more self-confidence regarding their ability to show vulnerability and incompetence in front of others.

A female student from the same class saw this issue of student learning experiences in the following way:

I think it is a very good strategy. I really like the teacher's methodology. She encourages us to participate without pressure. We always did everything in groups, opinions and research on the subject mainly. I like to be in every detail. It makes it easier to understand the work, and in those situations where a colleague does not show up... [we can take their place]. I'm a mother, so I started paying attention to a lot of things [laughs], I started paying attention and, yes, it is of great importance and we have to do it...for life (FemaleB13).

Beyond recognizing the merit of the strategy adopted, like MaleB12, this woman praised the teacher for her methodology, highlighting the opportunities the student had to be involved in every aspect of the research process. The interviewee stressed how much she, as a woman and mother, learnt in this process. This participant claims for herself, as a mother, this quality of paying attention as something specific to women, which might constitute a subtle manifestation of normative gender (Chilisa & Ntseane, 2006). However, from a gender equity perspective (Roja, 2016) it seems fair to recognize that as a mother, she may have some specific characteristics but also possibly specific needs to enable her studies (such as attention to detail, for example, or making the most of the learning time she has available). Overall, however, relative to the learning experience itself, the gender effects appeared to be fairly limited.

With each arguing differently, FemaleC17, FemaleC18 and FemaleC20 considered that the approach adopted made them feel that their learning had evolved and that their confidence levels regarding learning possibilities had improved. As FemaleC17 stated:

A lot of the time I had to give in. In addition to learning, we develop certain abilities and begin to shape ourselves in such a way that we...we have also developed our personal skills, we have molded our temperament so that it suits what we are going to do. Now, I feel a little more prepared, at least I have an idea of things and how they work. So, I will now be able to position myself in certain situations. ...with this form of learning or this learning experience I was able to develop...many skills in addition to acquiring knowledge.

FemaleC17 states that she has developed certain abilities, developed personal skills and feels somewhat prepared for future learning situations. She also highlights the change in her behaviour due to the learning experiences she had. In turn, FemaleC18 stated that:

Learning through tasks was a good experience. It provides us with experiences that are lived differently. It is a different reality from what we have observed outside. I learnt to deal with new thoughts, new theories...it was a good experience, especially because I was able to learn more about how to do research. The way the teacher approached the material was very easy to understand (FemaleC18).

With this form of learning, FemaleC18 claims to have learnt more about how to do research, how to deal with new ways of thinking. A third participant saw this learning experience in this way: “learning through tasks was a good experience. We learned to associate and develop a feeling for teamwork” (FemaleC20). For this participant, the experience was useful and also an opportunity to understand the importance of working as a team. Therefore, in a situation where there is good participation and engagement on the part of the constituent members, group work proved to be productive, as the students' sense of their own learning abilities and confidence related to knowledge has increased.

5.1.1 Problematic forms of assessment

One issue raised by some students in one of the classes was the way the teachers had prepared the assessments, specifically the formulation of the questions and the assessment criteria. According to the students, the questions were ambiguous and the assessment criteria were not known to the students, that is, the teachers had not provided them to the students beforehand. As one male participant said:

As for the elaboration of the tests, I did not like some questions that until today I consider that they were not well elaborated. I realized that there were issues that did not make so much sense. I have actually not had a good experience. That is it. So the whole learning process I think was generally positive. [But] I do not really know what criteria were used for the assessment. So, I would like the teachers to be able, before the assessment, to say what the criteria are because until now I do not. I do not understand why they gave us those low grades. It is just that (MaleB11).

In general, MaleB11 appreciated the learning experience. However, he commented on the way the lack of clarity regarding the assessment criteria. In turn, another participant contended that “eh, it was good, but at the same time it had some negative parts, yes, eh...but it was good. [Bad] in terms of the ambiguity of the questions, but in terms of interaction, dynamics, everything was very good” (FemaleB14). For this woman participant, the learning experience was good, the only issue was the questions' ambiguity.

Like the last two participants, another participant made the same complaint regarding the assessment:

We had moments of...presenting work, which is the part where the students show what they understood, right. During the course they will demonstrate everything they researched, but the contrast [problem] is the assessment, the writing [written tests], yes, they were... the questions were not very clear... to be able to understand why the answer that was given in the correction does not match the others much, right. It does not quite match what it should have been. Those who got it right, we even tried to debate but still did not... but the rest went well. I still criticize the formulation of the questions. Something may have happened on the test or a lack of understanding of the question [by students]. My concern is in formulating the questions. I think that teachers could review how they formulate questions (FemaleB15).

This participant who also recognized that the approach was good, also complained about the issue of the assessment, more specifically the way the questions were formulated. Similar to the other three, the last participant argued that:

It did not live up to the expectations I had set. But it was good. Well, regarding the tests, eh, the teachers were not very clear about the, about the examples [tests] themselves...because they asked, ah, some questions that led to the students' reasoning, right. There is that and the assessment criteria themselves, no, they were not very clear. It was not very clear what the assessment criteria were. (FemaleB16).

FemaleB16 did not see her expectations met and the problem was the same as the one already raised by the three previous participants, the assessment problem, since she also

claimed that the questions were not clear and the assessment criteria were problematic. This assessment issue is crucial. To date, it has not been the practice of the teachers to provide assessment criteria to students in advance. However, in many education and research contexts this is an established norm as people need to know what the assessment criteria in any evaluation are and to submit work accordingly. Assessment criteria published in advance also reduce the possibility of erratic and subjective assessment. More women than men complained about the assessment issue. There is room here to investigate further why this might be the case.

5.1.2 Summary

Generally, this subsection highlights that the learning experience was considered new and challenging but positive. Students mentioned that beyond the learning acquired, the experience gave them the opportunity to learn how to do research, and also to work as a team. The results confirmed the effectiveness of RBL as an instructional approach and also challenged the prejudice that STEM courses are only for men. In fact, all the women interviewed reported having mastered the content taught during the intervention, unlike the six men in the sample, one of whom reported not having mastered the content. Participants also considered the feedback provided by both teachers and peers to be important for their learning. The task assignment strategy proved to be appropriate for both genders, since it contributes to eliminating the gendering of knowledge stereotypes. However, there were some aspects that need to be improved, such as the issues around assessment, more specifically the way the questions were formulated, the assessment criteria and their provision to students beforehand, and also the need to give enough time to students to answer questions.

5.2 The student guide and RBL implementation

All students were issued with a student guide that told them how to do their work. The students in the three classes divided into two main categories regarding the student guide that, to a certain extent, challenged the RBL implementation, namely (i) those who did

not use the student guide, and (ii) those who used it. Among those who did not use it, there were those who (a) did not even read the guide, and (b) having read the guide, did not use it. Among those who used it some found it difficult to strictly follow the instructions while others had difficulties at first, but later managed to follow it; and finally, some followed the instructions without any difficulty.

5.2.1 Student guide not used

I will start by discussing those who did not use the guide, starting with students who did not even read it. MaleA01 and MaleA02 were among those who did not read the guide, and as a consequence they did not use it. As their statements suggest: “I don't remember much, a lot of information that was there in the guide” (MaleA01), and, “honestly speaking, I haven't even appreciated [read] it yet. But it is really negligence” (MaleA02). As there were few men in this study it is difficult to know whether or not men more generally are less likely to read and use instructions than women. This needs investigating further.

FemaleC21 also stated clearly that she did not read the guide. This attitude is probably linked to a lack of a learning culture that makes use of support instruments such as student guides. The students may have had this behavior because it was the first time that they were asked to consult a guide. This suggests that they could have been better prepared for using the guide by the teacher.

Having read the guide, one group did not use the student guide. They found it hard to follow the instructions provided. As one woman from this group argued:

I do not have much to say about the student guide because when the teacher said that we always had to check who the speaker was, who the coordinator was, eh! Then we did not know how to identify these people because the teacher said that this would have to change as we changed the tasks, but even then we did not know where we should put it...we did not use it (FemaleC19).

This statement draws attention to the need for the teacher to check the student experience carefully so as to support them more adequately in their learning.

Both some women and some men did not use the guide. Again, because of participant numbers it is not possible to draw any gender-centred conclusions from this. But this issue points to the fact that introducing new learning methods is a mutual learning process for both teachers and students where the actual learning experience should be adjusted and refined to improve those aspects that did not work at first.

5.2.2 Student guide used but difficult to follow instructions

Now, I briefly discuss those who used the guide, starting with those who found it difficult to follow the instructions. FemaleA03, for example, stated that “it was kind of hard to follow the guide”. Despite this difficulty, she recognized the guide's usefulness, arguing: “but it is useful, yes, it is useful because that way it will make us see what should appear in the work”. Similarly, FemaleB13 stated that “eh, it is not easy to follow it exactly”. But she also recognized the importance of the instrument, stating that it was not only useful for that subject, but could also be used in other disciplines: “but it helps a lot and can be useful in other disciplines as well”. MaleC25, too, confessed that his group had not used the guide rigorously: “there were some things there that we ended up using. But perhaps, due to lack of habit, we did not use it fully, that is, we still cannot follow it strictly”.

These statements reveal that the students recognized that they did not use the instrument appropriately, though they made some effort. MaleC25 also points to the issue of habit, and students not being used to following a guide as a possible explanation for why his group used the guide only partially. The appropriate use of study guides is clearly something that needs to be taught and checked to see if students understand how to make use of such guides.

5.2.3 Student guide used with some difficulties at first

Some groups had difficulties using the guide, but over time, they became successful. As one woman said, “it was important to guide us, but at first it was not easy” (FemaleA05). Likewise, a participant from class B stated:

It was a little difficult to understand at first. Even because I wanted to ask the teacher, but then they [teachers] gave us seminars. So we kept it when we went to seminars. We could see that it was an important instrument for us. But I still needed to understand it better (FemaleB15).

This participant belongs to class B, in which, at a certain point, the teacher changed the teaching strategy, starting to teach in seminars that were conducted in a slightly different way than the RBL sessions (see the section on "Working with a colleague on my research", Chapter 3, p. 32). As the students found the guide useful, they continued using it even in classes taught in the seminar format. However, the students demonstrated that they still needed to better understand the use of the student guide by asking the teacher.

There were cases of groups whose work was not satisfactory, as while some tried to follow the student guide, others simply did not follow it. The situation improved when everyone became aware that they should follow the guide, as stated by this participant: "at the beginning, after the teacher sent the student guide, not all of us were following it...we really had to have a path" (FemaleC18). Overall, of the total number of participants, two men and one woman said they had not used the guide, while two women and one man used it but with some difficulty at first.

This situation reveals the need for greater support from the teacher to ensure that all students use the guide, following its instructions correctly.

5.2.4 Student guide used without difficulty

There were students who found the student guide helpful and used it without difficulty. Participants FemaleC17 and FemaleC22, for instance, realized its importance in structuring the work, because in their view the student guide helped them with how they should sequence the content, that is, how they should organize the work. Thus, one of them said:

I think it's good, because it helped us learn how to prepare work because we used to do work in a disorganized way. After seeing that instrument we learnt how we could do work and it was clear what we had to look for and bring to work so as not to bring unnecessary things and that's more or less that (FemaleC17).

This participant understood the usefulness of the guide in instructing students how to carry out their tasks, contrary to what happened in another group, in which, initially, not everyone followed the instructions. Another participant, too, emphasized the importance that the instrument had in structuring the students' work: "it helps with structuring the work, knowing how many pages the work should have, and we have some techniques" (FemaleC22). The students in the two groups thus manifested different attitudes towards the same situation. This may serve as a warning to teachers about the need to avoid homogenization in the classroom and consider different learning experiences by diverse students within the same classroom situation. In the case of FemaleC17's group, the guide enabled them to select only relevant information and contributed to helping the students organize their work. On the other hand, 21 participants out of a total of 26 who took part in the questionnaire, stated that they understood the steps necessary to carry out the tasks (St 1). However, the teacher must be concerned with helping those who still did not understand all the steps provided by the guide (one of these did not return the questionnaire).

As far as the organization of work was concerned, another participant spoke in the following terms:

It [the student guide] was relevant because we were a little disoriented, each one did the work in their own way. So, with the student guide we already had a direction, how to do it, how to organize it. So, I found the guide very relevant (FemaleC24).

Where the guide was used and understood, it led to an improvement in the organization of the students' work.

The ability to select relevant information and to synthesize were some of the characteristics intended with this student guide. As one participant, for example, stated, the student guide asked that:

We have to bring information. We have to look for a few pages and we were challenged to produce any information that only took five pages. So, we had to develop an ability to... [synthesize] within a lot of good, important things, look for the most important thing to fulfill the instructions that came in the manual [student guide] and still have rich work (FemaleA08).

According to some other participants' statements, the student guide proved to be useful not only for the Statistics and Learning Psychology subjects, but also for other subjects. In fact, participants such as MaleB11 and FemaleA10 suggested expanding the use of the student guide to other subjects. For example, MaleB11 stated that “it helped a lot. And it will still help in the next disciplines because it has good guidelines”. Another participant argued:

The student guide, yes... [is good] yes, why is it good, because all the teachers, you know, demand the work according to that guide there from the students. So, we had some, some cases of poorly done Philosophy work. So why, because people did not follow that guide. While that guide is the general one for all work....that guide was to really help the student [her]/himself not only to do the Statistics work but to do the other work that was given here at UEM (FemaleA10).

In this extract, the participant indicates that the student guide can help students improve their work not only in Statistics but also in other subjects. The student's statement demonstrates the need and importance of designing and developing a guide that can serve as guidance for students during their independent learning.

5.2.5 Group members playing different roles

One thing the guide was meant to do was to instruct the students regarding the roles that each member of the group should play and the need for their rotation. Indeed, one participant stated:

It [the student guide] is useful. Because the student guide itself even asks questions... I don't know if you can understand... as an example, the part of... role of each member of the group. The student guide is asking us what the students did. What did each of you do? So, we all know that we all have to put our hands together... (FemaleA07).

FemaleA07 here suggests that the student guide drew students' attention to the need for active participation in the work. It also suggests the need for all group members to be

involved in carrying out the assigned tasks, by requiring the indication of the role that each student played and role rotation. Another participant said:

I think the student guide was very good because there was this alternation where if a certain person, for example, typed this time, the next time would do another activity. So, I think that was good because eh, it opened up more space so that the student could learn to do various things. To not just stick to one activity (FemaleB14).

This student highlighted the importance of rotating roles for each student when carrying out different tasks, as this allows the student to acquire more skills. Just like FemaleB14, another participant argued:

I could not see it all, but the part I read later I realized that I did because in the methodology part, for example, where the student should, eh the group itself, should eh, indicate what the task [role of each member] was... So, if the whole group read that guide, they would see that oh, if I relax, then they would discover that oh no, I did not do anything. I found that guide very interesting because there are parts [instructions] that we should follow so that we could do, in quotes, a perfect job (MaleB12).

However, at some point, students had some difficulties in indicating the group members' roles due to the situation described by this participant:

Sometimes we forgot to include, for example, the task number... almost most of the works we forgot to include the tasks [task number] and the importance part, while we thought it was just to put an introduction, index, references and so on. Sometimes the person didn't even participate, it is bad to write [she]/he did not participate. You have to put something. Even though he only printed the work, we had to put [her]/his name on it (FemaleC23).

One of the requirements in the student guide was to state the role played by each member in the task, but, as this extract shows, attention to detail was sometimes poor (e.g. not including task numbers) and group members did not feel comfortable indicating that so-and-so had not participated in the work. This meant that group members ended up including the names of colleagues who did not actually participate. This attitude demonstrates a lack of maturity and confidence on both sides (those who participated and

those who did not), in an act that not only weakened the group's work but also encouraged laziness in those who failed to participate in the group work. In contrast, some groups actually punished colleagues who did not participate in the group work (see the section on "Some difficulties with task accomplishment", Chapter 4, p. 54).

5.2.6 Summary

The results in this subsection show that the student guide was at least potentially important for students in their task accomplishment. Beyond the instructions on how the work should be done, indicating the work structure and roles to be played by each member of the group, the student guide gave concrete guidance regarding the maximum number of pages to be produced which was considered positive by the students, as it required them to learn to select the relevant information and summarize it. According to the students who used the guide, the structure helped in organizing the work in terms of logical sequence. Changing the group members' roles enabled them to practice the skills defined in the student guide.

The participants revealed that the student guide could also help in improving their work in other subjects. But not all students were able to use the student guide, some because they did not even read it, and some who did read it had difficulties in following the instructions. Others had difficulties at first, but later managed to follow it. Overall, too little attention was given by the teacher to the fact that the students were unfamiliar with this kind of learning instrument. There was also too little checking to see if the students had understood the guide or indeed used it as intended. It is clear that much better communication on the part of the teacher is needed regarding the guide.

5.3 Information and communication technologies as tools in facilitating research-based learning from a gender perspective

Information and communication technologies (ICT) are tools that, among many things, contribute to facilitating the teaching-learning process and can play an important role in shifting from a teacher-centered learning approach to a student-centered learning

approach (Alkamel & Chouthaiwale 2018). In my research, ICT played a fundamental role in facilitating the implementation of RBL, since RBL involved the assignment of tasks to students, which were mostly carried out in groups, outside the classroom and in some cases remotely (see the section on “The organization of the groups”, Chapter 4, p. 68). In all classes, in which the intervention took place, students had difficulties getting together to carry out work in person. Therefore, an alternative and effective means for task accomplishment was the use of ICT, mainly smartphones to access the internet and YouTube, and to make use of the WhatsApp platform. Beyond these resources, some students also used computers (desktop or laptops). All of these material resources were fundamental for carrying out the tasks and, consequently, conducting RBL. Both computers and smartphones, with the help of the internet and YouTube, were crucial for researching information, typing work, and doing the presentations in the classroom. But few students had computers (see Table 8 in the section on “Students' access to ICT tools and the internet by class and gender”, in this Chapter), so the majority resorted to using their smartphones when carrying out tasks, as evidenced by the 21 participants in the questionnaire (St 24) who stated how often they used their smartphones as an important learning resource in their lives. As the following two participants said: “we all looked for information, both in the library and on the internet. We shared everything via WhatsApp, as it was difficult to meet up. What was supposed to be debated was done via WhatsApp” (FemaleC18).

Apart from some subjects, I also learned. I could learn something because we live quite far from each other. We created a WhatsApp group where each one researched, [each one] did their research and sent it to the group and we put all that research together (FemaleA05).

These two women from two different groups discuss somewhat different ways of using the WhatsApp group. One talks of discussing things online while the other describes sending in information to share. The WhatsApp groups had multiple uses in accomplishing the tasks. However, to what extent this could effectively replace face-to-face interactions is another issue. More research is needed on the different uses to which WhatsApp groups may be put in the learning process. There were no difficulties in using

any ICT tool due to belonging to a specific gender. The same amount of smartphones and computer use occurred among students of all genders.

5.3.1 Students' access to ICT tools and the Internet

In this section, I briefly discuss the students' access to ICT tools and the Internet, since they had an impact on students' participation. Table 8 summarizes the students' access to ICT tools and the Internet.

Table 8

Students' access to ICT tools and the internet by class and gender.

Class	Gender	Total no of participants	Smartphone	Computer	Internet	Observations
A	Women	8	8	3	8	5 women did not have computers
	Male	2	2	2	2	All men had all hardware
	Total	10	10	5	10	
B	Women	4	3	3	4	1 woman did not have a smartphone or computer
	Male	2	2	1	2	1 man did not have a computer – no man had no hardware
	Total	6	5	4	6	
C	Women	8	8	4	8	4 women did not have a computer
	Male	2	2	1	2	1 man did not have a computer
	Total	10	10	5	10	

Ten women out of 20 and two men out of six did not have computers. This means that proportionately fewer women had computers than men, indicating a gendered dimension in access to computers. In total, 12 participants out of 26 did not have computers. One

female participant did not have a computer or smartphone, but she had access to the internet. She said that to carry out the tasks she had to borrow a computer from her uncles, and there was WiFi at home. Again, although this woman could access a computer that computer was owned by men, her uncles, rather than by women. She did say that whenever she needed it, they lent it to her but the very fact that she had to ask in this manner means that there was always an extra step to be undertaken to deal with the work. Another female participant also said:

I do not have a laptop now. I have to use it with my brother. Sometimes... he works with the laptop so when he takes it, I have to ask for it first. There are times he cannot let go and it gets kind of hard (FemaleA05).

Not having a computer placed this participant in a difficult situation of dependence for her learning, since she could only do her work when her brother lent her the laptop. And this became even more complicated whenever her brother was unable to lend it to her. This is further evidence of the disadvantageous situation in which, most of the time, women are likely to find themselves, as they do not have the necessary means for their day-to-day learning. Women's gendered disadvantage in ownership of hardware (computers, smartphones) was thus evident among my participants.

This also means that in circumstances where students are implicitly required to have, or have access to, a computer to do a certain task, women are more disadvantaged than men in terms of being able to do that work. This is exacerbated if women also have additional care duties (see the section on "Some difficulties with task accomplishment", Chapter 4, p. 54), making on-campus attendance more difficult for them.

However, where students had access to the hardware, according to some participants, task accomplishment through ICT was a good opportunity not only to learn the content but also to develop digital literacy skills, such as typing using smartphones, as stated by the following two participants:

I just learnt it now. I didn't know it was possible to type on a smartphone. Yes, I learnt now. But some already knew (FemaleC18).

I discovered that when I take the work to type, I learn many other things, I learnt how to [type] using the telephone (MaleC18).

Another participant said that:

Each person typed a part on their smartphones and sent the document to me. They sent me the work and I transferred it from my smartphone to the computer, copied it later, and accepted the font size, all these things (FemaleA08).

The use of ICT provided students with the occasion to work as a team and develop other digitally based skills necessary for their academic life, such as those mentioned by the above participants.

The students also made use of YouTube and other online resources. As one female stated: “we had to meet many times, sit down, talk about it... Many times we also had to use YouTube, many platforms” (FemaleA07). One question this raises is how exactly students use social media such as YouTube in their learning. It is well established that social media are increasingly full of misinformation, so research is required to assess how students use social media and, more particularly, how they distinguish between appropriate and inappropriate sources. Even more to the point, the emergence of generative artificial intelligence (AI) has created opportunities for students simply to use online software to create their work, thus reducing their learning opportunities in terms of selecting and analysing appropriate material. This very fact may change the learning and teaching landscape significantly in years to come (for instance regarding how one assigns tasks and assesses student work). The quickly evolving technological landscape requires both relevant research and adaptation by both teachers and students.

In my research, ICT contributed to improving teaching-learning through its dynamic and interactive characteristic (Alkamel & Chouthaiwale 2018). Women and men seemed to learn new digitally-based skills. However, without further research it is hard to say if and how the use of smartphones and working remotely impacted on the work, compared to doing it face-to-face, and quite what gendered differences this might have entailed. It is, however, evident, that women are more likely to suffer from lack of ownership and direct access to ICT which in turn impacts on their learning opportunities and potentially their learning outcomes.

5.3.2 Internet use and student learning

Internet instability was a general issue and affected everyone. As one participant stated: “Sometimes I have to wake up at dawn to search [the internet] in the dead of the night. That is when the internet runs” (FemaleC21). However, despite these difficulties, students recognized the fundamental role played by the internet in their education. As another participant stated:

Internet access makes a lot of things easier for me. Almost everything I do today in relation to the Faculty is connected to the internet. I always have to be online. Online and even the information for the work we have to look for, ah, some articles on the internet (MaleC25).

When the internet was stable, “you find information much faster. You can use the internet anywhere” (FemaleB14).

Some participants also pointed out the ICT tools advantages in relation to the library, since students were not always able to find the actual books they were looking for in the libraries. As this participant said:

Many books we can find easily on the internet. So, if I had a laptop, for example, I could have more access to certain contents, certain virtual manuals because if we look at it, we have a physical library, but if you are going there, it is not easy for you to find the book you want. So, if you had a smartphone or a laptop it would be very advantageous because as it is, the student must produce knowledge. He is an intellectual being. A person who likes research. So, if he had a laptop it would help a lot (MaleB12).

It is clear from this participant’s statement that the internet, laptops and smartphones are indispensable for the students’ learning process, particularly in a context where library resources are limited. Perhaps it is time for the university to think about the possibility of creating more facilities for students so that they have access to different ICT tools, as many students do not have these essential resources for their learning, and the lack of these tools harms the students’ performance. As one participant stated:

Yes, it [the internet] does help because a lot of the time, not all the content we need is there, in the library. Sometimes you go to the library looking for a book, it is being used there. You have to wait, and you have to race against time. While

having the internet, the computer, it is easier to download a certain book in pdf format, it is easier to have in physical format for better learning (FemaleC20).

The importance of these ICT tools was also highlighted by the participants when answering the questionnaire. In fact, for access to the internet (St 23), 17 women and five men stated that they accessed the internet very frequently but one man denied that he accessed it as much. For smartphone use (St 24), 16 women and five men stated that they frequently used this device, one man said he did not use the smartphone frequently and one woman was undecided. Regarding computer/laptop use (St 25), eight women and three men stated that they used laptops frequently. Five women and two men said they did not access them very often. Four women and one man were undecided. This position reflects the participants' answers provided during the interviews in that they show that access to ICT hardware (computers, smartphones, laptops) was sometimes problematic for students, and that the use of smartphones was much more common than the use of laptops or computers.

However, some students criticized the attitudes of some teachers who required the use of these tools, as, in their opinion:

Smartphones and laptops would help in some way a lot of the time when you have to type work. There are teachers who do not accept handwritten work. So, you have this ease of doing the work, typing the work, printing, all these things, I believe it gets better (FemaleC19).

But what FemaleC19 said was only the case for the students who had easy access to these tools. Implicit in the quote above is a call to teachers to understand that there may be students, women and men, who do not have access to the internet, smartphones or laptops, and who therefore may have to hand in handwritten work. These are more likely to be women than men, if the figures on having (access to) hardware above are anything to go by. Thus, teachers should be tolerant regarding the requirements for presenting work, also accepting work that may have been written by hand. Such an attitude on the part of teachers would result in the denial of homogenization in the classroom and, consequently, provide differentiated treatment according to the needs of each student (Canen & Santos, 2014; Rojas, 2016).

There were other issues regarding ICT tools. For instance, the participants called on students to be self-regulated in the use of ICT tools, especially smartphones and the internet, as this can distract them, as stated by the following participants:

Technologies certainly help a lot. In a way we already have access to them. They contribute a lot to learning, but they also get in the way. I turn on the smartphone, messages are coming in, there are memes, a group of class also in certain subjects, and there is a class taking place in parallel. So, this takes away concentration, on the one hand, but it also makes it a lot easier (FemaleB13).

Even more, with distractions, someone else calls, you are typing, a message comes in, you end up losing focus, opening the message, they start talking and you end up... the day is lost (FemaleC23).

An important fact is that only women made these observations. In this sense, some questions could be raised: are women the only ones affected by the distractions produced by smartphones and the internet? Or is it because women take the tasks assigned to them more seriously, therefore noting distractions which might prevent them from carrying out the tasks in a timely manner and with better quality? It may also be the case that women feel more obliged to respond to messages etc. Research into the gender dimensions of engagement with the internet while learning could help answer these questions.

5.3.3 Summary

The findings indicated that ICT tools, namely computers, smartphones and the internet, play an important role in facilitating the learning process. Additionally, YouTube and WhatsApp were other tools that also contributed significantly to student learning, especially when searching for information while carrying out the assigned tasks. Beyond learning the content, students had the opportunity to learn new or improve their digital literacy skills, such as learning to type on smartphones.

Smartphones were the most used tools, as few students had computers. In this respect, women were at a disadvantage, since, proportionally, they constituted the majority who did not have access to computers. The results reveal that women are thus at a double

disadvantage compared to men because without having ready access to computers, completing tasks could be difficult for them.

The results also show that students should be self-regulated when using smartphones as they can be a source of distraction for students, making them lose their focus while carrying out their work. It is interesting to note that only women made reference to this. Maybe they were more easily distracted, or maybe they felt more obliged to answer their phones. Alternatively, men may feel more entitled to answer their phones when they should be focused on other tasks and therefore do not see this as a distraction. This is an issue that would benefit from being investigated further.

Additionally, it would also be useful to research how the use of hardware and software structures student learning, for instance, if it leads to a 'copying mentality' where students simply and uncritically reproduce what they find on the internet, or how they make judgments in these learning contexts.

There are also lessons for the university here in terms of developing teaching and learning strategies that take account of the unequal distribution of (access to) the internet, computers and smartphones. I now move on to Chapter 6 to discuss the challenges of implementing RBL from a gender perspective.

CHAPTER 6: CHALLENGES OF RBL IMPLEMENTATION FROM A GENDER PERSPECTIVE

This chapter discusses the challenges faced by teachers and students in implementing RBL from a gender perspective. To do this, I consider seven factors, namely: (i) students' material/life circumstances, such as material resources (computers, smartphones, and internet) which have already been discussed in the previous chapter; (ii) using university facilities (access to toilets, and laboratories); (iii) teacher attitudes and behaviour in the classroom; (iv) students with somatic challenges; (v) student employment and proximity to institution and fellow students; (vi) working students attending daytime courses; and (vii) graded presentations versus ungraded classroom contributions.

The successful implementation of RBL requires careful consideration of various factors, including teacher preparedness, resource allocation, coordination among teachers, and social equity (Kilag *et al.*, 2024). Along with innovations come challenges that must be faced (Adeleke *et al.*, 2024). Some of the factors described here, such as access to toilets, teacher attitudes and behaviour in the classroom, students with somatic challenges, and graded versus ungraded classroom contributions, are not specific to RBL, but if necessary precautions are not considered by the institution and other stakeholders, the implementation of RBL can also be compromised. I make a point of addressing these issues here, as a way of raising the awareness of everyone involved.

To understand the findings in this chapter it is important to remember that, proportionately, of those interviewed, women were more numerous than men. This means that the quotes from the answers given by women predominate over those by men. But it also seems that women are almost always in a disadvantaged position, as almost all of the difficulties described here were articulated by women only. This may be by chance (and a larger, more systematic study might reveal that), or it indicates a problem that both the institution and society need to address. I start by discussing the issue of material resources.

6.1 Students' access to material resources

The material resources discussed in this section include computers, smartphones and the internet. The great challenge for a successful implementation of RBL is to provide all students with the material resources necessary for their learning, since not all students have sufficient financial resources to acquire them. Regarding the lack of computers and the need to have these means, one participant stated:

I could do a lot of work if I had a computer. Just send a notification of a job, I would start organizing, I would start organizing the cover, I would start organizing the introduction, I would also provide information (FemaleA08).

The phrase 'if I had a computer' suggests that the student does not possess one. So, the lack of a computer prevented this student from doing her work and to deadline. This case is similar to many other female students I interviewed as already indicated in the previous chapter. It is worth repeating here that, of the 26 interviewees, 12, that is almost half, did not have a computer, and of these 12, 10 were women.

One participant referred to the lack of computers and the importance of having them in the context of higher education by stating:

I really need a laptop because I believe that having a computer is essential for higher education, the basic thing is a laptop. Even if you don't have a smartphone, the basic thing is a laptop because scientific work, that is, all the work we do at university, is different from secondary school, it really requires [computers]. (FemaleB15)

In turn, students' possession of smartphones, which is an advantage for their learning, can, at some point, also constitute a challenge if we consider that they can be a source of distractions for the students, as the previous chapter also indicated. As one participant suggested: “ah, instead of watching a movie on YouTube, we can take about thirty minutes and watch a class that has something to do with it... a class, you know, that has to do with our course” (FemaleB13).

The other concern is that some students have smartphones that are not in a good condition which circumscribes their ability to use them effectively. Hence one participant argued that “with a smartphone in slightly better condition, with battery quality, it is

possible to last longer on a charge and it is also possible to watch lots of video classes on YouTube” (Female A08).

This implies that some students may have smartphones that are not highly functional, with battery problems. Regarding this, one participant stated:

I really could not do the work on time and send it on time because of my cell phone. I have battery problems. I cannot use the cell phone while it is away from charging. It always has to be plugged in. So, having good smartphones, in good condition, does help because you cannot always go to the library (FemaleC18).

There is a need to reflect on how this situation can be overcome. The quote also indicates that students often face intersecting issues when learning. Access to a well-functioning smartphone may be one issue but not having access to this device can be compounded by a student, for example, living far away from campus, or with internet and electricity problems, or having other issues that prevent her/him from going to the library.

Moreover, along with computers and smartphones, the internet constitutes another challenge to be taken into consideration, not only for the RBL implementation but throughout the teaching-learning process. However, it is in the RBL implementation that the internet presents itself as quite crucial because, given the limited resources available in the library, without the internet it is almost impossible to implement RBL. The internet is fundamental for information research, and for communication between students who, in most cases, are forced to carry out work at a distance (see the section on “The organization of the groups”, Chapter 4, p. 68).

Some participants complained about the lack of internet access in many parts of the university campus, as it is only available at some well-defined points and even in those places, it can be difficult to access. And, when it is accessed, it is difficult to navigate because it is often unstable. Therefore, the quality of the internet, when it is offered, is poor. But in certain parts of the university it is simply absent. As one interviewee said: “here at CP II [CP is a building called *Complexo Pedagógico II*, whose rooms are under common management, that is, they do not belong to any faculty], I don't think there is internet. It does not exist” (FemaleA06). Corroborating this, another student argued that “ah, WiFi, we have to go... but here [at CP II], for example, there isn't any. At least here, teacher, we are in need” (FemaleA09).

In the same vein, a third participant contended:

So, for the WiFi [a student] has to be there in the garden, in the library. And this is not possible [enough] because sometimes we want to use the internet and we are in class. But that becomes impossible because my department doesn't have WiFi (FemaleA10).

The statements of the three participants above clearly show that there is a weakness regarding internet provision on the university campus. This needs to be remedied. For all the reasons mentioned above, lack of access to the internet constitutes a serious challenge for the implementation of RBL. Next, I discuss the access to university facilities.

6.2 Access to university facilities

Additionally, the lack of access to university facilities such as toilets and laboratories may compromise the implementation of teaching-learning, regardless of the approach adopted. In relation to the toilets, this is difficult to understand because they exist, but often they remain closed and cannot be used by anyone. This can sometimes negatively influence the completion of tasks assigned within the scope of RBL as students may avoid gathering on the university campus, simply because they know that they are not going to feel able to use the toilets. When students are at the university campus, they are often forced to walk long distances looking for toilets which takes away from their learning and classroom time, and toilets may be locked or in an unusable condition.

As one participant mentioned: “we at CP II, when we started classes, the toilets down here were not accessible. We went up to... there was not the... the toilets were locked. There are times when we go to other toilets, they are also locked” (Female06). Similar to this, FemaleA10 stated that “in our department there are no toilets. To go to the toilet you have to go out there.” Although everyone suffers from this situation, women are the most affected, finding themselves in a very embarrassing situation, especially when they are menstruating. Maroko *et al.* (2024) state that “a public toilet facility’s design and upkeep should offer privacy and safety, ensure cleanliness, provide required sanitation-related resources, and be gender equitable, including enabling comfortable and safe management of menstruation” (p. 1). But instead, even when students get access to the toilets, the

toilets are often not in a usable condition, and in some cases, no water is available (Bhakta *et al.*, 2024). As one participant stated:

First improve [clean] the toilets. It doesn't seem to be part of it, but it is. Because we are students. We use them and they must be in perfect conditions. We are obliged to travel certain distances to other Faculties to use the toilets and that somehow slows us down. We stay here having classes, we have to go somewhere far away (Female07).

If, as Baharuddin *et al.* (2024) argue, much of what constitutes human resources is shaped by educational organizations, by depriving students of the use of toilets, we debase them in a situation in which the satisfaction of basic needs appears to be a benefit for only a privileged few. This attitude demonstrates a certain insensitivity on the part of those responsible for managing the toilets. Although this situation affects all students, only women raised this concern. This demonstrates, as is well established in the relevant research literature from across the world (Maroko *et al.*, 2021; Bhakta *et al.*, 2024; Lewkowitz & Gilliland, 2024), that women are disproportionately affected by poor toilet facilities. It means that the organization compounds the detrimental impact the learning environment has on its female students. This is a general issue that affects any teaching-learning approach, including RBL.

Furthermore, the university does not have adequate infrastructure designed only for learning and group work, which constitutes a demotivating factor for students, especially when they have to accomplish group tasks, as is mostly required in the case of RBL. One of the students' complaints was the lack of a psychology laboratory for practical classes at the Faculty of Education. Laboratories are fundamental in helping students clarify scientific concepts in a more comprehensive and meaningful way (Duban *et al.*, 2019; Wati *et al.*, 2024). However, they do not exist at UEM for Psychology students' needs. As a result, students do not have the laboratory practice they require. The study participants requested the installation of laboratories by the institution and access to a projector in some specific classes. As one of the participants argued:

We have a lot of theory. The practice. Provide practice! We may be talking about the brain. We never even saw it. We should have a laboratory for psychology because we have a psychology discipline. So, we should have a laboratory.

We should [also] have a projector because nowadays we are in virtual time. We could put a video on that one. We would be here to see how things are done in practice. I think that is it (FemaleA07).

This participant suggests linking theory to practice, highlighting the importance of visualizing the content being transmitted (Badmus & Jita, 2022; Assen *et al.*, 2023), thus reducing the need for greater abstraction. To complement this participant's idea, FemaleB16 stated that “downloading a document in digital format is better, you know. It saves money, it saves paper, and now things are more advanced, for example, projectors have been used in classes, right? Projecting, so you can get a lot of material out but without writing or dictating, yes, I think it is very good.” Consistent with Bouasangthong *et al.* (2024) and Hakimi *et al.* (2024) the participant in this statement calls for the increased use of information and communication technology (ICT) tools in the teaching-learning process, so that it is more effective. This is also an issue the institution needs to address. I now move on to discuss teacher attitudes and behaviour in the classroom.

6.3 Teacher attitudes and behaviour in the classroom

When implementing RBL it is important to take into consideration teachers' attitudes and behaviour, as they can have a negative influence if they are not appropriate. Indeed, teachers' attitudes and behaviour are of paramount importance for the success of students (Gülsün *et al.*, 2023; Kelly *et al.*, 2024), and they play a crucial role in RBL implementation. Some participants complained about teachers' attitudes and behaviour more generally in the classroom. As one participant stated:

Teachers get... hard, they insult students, they speak badly, they even go so far as to insult, calling stupid, calling people names, but first of all, s/he is a human being, s/he is there to learn. Instead of cursing because s/he made a mistake, I think teachers could say: look, it is not like that, it is wrong. You should do it like this, because a person may think that calling people stupid, calling them names, is a motivation for the student, but no, at some point it can affect the student psychologically. At some point, it can happen to people who have more sensitive

conditions, you know, it can make the student give up on their studies. First of all, I think that respect is the basis of everything. It counts a lot. So, it is knowing, teachers should know how to express themselves, no matter how nervous they are, no matter how angry they are, it is always good to remain calm. Because instead of being there producing, he will be there with students who are just afraid of him (FemaleA10).

Although it was something said by just one student, this could be a voice that represents other voices that, possibly for fear of potential reprisals, chose to remain silent. However, the resolute and extended way in which this woman spoke demonstrates that it is something serious that deserves attention. And once again, it is a female voice that makes this point. But if there are women and men in the classroom, men probably also experience these situations. However, they may lack the courage and determination to call out such acts. Or are women the ones who suffer the most, which makes them more sensitive to these issues and therefore they report them? Research on this matter would, perhaps, provide a better answer for the questions raised. Regarding establishing a good classroom environment/climate, one participant stated that “when students feel more comfortable, they learn better, yes” (FemaleB16).

It is well established in the literature (Assem *et al.*, 2023; Toding *et al.*, 2023; Rohmer *et al.*, 2024) that the teachers’ attitudes and behaviour in the classroom directly influence their relationships with students. These attitudes and behaviours also impact on the pedagogical practices that may or may not favor the promotion of an environment that offers wellbeing to the students and, thus, good learning. It is with a view to promoting this learning and gender awareness among students that teachers are called upon to adopt pedagogical practices that are also gender-sensitive.

But, beyond this, there is a coordination issue among teachers. Although the weekly cycle of RBL sessions was useful, due to the work assigned from other disciplines to complete at the same time, some students ended up feeling overwhelmed (see the section on “Some difficulties with task accomplishment”, Chapter 4, p. 54), and this negatively affected their performance. To prevent tasks from piling up on students, there must be coordination among teachers who work across the same classes. By embracing collaborative initiatives and coordinating their activities, teachers and students have a lot

to gain, as students will not be overwhelmed, and therefore will be able to carry out all their activities with greater possibilities of performing well (Adeleke *et al.*, 2024; Kelly *et al.*, 2024). At the moment, there is a lack of coordination among teachers from different disciplines.

6.4 Students with somatic and mental health challenges

Although it is an aspect not specific to RBL, students with somatic challenges such as bad eyesight or other disabilities also constitute a challenge for the implementation of RBL. For a better understanding and good practice, let us listen to what one of the participants said:

There are people not only with physical needs but also with some mental difficulties. There are people who understand things very easily, but there are people who need more time, need more patience, need more leverage. So, I think that students should make a lot of effort, but teachers should also create a very inclusive system [environment], which would help even those who perhaps have some problems or difficulties with their hearing, vision, someone who has difficulties. In my class, for example, there are people with hearing problems, there are people with vision problems, and some of these people are even at the back and sit on the last benches and, despite the system [environment] being very good, very good, end up not covering these people. For me it's good because I have completed all the tasks, I have understood the tasks, but for those who do not even understand how to do it. So, you end up not doing it (FemaleA08).

For all instructional approaches, including RBL, taking note of a very heterogeneous environment is important so that teachers can provide differentiated treatment depending on the characteristics of their students (Canen & Santos, 2014). It is up to the institution, at the time of registration/enrolment, to identify students with conditions requiring special attention and to provide the relevant information to the teachers. However, teachers must also be aware of these situations because students themselves may not bring up their issues. But knowing about their existence is very important to ensure that no one is left behind, including those with somatic challenges (Kelly *et al.*, 2024). Although RBL can

be a good learning approach, it can fail if, for example, it does not take into account students with hearing and vision problems and thus promote a “safe and supportive environment where students can thrive academically, socially, and emotionally” (Melikboboyevich et al., 2024, p. 132). Therefore, this is one challenge to take into account when implementing RBL.

6.5 Student employment, proximity of living near the institution and fellow students

Living far from each other, from the university campus and having to work, were challenges some students faced, particularly when they had to accomplish their tasks, since it was almost impossible for them to meet up in groups. A female participant described her day-to-day difficulties getting to the university campus as follows:

I live far away, my transport takes a long time to arrive. I... have to do this, and that, and that ended up making the process of preparing the work difficult because there were things ahead of the preparation of the work. Those personal difficulties. So, arriving early too, it was every day getting transport money in time to get here. Because as we are studying in the evening, it is difficult to leave here and go to the library. And get home at 10 or 11 pm. So, if I could get here every day at 8am, maybe I would have more knowledge than I do now because I... time and again I go to the library... but I cannot always get there. But if I could go every day, I would be able to do all the things I wanted to do (FemaleA08).

The above quote shows this woman's day-to-day difficulties in getting to the university campus. This is an example of the intersectional dilemmas faced by students. For this woman it was a daily struggle to raise the money for the transport to come to the Faculty. This was compounded by her living far away, which created permanent uncertainty as to whether she would go to the Faculty the next day or not. This fact alone constitutes a major obstacle to good learning and consequently to carrying out the assigned tasks within the scope of RBL. The question remains: how many students are likely to be in this situation? Is not this challenge for the implementation of RBL also a reason for implementing this approach, since even remotely, students can carry out their tasks and

thus continue with their studies, by using ICT tools if they have these available? These are some questions that only further research can answer. In the next section, I talk about working students who attend daytime courses.

6.6 Working students attending daytime courses

Notwithstanding the fact that the majority of my research participants did not seem to work or be in paid employment, some were, according to some participants teachers do not take into account the difference between full-time students and students who study and work to pay for their studies. As one woman said:

There are difficulties for teachers to realize that not everyone who is attending day classes is just a student or is just dependent on their mother, father, eh. They are not the ones in the situation of being told to come to Faculty. Not all of us are in this situation, so I think there is a lack of empathy even in understanding that, eh, these are real people who have different lives, come from different places and have different objectives (FemaleB13).

Students demand differentiated attention, including taking into account the specific characteristics of this group of students, in order to meet their learning needs (Kilag *et al.*, 2024; Rojas, 2016). To respond to this, I call for “differentiation as a philosophy of teaching rooted in deep respect for students, acknowledgement of their differences, and the drive to help all students thrive” (Smale-Jacobse *et al.*, 2019, p. 1) to be embraced by teachers in similar, if not all, situations. Furthermore, to address the issues of students such as Female B13, RBL seems to be one of the most appropriate approaches to respond to these concerns by stimulating independent, autonomous and responsible student learning, regardless of gender (Bowyer & Akipinar, 2024). RBL practices make learning more student-centered and provide students with an appropriate environment that enables them to overcome some difficulties (Pongračić & Marinac (2021). Such student-centredness also means accounting for the students' standpoint in creating their learning context. Based on the content, context and target group, teachers can improve their classroom environment by making the necessary adjustments to their pedagogical practices (Melikboboyevich *et al.*, 2024) and thus come as close as possible to the needs

of their students. I shall now move on to discuss graded presentations versus ungraded classroom contributions.

6.7 Graded presentations versus ungraded classroom contributions

One participant argued that the presentations carried out in the classroom should only aim to promote student learning, avoiding presentations that at the same time assess the student. As she said:

Being assessed implies a lot. Eh, it is that moment when you realize that someone is there paying attention to everything I say. This is boring. Spontaneous participation in class is much more interesting. You participate, you do not have that awareness [concern] that I am being assessed, I am just participating in the class ummm, and... with the conversation you obviously end up retaining the content. But when there is free and spontaneous participation, it is something else.

Yes, there may be a need for prior preparation, but when you participate because you like it, it is stimulating to participate (FemaleB13).

According to this participant, the teacher should be concerned with valuing the student's contribution and not their grades. As she said: "I admit that what moves us here at the University is not just knowledge, taking into account that teachers also, some teachers, right, do not look at your knowledge and your argument but they only value your knowledge through the marks" (FemaleB13). This participant's statements suggest the impact on learning produced through immediate feedback to students (Panúncio-Pinto & Troncon, 2014).

Of course, students' assessment is necessary since it provides feedback for both sides, students and teachers (Pang, 2020; Stanja *et al.*, 2023; Huber *et al.*, 2024) and thus helps students to "monitor their learning progress" (Tai *et al.*, 2023, p. 407). However, the participant's statements call teachers' attention to the fact that although the grades can be used to identify the level reached by the students, they should also value other issues as a way of recognizing their commitment and dedication to their studies. In short, assessment should not only serve for classification, as seems to be the case in this student's understanding. The student emphasizes the need to encourage student engagement,

without them necessarily being “compensated” by grades. This may be due to the fact that the student who knows s/he is being assessed, can be overcome by nervousness, which can affect her/his performance during the presentation negatively. Fear of assessment can be a factor that hinders the very learning we want to promote. However, it is also the case that directly or indirectly we are assessed in many life and work situations, and that students need to learn to cope with this.

It may be that, unconsciously, we as teachers are teaching people to become vulnerable to corruption by getting our students used to the idea that whenever they perform the assigned task or answer a question, we will give them grades. The student demands that her or his knowledge be valued, which is not limited to just grading. Teachers should make clear and explicit distinctions between learning situations that involve grading and those that do not. In relation to the assessment issue, although not directly related to RBL, it can make its implementation difficult if there is no clear definition of the objectives that are intended to be achieved with a given assessment. Accordingly, this should be addressed since participants quoted earlier expressed a concern regarding the assessment criteria, which were not clear and were not disclosed to the students in advance. The questions in the assessment also apparently contained a lot of ambiguity from the students' point of view (see the section on “Problematic forms of assessment”, Chapter 5, p. 83). Although the student assessment issue is general, if not designed appropriately, it can pose a challenge to RBL too. This means that RBL teachers cannot continue to assess in the same way as they did with other approaches. An assessment is needed that meets the requirements of RBL, in order to value fairly the efforts made by the students.

According to Fernandes *et al.* (2023) in innovative teaching-learning approaches that contribute to the shift from teacher-centred learning to student-centred learning such as RBL, the students' assessment should be consistent with the Bologna process, adopting assessment practices that encourage active student involvement. Students do not reject their assessment, but they want and teachers should provide, an assessment tailored to the approach adopted, and with clear and previously established criteria. Such assessment will be welcomed by students if, according to Fernandes *et al.*, it is accompanied by “systematic feedback that promotes critical thinking and deeper learning, [and is] more focused on understanding and comprehension” (p. 168). Thus, for students' assessment to

meet innovative teaching method requirements, it is essential that teachers are creative and use assessment techniques that are consistent with their learning approaches (Araujo, 2020).

Changing the focus a little, participant MaleB11 suggested that education, whether in the RBL approach or any other, is expensive and therefore requires investment on the part of the student, arguing that:

It is necessary for the student to realize that, first, education is not cheap. It is something that I noticed in this class that many complain when teachers charge reading tokens, charge for some books that are necessary, and actually for me it was also very difficult to find money to buy some data (internet data). In this case, at no time did I blame the teachers because it is an investment. So, students need to understand that education is an investment (MaleB11).

This is a warning about the complaints that have been made by students due to the fiscal demands of the teachers, on the one hand. On the other hand, this could be a call to attention for the creation of a social fund that can help the most disadvantaged students, so that they can cover the additional expenses beyond the fees inherent in their studies. In fact, this is a situation that, in some way, can constitute a challenge for RBL implementation, as education requires, to a certain extent, an investment. RBL students really need, among other things, access to the internet, which means having a smartphone and/or a computer. In other words, students or parents need to invest in acquiring these ICT tools to ensure that the learning process runs smoothly. The institution should also try to do its part in creating appropriate and sufficient support facilities for the students. Without this investment, RBL implementation could be doomed to failure.

6.8 Summary

This chapter highlighted some factors that can hinder RBL implementation in the Faculty of Education (FacEd). RBL implementation presents challenges for students and teachers, as there is a shortage of certain material resources to support the teaching-learning activities. Students are treated as if they are all full-time, which disadvantages students who are not full-time. The chapter also engaged with more general issues that impact on

students' learning experience. The factors that influence the implementation of RBL include the quality of the material resources; the lack of university facilities such as toilets, which is not specifically linked to RBL but can end up having a negative influence on students' performance; teacher attitudes and behaviour contributing to students motivation or demotivation; the lack of adequate attention to students with somatic challenges put this group of students at a disadvantage, and the lack of coordination regarding coursework among teachers which can lead to student work overload; the students' geographical location and their work situation which makes it difficult to carry out group work in person, a fact that contributed to tasks being carried out remotely; students who attended daytime classes while they were workers felt considered as full-time students, as they did not receive differentiated and appropriate treatment; the assessment aimed at classification through the attribution of grades during presentations unnerved students, which could contribute to poor student performance. All of these factors constitute, directly or indirectly, a challenge for the implementation of RBL at the FacEd. These challenges may well have gendered dimensions but these need to be researched further.

Due to the lack of suitable rooms, as of 2025 students continue to be forced to work outdoors, amidst much noise. Thus, the university needs an adequate infrastructure to enable students to carry out group work, that is, make available to students suitable rooms for carrying out group work or studies, install psychology laboratories, make the internet available throughout the campus and, eventually, consider creating a social fund that could help students acquire computers. This would probably be useful in fulfilling the tasks assigned not only under the RBL approach, but also in other learning approaches more generally. The lack of computers prevents students from doing their work and meeting deadlines. My research data reveal that women were proportionally the most affected, as many of them did not have these material resources for learning. The same applies to access to toilets, which apparently affects everyone, but affected women the most (see the section on "Access to university facilities", Chapter 6, p. 104). The institution needs to be attentive to all these almost invisible situations, designated by Acker (2006) as inequality regimes, which perpetuate gender disparities.

If the institution overcomes these challenges and adopts a future-oriented mindset, it can stimulate positive attitudes on the part of the students and create a favorable environment for the implementation of RBL, thereby creating solid foundations for its transformation into a research university (Obiuto *et al.*, 2024). I now turn to Chapter 7 to discuss the research results.

CHAPTER 7: DISCUSSION OF THE RESEARCH RESULTS

In this chapter, I discuss the results of my research. This thesis aimed to understand how gender affects students' research-based learning in the context of the Faculty of Education at UEM. My research contributes to two main academic areas, namely, higher education studies (HES), more precisely HES in Mozambique, and gender, and to HES more generally. It focused on three main research questions. The first, addressed in Chapter 4, concerned RBL. The second, dealt with in Chapter 5, centred on working with RBL from a gender perspective. The third one, focused on in Chapter 6, was related to the challenges of RBL implementation from a gender perspective.

7.1 Students' views of RBL and gender

With regard to the first question related to the students' views of RBL and to gender in terms of carrying out tasks, the results indicated that in the three classes, RBL was generally, but not uniformly, positively appreciated by the students, regardless of gender, as it required that everyone participated actively and, as a consequence, provided them with effective learning (Carter *et al.*, 2016). In line with Susian *et al.*'s (2018) and Wessels *et al.*'s (2021) findings, the tasks enabled participants to experience not only the early steps of research but also the development of critical thinking when reasoning and analyzing during group discussions. Thus, my findings showed that RBL was useful to students in helping them to build a strong intellectual background, and connecting research principles to students' learning process (see also Ahdika, 2017). Some participants also realized that by performing tasks, it was possible to learn in an independent way, and that they were capable of learning on their own (Paris & Paris, 2001; Susian *et al.*, 2018). In their studies, authors such as Fuz (2018), Karoff *et al.* (2017), and Whittington *et al.* (2017) when discussing the issue of learning, contend that students are required to take responsibility to find solutions through an inquiry process. And my findings showed that the assignment of tasks made these students aware that they should become responsible for their own learning and some of the students went further, arguing that task assignment should be a more comprehensive practice, covering all education levels. Participants' views mirror those of Hill (2022), who stated that student

learning comes from “experience and learning through practical practice and reflection” (p. 934).

According to many participants, the accomplishment of task assignments in groups gave students the opportunity to develop the spirit of team work, to develop skills such as digital literacy, oral communication and the ability to make presentations without fear of the audience (O’Connor *et al.*, 2021). The results of my study also indicated that group tasks were important because they promoted collaboration, social interaction among students, promoted gender relations development during interactions in the group, and the students learnt to help each other (Morris, 2020; Susiani *et al.*, 2017). Thus, groups were also seen by many participants as an appropriate way to develop cooperative learning (Karoff *et al.*, 2017; Morris, 2020; Susiani *et al.*, 2017).

The research results also showed the existence of two groups of participants with different opinions regarding the tasks assigned. One, mostly made up of women, complained about the pressure of having to carry out consecutive tasks which they thought ended up negatively affecting the students' performance and, the second one, for whom the number of tasks received was unproblematic. The fact that, proportionally, more women than men complained about the pressure, might be a consequence of their socio-economic condition, since women in Mozambique have to carry out more domestic tasks than men. The students' claim of task overload demonstrates the need for good institutional coursework organization, and good coordination in this respect among teachers.

Though RBL is demanding, in line with Wessels *et al.* (2021) who suggest the incorporation of RBL into the curriculum of all academic study programs, some participants in this study suggested the implementation of RBL from primary school to university, due to its effectiveness in awakening interest in research and awakening gender awareness by promoting greater interaction among the participants. Susiani, Salimi and Hidayah (2018) also suggest that RBL might be implemented in the learning of future primary school teachers because the implementation of RBL develops their critical thinking skills, which is important for the emergence of creativity. This is compatible with the responses of some of my interviewees when reporting that the strategy used enabled them to develop their research and knowledge production capacity.

As argued by Wessels *et al.* (2021) in stating that RBL is a useful experience for students' later careers, the results of my research showed that RBL is an appropriate approach to train professionals who can better serve the country in the future.

Concerning students' perceptions regarding gender in relation to RBL, although the research was conducted under specific conditions typical of the Mozambican context that, in some way, conditioned the implementation of RBL, my research findings do not differ from those of Mazzuca *et al.* (2020) in that students' perception reflected normative and non-normative gender positions. They were normative because in some instances students tended to reproduce exactly what society has defined as appropriate for each gender (Kuhn & Wolter, 2022). In fact, the results of my research showed that some participants, who seemed to think in gender-equal terms, nonetheless exhibited traces of gender stereotypes/prejudices in their discourse when, for instance, a male participant said that at the beginning he felt embarrassed about being among too many women and that he did not know how he would deal with these women. In this regard, addressing gender and pedagogical practices Muasya and Kazung (2018) argue that it is necessary to involve both genders in mixed-group activities so that they understand that everyone is equal. This is consistent with standpoint theory which explains that knowledge is partial as it depends on the position of the individual (Harding, 2004) and therefore there is a need for teachers to pay equal attention to different categories of students, both female and male. Therefore, it is very important that teachers in pre-university schools, since it is at this level that students decide on the courses they want to take, explain to students that there are no courses designed specifically for a certain sex. Anyone, whether female or male, can take any course they want. Awareness-raising lectures can be included to attract women to STEM courses and men to social science courses.

Through their responses to the interviews, certain participants also revealed that their ideas about gender differences were deeply rooted in their perspective on women and men thinking differently in same-sex groups, which, to a certain extent, underlies the existence of gender inequalities in the classroom, manifested in a subtle way. This reflects Acker's (2006, pp. 451-452) thinking when she argues that some "interaction practices" demonstrate the existence of "patterns of inequality" in a subtler way, which makes their discovery difficult. The attitudes of some students demonstrated how much

they were under the influence of normative gender structures. The students' perceptions, the division of tasks according to sex and the consequent definition of courses that might be taken specifically either by women or by men are an example of gender-normative attitudes. As Harding (2004, p. 32) states, "each member is oppressed because she or he is a member of that group, not because he or she individually deserves to be oppressed". Both women and men tend to act in accordance with the "dominant values" (Chilisa & Ntseane, 2010, p. 620) or, as stated by Harding (2004), "power practices" proceeding from the "conceptual framework that created and maintained oppressive social relations" (p. 31), that is, conventional gender norms.

Feminist standpoint theory seeks to deconstruct this mindset by showing how knowledge is influenced by the position of the individual and hence subjective (Harding, 2004), while also promoting an ethical framework, awakening "awareness of contextual variations" (Chilisa & Ntseane, 2010, p. 619). In this context it should be emphasized that feminist theory, whatever its specificity, is not a theory that addresses only women but rather, that it addresses issues of gender which are relevant to both sexes and all genders. Although few male students in Mozambique take Psychology, and despite the negative judgment they may be subject to by their peers from other Faculties, as was mentioned by some participants, the male Psychology students demonstrated that theirs was a conscious choice. In this regard, one interviewee, for example, said that he chose Psychology because he would not feel comfortable in engineering because he enjoys debating. Although my interviewees said that there are some students who think that there are easy courses such as social science ones, aimed at women, and more difficult ones, the STEM courses, aimed at men, because they grew up being told that there were courses for women and courses for men, they were unanimous in stating that anyone, regardless of gender, can take any course they want. This attitude reveals that these students are at least beginning to challenge the conventional gender norms that continue to prevail but are gradually changing in contemporary Mozambican society.

The results of my research also showed that some students were non-normative in their gender orientation, as students tended to challenge already established sociocultural norms, such as men's choice to take a course often considered more suitable for women, e.g. Psychology. Thus, the results of my research indicated that in general both genders

from the three classes in which RBL was implemented had the perception that it is not a person's gender that influences or determines the participation and/or degree of involvement of that person in task accomplishment, because everyone is capable of carrying out education tasks regardless of gender (Karlson & Simonsson, 2011; Mahat-Shamir, *et al.*, 2021).

In my research, and corroborating Susian *et al.* (2018) who argue that in RBL students have opportunities to implement collaborative learning, some participants also emphasized the strong involvement and ease of some male colleagues in their relationships with female colleagues while performing tasks. This attitude was considered important as it could contribute to raising awareness about the need to deconstruct prevailing conventional gender norms. This is one of those situations in which men accept contributing to and sharing their knowledge and are willing to learn from their female colleagues, as mentioned in one of the groups. However, on the other hand, there were cases of male students who felt embarrassed to be among so many women, most likely due to gender stereotypes. And, placing students of both sexes in increasingly greater interactions may be one of the solutions to eliminate or at least minimize these prejudices. The effect of this may be a shift, over time, in gender composition in the class room. RBL presents itself as one of the best approaches to promote such a shift. However, there were also those who did not engage well and thus compromised learning, with some women and some men accusing each other of being lazy or selfish.

Consistent with the earlier study of Clavero and Galligan (2021) and with regard to the role of gender in the students' organization of carrying out the tasks, the results of my research indicated that carrying out tasks in groups contributed to promoting greater interaction among students, and also played an important role in reducing epistemic injustice, as students, women and men, learnt to respect and value each other, because during their interactions it was possible for them to see that everyone is equally important. This process aimed to ensure that all students had the same learning opportunities. When studying/working together, women and men have the opportunity to develop a productive relationship that will have an impact on their future lives because they will find themselves in the job market, where they will have to deal with each other. Consequently, it is crucial to harmonize "gender interaction on the basis of egalitarianism as

the principle of equal rights and opportunities for the individual" (Rajapbayevna, 2022, p. 334), safeguarding gender equity through the recognition and consideration of classroom heterogeneity. This is a challenge for a situation of gender imbalance, as in the cases in which this research took place. However, proportional treatment can be promoted as can explicit engagement with and discussion about gender roles.

To perform tasks, students created WhatsApp groups meeting virtually using smartphones, as many of them did not have access to computers. The creation of these WhatsApp groups and the respective use of smartphones helped to solve the problem of the impossibility of face-to-face meetings. While performing tasks, each group was free to adopt the organization it wanted, as long as it guaranteed the performance, by all group members, of the three roles defined in the student guide, namely, coordinator, moderator and rapporteur. Some groups managed to make this rotation, but others were for various reasons unable to do so, especially groups where there was little engagement on the part of some members. As this was their first experience of these roles and of role rotation, it was perhaps understandable that some students (groups) had these difficulties. More teacher supervision of this issue might have helped here. Due to the difficulties faced in carrying out group work, some students preferred to work/learn individually, but others had a preference for group work. Collaboration and interaction among group members are also advocated by Blair (2016), Breunig (2017), Rojas (2016) and Susian *et al.* (2018) when addressing experiential learning such as RBL.

Similar to the interview results, the questionnaire results also indicated that it was not gender *per se* that determines the ability to learn but rather socialization into gender norms and roles that shape and determine what the individual becomes (Muasya & Kazungu, 2018; Mazzuca *et al.*, 2020). Overall, although both genders expressed positive attitudes towards RBL, female students tended, proportionally, to be more positive and confident (see, for instance, St 17, in Table 9, p. 176, St 28 and St 29, in Table 10, p. 177) than male participants in relation to certain aspects of RBL. This is interesting given that RBL was carried out largely in a discipline that, from the outset, one might think was the domain of men, statistics. Therefore, consistent with Bowyer and Akpinar (2024), Susian *et al.* (2018), and Wessels *et al.* (2021) who argue that when immersed in RBL environments, students are able to learn effectively while developing research skills, the

results of the questionnaire also showed that students reported being capable of learning, as long as the teachers adopt learning approaches and pedagogical practices that promoted gender equality and equity and thus gave them the same opportunities.

The introduction of a moderator and a 10-minute break in one of the classes for a brief breather before starting to answer questions were approved by the students. This is an example of how the dynamics of the classes themselves can determine the innovative and flexible character of the learning process, opening space for creativity. However, it can be disadvantageous if it is not well monitored by the teacher to ensure that time is not wasted, either by the moderator or by students due to the break.

7.2 Working with RBL from a gender perspective

Regarding the second question, about working with RBL from a gender perspective, the results of my research revealed that when students are subject to the same conditions and benefit from the same opportunities, gender has a limited influence on students' opinions in regard to RBL. The results indicated that RBL was a great opportunity for students of both sexes to realize that it is not gender that determines what someone is capable of doing, but rather how open and prepared women and men are to understand the subject. Some participants of both sexes highlighted the benefits of the learning experience they had. This learning experience may have contributed to a change in their attitudes toward conventional gender norms. Cardono-Molto and Miralles-Cardona (2022) consider that education should be a scaffold that advances gender equality, and combats and prevents discrimination. This study was fundamental in that it was an opportunity for students of both sexes to constantly interact while carrying out tasks, providing them with independent learning and also contributing to the deconstruction of gender stereotypes. Unlike women, men displayed a certain shyness in answering the teacher's questions or even in terms of contributing to groups, possibly because they were afraid of making mistakes or because of ingrained gender attitudes. The same attitude was not exhibited by women. Women may not have the same gender preoccupations as men. On the contrary, this was a great opportunity for them to demonstrate their competencies. The accomplishment of tasks in groups and the presentation sessions might have been important in helping students to eliminate the fear of talking to an audience, where

women and men might be present. In regard to this, some authors contend that students must be aware that they are required to respond, constantly being subject to challenges and to behave spontaneously in a new learning situation that involves unpredictability (Davidson *et al.*, 2016; Karoff *et al.*, 2017; Whittington *et al.*, 2017; Fuz, 2018) since this is a norm in the labour market which they will enter.

My research showed that the questions of the tests were not always clear to everybody and the assessment criteria were problematic. Although this is not an issue specific to RBL, teachers may need to be careful with the two aforementioned aspects because, in general, these kinds of issues can end up affecting students' entire teaching-learning process, whatever the approach. Assessments must be made that are in line with the demands of the approaches in use. In one of the classes, participants argued that, despite highlighting the importance of this learning experience, RBL could fail due to problems with the assessment. In regard to this aspect, more women than men complained but because of the qualitative nature of my research and the limited number of participants, as well as the gender distribution in the sample, it is not easy to draw any particular conclusion other than the need for teachers to think through these aspects of the learning process more thoroughly.

Participants also spoke about the student guide, an instrument that was designed to help them carry out their tasks and how to write the final report. For some participants, the student guide was an instrument that proved to be important to keep students on track, both in carrying out the tasks and when writing the final report. Stroth *et al.* (2018) emphasize that RBL activity is important for students to practice fieldwork methodology and therefore, for some students, the student guide was fundamental in helping students to exercise some basic research principles. These statements are further consistent with Covele *et al.* (2017) when highlighting the importance of learning through research, since the guide, together with the assigned tasks, helped to operationalize the implementation of RBL. But the results also revealed that although some groups used the guide, others did not because they had some difficulties in following the instructions. Difficulties in using the student guide can, to some extent, pose a challenge to the implementation of RBL. Teaching students how to use it must be made an explicit part of the teaching-learning approach adopted by the teacher.

The implementation of RBL requires information and communication technology (ICT) tools as they are crucial for shifting the teaching-learning process from teacher-centred learning (TCL) to student-centred learning (SCL) (Alkamel & Chouthaiwale, 2018). Thus, the use of smartphones, WhatsApp, the Internet and YouTube were fundamental for the accomplishment of the tasks. But, as few students, especially women, had a computer, the majority resorted to using smartphones to carry out the tasks. This is clearly a disadvantageous situation in which, most of the time, women were likely to find themselves, as they were less likely than men to have the necessary means for their daily learning. The research results showed that the use of ICT tools such as laptops, smartphones and the internet was indispensable for the students' learning process and thus, the lack of these tools harms students' performance, and more likely that of women. This kind of issue is not addressed at all in the literature on RBL but needs to be dealt with. It constitutes both an original contribution to RBL research and to research in HES and gender. The results of my research also call on students to be self-regulated in the use of ICT tools, especially smartphones and the internet (see also Anshari *et al.*, 2017).

As in some other contexts, so in Mozambique the learning process is embedded in a context in which it is necessary to deal with certain specific issues such as access to material resources, infrastructures, the students' geographical location and so on. This is an issue for central government and its input into (higher) education as much as for individual institutions and for teachers deciding on what teaching and learning approach to adopt and how best to adapt it to local circumstances.

7.3 Challenges of RBL implementation from a gender perspective

Regarding the third question, related to the challenges of RBL implementation from a gender perspective, the research results indicated that there are many factors that can undermine its implementation. This means that RBL also suffers from additional difficulties that the institution, teachers and students have to deal with, since along with changes and innovations come challenges that must be faced (Adeleke *et al.*, 2024). And as argued by Roby *et al.* (2009, p. 350) particularly in Mozambique, women are affected more negatively by this than men.

Among the challenging factors identified in this research, there were some that were not specifically linked to RBL, but that, at some point, can also harm the success of its implementation if precautions are not taken. Thus, the research results identified some factors that can directly or indirectly affect the implementation of RBL such as access to computers/laptops, smartphones and the internet; teacher attitudes and behaviour in the classroom; students with somatic challenges; appropriate availability of university facilities such as toilets and laboratories; student employment and proximity to institution and fellow students; working students attending daytime courses; and graded presentations versus ungraded classroom contributions.

Regarding computers/laptops, the study findings indicated that most of the women but very few men interviewed did not have computers, meaning that women were the most disadvantaged in a context where ICT tools play a fundamental role in teaching-learning (Alkamel & Chouthaiwale, 2018). This situation is worrying as it may result in many women not performing as well as they should, which may also lead to a misinterpretation that women are not very dedicated or under-perform. Students' access to smartphones and the internet can also pose a challenge to their learning in several different ways: they may interfere with learning due to acting as a distraction (Anshari *et al.*, 2017). They may also not be accessible due to electricity outages, lack of resources to pay for internet access and uneven internet access. There is a lack of internet access on many parts of the university campus. And overall the quality of the internet is poor, both on campus and in students' residences.

Another challenge highlighted in this research by the participants was the teacher's attitudes and behaviour in the classroom, as they can impact on student learning (Gülsün *et al.*, 2023; Kelly *et al.*, 2024) which, as a consequence, can affect RBL implementation. In fact, the attitudes and behaviour of teachers in the classroom, evidenced by the way in which they address students, directly influences their relationships and they also impact on the pedagogical practices and, consequently, good learning (Rohmer *et al.*, 2024; Toding *et al.*, 2023).

Results from this study also indicated that bunching of tasks could make RBL implementation difficult.

My study revealed also the existence of students with somatic challenges in the classroom. This can be an obstacle to the implementation of RBL. Given all this, teachers are called upon to maintain a positive attitude and appropriate behavior in their relationships with students, and must avoid overwhelming students with work, through effective collaboration across disciplines.

Another complaint raised by the students in this research and which may contribute to challenging the implementation of RBL was related to classroom presentations. For students, presentations carried out in the classroom should only aim to promote student learning, avoiding presentations that at the same time assess the student. Some participants highlighted the need to encourage student involvement in the search for knowledge, without them necessarily being awarded grades. However, students should be aware that assessment is necessary as it provides feedback to both sides, students and teachers (Huber *et al.*, 2024; Pang, 2020; Stanja *et al.*, 2023) and thus helps students to make sure that their learning is progressing (Tai *et al.*, 2023). However, students have the right to know clearly the types of assessment to which they are being subjected (submitted) and their importance, whether formative or summative, depending on whether it is for feedback from students and teachers or for decision-making through student classification. Being assessed is also a common aspect of ordinary working life and therefore needs to be prepared for.

And, linked to this issue of assessment, one more challenge found in this research was the assessment criteria, which were not communicated to students in advance. Furthermore, the assessment questions were seemingly unclear, leaving a lot of ambiguity. This shows the need to improve the assessments that are administered to students, both in the way questions are formulated as well as in the application of the type of assessment that is appropriate to the teaching-learning approach adopted. Thus, students were not assessed according to Fernandes *et al.* (2023) who argue that in innovative teaching-learning approaches, student assessment should be consistent with the Bologna process. The provision of assessment criteria in advance would enable students to know exactly what they have to concentrate on in their work.

As suggested in Badmus and Jita (2022), this research also indicated that the lack of access to good university facilities such as toilets and laboratories may compromise the

implementation and the process of teaching-learning as a whole. Difficulties in accessing toilets was raised by female participants who echoed Bhakta *et al.* (2024), Lewkowitz and Gilliland (2024), and Maroko *et al.* (2021) who state that women are disproportionately affected by poor sanitation facilities worldwide.

Some contents demand connection between theory and practice. Therefore there is a need for the installation of a psychology laboratory at the Faculty of Education. This would enable different kinds of teaching and allow for the interweaving of theory and practice. Laboratories are crucial for helping students clarify scientific concepts in a deep and lasting way (Duban *et al.*, 2019; Wati *et al.*, 2024). The participants not only complained about the lack of laboratories for practical classes but also the lack of image visualization, which is why they also demanded increased ICT tool use, such as projectors in the teaching-learning process to make it more effective (Bouasangthong *et al.*, 2024; Hakimi *et al.*, 2024). The lack of such teaching aids can act as a challenge for students in terms of understanding the content transmitted (Assen *et al.*, 2023; Badmus & Jita, 2022).

Student employment and proximity to the institution and colleagues were also a challenge for the implementation of RBL, as confirmed by the findings of this research. Many students, living far from the university campus, faced financial problems that at some point compromised their learning because they could not find the money to travel to the Faculty every day. They live in constant uncertainty and this fact alone can harm their educational performance. Basically, this is the underlying effect of the poverty in which many Mozambican families live, where some people end up not knowing whether they will be able to go to the Faculty the next day. Again, this is an issue not mentioned at all in the prevailing literature on RBL but needs to be considered in a context such as Mozambique.

My research also showed that working students who attended daytime courses said they were treated in the same way as full-time students, in a clear allusion to the homogenization and normalization of students by teachers. At the time of the interviews students were so mixed that in both classroom slots (working time and after-work time), there were students who were workers and non-workers, married and single, in both classroom slots (working time and after-work time). But in the past, the working-time course was only for non-workers and the after-work time course was only for workers.

Now, everyone has access to all sessions. And teachers have to know how to deal with this heterogeneous situation. To sum up, as some authors (e.g. Carter *et al.*, 2016; Stroth *et al.*, 2018; Susiani *et al.*, 2018; Wessel *et al.*, 2021), highlighting the importance of RBL as a good instructional approach, do not discuss the material conditions of students and many other students' circumstances as mentioned earlier, my findings, in the context of Mozambique, show that although some of these conditions are not specific to RBL, they clearly influence students' opportunity to actively participate in learning. I now move on to draw some conclusions and make a number of recommendations.

CHAPTER 8: CONCLUSIONS AND RECOMMENDATIONS

In this chapter, I present my conclusions and make some recommendations. I will start with the conclusions.

8.1 Conclusions

My research was carried out in Mozambique, where studies on teaching-learning approaches that contribute to students' autonomy and critical thinking, such as RBL or PBL, are not common. Only two studies in RBL were conducted in Mozambique (Covele *et al.*, 2017; Uaciquete & Valcke, 2022). Covele *et al.*'s (2017) study was carried out on Psychology and Engineering courses at UEM. The study of Uaciquete and Valcke (2022) was conducted at the Faculty of Arts and Social Sciences. Although both studies recognize the effectiveness of RBL as an instructional approach, they do not discuss the impact of gender.

As my study focused on RBL and gender in the context of higher education (HE) in Mozambique, my research contributes first, empirically, with new qualitative data in the field of HES and gender, and second, it contributes with knowledge on RBL by shedding light on the factors that impact on the implementation of RBL in HE in Mozambique. Beyond that, the findings of my study showed that RBL raises some important gender issues and further, that it requires some modifications to suit the circumstances under which I introduced RBL. Such modifications consisted in having only one RBL session per week and one lecture (master class) to ensure compliance with the course program, since RBL is time consuming. It was also necessary to take into account the students' inexperience in studying in an RBL environment in which one needs to have a series of resources. Another contribution to knowledge on RBL, in the context of Mozambique, is the need to consider the material conditions of the students, and other specific circumstances.

One further important conclusion is that teachers themselves need to be trained in how to implement RBL effectively, how to integrate ICT tools in their teaching-learning process, and how to design instructional materials for RBL and ICT use. This points to the

dialectical nature of education where the introduction of new ways of teaching also requires adaptation from the teachers.

My research was conducted in Mozambique, where there is still limited research on higher education studies (HES) and gender (Frambach *et al.*, 2017; Golightly, 2021; Onyi, 2022; Uamusse *et al.*, 2020). Thus, my contribution to knowledge regarding HES and gender consists of bringing to light the challenges inherent in the implementation of RBL from a gender perspective, in particular the challenges faced by women. I suggest that, by adhering to the principles of equality and equity, the impact of gender on RBL can be reduced. My study also contributes theoretically to HE and gender by raising awareness regarding the need for gender-consciousness in teaching in higher education. In my research I found that both some women and some men challenged conventional gender norms. Here we see the beginnings of shifts in gender understandings that need to permeate Mozambican society more widely to benefit society at large.

My study on RBL produced empirical data that illuminate the pedagogical, resource, and training needs when it comes to implementing RBL. Regarding pedagogical issues, the results of my study show that RBL focuses on the process of knowledge acquisition through learning activities that train in research, and not just the product (Stroth *et al.*, 2018). Thus, RBL presents itself as an effective teaching-learning approach that leads to autonomous work and stimulates the spirit of research. The results suggested that the assignment of tasks made students aware that they could and should be more sustainably responsible for their own learning. Both in the interviews and in the questionnaires, it was evident that students' responsibility and independence during learning are characteristics that make RBL a useful instructional approach. As a consequence, by stimulating a research culture in students, RBL might contribute to the materialization of UEM's vision in its aim to transform itself into a research university.

Regarding gender issues, my research results reflect normative and non-normative gender positions among students. Indeed, participant responses to the interviews revealed that in some instances their ideas about gender differences were deeply rooted in their perspective on the notion that students of both genders think differently in same-sex groups. Such thinking to a certain extent underlies the existence of gender inequalities in the classroom. My research also showed that both genders had, at least on some level, the

common perception that it is not the gender of a person that influences or determines the participation and/or the extent to which that person is involved in the completion of tasks. When students are subject to the same conditions and benefit from the same opportunities, gender has limited influence on students' opinions regarding RBL. However, all students do not start from the same position as was evident in issues such as the ownership of computers and women's greater degree of household responsibilities. RBL therefore requires taking account of these gender issues and adapting one's teaching and learning practice accordingly.

Another conclusion, drawn from the results of my study, was that to deal with the heterogeneity of the classroom, aware that it is not possible to meet everyone's needs, teachers are called upon to offer differentiated treatment according to the characteristics of their students to ensure gender equity. The adoption of gender-sensitive pedagogical practices (Karlson & Simonsson, 2011; Rojas, 2016) which account for this may then contribute to students' gender awareness (Muasya & Kazungu, 2018).

By subjecting students to an RBL environment, I placed them in a new situation that they were not used to dealing with. Therefore, there was a need to provide them with an instrument that would serve as an orientation guide, which I called the student guide. This guide was in some instances instrumental in helping students to develop the ability to select relevant information, summarize it and also structure their work. The student guide requirement to rotate the roles played by each member, when it was actually implemented which was not always the case, helped group members to develop skills related to the roles defined in the guide and also to practice some basic research skills. The presentations made by students in groups during RBL sessions were fundamental in developing students' ability to communicate and in eliminating the fear of speaking in front of an audience. The students' responses showed that not just their intellectual responses or material conditions need to be considered but also their affective needs such as not feeling embarrassed or vulnerable in the class room.

Although both individual and group tasks were planned, I prioritized carrying out the tasks in groups, as one of my objectives was to promote greater interaction among students. Indeed, the accomplishment of tasks in groups proved to be very important for developing the spirit of teamwork, and to deconstructing stereotypical gender mentalities

due to the constant interaction of the constituent members of the groups, despite one of the sexes being under-represented. However, individual work has its place in the development of personal skills, and it is therefore advisable to assign both individual and group work, but with a higher percentage of the latter, due to the advantages mentioned above. Furthermore, despite the fact that the students belonged to two different levels (1st year and 2nd year) and therefore had different learning experiences, students' views of RBL and the related gender issues were the same at both levels.

Although the empirical and theoretical results of my study revealed the importance of RBL as an innovative and flexible teaching-learning approach potentially fostering the gender consciousness in students (Abraha *et al.*, 2019), the same study identified some factors that might challenge the implementation of RBL and which also need to be addressed.

The research constituted a unique learning experience for me, not least regarding the writing style informed by gender research and a feminist perspective (e. g., the use of the first-person singular, which is unusual in some social science contexts as well as in Mozambican higher education although it is very established in Social Sciences and Humanities contexts in much of the rest of the world as writing styles in international peer-reviewed journals, for example, indicate). As a teacher, my pedagogical practices may undergo some changes as a result of this research. For example, I am now much more aware that I need to map my assessment arrangements onto my teaching and learning methods, and that the use of new teaching-learning materials such as study guides needs to be taught appropriately rather than being taken for granted. I also recognize that enabling students to engage successfully with RBL requires more engagement with them from the teacher about issues such as role rotation to ensure that this happens rather than assuming that it will automatically take place. And, finally, there is a question whether or not one should formulate RBL tasks in such a way that they do not inevitably require internet use, given that access to computers and to the internet can be quite an issue. I now turn to make some recommendations and suggest some future research topics.

8.2 Recommendations and future research

In this section, I first suggest 23 recommendations for future actions towards a successful implementation of RBL and then, for the same purpose, I suggest six topics for future research. My recommendations are on three levels, namely: the macro (governmental), the meso (institutional), and the micro (teacher/students).

Macro level

At this level, I have a recommendation for the government, more specifically the Ministry responsible for education, in partnership with service providers, to address the problem of internet instability in students' places of residence. This is necessary to enable effective learning off campus as well as on campus.

Meso level

At the meso level, I have 10 institutional recommendations:

- There is a need for a forward-looking institutional mindset that encourages positive student attitudes and creates a supportive environment for the implementation of RBL, thus laying a solid foundation for its transformation into a research university.
- The university should create more facilities, such as appropriate rooms for carrying out work/study in groups, adequate toilets, laboratories, secure internet, and providing students with access to different ICT tools. These rooms need to be well maintained and adequate to their function. Perhaps the university needs to look into a better way of ensuring that access to toilets is permanent. And toilets that are gender-equitable are needed to enable women's comfort and safe hygiene management.
- A debate should be organized at institutional level on how to design course requirements to avoid overloading students with tasks both within courses and across courses.
- In recognition of the heterogeneity of student groups and with the aim of promoting gender equality and equity, institutional consideration should be given

to developing a gender-conscious curriculum for (undergraduate psychology) courses.

- The institution should also consider developing a professional training program for teachers on how to integrate innovative teaching-learning approaches into their classes, with a particular focus on RBL, and on the use of ICT, that is, providing teachers with the technical skills regarding the use of ICT and training them in designing appropriate instructional materials.
- In order to overcome students' lack of computer ownership, the institution might consider providing a computer room, with a view to implementing RBL, and also the creation of some facilities, for example, a social fund, so that students can acquire a laptop, possibly through a relatively easy payment scheme. The students' ease of purchasing laptops would help to solve the problem of demand in the computer room and would have the advantage of students having the possibility of working from home or other appropriate places. Making these resources available would ultimately help to resolve or at least minimize the problems faced mainly by women, who have more difficulty accessing computers.
- Thus, the institution should pay special attention to women to reflect on the best ways to help them, since in addition to studying in difficult conditions with a lack of access to resources, they still have to deal with domestic duties, as a reflection of the gender stereotype-driven society in which they find themselves.
- There is a need to reflect on the best strategies that the institution should adopt to minimize the material difficulties faced by students.
- For the successful implementation of RBL or any other innovative teaching-learning approach, the institution should consider first helping teachers who do not have these resources, particularly laptops, so that they can work wherever they are. Because if support is directed only to students, we run the risk of seeing the scientific authority of teachers in the classroom being called into question, since students will have more access to information than teachers.
- The institution should provide teachers with training on how to appropriately deal with students with somatic challenges.

Micro level

At the micro level, I have 12 recommendations for teachers:

- Teachers should provide students with some training on the proper use of ICT tools.
- Teachers must prepare and make available to students a user-friendly guide/manual on the rules for the appropriate use of ICT tools, and train students in its use.
- Recognizing the poor financial situation in which many students find themselves, as not everyone has access to ICT tools, teachers should reduce typed requirements for the submission of work and accept handwritten reports for those who have difficulties in accessing computers.
- Regarding individual and group tasks, students' different points of views and preferences are an indication of the need to consider student heterogeneity by assigning both individual and group tasks in order to balance the different interests in the class.
- Thus, as far as possible, it is important to try to meet students' needs, diversifying teaching-learning strategies/approaches so that they come closer to students' individual learning styles.
- Teachers should also pay attention to what is happening in the classroom in relation to students who may require special attention, such as students with somatic disabilities.
- Regarding the student guide and the need for role rotation, teachers need to provide students with clearer instructions and monitor more closely how tasks are being followed through by students.
- Perhaps teachers should also consider improving the student guide, especially in terms of language, in order to facilitate students' understanding of the guide and constantly monitor its use to detect and correct possible errors in a timely manner in that usage and thus support students during the course of their work.
- Additional training for students on how to properly use the student guide may also be necessary.

- Regarding students' assessment, teachers need to improve their question formulation and provide assessment criteria in advance.
- Teachers should also think about the type of assessment itself, as it no longer makes much sense to continue to assess in the same way as before, when teaching-learning approaches are more innovative.
- Teachers should organize presentations so that some are used for assessments (summative) but others are only for learning (formative), in a calendar previously distributed to students so that they can organize themselves better.

Future research

In this subsection, I suggest six topics that might guide possible future research:

- The results indicate that to overcome the difficulty of meeting physically, some students alternatively created WhatsApp groups on their smartphones to carry out the tasks remotely. Therefore, I suggest conducting research to determine whether students who use WhatsApp groups and work together remotely are actually as effective in their learning as those who meet in person.
- There is also a need for research into the gender dimensions of engagement with the internet while learning.
- As demonstrated by the findings, RBL requires students to be constantly on the internet, searching for different materials and information for their learning, so I also suggest research on how the use of hardware structures student learning to examine if it leads to a situation where students simply and uncritically reproduce what they find on the internet, or make appropriate judgments in these learning contexts.
- Also, and bearing in mind that, during group tasks, there were some complaints, mainly from women, that there was little commitment from their male colleagues, I suggest conducting research to explore the reasons for the weak participation and engagement of students, especially among men, since this attitude contributes to replicating heteronormative gender structures in the classroom.

- Given the Mozambican context, I suggest research on how to modify RBL to make it more effective under our specific and evolving material conditions.
- Finally, to examine the effectiveness of RBL as an instructional approach, I suggest conducting further research into the extent to which RBL can be an effective learning approach that leads to better student performance and greater gender awareness not just in the immediate but also and importantly in the longer term.

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APPENDICES

Appendix I

Learning Cycles

Teaching-Learning Process

This semester's classes will follow the learning cycle presented in Table 1. The first day is reserved for the teacher to give some explanations to students on how the teaching-learning process will take place.

Table 1:

Learning cycles.

Week	Day	Task	Observations
Week 1	Monday	Independent learning	27/02 to 03/03
Week 1	Tuesday	Introduction: Procedures & assignment of Task 1	RBL session & Lecture
Week 1	Wednesday	Independent learning	
Week 1	Thursday	Conventional class (lectures)	Lecture
Week 1	Friday	Independent learning	
	Saturday		
	Sunday		
Week 2	Monday	Independent learning	06/03 to 10/03
Week 2	Tuesday	Task 1 Presentation & & debate/summary Task 2 Assignment	RBL session
Week 2	Wednesday	Independent learning	
Week 2	Thursday	Conventional class (lectures)	Lecture
Week 2	Friday	Independent learning	
	Saturday		
	Sunday		
Week 3	Monday	Independent learning	13/03 to 17/03
Week 3	Tuesday	Presentation of task 2 & & debate/summary Task 3 assignment	RBL session
Week 3	Wednesday	Independent learning	

Week 3	Thursday	Conventional class (lectures)	Lecture
Week 3	Friday	Independent learning	
	Saturday		
	Sunday		
Week 4	Monday	Independent learning	20/03 to 24/03
Week 4	Tuesday	Presentation of task 3 & & debate/summary Task 4 assignment	RBL session
Week 4	Wednesday	Independent learning	
Week 4	Thursday	Conventional class (lectures)	Lecture
Week 4	Friday	Independent learning	
	Saturday		
	Sunday		
Week 5	Monday	Independent learning	27/03 to 31/03
Week 5	Tuesday	Presentation of task 4 & & debate/summary Task 5 assignment	RBL session
Week 5	Wednesday	Independent learning	
Week 5	Thursday	Conventional class (lectures)	Lecture
Week 5	Friday	Independent learning	
	Saturday		
	Sunday		
Week 6	Monday	Independent learning	03/04 to 07/04
Week 6	Tuesday	Presentation of task 5 & debate/summary Task 6 assignment	RBL session
Week 6	Wednesday	Independent learning	
Week 6	Thursday	Conventional class (lectures)	Lecture
Week 6	Friday	Independent learning	
	Saturday		
	Sunday		

Week 7	Monday	Independent learning	10/04 a 14/04
Week 7	Tuesday	Presentation of task 6 & debate/summary Task 7 assignment	RBL session
Week 7	Wednesday	Independent learning	
Week 7	Thursday	Conventional class (lectures)	Lecture
Week 7	Friday	Independent learning	
	Saturday		
	Sunday		
Week 8	Monday	Independent learning	17/04 to 21/04
Week 8	Tuesday	Presentation of task 7 & debate/summary Task 8 assignment	RBL session
Week 8	Wednesday	Independent learning	
Week 8	Thursday	Conventional class (lectures)	Lecture
Week 8	Friday	Independent learning	
	Saturday		
	Sunday		
Week 9	Monday	Independent learning	24/04 to 28/04
Week 9	Tuesday	Presentation of task 8 & debate/summary Task 9 assignment	RBL session
Week 9	Wednesday	Independent learning	
Week 9	Thursday	Conventional class (lectures)	Lecture
Week 9	Friday	Independent learning	
	Saturday		
	Sunday		
Week 10	Monday	Independent learning	01/05 to 05/05
Week 10	Tuesday	Presentation of task 9 & debate/summary Task 10 assignment	RBL session
Week 10	Wednesday	Independent learning	
Week 10	Thursday	Conventional class (lectures)	Lecture
Week 10	Friday	Independent learning	

	Saturday		
	Sunday		
Week 11	Monday	Independent learning	08/05 to 12/05
Week 11	Tuesday	Presentation of task 10 & debate/summary Task 11 assignment	
Week 11	Wednesday	Independent learning	
Week 11	Thursday	Conventional class (lectures)	Lecture
Week 11	Friday	Independent learning	
	Saturday		
	Sunday		
Week 12	Monday	Independent learning	15/05 to 19/05
Week 12	Tuesday	Presentation of task 11 & debate/summary Task 12 assignment	RBL session
Week 12	Wednesday	Independent learning	
Week 12	Thursday	Conventional class (lectures)	Lecture
Week 12	Friday	Independent learning	

Adapted from the *Guide to problem-based learning*. Jurković, Violeta. 2005. Ed. Ljubljana: Slovene Association of LSP Teachers. <http://www.sdutsj.edus.si/> and from the *Guide to problem-based learning*, University of York.

Appendix II

Student Guide

Academic Year 2023

First/Second Year

First Semester: February – June

Introduction

This guide informs students how to carry out the tasks for their learning:

1. Some tasks will be performed in groups and others, individually;
2. There will be a clear indication of which tasks must be done in groups and which must be done individually;
3. There must be a rotation of roles played by each group member (coordinator, moderator and rapporteur), from task to task;
4. All tasks, in groups or individually, will be presented and discussed in a plenary session;
5. For this to happen, one or two groups, or individuals, depending on whether it is group or individual work, will be randomly selected to make the presentation;
6. Then there will be a debate and, at the end, the teacher will make a summary, giving feedback.

The schedule of the activities is presented in appendix I, about “Learning Cycles”. However, the dynamics of the group work, the complexity of the tasks, the Covid 19 pandemic or other factors related to pedagogical management may dictate some specific changes.

Classroom presentations and debates will serve to explore the content of the questions introduced in the tasks. The discussion of each task during plenary sessions will be guided by the teacher. Students must attend and actively participate in sessions and in doing the tasks, either face-to-face or remotely.

Course content will be delivered in the form of tasks, in a strategy anchored in some of the seven research-based principles for smart teaching (Ambrose et al., 2010, p. 3) in combination with some of the seven stages of Problem-Based Learning (Moust, 1998, p. 17; Moust et al., 2005, p. 668). This enables students to commit (engage) themselves to the tasks that will be assigned to them, in order to achieve the learning objectives corresponding to the respective contents and, at the same time, to become familiar with the basic principles of scientific research. In addition to the main objective that is learning, group work is meant to stimulate social interactions among students and foster gender relations between women and men.

Objective

The aim is to guide students in their learning process, while giving them basic research skills.

Goal

To help students be able to:

1. Seek necessary and adequate information;
2. Familiarize themselves with a variety of search resources;
3. Organize new information;
4. Synthesize new information;
5. Interpret information;
6. Apply the acquired knowledge in new situations;
7. Increase knowledge broadly and deeply.

Steps to perform the tasks

To carry out the tasks, carefully observe the following steps:

1. Read the assigned task carefully;
2. Identify and clarify difficult terms and concepts through literature or with peers;
3. Try to formulate learning objectives;
4. Select and study relevant information sources;
5. Execute the assigned task;
6. Share your learning results (during RBL sessions).

Appendix III

Report template

Work report

Topic: Example – **Task 1:** Table of frequency (Distribution of frequency)

1. Introduction

Here, the student is expected to present, in a clear and objective way, the relevant aspects and the importance of the work. In the case of task 1, it is all about the “Frequency Table”. That is, the introduction must contain: (i) the topic (subject) to be addressed; (ii) the purposes (objectives) for studying this topic; (iii) what you want to develop (accomplish); (iv) the reasons for choosing this topic and; (v) briefly, the path and methods used (the student can refer to the way of presenting the work, the roles that each member of the group will have played (in cases where the work has been carried out in a group). Normally, the introduction should work as something that encourages and motivates the reading of the work in order to make it interesting and inviting for reading. Although it is an initial part of the work, the introduction should be written after all the work has been completed (at least the final version), when the student has already mastered everything she/he did and how she/he did it. Example: The present work is about.....more specifically..... It has as objective(s)....This has its importance in....To carry out this work...(the methods/procedures).

2. Objectives

The objective is what you intend to achieve, that is, the goal. So, the student writes down what she or he wants to achieve. It helps the reader to view where you want to go. The student can derive it from the questions.

3. Importance/Relevance

Here the student writes about the relevance of the task performed, indicating its impact (on the topic under study).

4. Task development

This is, somehow, the most extensive part and can be subdivided into different parts (for the case at hand, these would be the steps) in which all the information found on the subject is placed in this part of the work.

Note: In each case, give at least one example, whenever it is possible!

5. Methodology/Methods

Indicate the methodology used to carry out the task.

6. Conclusions (If applicable)

It constitutes the outcome of the work, in relation to everything that was approached (performed) in the work. In this part, reference is made to the achievement or not of the objectives defined for the work (in this specific case for the task).

7. References

You can use those in the analytical plan (course program) or others that you might find useful. References refer to the list of literature used (consulted) to carry out the work. There are several styles of referencing. In the case of FacEd, the style used is that of the *American Psychological Association* (APA), for which the guide will be provided. Remember that there is some literature in the “Analytic Plan” provided to you.

Additional information

1. This task may count for assessment purposes;
2. Work must be delivered within 7 days;
3. The work will be subject to presentation in class.
4. Whenever you need additional information, do not hesitate to contact the teacher;
5. Maximum 5 pages. Meaning 2, 3, 4 or 5, but no more than 5;
6. Groups or individuals, must be clearly and fully identified (indicating who did what/what was the role of each member).

Appendix IV

Student consent form

Consent to participate in a research interview

Project: Research-Based Learning and Gender in Higher Education in Mozambique:

a case study of students from the Faculty of Education at UEM UEM-SIDA BILATERAL Research Programme

I agree to participate in a research project led by **Samuel Benjamim Matlombe** from the Faculty of Education at UEM in Maputo - Mozambique, with the aim of understanding the gender issues of learning in a research-based learning environment.

The purpose of this consent form is to specify the terms of my participation in the project, through an interview:

1. I received information about this research project and the purpose of my participation as an interviewee was explained to me and it is clear;
2. My participation as an interviewee in this project is voluntary;
3. The interview will last approximately 60 minutes, and I allow the researcher to take written notes and audio-record the interview;
4. It is clear to me that if I do not want the interview to be recorded, I have, at any time, every right to withdraw from participating;
5. I have the right not to answer any questions if I feel uncomfortable in any way during the interview session and I also have the right to withdraw from the interview without explanation;
6. I have received explicit assurances that the researcher will maintain anonymity in the use of information obtained in this interview, and that no unauthorized person will have access to the interview material. In all cases, subsequent uses of the data will be subject to UEM's research policy;
7. I understand that this research project was approved by the Faculty of Education. For research problems or any other questions regarding the research project, the Faculty of

Education of UEM can be contacted through Prof. Doutor Manuel Zianja Guro, who is the Deputy Director for Postgraduate Studies (Email:manuelguro@gmail.com);

8. I have read and understood the points and statements of this form and have had all my questions answered to my satisfaction;

9. I received a copy of this consent form co-signed by the interviewer.

Student Signature

Date

Researcher Signature

Date

Appendix V

Student interview guide

Student interview guide

Name: _____ Sex: _____ Code: _____ Date ___/___/___

Course _____ Time _____

Before starting to answer the questions below, I would like to ask you to formally register your consent to participate in this project.

By answering these questions, I acknowledge that my participation in this project is voluntary. I understand that my responses will remain anonymous, and I give my permission to use them for research purposes and publications resulting from these only.

Yes

No

Please, tell me as much as you can, from your own perspective and, if possible, give some specific examples to illustrate your point:

1. How do you feel about your homework assignment and achievement?
2. What is the difference between learning at university and learning at school?
3. In the past, in Mozambique there were all-female schools and all-male schools. Now, and since our independence, girls and boys are placed in the same class:
 - a) what do you think about this?
 - b) are there any advantages or disadvantages with mixed-sex classes?
4. What do you think about learning in groups?
5. In subjects like Psychology, there are more girls than boys. And the opposite happens in courses such as Engineering. In your opinion, what is the reason for this?
6. How would you describe the learning process you undertook this semester in this subject (Statistics)?
7. What skills/competences do you consider you have acquired during this learning process?
8. How did you find working with boys (girls) in your group work?
9. How was your group organized?
10. Some tasks were to be done in groups but others were to be done individually. Do you have any preference? Why?
11. Were there any issues during the learning process?
12. How did you deal with those issues?
13. Did you have different roles in your group? What were the roles?
14. What do you think of your participation in your group?

15. What do you think of the level of engagement and collaboration of your colleagues?
16. Is there anything that you think would help with your learning, for example, smartphone, and laptop? Why?
17. What do you think of the overall learning experience?
18. What is your opinion about learning through task accomplishment?
19. What do you think about the student guide?
20. Do you feel confident about what you have learnt in this subject?
21. Would you be able to apply it in new situations or other subjects?
22. To improve student performance, what do you suggest that the institution, teachers or even students do?
23. How do you feel now in terms of preparedness about this way of learning?
24. If you were asked to give a recommendation to the institution, would you recommend this way of learning? Why?
25. Marital status: _____ Age: _____ Children: _____
 Employed or not _____ How far do you live from the campus _____?
 What is the means of transport you use to go to the Campus _____?
 Where do you live _____?
 How many family members live in your household _____?
26. Do you have a smartphone _____?
27. Do you have Laptop/Desktop _____?
28. Do you have internet _____?
29. If you have something to add, please feel free to do!

Thank you very much for your collaboration!

Appendix VI

Questionnaire about students' attitudes

Questionnaire about students' attitudes

Name (Not mandatory) _____

Sex (Mandatory) _____ Program _____

The following statements concern your attitudes only in this class. Use the scale below to mark the statement that best reflects your opinion. If you completely agree with the statement, mark “x” in column 5, if you completely disagree, mark “x” in column 1. If you neither completely disagree nor completely agree, mark “x” in the column (2, 3 or 4) that best describes your opinion.

1 = completely disagree; 2 = disagree; 3 = neutral; 4 = agree; 5 = completely agree

	Nr	Statement	1	2	3	4	5
Learning Strategy	1	I fully understand all the steps concerning the accomplishment of the tasks					
	2	The teacher is available in all learning sessions					
	3	The teacher has guided us appropriately towards the independent performance of the tasks					
	4	Task learning is the best learning method when compared to master classes (lectures)					
	5	In group work, we develop skills such as communication, interpersonal relationships, and teamwork					
	6	This way of learning gives students the opportunity to develop skills, creating their own knowledge.					
	7	The feedback from the teacher was helpful					
	8	The feedback from my team mates was useful					
	9	I benefit a lot from my team mates by working in groups					
	10	Independent work allows me to develop personal skills and competences					
	11	Working in groups allows us to develop teamwork					

	12	It is important for me to learn the subjects in this course.					
	13	I am very interested in the syllabus of this course.					
	Nr	Statement	1	2	3	4	5
RBL as Instructional Model	14	If I try hard, I will understand the subjects of this course.					
	15	I think it is useful for me to learn the material in this course.					
	16	Task assignments make learning more interesting					
	17	Task assignments have taught me how to conduct research personally					
	18	Presentation sessions are very useful for my learning					
	19	Complementary master classes (lectures) are necessary					
	20	I feel confident in my knowledge acquired in these classes					
	21	I am able to find the information I want during my self-learning					
	22	The learning resources are adequate					
	23	I often use the internet as a learning resource					
	24	I often use my smartphone as a learning resource					
	25	I often use a laptop/desktop as a learning resource					
	26	I like the way of learning in this subject.					
	27	I have no problem working with any colleagues, regardless of gender.					
28	If I study properly, I am able to learn the material in this subject.						
29	I think I will be able to use what I learn in this course in other subjects.						

Adapted from Elsie, K-M., Francis, B. & Gonzaga, M. A. (2010).

Thank you for your collaboration!

Appendix VII

Tables 9 & 10: questionnaire results

Table 9*Learning strategy (Part I).*

Nr.	Statement (St)	1*		2		3		4		5		Total	Missing
		F	M	F	M	F	M	F	M	F	M		
1	I fully understand all the steps concerning the accomplishment of the tasks	-	1	1	-	2	-	7	3	9	2	25	1
2	The teacher is available in all learning sessions	-	1	1	-	1	-	2	2	15	3	25	1
3	The teacher has guided us appropriately towards the independent performance of the tasks	2	1	1	-	1	-	4	-	11	5	25	1
4	Task learning is the best learning method when compared to master classes (lectures)	-	-	3	1	1	1	6	3	9	1	25	1
5	In group work, we develop skills such as communication, interpersonal relationships, and teamwork	-	1	-	-	1	-	6	2	12	3	25	1
6	This way of learning gives students the opportunity to develop skills, creating their own knowledge	-	-	-	1	1	-	4	1	14	4	25	1
7	The feedback from the teacher was helpful	-	1	-	-	1	1	7	2	11	2	25	1
8	The feedback from my team mates was useful	-	-	-	1	3	1	9	2	7	2	25	1
9	I benefit a lot from my team mates by working in groups	2	-	-	1	4	2	7	1	6	2	25	1
10	Independent work allows me to develop personal skills and competences	1	1	-	-	-	1	5	2	13	2	25	1
11	Working in groups allows us to develop teamwork	0	1	-	-	-	-	5	2	14	3	25	1
12	It is important for me to learn the subjects in this course	0	1	-	-	-	-	4	1	15	4	25	1
13	I am very interested in the syllabus of this course	0	1	-	-	1	-	6	1	12	4	25	1
16	Task assignments make learning more interesting	-	1	-	-	1	1	3	1	13	3	23	3
17	Task assignments have taught me how to conduct research personally	-	1	-	-	-	-	7	2	10	3	23	3

*1 = strongly disagree; 2 = disagree; 3 = neutral; 4 = agree; 5 = strongly agree; F - Female; M - Male.

Table 10*RBL as instructional model (Part II).*

Nr.	Statement (St)	1*		2		3		4		5		Total	Missing
		F	M	F	M	F	M	F	M	F	M		
14	If I try hard, I will understand the subjects of this course	-	1	-	-	-	-	1	1	16	4	23	3
15	I think it is useful for me to learn the material in this course	-	1	-	-	-	-	4	1	13	4	23	3
18	Presentation sessions are very useful for my learning	-	1	-	-	-	1	5	1	12	3	23	3
19	Complementary master classes (lectures) are necessary	-	-	-	1	2	2	8	2	7	1	23	3
20	I feel confident in my knowledge acquired in these classes	-	-	1	-	-	1	4	3	12	2	23	3
21	I am able to find the information I want during my self-learning	-	-	1	1	-	1	9	3	7	1	23	3
22	The learning resources are adequate	1	-	-	-	2	1	8	5	6	-	23	3
23	I often use the internet as a learning resource	-	1	-	-	-	-	4	2	13	3	23	3
24	I often use my smartphone as a learning resource	-	-	-	1	1	-	4	1	12	4	23	3
25	I often use a laptop/desktop as a learning resource	1	2	4	-	4	1	3	-	5	3	23	3
26	I like the way of learning in this subject	-	1	1	-	1	-	4	3	11	2	23	3
27	I have no problem working with any colleagues, regardless of gender	-	1	1	-	-	-	3	1	13	4	23	3
28	If I study properly, I am able to learn the material in this subject	-	1	-	-	-	-	2	2	15	3	23	3
29	I think I will be able to use what I learn in this course in other subjects	-	-	-	1	-	-	2	1	15	4	23	3

*1 = strongly disagree; 2 = disagree; 3 = neutral; 4 = agree; 5 = strongly agree; F - Female; M - Male.