



Ministry of Higher Education and Scientific Research

Mohamed Kheider University of Biskra

Faculty of Letters and Foreign Languages

Department of English Language and Literature

MASTER THESIS

Department of Literature and Foreign Languages

Science of the Language

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**The Affordances and Challenges of English as a Medium of Instruction
(EMI) on Learners Skills.**

**A Case Study of First Year Computer Science Students at Biskra
university.**

*Submitted to the Department of English Language and Literature in partial fulfilment of the
requirements for the Master of Arts degree in Linguistics, specializing in English within the
Science of Language.*

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Dedication

I dedicate this thesis

To the memory of my Father SAID KHAMKHAM, whose I keep his love in my heart forever.

To my Mother CHERIFA KHAMKHAM whose have always supported and believed in me. Special thanks for her endless love, encouragement, and support throughout my academic journey.

To my dearest Siblings: SALIHA , SANA , SABER, SARA, SOFIANE , SAMI , SOHAIB , SOULEF , and their children , your caring and love are unforgettable , I love you all .

To my friends: Ibtissam, Ikhlas, and Sara for their collaboration and friendship.

With Heartfelt Gratitude.

Acknowledgments

Above all, I acknowledge the divine guidance and blessings that enabled me to undertake and complete this thesis.

I would like to express my Sincere Appreciation to my supervisor, **Dr. Yasser Benmoussa** for his patient guidance and encouragement that shaped my thesis.

Special Thanks for the evaluation board, **Professor** Ahmad Bachar, **Doctor** Tayeb Bouhitem , and **Dr.** Amina Zohra Mebarki , for their time , expertise , and valuable feedback to evaluate this thesis .

My heartfelt thanks to my teachers throughout my university years for their guidance, support and dedication to my linguistic development.

To the Department of Literature and Foreign Languages, Science of the Language for their guidance and support throughout my academic journey.

To the Department of Computer Science, my sincere gratitude to the participants and teachers who share in this thesis, Special thanks for Dr. Tarek Ababsa for his collaboration and time.

To Mohamed Khider university of Biskra for providing a stimulating academic environment and resources that facilitated my growth.

Abstract

The current thesis aims to examine the impact of English as a Medium of Instruction (EMI) on learners in higher education. EMI refers to the teaching of academic subjects in English within non-English-speaking countries with the objective of enhancing students' language proficiency and improving their global employability. This study hypothesized that first year computer science students will encounter the most significant challenges with writing skills in their academic work, experience moderate difficulties with reading and listening comprehension, and face relatively fewer obstacles with spoken communication. This study aims to achieve objects , most notable : to assess the English language proficiency level of first year computer science students and explore the benefits and challenges they face when learning in English . A mixed-methods approach were used to collect data for this research. Our primary data collection tools will be questionnaires and interviews. Additionally, we aim to gather information from reliable and relevant sources connected to our study to ensure the authenticity and comprehensiveness of the data. The questionnaire results were analyzed using descriptive statistics with SPSS version 26, while the interview responses were transcribed and examined through thematic analysis. The major results from the questionnaire were that there are learners with drawbacks in learning with English in their coursework, while others agree to be taught in English as medium of instruction. Moreover, the results of the teacher's interview highlighted that most teachers said that the learners do not have the ability and capacity to learn in English language. This study investigates the benefits and challenges of EMI for first year computer science students, seeking to identify the difficulties they face and develop strategies to improve their learning experiences.

Key Words: Higher education; Computer Science; EMI; Affordances; Learners Skills.

ملخص

تركز هذه الدراسة على مزايا وتحديات استخدام اللغة الإنجليزية كلغة للتدريس في التعليم العالي، مع التركيز على تأثيرها خاصة على طلاب علوم الحاسوب في السنة الأولى. يعد التعليم باللغة الإنجليزية (EMI) استراتيجية تعليمية تهدف إلى تعزيز مهارات الطلاب اللغوية وزيادة فرصهم في سوق العمل العالمي. ومع ذلك، قد يواجه الطلاب تحديات في فهم المفاهيم التقنية المعقدة باللغة الإنجليزية، خاصة في مجالات مثل البرمجة التي تتطلب دقة عالية في التعامل مع اللغة والتعليمات البرمجية. ومن خلال دراسة تأثيرات EMI، يمكننا فهم أفضل للطرق التي يمكن من خلالها دعم الطلاب في تحقيق أهدافهم الأكاديمية والمهنية.

بالإضافة إلى بعض الفرضيات للدراسة، تفترض هذه الدراسة أن طلاب السنة الأولى في علوم الحاسوب سيواجهون أكبر التحديات في مهارات الكتابة في أعمالهم الأكاديمية، وسيعانون من صعوبات متوسطة في الفهم القرائي والاستماعي، بينما سيواجهون عقبات أقل نسبيًا في التواصل الشفهي. تهدف هذه الدراسة إلى تحقيق عدة أهداف، أبرزها: تقييم مستوى الكفاءة في اللغة الإنجليزية لدى طلاب السنة الأولى في علوم الحاسوب، واستكشاف الفوائد والتحديات التي يواجهونها عند التعلم باللغة الإنجليزية.

نخطط لاستخدام منهجية البحث المختلطة لجمع البيانات لهذه الدراسة. ستكون أدوات جمع البيانات الرئيسية هي الاستبيانات والمقابلات. بالإضافة إلى ذلك، نسعى لجمع المعلومات من مصادر موثوقة وذات صلة بالدراسة لضمان صحة وشمولية البيانات. تم تحليل نتائج الاستبيان باستخدام الإحصاءات الوصفية عبر برنامج SPSS الإصدار 26، بينما تم نسخ وتحليل ردود المقابلات من خلال التحليل الموضوعي.

أظهرت النتائج الرئيسية من الاستبيان وجود متعلمين يواجهون صعوبات في التعلم باستخدام اللغة الإنجليزية في دراستهم، في حين أن آخرين يوافقون على التدريس باللغة الإنجليزية كوسيلة للتدريس. علاوة على ذلك، أبرزت نتائج مقابلات المعلمين أن معظمهم يرون أن المتعلمين لا يمتلكون القدرة والكفاءة الكافية للتعلم باللغة الإنجليزية. تهدف هذه الدراسة إلى استكشاف فوائد وتحديات EMI لطلاب السنة الأولى في علوم الحاسوب، مع السعي لتحديد الصعوبات التي يواجهونها وتطوير استراتيجيات لتحسين تجارب تعلمهم.

List of Acronyms

CEFR : Common European Framework of References for Language

CLIL : Content and Language Integrated Learning

COIL : Collaborative Online International Learning

ECTS : European Credit Transfer and Accumulation System

EMI : English as Medium of Instruction

IELTS : International English Language Testing System

IHE : Internationalization of Higher Education

PBL : Project-Based Learning

PPE : Problem-Posing Education

SPSS : Statistical Package for Social Sciences

TOEPAS : Test of Oral English Proficiency of Academic Staff

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General introduction

English as Medium of Instruction

Introduction

English is the primary language of instruction in many universities around the world, particularly in countries where English is not the native language. It gained prominence due to the influence of the British Empire and the rise of the United States. Many impressive universities, particularly in the English - speaking countries, use English as their primary language of instruction, making it an attractive medium for international students. English acts as a common language for academic discourse, research collaboration, and knowledge dissemination, facilitating global academic connections. Proficiency in English opens doors to international career opportunities, particularly in fields like business, technology, and research. While English as a medium of instruction offers benefits, it can also pose challenges for students from non-English speaking backgrounds.

These challenges include acquiring a high level of English proficiency, adjusting to the academic culture and communication styles of English-speaking universities, understanding academic terminology and the nuances of academic writing in English. To thrive in an English-medium university, students often need to develop strong English skills, seek support services offered by universities, and engage with the academic community. The use of English as a medium of instruction (EMI) in universities worldwide has become increasingly common. This trend has been driven by globalization, the increasing mobility of students, and the desire for universities to attract international students. However, the implementation of EMI varies significantly across different universities, depending on their resources, student demographics, and academic culture.

Many universities have adopted a range of strategies to support students who are learning in a language that is not their native tongue. These universities require international students to demonstrate a certain level of English proficiency before they can be admitted to their programs. This is typically assessed through standardized tests. Some universities offer pre-

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sessional English courses to help students improve their language skills before they start their degree programs. These courses are often designed to focus on academic language and the specific demands of university study. Many universities provide support services for students who need additional help with English, such as language centers, tutoring, and academic advising. These services can help students develop their language skills, improve their understanding of academic concepts, and adjust to the demands of studying in English.

Universities may adapt their curriculum to feed the students with varying levels of English proficiency. This may involve using simplified language, providing more visual aids, and offering additional support materials. Universities may train faculty on teaching strategies for students with diverse language backgrounds. This training may focus on clear communication, using accessible language, and incorporating active learning techniques. Universities may adjust assessment methods to account for students' language proficiency. This may involve using a variety of assessment tools that go beyond written exams, such as oral presentations and group projects.

While EMI can offer significant benefits to students, it is important to recognize that it can also pose challenges. Students who are learning in a language that is not their native tongue may struggle to keep up with their peers, feel overwhelmed by the academic demands of their program, or experience difficulty in communicating with their professors and classmates. Universities that are committed to providing a high-quality education for all students must carefully consider the implications of using English as a medium of instruction. They must ensure that they have sufficient resources in place to support students who are learning in a language that is not their native tongue. They must also be mindful of the potential challenges that EMI can pose and work to create an inclusive and supportive learning environment for all students.

English as Medium of Instruction

In recent years, (EMI) English as Medium of Instruction has gained significant interest in educational institutions in Algeria. This shift aims to enhance student's language proficiency and prepare them to get out of the familiar after being dealt with the French language. The Algerian government is encouraging first year university students across all fields to learn English. This advantage aims to help students' access international academic resources more easily, and provide them with essential skills for their future careers. However, there are some challenges associated with this linguistic shift, such as the need of faculty development and language proficiency.

The use of English as Medium of instruction in Algerian universities has become essential rather than optional, turning into a significant trend that the academic community must embrace. However, introducing any language policy can impact language learners, creating both opportunities and challenges in learning. In Algerian universities specifically, English poses a challenge for teachers who were trained in different languages. The adoption of English as the primary language of instruction in Algerian institutions not only opens access to a wealth of international academic resources but also plays a crucial role in preparing students for success in their future careers on a global scale. While it may present challenges, especially for educators trained in different languages, the shift towards English proficiency can greatly benefit students in their academic and professional journeys.

Computer Science is the study of computers and computational systems. It encompasses both the theoretical and practical aspects of computing, including algorithms, programming, software development, and systems design. Essentially, it involves understanding how computers work, how they can be used to solve problems, and how to create software that runs on them. However, the Impact of EMI on first year computer science learners is a complex and multifaceted issue that warrants thorough exploration, how is that ? Well, Complexity in computer science often refers to computational complexity, which a way of classifying

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problems is based on the resources (like time and space) required to solve them. It helps in understanding how efficiently a problem can be solved using algorithms. For the new learners, grasping the concepts of computer science is crucial as they form the foundation for more advanced topics in the field. This study will provide valuable awareness into the effectiveness of EMI, examining the case of first year computer science students at Mohamed Khider university of Biskra. The main objectives of this study are related to evaluating the levels and investigating the challenges the face while they are researching.

This research seeks to examine how EMI influences students and teacher's academic performance, engagement and overall learning experience in the context of computer science education towards the using of EMI in the university of Mohamed Khider Biskra especially for the first-year students.

This work is divided into three chapters, the first chapter presents an evaluation of EMI globally, it also discusses the impact of using English as the language of instruction in educational institutions. The second chapter presents the application of English as a medium of instruction in the Algerian context. The third chapter presents the data analysis and interpretation which provide valuable insights into the effectiveness of EMI in the Algerian educational system.

1.Statement of the problem

The benefits and the challenges of English as Medium of Instruction EMI on learners especially in higher education has become undoubtedly important area of study. EMI refers to the use of English in teaching inside countries where English is not the first language. This approach adopted to enhance student's English language skills and prepare them for globalized work force. In the case of first year computer science students, EMI can have both positive and

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negative effects. On the positive side, it may improve student's proficiency in English which is essential for engaging in international collaboration, academic resources, contribute to improve educational practices. Nevertheless, there are challenges as well, learners may have difficulties in understanding technical concepts when taught in non-native language, data structures can be difficult to hold without practical examples, programming difficulties such treat errors and understanding syntax.

2. Research Objectives

The current study is guided by a set of specific objectives, including:

Evaluating the English proficiency levels of first-year Computer Science students.

- ❖ Moreover, to investigating the challenges and benefits these students encounter when learning in English.
- ❖ And assessing the impact of English as a Medium of Instruction (EMI) on students' academic performance and engagement.

3. Research Questions

According to the objectives we mentioned, the following questions are: What skills (reading, speaking, listening, and writing) do first year computer science students find most challenging in their coursework? Are there any differences in academic performance between students with varying levels of English proficiency? How do students evaluate the impact of their English language abilities on their comprehension of computer science topics?

4. Hypothesis

The study hypothesizes that first-year computer science students are likely to struggle most with writing skills in their coursework ,face moderate challenges with reading and

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listening skills , and encounter relatively fewer difficulties with speaking skills. There will be a significant difference in academic performance, with the students who have higher levels of English proficiency achieving better grades compared to those with lower proficiency levels.

5. Research Methodology

We intend to use the mixed method approach for gathering data to accomplish this research work. We will use the questionnaire and the interview as tools to gather information. Furthermore, we seek to collect the information from any authentic source that is related to our study.

6. Population and Sampling

The population that has been selected to be engaged in this study is First year computer students at Mohamed Khider university of Biskra. The sample used in this work is random sampling. The sample privileged for this work is first year computer science students (100 students) who need to be investigated about the challenges they face during learning English. In addition to, some computer science teachers (10 teachers) in order to know how students perform in the classroom.

7. Data Collection Method

This study will collect mixed method data. The tools and instruments that will be used are interviews with teachers, questionnaire to the students to gather their perspectives toward the English as a new language.

Questionnaire will be distributed electronically via Google form and interviews will be conducted via Google form too. All the participants in this study will be anonymous and their response will be kept confidential.

8- Significance of the Study

The significance of studying the affordances and challenges of EMI (English Medium Instruction) on computer science students is multifaceted and many sided. First, it helps to understand how learning in English affects students' comprehension of technical concepts, which are often complex and require a strong grasp of the language. This knowledge can inform curriculum development, ensuring that it meets the needs of students who may struggle with English.

Second, the study can reveal how EMI influences students' confidence and motivation in their studies. If students feel more capable in English, they may be more engaged and willing to participate in class discussions and projects. Additionally, examining the impact of EMI can provide insights into the broader implications for the job market. As the tech industry often requires proficiency in English, understanding how EMI prepares students for their future careers is crucial.

9- Aim of the Study

The aim of this study is to comprehensively investigate and reveal the affordances beside to the challenges of English Medium Instruction (EMI) on computer science students, focusing on several key dimensions. Firstly, the study seeks to analyze how EMI influences students' understanding and holding of complex technical concepts in computer science. By assessing students' academic performance in relation to their language proficiency, the research aims to identify any connections between language skills and success in technical subjects.

Secondly, the study intends to explore the psychological and motivational aspects of EMI. It will examine how learning in English affects students' confidence levels and their willingness

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to engage in collaborative projects and discussions. Understanding these factors is crucial for developing strategies that enhance student participation and promote a positive learning environment.

Additionally, the study is all about checking out how EMI affects how ready students are for their careers in the long run. By surveying graduates and industry professionals, the research will investigate how well-prepared students feel for the job market and how their language skills impact their employability in the tech industry.

Ultimately, this study aspires to provide valuable insights that can inform educators, policymakers, and curriculum developers about the effectiveness of EMI in computer science education, guiding improvements that will benefit current and future students.

10- Structure of the Thesis

This study is based on three main chapters, the first chapter is about the evaluation of EMI globally, and it will evaluate how some countries deal with the EMI. The second chapter is about the application of English as a medium of instruction in the Algerian context, which explain the use of the EMI in the Algerian institutions. The third chapter will be about data analysis and interpretation, it will discuss the given data. In this research, the significance of English as Medium of Instruction(EMI) in computer science education is to analyze, focus on how it improve students understanding of complex concepts and their English language skills.

Chapter one

The Evaluation of EMI

Globally

1- Introduction.

2- Importance of English language instruction

3- Definition of EMI

4- Factors that Impact EMI

5- The role of EMI in access to international knowledge and resources

6- Development of multilingual and multicultural identities

7- EMI as fostering creativity and innovation

8- The role of EMI in language anxiety and self-efficacy

9- The lack of teacher training and support for EMI implementation

10- Enhancing communication and collaboration in EMI higher context

11- Fostering inclusive and supportive learning environments

12- Conclusion

Introduction

EMI has become an essential aspect of many institutions' strategic plans, focus to enhance their global reputation, attract international students, and prepare graduates for a progressively interconnected world. However, the implementation of EMI also poses significant challenges, including linguistic, cultural, and pedagogical complexities. EMI is a double - edged sword of examining the affordances and challenges of EMI for learners, by acknowledging both the benefits and drawbacks of EMI, educators and policymakers can work to mitigate the negative effects and maximize the positive outcomes for students. This chapter explores the affordances and challenges of EMI in higher education, with a specific focus on its impact on learners. By examining the benefits and drawbacks of EMI, this research aims to contribute to a deeper understanding of the complexities involved in implementing EMI programs and to inform policy and practice in this area.

1. Importance of English Language Instruction

McKinley and Nicola Galloway (2022) note that the exponential growth of English Medium Instruction (EMI) particularly in higher education on a global scale is largely propelled by the

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rise of English as the global lingua franca in academic research and communications. English has transitioned from being a foreign language or second language (L2) to becoming the primary language of academic disciplines in higher education (Wanphet and Tantawy, 2018). A significant outcome of the internationalization of colleges, particularly in Thailand, is the adoption of English as the medium of instruction (EMI) across all study programs. Moreover, the prevalence of English in education is strongly influenced by social, economic, and technological advancements, as well as the demands of international communication stemming from globalization (Tang and Ngang , 2020, pp 97-118)

2. Definition of EMI

‘EMI refers to the use of the English language to teach academic subjects, other than English itself’ (Dafouz and Gray, 2022 p 499 (EMI stands for English-Medium Instruction and it means that English is the language used by the teacher when teaching a subject and the coursework. The subjects taught can be any academic subject except English language itself. For example: Teaching Math, Science, History, or Economics in English.

‘The use of the English language to teach academic subjects (other than English itself) in countries or jurisdictions where the first language (L1) of the majority of the population is not English’ (Macaro, 2018, p 21). This definition explain English Medium of Instruction (EMI) refers to the practice of teaching subjects other than English in English, particularly in regions where English is not the primary language. This approach aims to enhance students’ proficiency in English while providing them with academic knowledge in various disciplines.

3. Factors Impacting EMI

Findings from previous studies suggest that both linguistic and non-linguistic factors especially those connected to learner psychology play a role in students’ academic success in EMI classes (Soruç, et al., 2025, p 1947). Students face linguistic challenges when transitioning

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to an English-only environment, primarily due to insufficient language skills Galloway and Ruegg, 2020). Limited language proficiency can impact learners in multiple ways, including suffering with comprehending lectures, challenges in note-taking, difficulties in communicating subject-specific content, and obstacles in understanding academic texts (Wilang and Nupong , 2022, pp 437-446) . A study conducted by Hellekjær (2010) involving Norwegian and German students show that these students struggled to read texts and take notes in English Medium Instruction (EMI) classes due to unfamiliar vocabulary. Coxhead and Boutorwick (2018) argued that without appropriate reading input, students lack the necessary and key vocabulary knowledge to effectively engage with subject content (Ngoc Tien Tran ,et al ; 2020 p 29)

4. EMI in Higher Education

Kim (2002) examined college students' responses to English Medium Instruction (EMI) lectures and found that students had a favourite view of the overall learning environment, their motivation to learn, and the additional resources provide. The implementation of English Medium Instruction (EMI) may also be intended to generate additional revenue, boost university rankings, and improve students' overall competitiveness and employability in the global job market (Coleman 2006; Pecorari et al.,2011) However, they expressed negative feelings regarding the increased of the work pressure and the psychological stress associated with these classes (Inyoung and Moon Hyun Kym , 2014, pp 35-61) Furthermore , Hamid, Nguyen et al., (2013, p. 11) Determined that EMI implementation is “fraught with difficulties and challenges”. The findings showed that EMI is an approach not without difficulties and on-going problems for students and even for instructors. (Galloway and Sahan, 2021, p. 11).

5. The Role of EMI in Access to International Knowledge and Resources

The “Englishisation of university programs” (Tran and Nguyen, 2018, p. 98) began in the 1990s with the introduction of the first English Medium Instruction (EMI) programs at the postgraduate level in partnership with foreign institutions. A decade later, undergraduate programs were introduced (Vietnam International Education Department, 2016). However, the provision of EMI has expanded in response to recent policies aimed at internationalizing higher education, as the Ministry of Education and Training has worked to enhance students' English proficiency (Galloway and Sahan, 2021, p 11). Furthermore, all private universities have embraced English Medium Instruction (EMI) as their primary medium of instruction. In contrast, public universities have adhered to the university act of 1974, reflecting the nation's political aim to promote Bengali in order to strengthen the newly established nation following its independence in 1971 (Banu & Sussex, 2001).

As a result, Bengali has been recognized as the medium of instruction in higher education, with only a few exceptions (Hamid, Jahan, & Islam, 2013; Hamid & Kirkpatrick, 2016; Islam, 2013). With the aim of internationalizing begun to integrate English Medium Instruction (EMI) (Kim & Tarar, 2018) Moreover, By 2013, EMI programs were offered at the majority of the 420 universities in South Korea, which are in competition to improve their annual international rankings (Piller & Cho, 2013). By these contexts represent much of Asia’s higher education (Rahman, et al ;2018 p. 1156)

6. Development of Multilingual and Multicultural Identities

According to Lie (2017, p71) Educational policies also address the use of languages in schools, with their implementation influenced by the multicultural context of each region. In Indonesia, Indonesian serves as the medium of instruction from primary school through university across the nation. However, industrialization has led to significant human migration within the country, resulting in many schools having students who do not share the same local languages. Furthermore, Currently, Kazakhstan is refreshing its formal language. The "Law on Languages in the Republic of Kazakhstan," established in 1997, has granted the Kazakh language the status of the national language. Nevertheless, the Russian language remains significantly used as a medium of instruction, particularly in urban areas (Fierman, 2006).

7. EMI as Fostering Creativity and Innovation

In addition to innovative methods like collaborative online international learning (COIL), content and language integrated learning (CLIL), problem - posing education (PPE) and project - based learning (PBL) through English as a medium of instruction (EMI), students might be able to increase their confidence in using English as a tool of communication. Studies have shown that EMI in higher Education can be significant for content learning and English as an international language (Hino, 2017) and may increase students' confidence in spoken English (Zhang and Pladevall-Ballester, 2023). However, studies have also shown that teaching with an EMI approach does not seem to be effective in terms of improving academic performance and English proficiency (Arroyo-Barrigüete et al., 2022; Lei and Hu, 2014; Lin and Lei, 2021). Several possible factors that contribute to ineffective EMI classrooms have been identified, such as excessive use of teacher centered pedagogy, limited classroom interactions, lack of English proficiency, and lack of academic writing instruction (Ismailov & Yamamoto, 2021; Kojima, 2019).

To address such factors, innovative methods (COIL, PPE, CLIL, and PBL) could be employed to provide opportunities for the extensive use of group work, promoting dialog through questions, checking for vocabulary comprehension, and providing instructions on academic writing, which could contribute to the effective implementation of EMI. Thus, the objectives of this study are to develop an EMI course that integrates innovative methods such as collaborative online international learning (COIL), content and language integrated learning (CLIL), problem-posing education (PPE), and project-based learning (PBL) and to investigate how the course affects participants' confidence, knowledge, and skills corresponding to the content of the course in aspects related to using English as a tool of communication .(Chu and Mariko,2024 pp. 90-110)

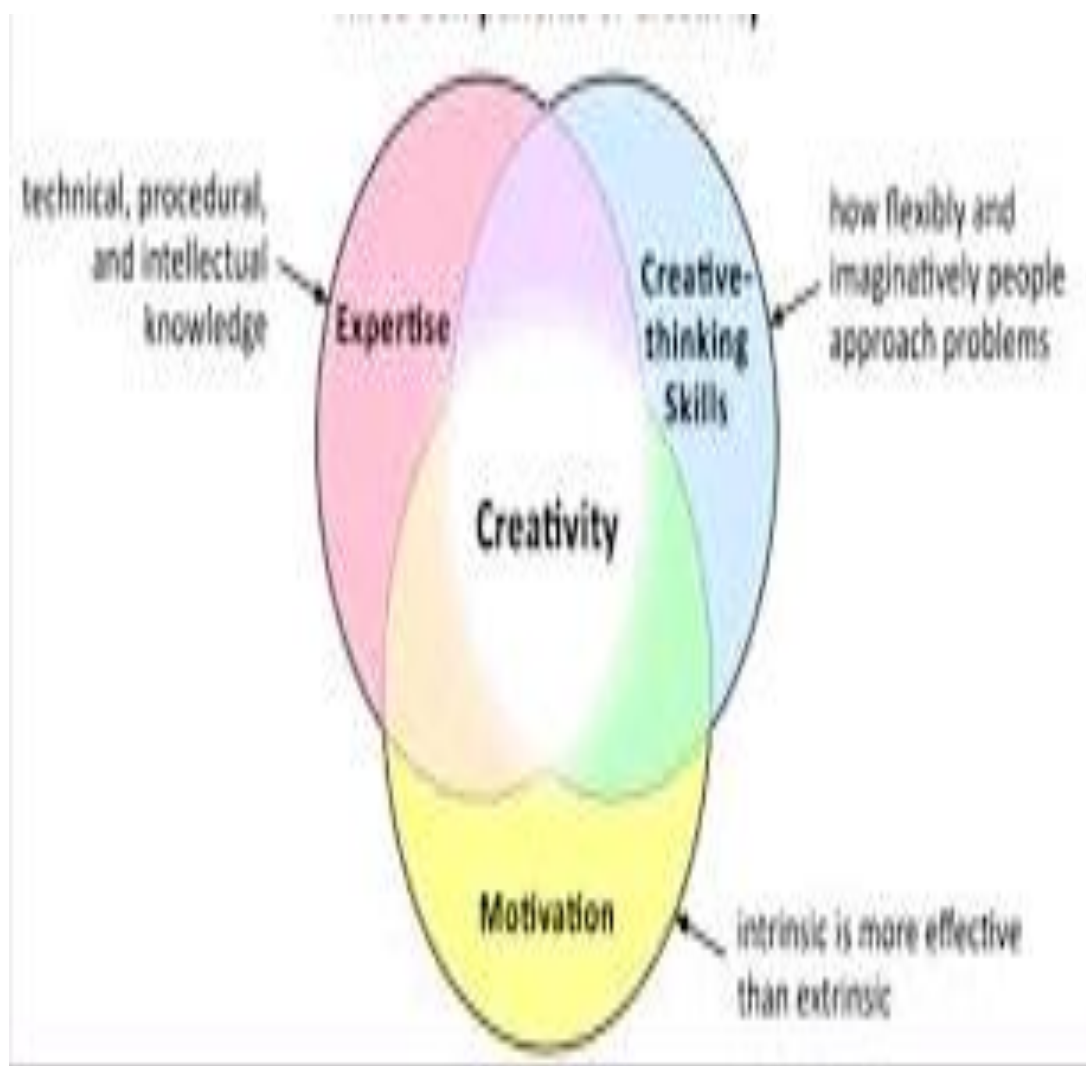


Figure 1.1 the three components of creativity.

HBS - Componential Theory of Creativity - Working Paper

Expertise impacts technical, procedural, and intellectual knowledge by: Deepening technical understanding, Optimizing procedural knowledge and Enhancing intellectual knowledge. By developing expertise, individuals can improve their performance and innovation in their field. In the other side, Intrinsic motivation is more effective than extrinsic motivation because Sustains effort, fosters autonomy, encourages creativity and Promotes resilience. This leads to more meaningful engagement, creativity, and innovation. Moreover, Creative thinking skills

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demonstrate flexibility and imagination in approaching problems by: Generating diverse solutions, thinking outside the box Making novel connections and adapting to new information. This flexibility and imagination enable individuals to develop innovative solutions and approach problems from unique angles.

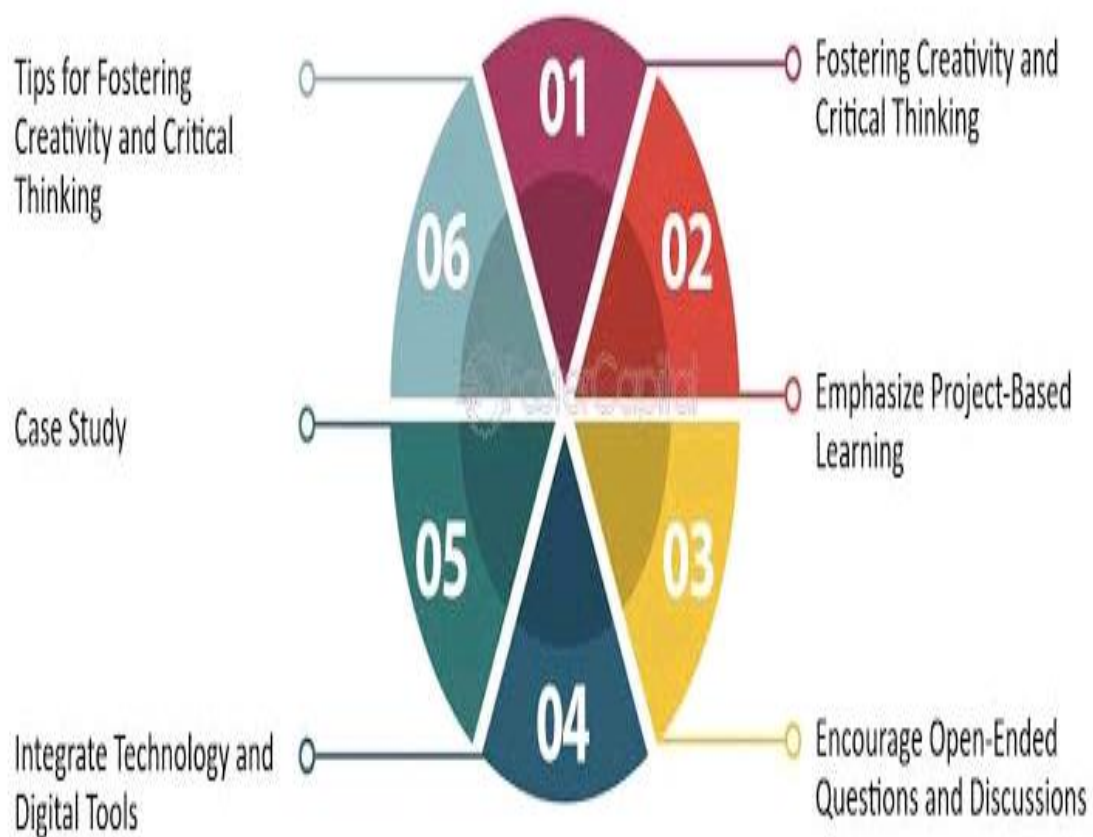


Figure 1. 2: encouraging innovation in education

Faster Capital: Encouraging Innovation and Creativity

Encouraging innovation in education related to English Medium Instruction (EMI) involves integrating innovative teaching methods and technologies that enhance language acquisition and comprehension. This could include using interactive digital tools, collaborative projects, and real-world applications to make learning more engaging for students. Like: fostering creativity and critical thinking, emphasize project based learning, encourage open -ended questions and discussion, integrate technology and digital tools, case study and tips for fostering creativity and critical thinking. By fostering an environment that supports creativity and critical thinking, educators can help students become more proficient in English while also developing their subject knowledge.

8. The Role of EMI In Language Anxiety and Self - Efficacy

English medium instruction (EMI) is a growing phenomenon in higher education contexts across the globe, and EMI programs are expanding rapidly as part of the internationalization efforts.

8.1. Language Anxiety

(Zhang and Cheng ,2018) confirmed that “almost unequivocally that higher levels of language anxiety were closely connected with lower levels of language success or attainment” Language learning anxiety is a common phenomenon where learners feel nervous or hesitant when communicating or learning in a second language. Self-regulation enables learners to structure their learning environment and take control of their learning process. While anxiety in English language learning has been studied, particularly in EMI contexts, there's a need for more research on the relationship between language learning anxiety and academic success in EMI settings (Yuksel and Soruc.et al;2023 pp399-426).

8.2. Self-Efficacy

In educational research, self-efficacy is recognized as a vital factor influencing students' motivation and learning, as it reflects their confidence in their abilities. Students' thoughts and beliefs, particularly self-efficacy, play a significant role in their learning process, affecting motivation and overall academic performance. (Van Dinher, Douchy and Segers, 2011, pp 98-108). In the article of Zhang and Dai (2024), MacIntyre et al. (1998) identified various emotional, personal, and environmental factors that affect students' decisions to engage in classroom discussions. They organized these factors into a pyramid with six distinct layers. The top three layers of the pyramid represent immediate, temporary, and situational influences on students' willingness to communicate (MacIntyre, 2007). In contrast, the three lower layers illustrate distal, long-lasting, and broadly applicable effects on students' willingness to communicate (MacIntyre, 2007).

9. The Lack of Teacher Training and Support for EMI Implementation

Klaasen's (2001) doctoral thesis offers training recommendations based on student feedback, suggesting lecturers improve clarity and enhance pronunciation and vocabulary skills. Additionally, universities are advised to hire native speaker instructors and establish support systems for professional development to enhance teaching effectiveness and lecturer support. Nevertheless, lecturers need to recognize that simply translating their lectures is not enough and sufficient; they must focus on both language proficiency and content delivery to effectively engage students (Fortanet and Gomez 2010) (Costa, 2015, pp 127-136). Universities encounter challenges in selecting staff for English as a Medium of Instruction (EMI) courses, particularly regarding the definition of "acceptable" English proficiency levels. Requirements vary by country and institution: in Spain, 43% of universities require B2, 44% C1, and 13% C2 levels; Nordic universities typically require C1; while in Russia, proficiency ranges from B1 to C1. The term "qualified" can refer to high English proficiency or completion of an EMI course or

certification. This approach is effective in universities with clear language policies and assessment schemes that include English proficiency. Leading research universities in Moscow and Saint-Petersburg have successfully adopted this strategy, benefiting from their strong international research networks (Ksenia and Elizaveta ,2021, pp185-219).

10. Enhancing Communication and Collaboration in EMI higher Context

EMI is seen as a means to achieve internationalization, improve job opportunities, and signify quality education, making institutions more attractive to international students and increasing their income (O'Dowd, 2018). According to Lyster (2017), studying interdisciplinary teacher collaboration in higher education can foster content lecturers' awareness of the language-content nexus in their classes. Enhancing communication and collaboration in EMI higher context focus on the crucial need for effective communication and collaboration in higher education settings where English is the medium of instruction, but not necessarily the native language of all students or faculty.

Effective communication and collaboration are essential for knowledge sharing, idea exchange, and student growth, especially in higher education where complex concepts are explored and critical thinking is encouraged. However, linguistic differences, cultural nuances, and different levels of English proficiency can create barriers. Therefore, enhancing communication and collaboration requires a multi-faceted approach that includes fostering inclusive classroom environments, supporting academic writing skills, designing effective group activities, leveraging technology for communication, and providing faculty development. Language support services, culturally sensitive pedagogy, and innovative assessment practices are also vital components. Ongoing research and the development of new strategies are essential to address the unique challenges and opportunities presented by EMI contexts (Akincioglu, 2024, pp141-163).

10.1. Stakeholder perspectives

In the article project of Simbolon (2018, p29) state that English Medium Instruction (EMI) is a bilingual teaching model where certain curriculum content is delivered in English, which is not the students' first language (Baker, 2011). In European and Asian contexts, EMI is often referred to as Content and Language Integrated Learning (CLIL), necessitating that individuals from non-English-speaking backgrounds possess English skills to engage with it (Ammon, 2001). Additionally, English has emerged as the dominant language in economic and entertainment sectors (Crystal, 1997).

EMI has been extensively researched in Turkey, particularly at the classroom level. Studies suggest that EMI universities are more popular due to perceived benefits, such as increased job prospects and social prestige. This study explores the perspectives of business stakeholders, including company managers and HR supervisors, on EMI programs and their graduates in Turkey, using a Human Capital Theory framework. It aims to determine the views of business stakeholders on the value and effectiveness of EMI programs. (Yuksel and Altay, 2024, pp. 48-67)

11. Benefits and Drawbacks of EMI

Research suggests bilingualism enhances divergent thinking, with bilingual children outperforming monolinguals in fluency and flexibility (Baker & Jones, 1998). Studies also show EMI students are more outgoing, active, emotionally mature, and independent-minded compared to their non-EMI counterparts (Senapati, Patnaik, & Dash, 2012). Additionally, bilingualism and EMI promote metalinguistic awareness, a valuable cognitive benefit (Bialystock, 1987). EMI provides access to resources unavailable in students' native languages, including science textbooks and materials typically published in English (Alhamami, 2015;

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Başıbek et al., 2014; Probyn, 2005; Zare-ee & Gholami, 2013). Proficiency in English is crucial for accessing these resources, making EMI highly significant. Furthermore, EMI boosts employability, as bilingual individuals have better career prospects, particularly in foreign companies (Tamtam et al., 2012). English proficiency can lead to enhanced job opportunities and promotions. In the other hand , drawbacks of English as Medium of instruction are many and multifaceted. For example EMI students face significant challenges, particularly in comprehending lectures, due to limited English proficiency (Chang, 2010; Huang, 2009, 2012; Tatzl, 2011). Poor listening comprehension skills hinder students from grasping key points, while inadequate speaking skills prevent them from asking clarifying questions (Ibrahim, 2001). Even in top universities, lecturers often summarize content in students' native language to facilitate understanding (Tong & Shi, 2012).

Furthermore, EMI students encounter challenges in tests and exams, struggling to comprehend questions and provide detailed answers due to language proficiency limitations (Al-Bakri, 2013; Sivaramana et al., 2014; Le, 2015). Phong and Thong, 2019, pp 88-100 state that this can lead to low grades and hinder academic progress

12. Fostering Inclusive and Supportive Learning Environments

According to Louis and Betteridge (2024) Inclusive learning environments are educational settings that value diversity, recognize and admire students' diverse backgrounds, experiences, and perspectives, promote equity, provide equal access to learning opportunities, resources, and support for all students, support a sense of belonging, create a welcoming and supportive atmosphere where students feel comfortable, respected, and valued, address individual needs, provide adaptation and support services to meet the diverse needs of students, and encourage participation, invite and facilitate active participation from all students, regardless of their background or ability. Salomon (2006, p. 255) stated that a learning environment encompasses

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any setting where learning occurs, emphasizing its characteristics. He noted that the study environment is specifically designed for this purpose, facilitating a supervised learning process where instruction can be delivered by teachers, computers, worksheets, and other resources. Edmonds (1999) asserts that all learning environments are complex and have multiple dimensions. Even if information about their components and interrelationships were accessible, accurately describing these environments would still be quite challenging (Läänemets and Rostovtseva (2015).pp 32-41.)

Conclusion

This chapter reveal an overview of English as a medium of instruction in global, besides to its importance and factors that impact it, moreover to its role on access to international knowledge and resources. Development of multilingual and multicultural identities took place in this chapter, furthermore shed the light on the role of EMI in language anxiety and self - efficacy. Focusing more on the lack of teacher training and support for EMI implementation. In addition to the stakeholder perspectives and the benefits and challenges of EMI. Last but not least, fostering inclusive and supportive learning environments.

Chapter two

Application of English as a Medium

Of Instruction in the Algerian Context.

Introduction

1- EMI in higher education (contextual analysis) .

2- The role of professional development in EMI implementation

3-Algerian EMI landscape: challenges and future directions.

4- EMI implementation in Algerian computer science programs.

5- The impact of EMI on Algerian university students: Academic performance.

6- Attitudes toward English as Medium of instruction

7- The influence of EMI on learners

8 - EMI in Algeria : a comparative analysis with International models .

9- Teachers _ Students perspectives on English language instruction.

Conclusion.

Introduction:

English as a Medium of Instruction (EMI) refers to the use of English as the primary language of instruction in educational settings where it is not the paramount language spoken by students. EMI is often used in international schools, universities, and other educational institutions to improve global communication, collaboration, and academic dealing. As English continues to establish itself as *lingua franca*, its use as EMI has become increasingly common in educational institutions around the world. Algeria, a multilingual country with a complex linguistic landscape, has also witnessed a significant shift towards EMI in recent decades. The Algerian government's efforts to change the education system and help internationalization have resulted in the increased use of English as a medium of instruction; particularly in higher education. Algerian universities have adopted English as a Medium of Instruction (EMI) in recent years due to several key factors. Globalization and international opportunities play a significant role, as English is the global *lingua franca*. Its adoption aims to enhance international collaboration, research clarity, and career expectation for students. By embracing EMI, Algerian universities seek to align themselves with global academic standards and increase their international renown.

The Algerian government believes that EMI will better prepare students for the global job market, particularly in fields like science, technology, and international business. This decision is also driven by political motives, aiming to modernize the education system and increase Algeria's global competitiveness. With English being introduced in Algerian primary schools in 2022, there is a growing demand for English teachers and professionals with strong English language skills. EMI in universities is expected to feed to this demand and provide students with the necessary skills to succeed in an increasingly globalized world. However, the adoption

of EMI also raises concerns. Many teachers lack the necessary English language proficiency and training to effectively teach in EMI settings. Students may struggle with low English proficiency, retarding their ability to comprehend lectures and engage with course materials. The shift towards EMI has also sparked debates about preserving Algeria's linguistic heritage and cultural identity.

This chapter aims to evaluate the effectiveness of English as a medium of instruction in the Algerian context, exploring the benefits and challenges associated with its implementation. This study seeks to provide awareness into the complexities of EMI in Algeria and inform policymakers, educators, and collaborators about the implications of this educational approach.

1- EMI in Algerian Higher Education (Contextual Analysis)

1.1. Historical and Economic Context

Salima and Hayat (2018) stated in their thesis that Algeria's linguistic landscape reflects the country's complex history with French. Once an official language during colonial rule, French later became a foreign language. Despite this shift, Algeria remains one of the world's largest francophone nations. Many older Algerians were educated in French and use it professionally, whereas younger generations were taught in Arabic due to Arabization policies. Although French is officially a foreign language, it maintains a prestigious presence in domains like healthcare, finance, administrations and education. As noted by Caubet (1986), French holds an ambiguous status, symbolizing both social success and access to culture and modernity, yet also awakening official detest as a language the former colonizer. This duality reflects the complex role French continues to play in Algerian society.

According to Ait Aissa and Ait Allaoua (2024), The primary objective of any business English course is to enable learners to communicate effectively in business settings. Key skills for achieving effective business communication include having a strong vocabulary, writing

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business reports and emails, making phone calls, delivering presentations, participating in meetings, and negotiating. Globalization has positioned English as the global language, particularly for specific purposes in business. Several factors contribute to the prominence of English as a global language and its association with business success. Historically, English emerged as a global language through conquest and colonization, later becoming intertwined with modernity, development, and business achievement. Today, business English is recognized as a distinct branch of English for Specific Purposes (ESP) (Dudley-Evans and St John, 1996)

1.2. Educational Context

The Algerian government introduced a significant policy shift in 2023, adopting English as a Medium of Instruction (EMI) in various university programs to enhance integration into the global academic and economic landscape (Macaro et al., 2018; Touhami and Bakar, 2024). With English spoken by approximately 1.5 billion people worldwide (Statista, 2024), this change aims to address previous linguistic shortcomings and prepare Algerian students for international opportunities. According to Hamane (2023) the popularity of EMI among Algerian stakeholders has significantly increased, despite being a late adoption compared to global trends. This decision is driven by political, scientific, and economic motives.

Khenioui and Boulkroun (2023) highlight the desire for linguistic independence from French influence. English, as a global lingua franca (Maraf,2024; Benhamlaoui and Benzadri, 2024), is associated with quality education and advancement, potentially enhancing scientific research in Algeria (Khenioui & Boulkroun, 2023; Touahmia and Bakar, 2024; Hamzaoui, 2021). The adoption of EMI is expected to boost the visibility of Algerian researchers' publications internationally, as English is the language of scientific publications (Saidoun and Bensemmane,

2024; Maraf, 2024; Benabdallah, 2023). It will also elevate the status and ranking of Algerian universities, fostering international collaborations and opportunities for academic mobility. Furthermore, English proficiency enhances students' career prospects in the global job market (Khenioui and Boulkroun, 2023; Touahmia and Bakar, 2024; Hamane, 2023). English has become increasingly popular among Algerian youth, symbolizing openness and a sense of belonging (Belmihoub, 2018). Proficiency in English is also linked to travel and scholarships, increasing interest and motivation to learn the language (Ghouali and Bouabdallah, 2024, pp. 629-642).

2. The Role of Professional Development in EMI Implementation

Algeria's education system has witnessed numerous reforms, shaping its structure and content. The latest initiative involves introducing English as a Medium of Instruction (EMI) in universities, with a preparation phase focused on teaching university teachers English. The success of this reform hinges on the effectiveness of this preparation phase, which highlights the importance of professional development in EMI implementation (O'Dowd, 2018).

According to Brogini and Costa (2017), proficiency in English is a major concern for EMI teachers, particularly non-native speakers, as varying levels of proficiency within the same university can impact content learning. However, general language proficiency testing and training may not guarantee teachers' success in classroom teaching (Freeman et al., 2015). As noted by Wang (2021), language proficiency is a crucial aspect of language training programs, but General Language Proficiency may not address the specific needs of EMI teachers. The preparation phase for EMI implementation in Algerian universities needs to consider the unique challenges and requirements of teaching in English, beyond general language proficiency (Maraf and Zekri, 2023, pp. 135-143).

3. Algerian EMI Landscape: Challenges and Future Directions:

The integration of English as medium of instruction (EMI) in Algerian higher education presents a complex landscape marked by both opportunities and challenges, justifying a closer examination of its current state and future directions.

3.1. Challenges:

According to Wilkinson and Zegers (2019), English Medium Instruction (EMI) offers students the chance to improve their language skills, raise their functionality, and experience various cultures and knowledge. Additionally, it allows universities to internationalize their programs and attract a diverse range of students. However, despite the advantages of implementing EMI, there can be challenges that emerge during this process. These challenges may involve issues related to language proficiency, teaching methods, and curriculum development, among others.

3.2. Future Directions:

Mehdaoui and Benabed (2023) state that many countries view translation services as a crucial component in enhancing their economies on a global scale. For example, as part of its political, cultural, and economic reforms, China has significantly increased the number of translation agencies and companies (Tian, 2008). The translation industry encompasses not only fiction but also a wide range of texts related to science, medicine, and engineering. Consequently, technical and scientific translation has become a vital sector in China's market, closely tied to the import and export of technologies (Tian, 2008; Carolan, 2022). In summary, it is evident that economic growth is the primary motivation for promoting English proficiency, with various measures implemented to achieve this objective.

4- EMI Implementation in Algerian Computer Science Programs

As Li (2019) pointed out, "EMI is not a simple process of replacing the medium of instruction. Instead, it involves a complex set of changes in the educational system that impact teachers, students, and administrators." Various contexts have identified common challenges and approaches to address them. Pham and Baldauf (2018) recommended that, "teachers and students should be provided with language support, and appropriate pedagogical training should be given to teachers."

They see that the teachers and students should be well have the appropriate pedagogical training, besides to the curriculum design which should be aligned with language proficiency level of students, as well as, the teachers who must adopt appropriate teaching strategies. Wilkinson and Zegers (2019) suggest that English Medium Instruction (EMI) offers students the chance to improve their language proficiency, boost their employability, and experience diverse cultures and knowledge. Additionally, EMI enables universities to internationalize their curriculum and attract a varied student population (Ouariki, 2023, pp 176-193). Research conducted by Ammon (2011) on language use and international communication indicates that the majority of the world's research is published in English.

Consequently, English-language research constitutes a significant portion of all indexed papers. In this context, (Cheriguene, et al., 2020 pp 102-113) clear that most of the leading scientific journal publishers, such as Taylor and Francis, Elsevier, and Blackwell, utilize English as their primary publishing language. Furthermore, many prominent journals in computer science, including IEEE and Springer, are produced in English, with most editors and reviewers being native or near-native speakers of the language. To illustrate this point, Hamel (2007) noted that in 2003, the journal AILA Review declared itself an "English only" publication. Similarly, Truchot (2001) highlighted that the most significant databases are located in the USA, making them the most widely used and influential in the field .

5- The Impact of EMI on Algerian University Students: Academic

Performance

According to Touahmia and Bakar (2024), English is the primary mode of communication, they see it as a strong language and dominant worldwide, it is attributed to the emergence of globalization. (Ament and Pérez Vidal, 2015; Dearden, 2014; Macaro et al., 2018) Pointed out that English has also led to the widespread use as a medium of instruction in higher education. However, the case in Algeria is totally different because of its Historical background reasons, one of the important reasons is the French colonization which conquer Algeria for about 132 years, and gave the French language the first and most importantly place (Bouhmama and Dendane ,2018) . At the university level, English modules such as English for Specific Purposes are offered in only some Algerian universities (Medfouni, 2020).

The objectives of implementing English Medium Instruction (EMI) go beyond pure global integration, they include facilitating student mobility, improving employment prospects, and providing a platform for enhancing English proficiency while preserving the integrity of subject matter learning (Graham and Eslami, 2021; Luu et al., 2023; Rose et al., 2022). Unlike many other countries that have rapidly adopted EMI, Algeria is considered a relative latecomer to this trend. Algerian educators are now tasked with redefining their pedagogical strategies within a cultural context that has traditionally favored instruction in French or Arabic. In response to the dynamic global landscape and the need for adaptability, the Ministry of Higher Education has launched a decisive initiative aimed at transitioning the medium of instruction from French or Arabic to English, marking a significant shift from established linguistic practices (Soraya Hamane, 2023).

5.1. English as Medium of Instruction:

EMI is the “use of English in the offer of university degree courses in higher education instead of the domestic language of the country” (Karakaş, 2015, p. 1). academic subjects are taught in English in countries where English is not the first language (Dearden, 2014; Macaro et al., 2018). In Algeria, EMI (English Medium Instruction) in higher education refers to the practice of teaching university courses in English rather than in Arabic or French. This approach is aimed at improving students' English proficiency while they study specialized subjects, such as engineering, business, or science. EMI is becoming more common in some universities, as it prepares students for a global job market where English is often the primary language of communication. However, its implementation can vary, and not all institutions offer courses in English.

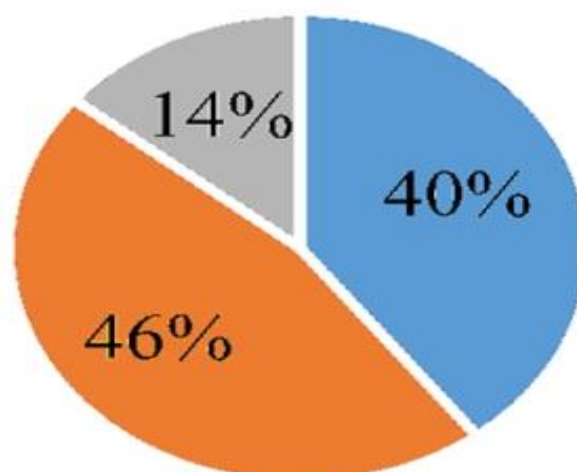
6. Attitude Towards English as Medium of Instruction

In Touahmia and Bakar (2024) research, they shed the light on the learners who accepted English as a medium of instruction and deal with it easily with no abduction. In the other side, the learners who refuse to be taught in English and found French more comprehensive and appropriate.

Jebali (2020) conducted research in Tunisia, where the ministry of higher education was considering the implementation of English Medium Instruction (EMI) in universities. The study revealed that both lecturers and students held a favorable view of English, seeing it as an essential tool for science and research. Additionally, it was noted that lecturers involved in EMI programs had a more positive attitude compared to those teaching in programs that used French as the medium of instruction. Similarly, Alsubaie (2021) reported comparable findings in a study involving Saudi Arabian students using EMI. Almahmoud (2012) found that students enrolled in EMI programs in Saudi Arabia regarded English as a language of prestige.

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Furthermore, Messaoudi and Elachach (2017) discovered that 99% of master's degree students in Algeria acknowledged the significance of English for knowledge acquisition and development. On the other hand, Chemami (2011) and Belmihoub (2018) conducted studies involving Algerian university students and found that these students preferred learning French, as it was the primary language of instruction. Amin (2018) reported that only 20% of students favored learning English, and just 17% considered it essential. Previous research regarding English in Algerian higher education has mainly concentrated on university students' attitudes toward learning English as a second language, with little focus on their perceptions of the language itself. It is important to gain insights into both lecturers' and students' thoughts, knowledge, and beliefs about English, as these factors are vital for the success of any EMI program (Banks, 2018).



ench in

English as Medium of Instruction

The above figure reveals that 46 % of learners in Algeria use Arabic in their course work. Whereas, 40 % of learners in Algeria use English in their coursework. In addition to 14 % of Learners in Algeria use French in their coursework.

7.The Influence of EMI on Learners

The connectionist theory of language acquisition affirmed that learners develop their language skills through repeated exposure to linguistic features in meaningful contexts (Lightbrown and Spada, 2006). In English as a Medium of Instruction (EMI) context, students are exposed to language features in specific situations, permitting them to build connections between these elements and develop their language skills.

Research has investigated the impact of studying in an L2-medium university on students' language abilities. Storch (2009) found that after one semester, students' academic writing improved in terms of structure, idea development, and formality, but not in linguistic accuracy or complexity. The short duration of the study and lack of feedback may have contributed to these limited gains. Another study by Knoch et al. (2015) found that students' writing improved in fluency after three years of study, but changes in accuracy, grammatical and lexical complexity, and global writing scores were not significant. These studies suggest that while studying in an EMI context can lead to some improvements in language skills, the extent of these gains may be limited and dependent on various factors (Cosgun and Hasirci, 2017, pp 11-20).

8. EMI in Algeria: A Comparative Analysis with International Models

Globalization, with its increasing impacts on the flows of people, information and goods, has effects on all areas of civil life, including the educational sector, mainly through the process of internationalization of higher education (IHE) “internationalization is changing the world of education and globalization is changing the world of internationalization” (Knight, 2003, p. 3)

8.1. North America and Europe

In regions like north America and Europe, the relationship between the commerce and the market aspects led to increase income through international student's fees. This financial motivation push institutions to compete for better positions in global classifications which often influenced by factors like output of research, faculty qualifications and student satisfaction. As a result, the education becomes increasingly “commodity “which institutions prioritize attracting international students and maximize revenues over traditional educational values. This "commodification" of education can shift the focus from learning and personal development to financial gain and market positioning, ultimately impacting the quality and accessibility of education (Kubota, 2009; Finardi and Rojo, 2015; Baumvol and Sarmento, 2016; Finardi and Guimarães, 2017).

8.2. Bologna process

Moore and Finardi (2019) state that the Bologna Process significantly transformed European higher education by creating a framework that promotes international attractiveness and competitiveness among institutions. It introduced a system of transferable credits, known as the European Credit Transfer and Accumulation System (ECTS), which facilitates academic mobility for students across different countries. This system allows students to transfer their credits easily when studying abroad, ensuring that their qualifications are recognized across Europe. Additionally, the Bologna Process aims to enhance the comparability of standards and quality in higher education qualifications, making it easier for employers and institutions to assess and recognize degrees from different countries. Overall, it fosters a more integrated and cohesive higher education landscape in Europe. The importance and impact of Bologna process are also discussed by hetti and Magalhães (2015) and Albuquerque et al. (2019) who claim that

Bologna process interfering in the decisions of administrators and managers, and changing the use of languages in the higher education context.

8.3. The Brazilian process

Ramos (2018) discussed that the public system in Brazil of higher education is free of charge for Brazilian and international students. In Brazil, most university students attend private colleges. However, the education system also includes federal universities that offer undergraduate, master's, and doctoral programs, as well as federal institutes of education, science, and technology, which provide high school, vocational education, and higher education. At the graduate level, research is funded by government agencies, which helps to promote the quality and relevance of the research conducted at federal universities. This diverse system allows students to access various types of education and opportunities.

9- Teacher's Perspectives on English Language Instruction

At the University of Copenhagen (Kling and Staehr, 2012) offers a certification program called the Test of Oral English Proficiency of Academic Staff (TOEPAS), which assesses the English proficiency of academic staff through a 20-minute simulated teaching session in front of peers. The evaluation is based on a scale where the highest level is described as being similar to "a highly articulate, well-educated native speaker of English" (Dimova and Kling 2015). While there is some acknowledgment of other pedagogical skills, the assessment heavily emphasizes the teacher's fluency, pronunciation, vocabulary, and grammar. This focus suggests that linguistic proficiency is considered crucial for effective teaching in an academic setting. Although there is some reference to other pedagogical skills, a great deal of weight appears to be placed on the teacher's fluency, pronunciation, vocabulary, and grammar. The University of Freiburg, as reported in some detail in Dubow and Gundermann (2017), uses general language criteria which are by and large based on the CEFR (The Common European Framework of

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Reference for Languages) and on the IELTS (International Language Testing Service) and the teacher's competence to teach is based on an assessment of: 'their fluency in the language; their pronunciation; grammatical accuracy; lexical range and accuracy; and their ability to avoid the use of the L1 (Dubow, et al; 2017 pp. 478-479).

Saidani and Afkir (2023) conducted a survey with 232 students most students have opted for English as the language of science and show a keen interest in studying abroad. The impact of English as a Medium of Instruction (EMI) on their learning and fluency is significant, with 80% of students agreeing or strongly agreeing that EMI has enhanced their speaking skills. Similarly, 80% also reported improvements in their writing abilities. Many students noted that EMI has positively affected their reading and listening skills as well.

Conclusion

This chapter presented an overview of English as a medium of instruction in Algeria, besides to the role of professional development in EMI implementation. The historical, economic and educational context were mentioned in this chapter. In addition to the challenges and future directions. This chapter also reveals that the EMI implementation in Algerian computer science programs, moreover, the impact of EMI on the academic performance. Also, a comparative analysis with international models, and attitudes of teacher and student towards EMI Last but not least, the teachers and students' perspectives on English language instruction.

Data Analysis and Interpretation

Introduction

1- Research Design

2_ Population

3_ Sample of the Study

4_ Data Collection

5_ Description of the Questionnaire

6_ Description of the Questionnaire's Sections

7_ Reliability of the Questionnaire

8_ Analysis of the Questionnaire

9_ Teacher's Interview

10_ Description of the Interview

11_ Analysis of the Interview

12_ Discussion of the Findings

Conclusion

Introduction

The current chapter explores the research design, population and the sample of the study, along with analysis and interpretation of the students' questionnaire and teachers' interviews. This chapter the use of statistical analysis including calculation of the percentage and recurrence and the use of SPSS for validity and reliability. Additionally, questionnaire is employed to collect student's perspectives on the English as a medium of instruction, also interview conducted with first year computer science teachers to obtain their insights into the challenges and suggestions for improvements. Moreover, the center of this chapter lies in the synthesize and discussion of the findings where the results from the treatment section, after the analysis of student's questionnaire and teacher's interview.

1. Research Design

The research design for the current investigation is cautiously designed to thoroughly expound the research topic, employing a mixed methods approach that combines numerical data with in-depth insights to provide a rich understanding of the EMI.

In the qualitative stage, participants performing with English as a medium of instruction through employ Likert scale questions to show the participant's perceptions, angles and choices toward the English as an additional language to their specialty. In the other hand, the quantitative data used through statistical analysis to reveal the validity of the study.

Simultaneously, the qualitative part contains conducting in-depth interviews with five university teachers. These interviews are designed to show and investigate deeper within participants' preferences providing wealthy insights into the challenges they face and give a valuable suggestions for improving the use of English as a medium of instruction in Algerian higher education.

This research prioritizes ethics, protect participant's privacy and consent while handling data responsibly. By defending rigorous ethical standards, the study's integrity and reliability are maintained, fostering trust in its conclusion.

By combining quantitative and qualitative methods with strong ethical foundations, this study ensures trustworthy results. The integration of diverse data sources boosts the credibility of the findings, offering a comprehensive understanding of English impact as medium of instruction for non-English language learners. This rigorous approach yield both statistically significant and nuanced insights, advancing knowledge in language education.

2. Population

The population for this research involves first year computer science students at the faculty of computer science at Mohamed Khider University of Biskra. The choice of this specific level

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guarantees a selected and applicable sample for investigating the affordances and challenges besides to the role of English at this specific level. The focus on first year computer science students agree with the aim of understanding the effect of English as a medium of instruction on learner's proficiency during their classes. The participants in this study are EMI learners from Mohamed Khider University of Biskra. Serving as the main contributors to the data collection process. These learners were selected as they represent the sample under this investigation, and their experiences with English application as new language in their specialty are important for obtaining insights into the effectiveness of English as a medium of instruction proficiency.

Additionally, experienced five English language teachers in the computer science branch were selected for their expertise serving as key informants. They offer valuable insights into the pedagogical aspects of teaching English as a new language, providing a nuanced understanding of the challenges and benefits of English as a medium of instruction. To ensure a comprehensive investigation, a random sample of forty participants of computer science learners were selected. This random sampling boosts the study's external validity, allowing findings to be more broadly applicable. This approach enhances the credibility and reliability of the research results.

3. Sample of the Study

This study involved 40 first year computer science students, comprising 13 males and 27 females.

4. Data Collection

A mixed method design, incorporating both quantitative and qualitative methods was used to achieve research objectives and investigate hypotheses. First year computer science students completed a Likert scale questionnaire to assess their attitudes toward EMI.

Semi structured interviews with four teachers complemented the quantitative data, providing rich insights into their EMI experiences, challenges, and suggestions in the computer science.

5. Description of the Questionnaire

A questionnaire was designed specifically for first-year computer science students to gather their perceptions and experiences regarding English as a Medium of Instruction (EMI). It is worth to note that this questionnaire were translated to Arabic to make it easy for students to understand it. The comprehensive tool consists of six sections, focusing on key aspects of English as a foreign language in the computer science field.

6. Description of the Questionnaire's Sections:

Section one: Demographic information of the first year computer science students.

In this section, age and gender of the Learners are required to get clearer image about Learners' age and how the gender effect and give various perspectives from male and female. Besides to the level of the proficiency of the learners while they are beginners, intermediate or advanced. In addition to the previous English language experiences of the learners.

Section two: highlighting the linguistic drawbacks that face the computer science students.

This section formed of five questions investigating the ability of comprehension of the new technical terms and how often do the students struggling with classifying the words and it's grammar. In addition to , pointed out the ability of comprehension academic paper in English. Moreover, this section asks for the ability of understanding the vocabulary and the complex technical ideas in English.

Section three: The academic challenges that the students struggling with.

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Through another specific five questions , this section reveal how students can deal with the writing, understanding and participating in English, besides to whether they are finish their assignment that need to be done using technical English or not .

Section four: showing the cognitive obstacles that computer science students suffer from.

In this part that shaped by five questions about the cognitive challenges of EMI in computer science, students suffer from the difficulty of complex technical information in English and their limited ability to solve problems and think critically in English, besides to the students ability to understand new technical words .

Section five: socio - emotional challenges that faced the new students.

This part is focused on different kind of drawbacks of EMI, five questions were giving to students for getting deep explanation and understanding of their perspectives towards the socio - emotional challenges. Do students feel anxious or stressed, do they have difficulties in making an interaction or speech with their colleagues, how they feel if their proficiency affect their academic confidence, and how they feel when the instructors demand from them to participate in the classroom.

Section six: The positive side of the English as Medium of instruction in the computer science.

In this section, five questions guided the students' angles towards the good side of EMI in computer science. This part investigate how the English affected the students' career and how the EMI Improved their critical thinking and problem solving and enhanced their professional networking opportunities. Moreover, to how studying in English impacted their potential to engage in international academic and professional resources.

7. Reliability of the Questionnaire

Table. 1. Alpha de Cronbach

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Reliability Statistics	
Alpha de Cronbach	Number of items
0,626	24

To assess the internal consistency of the questionnaire, a reliability analysis was performed using Cronbach's Alpha through **SPSS software** (version 26). A total of 28 items were analysed, which included demographic questions and key items measuring the two primary variables. The analysis yielded a satisfactory reliability coefficient of $\alpha = 0.626$, indicating a strong level of internal consistency across the entire instrument. This finding confirms that the questionnaire is a **reliable** tool for measuring both the independent variable (English as a medium of instruction) and the dependent variable (learners' skills).

The coefficient values were interpreted as follows: below 0.4 (unacceptable), 0.5 (poor), 0.6 (questionable), 0.7 (acceptable), 0.8 (good), and 0.9 (excellent).

8. Analysis of the Questionnaire

The questionnaire for first-year computer science students consisted of six sections, each with five questions, designed to assess their views on English as a Medium of Instruction (EMI) and its benefits and challenges. Participants rated their responses on a Likert scale, ranging from "not at all" to "extremely", allowing for a nuanced understanding of their attitudes. The analysis generated 28 figures, presented as pie charts, which visually represented the distribution of responses. Each figure highlighted the percentage distribution of participants' ratings, providing a clear and quantitative understanding of their perspectives. The analysis goes through careful examination to ensure accuracy and reliability, contributing to the study's credibility.

Section One: Demographic Information Of The First Year Computer Science Students.

Table3. 1. Gender

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Element	Number	Percentage
a) Male	13	32.5%
b) Female	27	67.5%
Total	40	100%

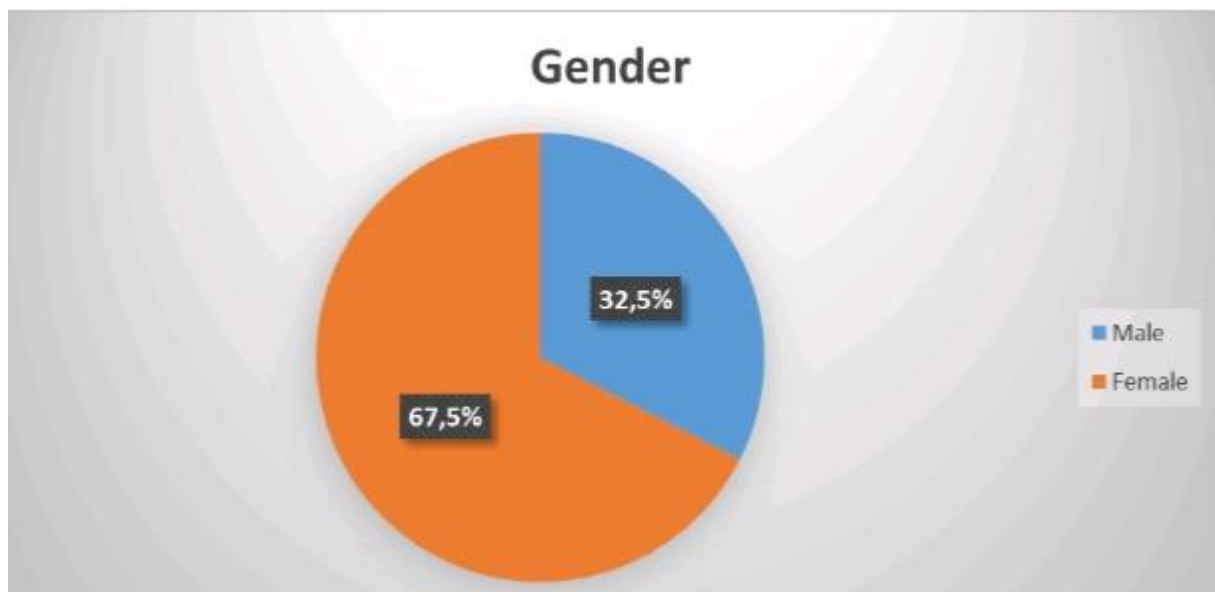


Figure3. 1 Gender Of The Participants

Results reveal that the participants of this questionnaire from the first year computer science were majority females with 67,5% . However the males also take a number, but lower in

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comparison with the females where they take only 32,5% . This large relative disparity has numerous reasons why the girls are more in this field are more than the boys , reasons like the boys are not into the college and study anymore , they have other interests like money and projects that guarantee their future as they said and justify their absence in the college .

Table3. 2. Age

Element	Number	Percentage
18– 20	38	97.5%
21 – 25	1	2.5%
Total	40	100%

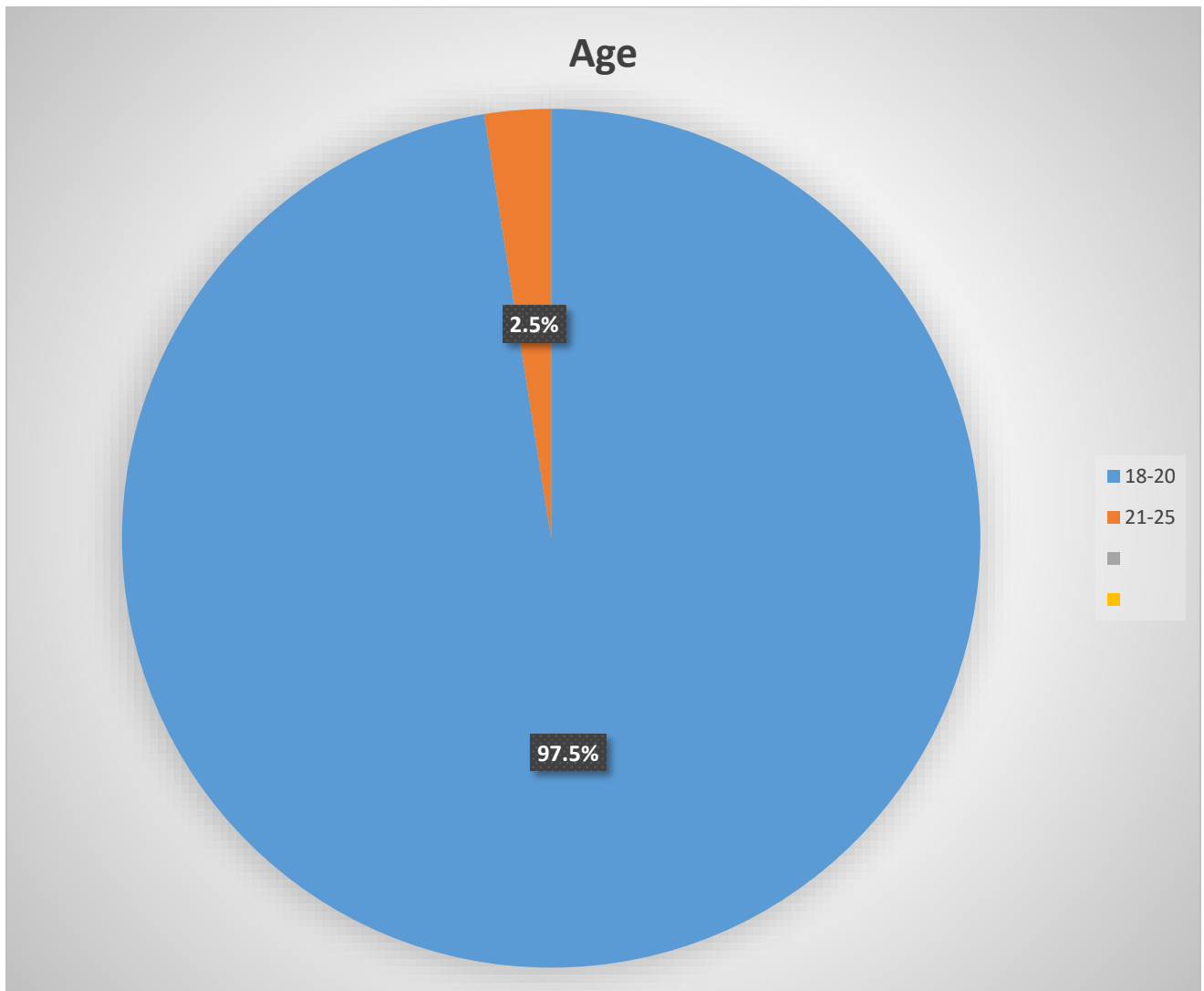


Figure3. 2 : Distribution of the Age for the First Year Computer Science Students.

Figure 1 shows how much there is females and males contribute in this questionnaire, besides to their age that was ranged between eighteen to twenty-five years old. In addition to the age that was greater number of the participants who were 97.5 % whom were from 18 to 20 than the participants whom were between 21to 25 years old. This portions of the age that indicate the students with high portion were around 18 to 20 are expected, because we deal with first year students, so it is rarely where we found students bigger than 20 , maybe there was failing

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students and they re-study , besides to worker students they have not luck to engage in college at their first time .

Table3. 3. Level of English proficiency

Element	Number	Percentage
Beginner	9	22.5%
Intermediate	30	75.0%
Advanced	1	2.5%
Total	40	100%

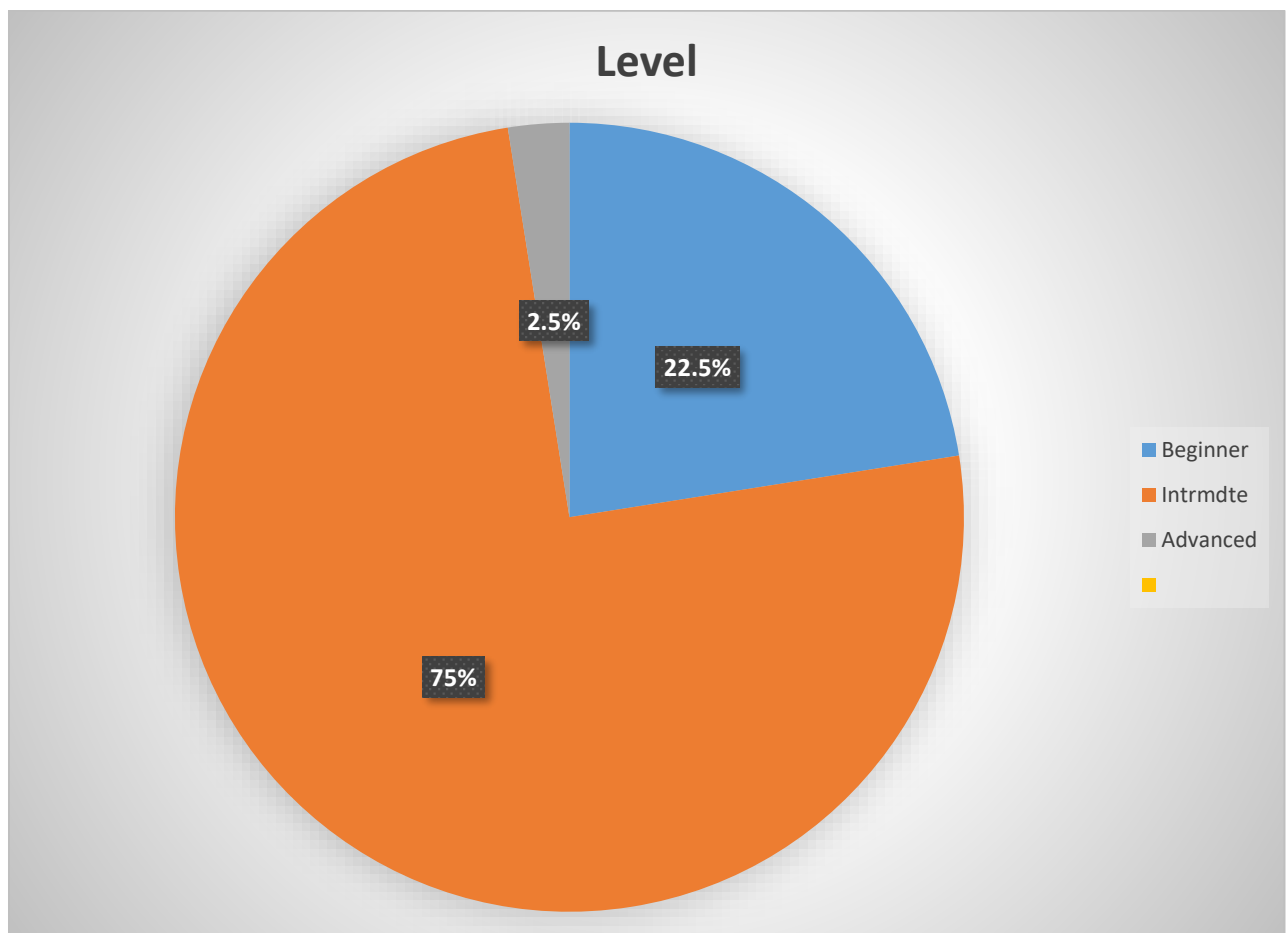


Figure 3.3 show the level of the first year computer science students.

This figure displays each level of the participants of this questionnaire, where we conclude that their level of performance English, differ from one to another, they are beginners and this is their first-time learning English and they are intermediate which mean they had English

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classes before but not enough to get Better performance, and they are advance and they can control their English very well in all the four skills of writing, speaking, listening and reading. According to the figure 3 there is great percentage of participants whom are intermediate of using English language with 75% participants, the beginners also take good percentage with 22.5 of participants whom are beginners with the English language learning in their field , last but not least a small number of participants with 2.5% are intermediate with the English .This have several reasons like some high schools do not have great teachers of English which make the students have good background and performance , besides other institutions do not have well training teachers that can affect good to the performance of the students .

Table3. 4. Previous English language experiences

Element	Number	Percentage
Yes	20	50.0%
No	20	50.0%
Total	40	100%

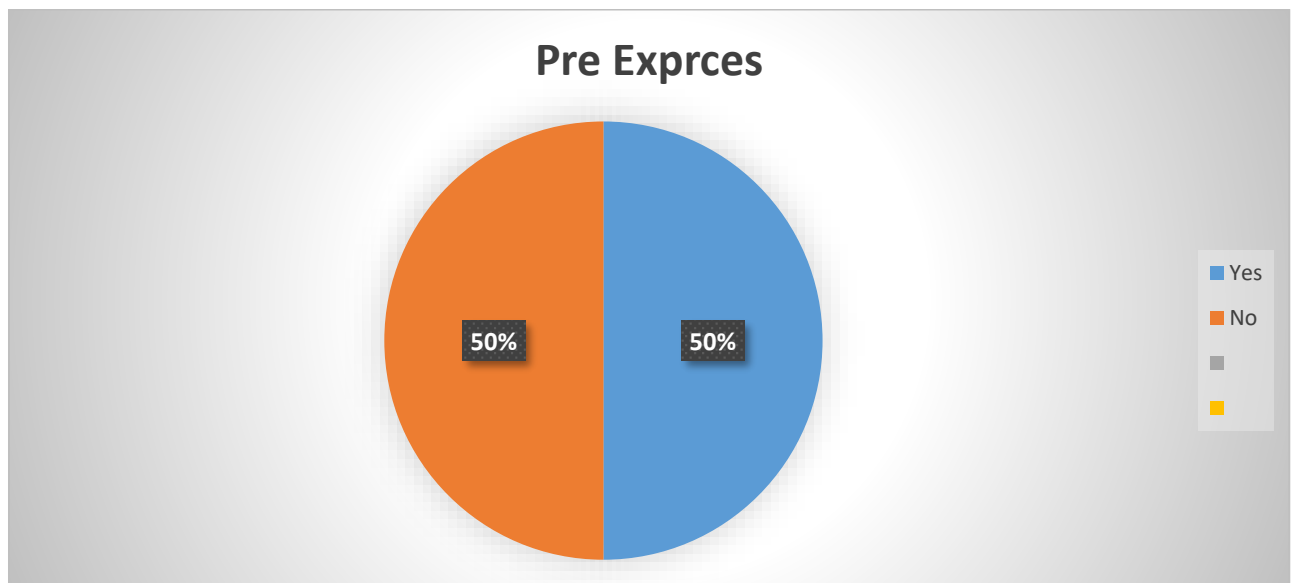


Figure3. 4 reveal the pre experiences whether the first year computer science students had or not.

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The figure 4 show whether the participants had a previous English language experience or not whether in the high school or other job experience or even in their daily life with the new and trendy applications that teach the English language. This figure show an equivalent number of percentage, fifty fifty percent of the participants who said no they do not had a previous English experiences while the other fifty said that yes , they do had a previous English experiences in their careers .

Section two: The Student' Linguistic Drawbacks.

Table3. 5. The ability of understanding the technical vocabulary and terms in English.

Element	Number	Percentage
Not at all	2	5.0%
Not very much	9	22.5%
Somewhat	18	45%
Very much	11	27.5%
Total	40	100%

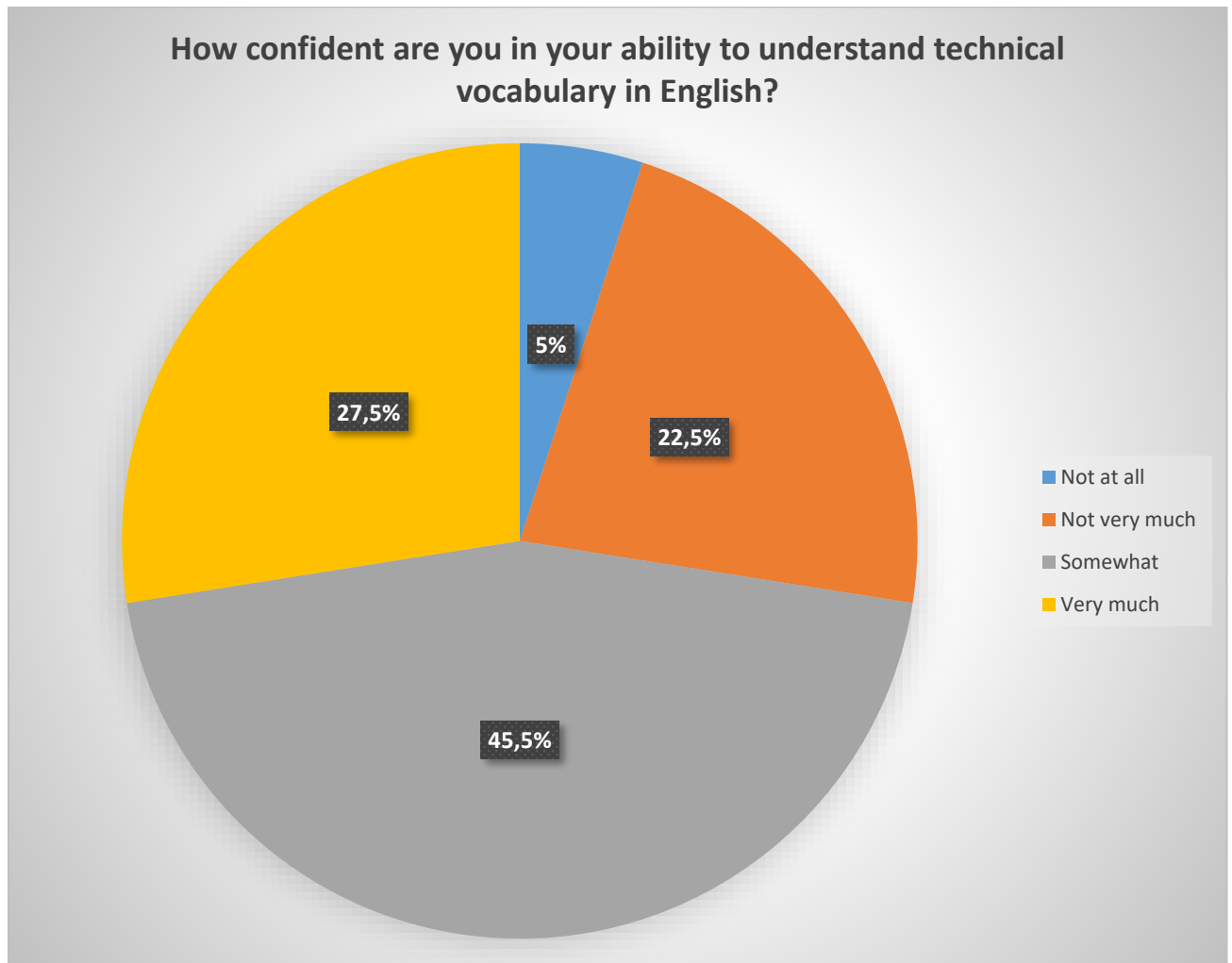


Figure3. 5 show the ability of understanding the technical vocabulary and terms in English.

The figure 5 displays the confidence of the participants of comprehension the new vocabulary and terms in English, while this figure is divided into: participants who not at all understand the new technical words, those participants take 5% of this pie chart. Another category of participants who are not very much understand and have the ability in comprehend the words in English, those participants take 22.5% . While the students who are somewhat have the ability of understanding the new technical words take the big percentage with 45%. Lastly, the students with very much understand and comprehend the technical English words that used in the computer science take 27.5% of the whole participants. In conclusion, there are varying proportions of the participants who can understand and the new technical words are

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easy for them, others are not and others can understand the basic words of English language but cannot understand the words that used in the computer science field.

Table3. 6. The vocabulary background that the students have in English language.

Element	Number	Percentage
Not at all	1	2.5%
Not very much	11	27.5%
Somewhat	17	42.5%
Very much	10	25.0%
Extremely	1	2.5%
Total	40	100%

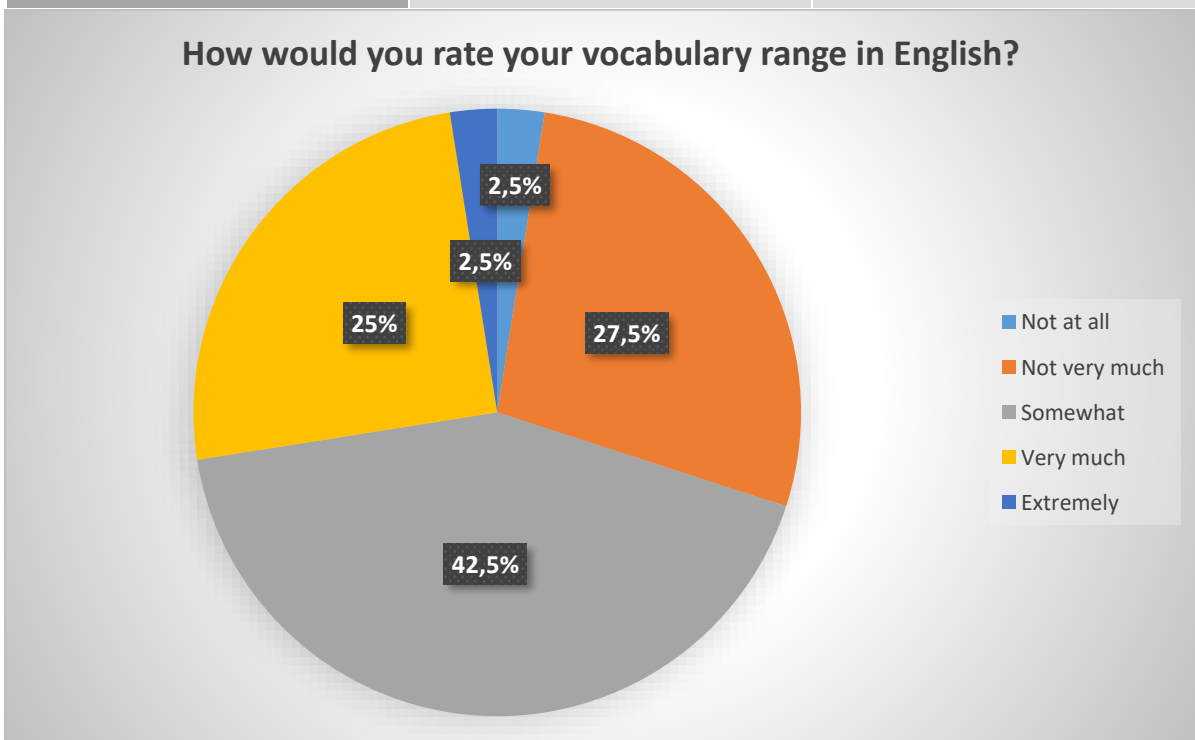


Figure3. 6 show the vocabulary background that the students have in English

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According to figure 6, a huge number of participants who have big percentage of words and terms in English with 42.5%. while there are also students who their backgrounds are not sufficient in English language, those students take 27.5%. In addition, there are also participants with 25% of the terminologies in their background in English. Moreover, just 2.5% of the participants take place in this figure, those with low percentage do not have enough vocabulary in their English background. So, this figure divided into students with good background, students with fair background and students with weak background of English in computer science.

Table3. 7/ Comprehending technical texts and academic papers in English.

Element	Number	Percentage
Not at all	1	2.5%
Not very much	10	25.0%
Somewhat	16	40.0%
Very much	10	25.0%
Extremely	3	7.5%
Total	40	100%

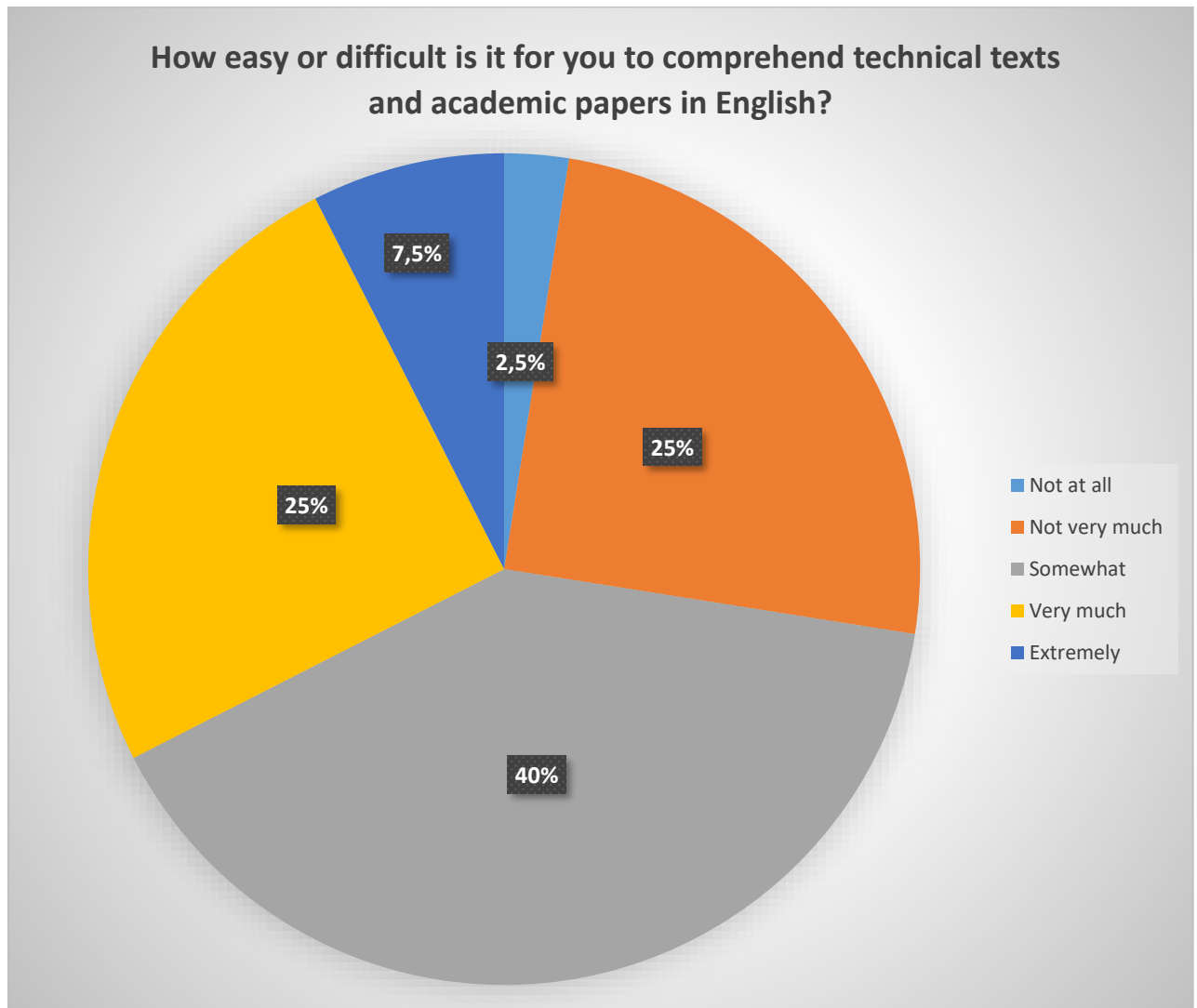


Figure3. 7 demonstrate the Comprehending technical texts and academic papers in English.

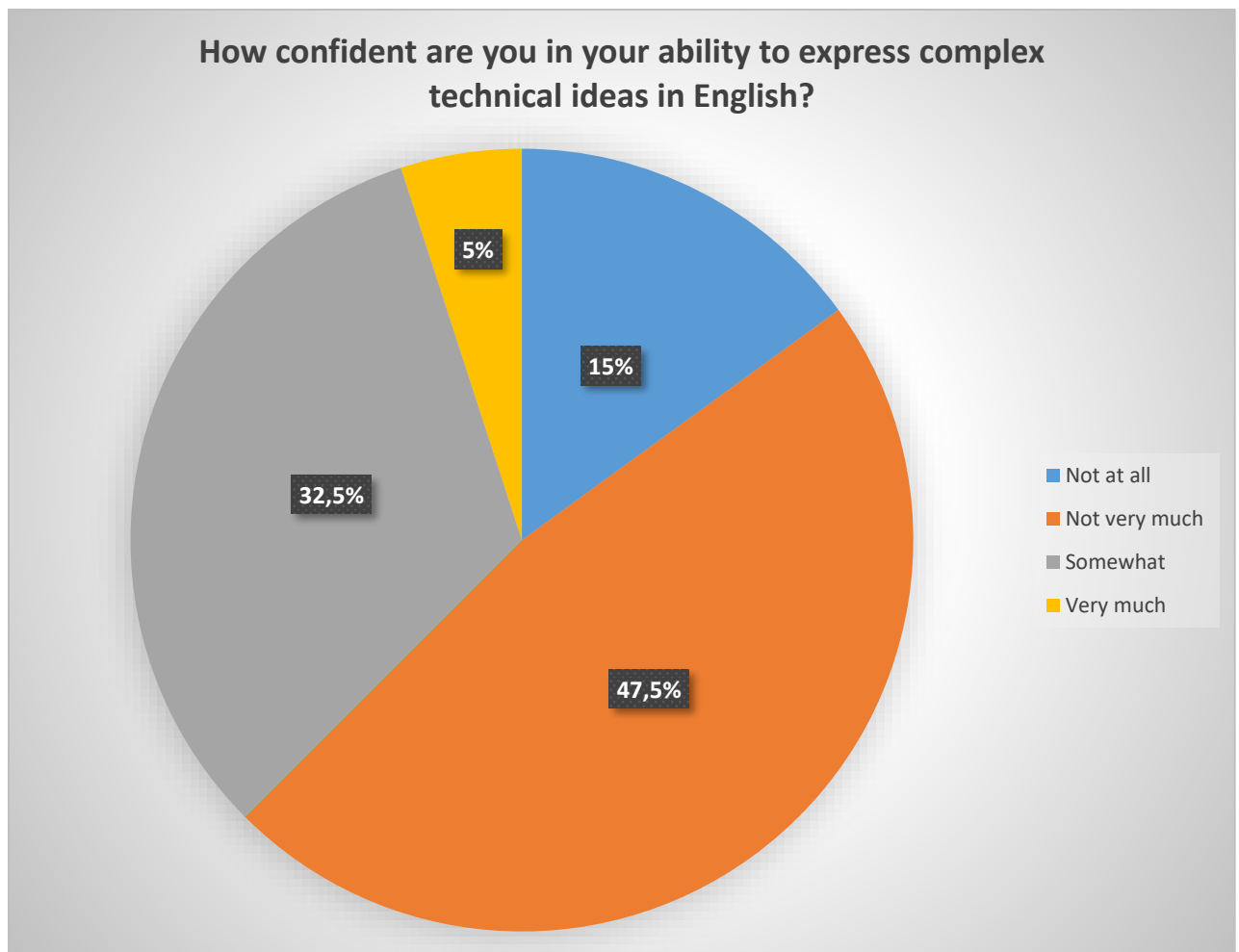
This figure explains the majority of respondents 40% feel Somewhat about the topic, indicating a moderate level of impact or agreement. A significant portion 25% feel Not very much and very much, suggesting polarized views. A small percentage 2.5% feel Not at all, while 7.5% feel Extremely, indicating strong opinions at both ends of the spectrum. Overall, the responses suggest a mix of opinions, with a leaning towards moderate impact or agreement Somewhat.

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This grouping suggests that the majority of respondents 72.5% have some level of impact or agreement (moderate to high), while 27.5% have low impact or agreement.

Table3. 8. The capacity of expressing complex technical ideas in English.

Element	Number	Percentage
Not at all	6	15%
Not very much	19	47.5%
Somewhat	13	32.5%
Very much	2	5.0%
Total	40	100%



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Figure3. 8 exhibit the capacity of expressing complex technical ideas in English

This figure investigates and show that big percentage of this question with 47.5% have the capability to give their ideas and technical thoughts without hesitation. While there are also students with 32.5% who can express their ideas in English. However, just small percentage of the students with 15% and others with 5% who cannot give their ideas and thoughts in English in the computer science field. So we observe that expressing thoughts and ideas in English in the computer science field using specific technical words and terms is not that easy for every student.

Section three: Certain academic challenges due the English language.

Table3. 9/ Following lectures and tutorials in English as stated by the students.

Element	Number	Percentage
Not at all	3	7.5%
Not very much	12	30.0%
Somewhat	13	32.5%
Very much	10	25.0%
Extremely	2	5.0%
Total	40	100%

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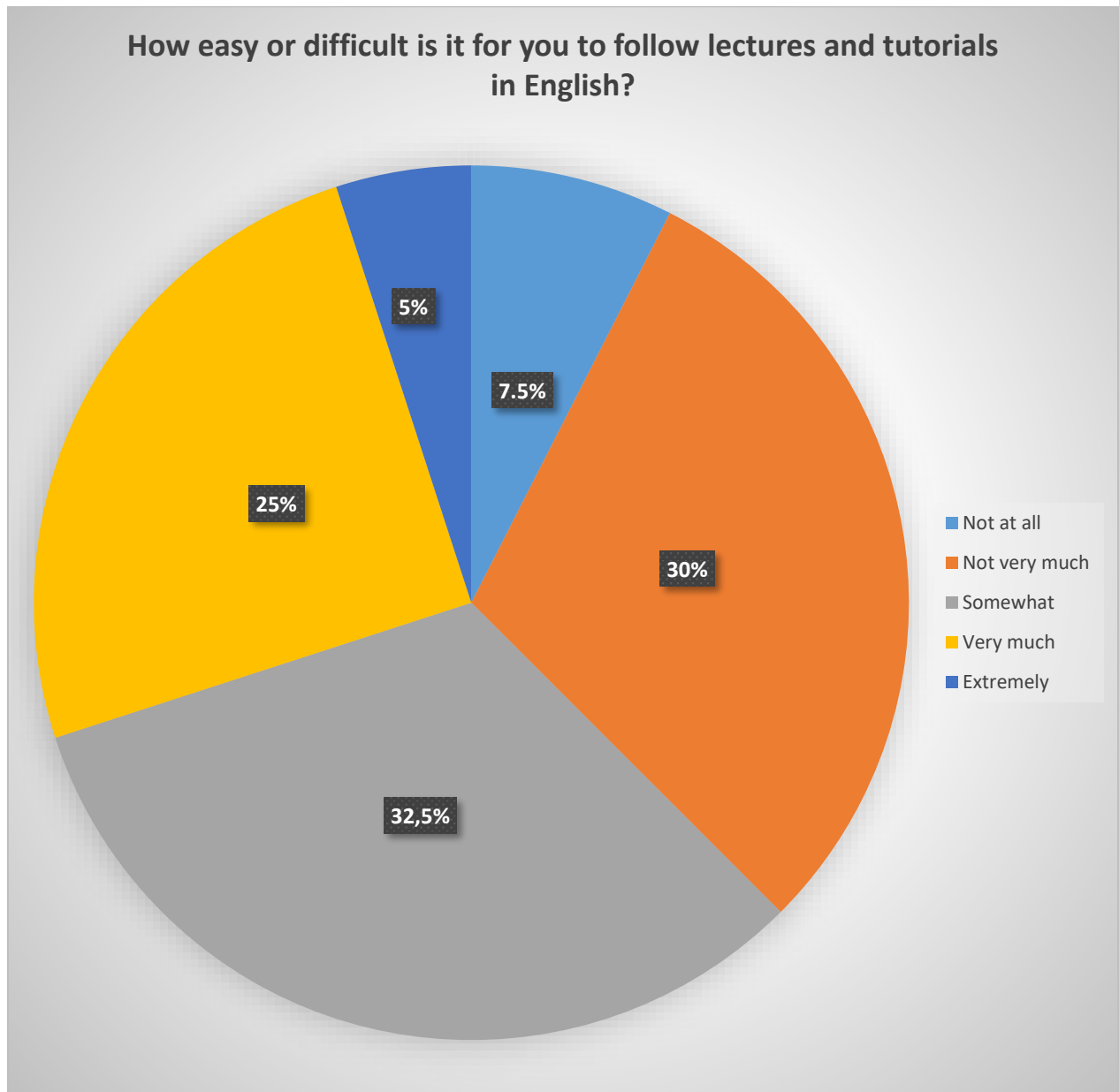


Figure 3.9 demonstrate students' following the lectures and tutorials in English classroom.

According to the table and the figure 9, the majority of respondents 32.5% feel Somewhat, indicating a moderate level of ease or agreement which mean the learners are concentrating while the teacher' explanation. In addition, a significant portion 30% feel Not very much, suggesting some difficulty or limitations which mean that they lose their focus easily or maybe they cannot understand. Moreover, 25% feel Very much, indicating a strong positive response. Those students have completely concentrated in the classroom.

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A small percentage 7.5% feel Not at all, while 5% feel Extremely, showing strong opinions at both ends. Overall, the responses indicate a mix of experiences, with a leaning towards moderate ease or some challenges.

Table3. 10. Student's capability in writing assignments and reports in English.

Element	Number	Percentage
Not at all	5	12.5%
Not very much	9	22.5%
Somewhat	19	47.5%
Very much	6	15.0%
Extremely	1	2.5%
Total	40	100%

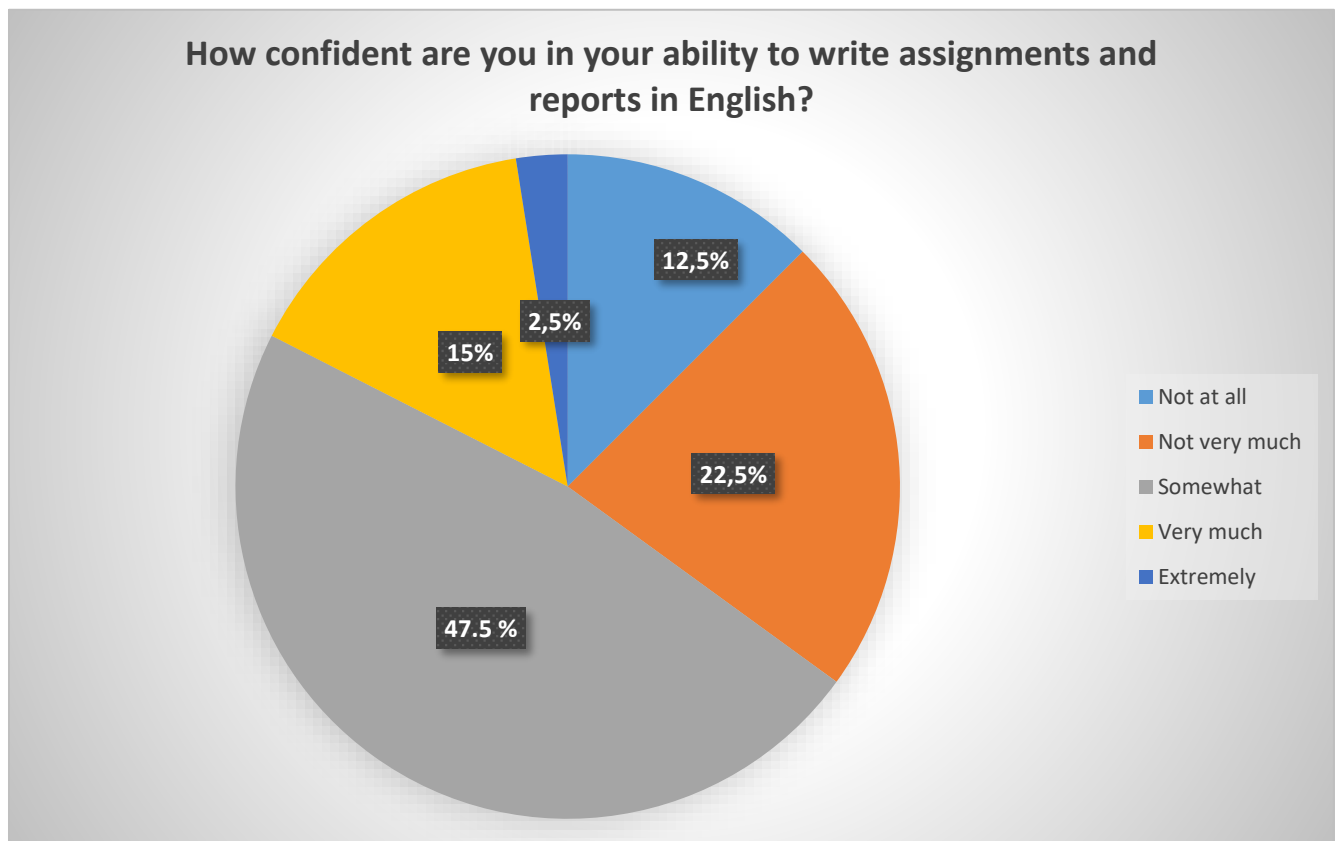


Figure3. 10 present students' capability in writing assignments and reports in English.

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Due to the tables and the pie chart that show the participant's capacity of expressing their thoughts and perspectives in writing assignments and reports according to the teachers' instructions. Nearly half of respondents 47.5% report a moderate level of confidence, selecting somewhat, those participants maybe have an obstacle in writing or the way of writing. Over a third 35% express limited confidence, with 22.5% saying Not very much and 12.5% saying Not at all. This kind of students perhaps cannot understand the new technical words that using in the computer science field

A smaller group 17.5% exhibit strong confidence, with 15% responding Very much and 2.5% responding Extremely. This percentage show that there are some students who do not have problems in writing assignments and reports whether in English or in their native language, they are confident students who have a skillful way of writing in English. This suggests a trend towards moderate confidence, with a notable proportion of respondents.

Table3. 11. The struggling of learners to understand course materials in English.

Element	Number	Percentage
Not at all	4	10.0%
Not very much	15	37.5%
Somewhat	11	27.5%
Very much	7	17.5%
Extremely	3	7.5%
Total	40	100%

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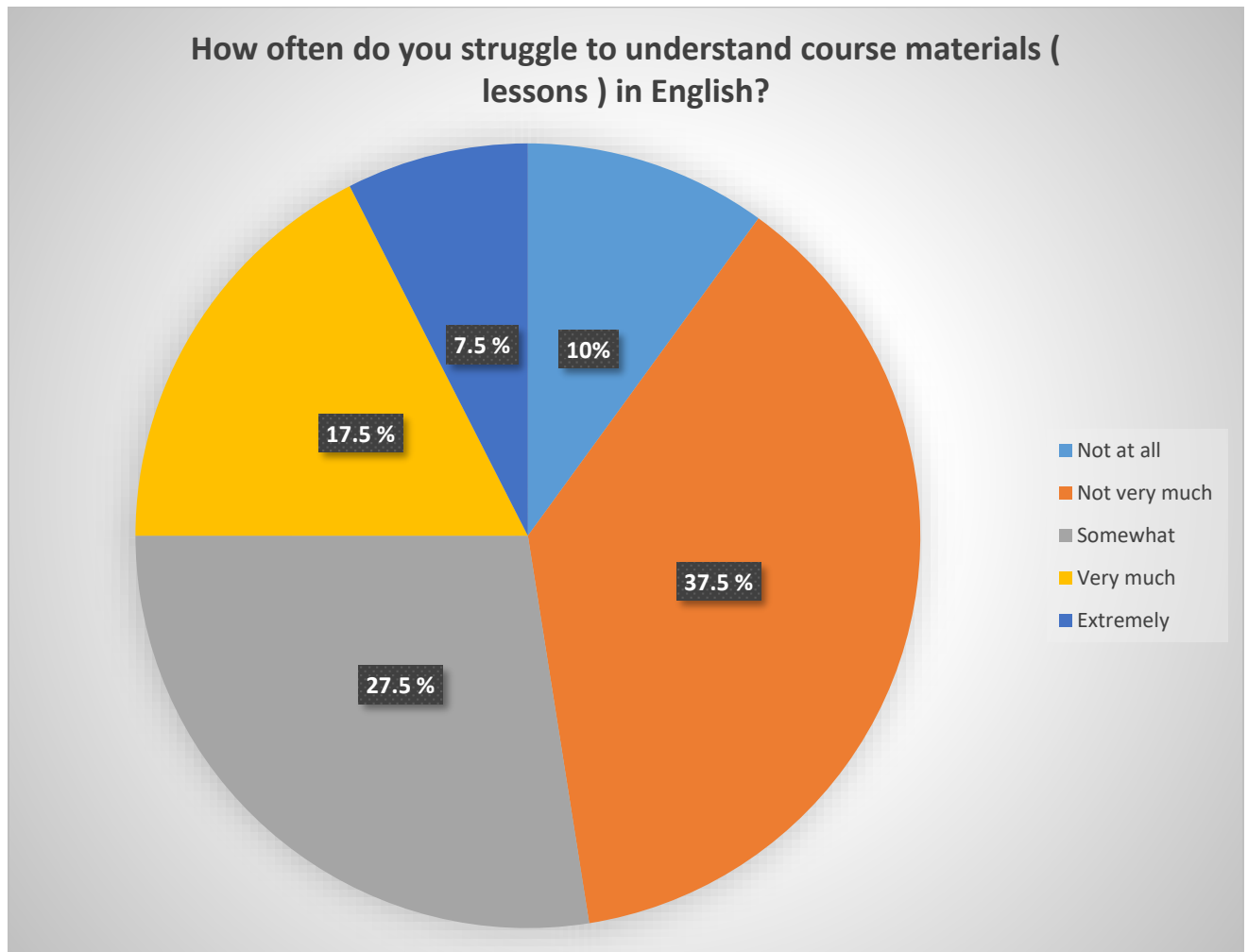


Figure3. 11 illustrate struggling of the participants in understanding and comprehend the new course materials in English.

According to the giving percentage of the figure 11, we noticed that the majority of the participants choose not very much with 37.5%, that because they do not familiar with this new update for their course materials, they used to learn in their mother tongue. Moreover, participants with 27.5% pick somewhat, those participants perhaps had a previous English language experiences or courses before so they do not have any problem with that. In addition to students with percentage of 7.5% and 10% those students have big problem in comprehend the course and zero background of the vocabulary that may help them understand, mainly when encountering specialized terminologies or complex concepts. While also there is students with percentage of 17.5 who choose very much as a description of their understanding easily the new

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course materials. In conclusion, there varying proportions of the students' perspectives on how can they engage and comprehend the new course materials in English.

Table3. 12. Learner's participating in classroom discussions and asking questions in English.

Element	Number	Percentage
Not at all	8	20.0%
Not very much	15	37.5%
Somewhat	7	17.5%
Very much	10	25.0%
Total	40	100%

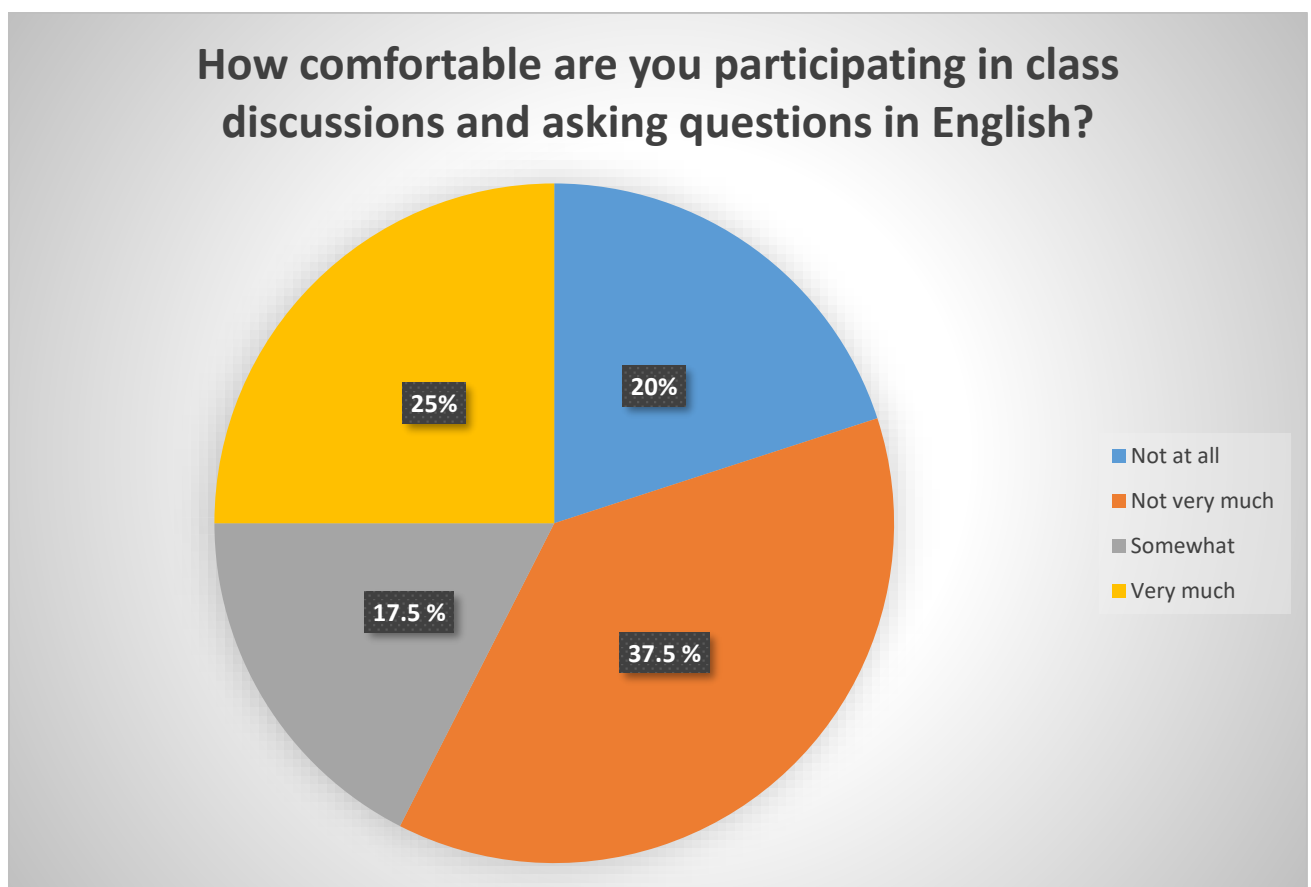


Figure3. 12 showcase the participating of the learners in the classroom discussions and ask questions in English.

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Figure 12 reveal that the students' obstacles that have in the classroom whether it was about the interaction or the participating or the discussion. We noticed that 37.5% of the students and 20% choose not very much, perhaps this have various and multiple reasons, perhaps the hesitation arises when using complex vocabulary and expressions and they do not yet familiar with the new technical words used in English. While there is good percentage of students who choose somewhat with 17.5% and 25% choose very much, this kind of students maybe they had previous studies or experiences or even more they focus with the teachers in the classroom and get sufficient comprehension for his/ her instructions. Overall, the participating in the classroom have multiple and various reasons it can be shyness or hesitation of being the response wrong or be the classroom environment judgmental or not safe to express the free thoughts, ideas and opinions.

Table3. 13. Learners ' understanding and completing assignments and projects that require technical English.

Element	Number	Percentage
Not at all	4	10.0%
Not very much	9	22.5%
Somewhat	16	40%
Very much	10	25.0%
Extremely	1	2.5%
Total	40	100%

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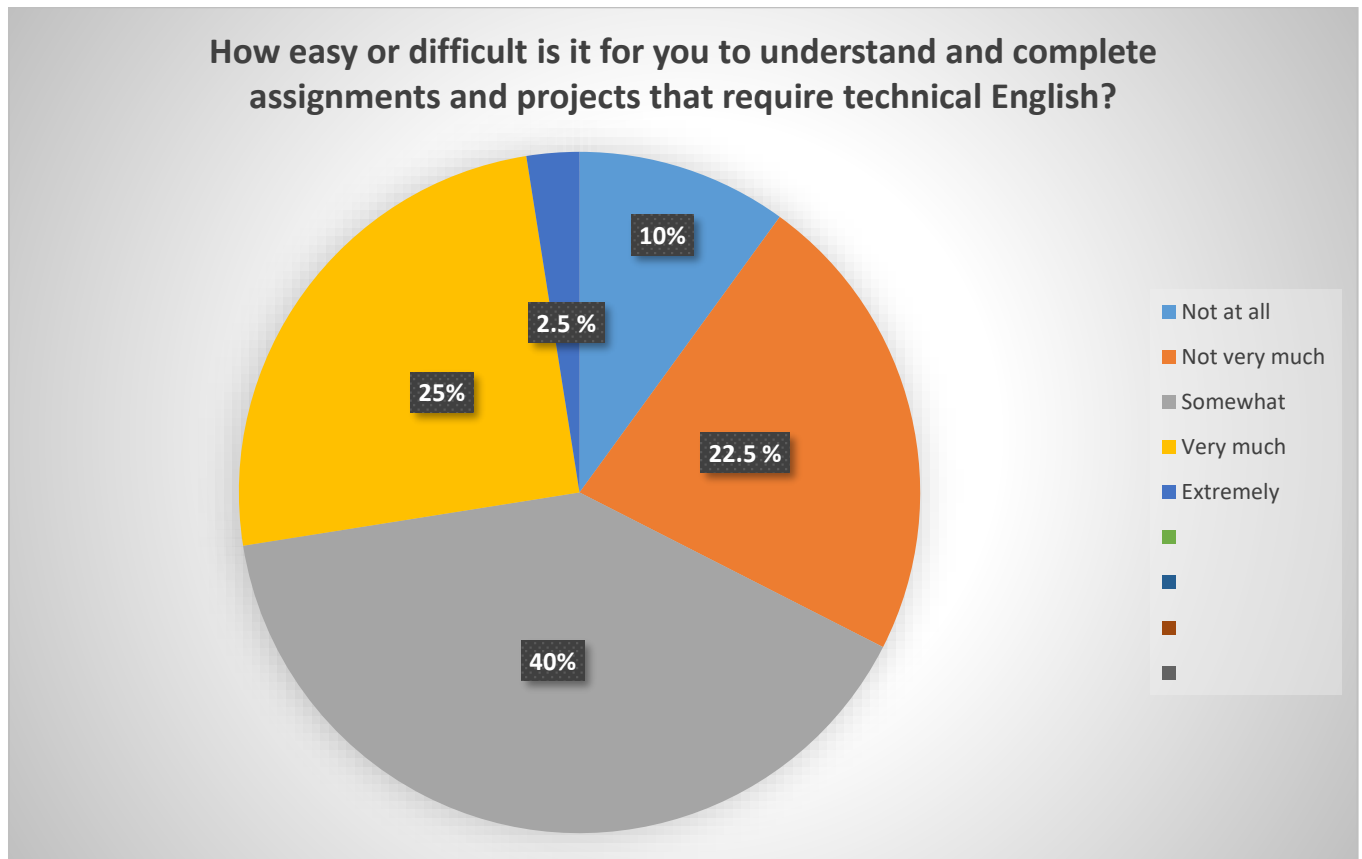


Figure3. 13 exhibit the learners understanding and completing assignments and projects that require technical English words.

Figure 13 represent the students' perspectives with the their completing their assignments and workshops, we notice that a notable portion with 40 % say that somewhat they can comprehend the workshops and somewhat can finish assignments and tasks. While 22.5% of students choose not very much have understanding on the tutorials to accomplish the assignments and the project. Moreover, there is students who choose the very much choice to express their ability of understanding and completing assignments and projects that require technical English words. Another portion of 2.5% said that not at all have the capacity of finish their homework and assignments perhaps of the explanation of the teachers or cannot understand the new additional language. To conclude, the data indicates a mix of abilities, with room for support or improvement, especially for those struggling.

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Section four: Some cognitive obstacles that impact the students.

Table3. 14. Students ' processing complex technical information in English.

Element	Number	Percentage
Not at all	4	10.0%
Not very much	16	40.0%
Somewhat	15	37.5%
Very much	5	12.5%
Total	40	100%

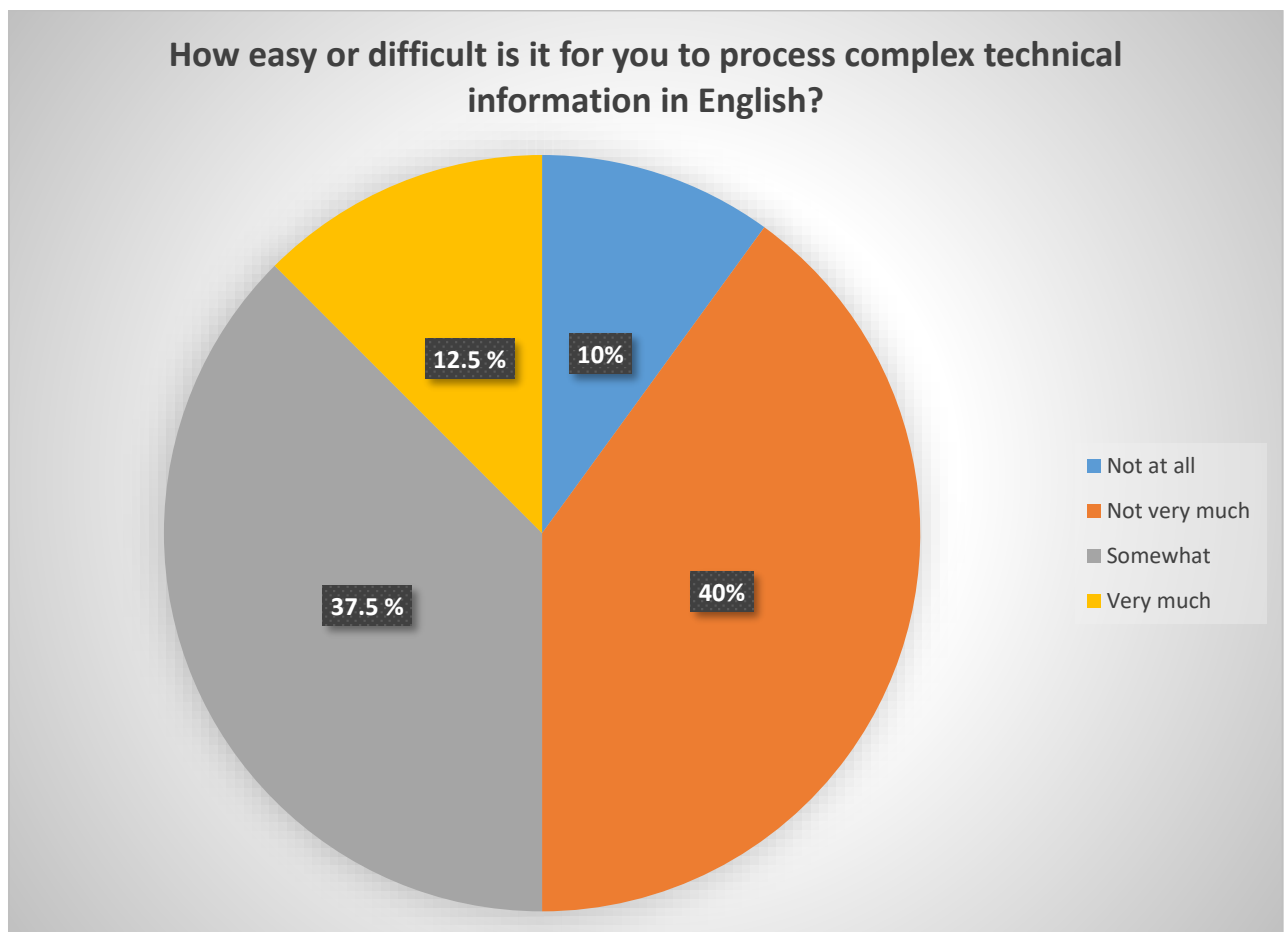


Figure3. 14 reveal the processing of students in complex technical information in English.

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Figure 14 present how can the learners process the complex technical information and resources in English language. Students with 40% and 37% portions have less capability to process in the technical vocabulary and information in English, it seems somewhat easy for them to get easily managing in this kind of tasks. A very much portion take place in this pie chart with 12.5%, this kind of students can deal with the complex technical information that used in the classroom while learning in the computer science field. Weak and poor portion with 10% of the students do not have at all the capacity of handling such king of tasks , whether in the classroom or outside the university walls , maybe because multiple and various reasons like the difficulty of the new technical words or the absence of the background of the English language. The data indicates a need for support or strategies to improve processing and comprehension of complex technical information in English.

Table3. 15. The ability of the students in solving problems and think critically in English language.

Element	Number	Percentage
Not at all	10	25.0%
Not very much	9	22.5%
Somewhat	13	32.5%
Very much	4	10.0%
Extremely	4	10.0%
Total	40	100%

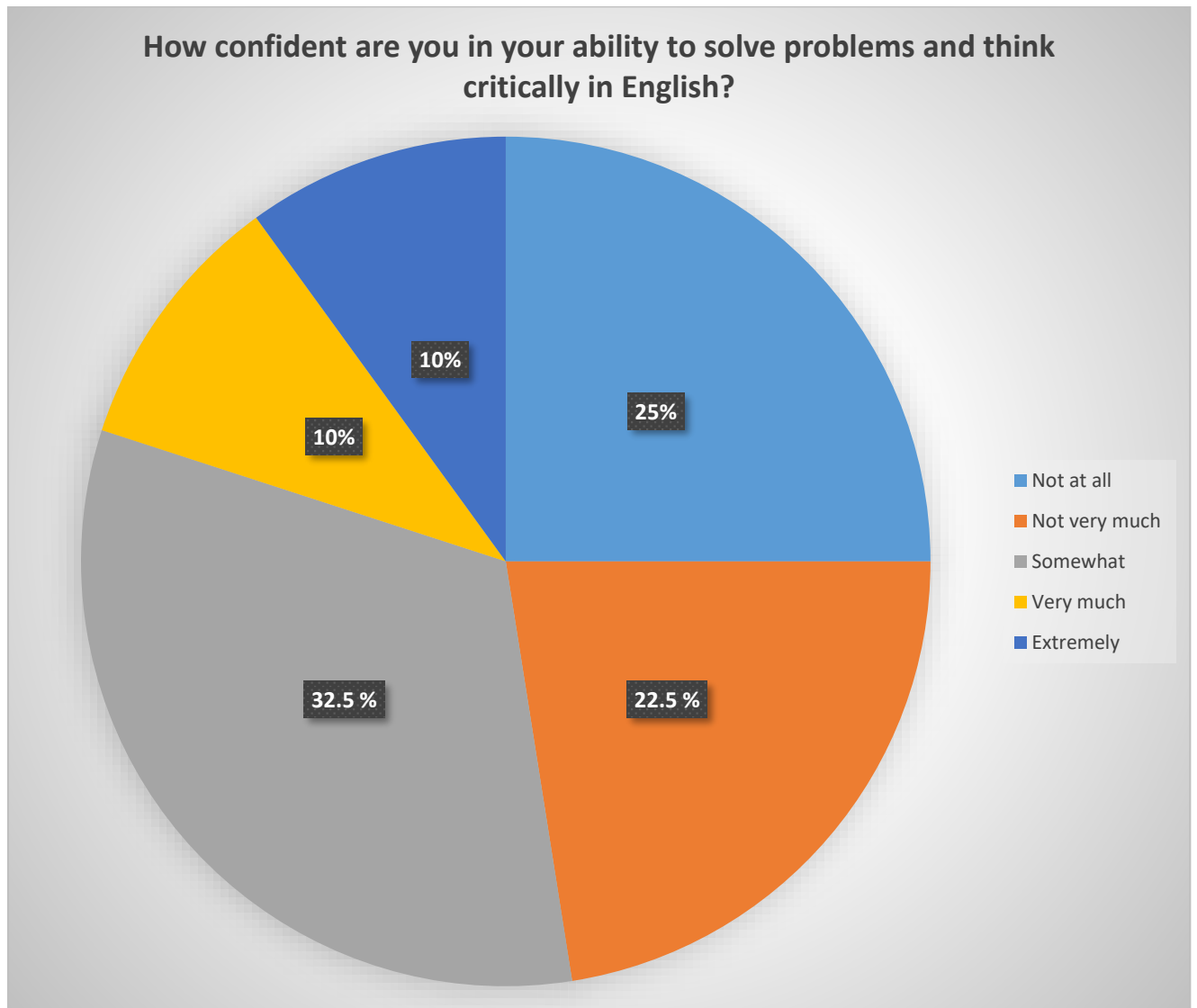


Figure 3.15 demonstrate the students' capacity in solving problems and think critically in English language.

According to the figure and the table, we noticed varying proportions of the capability of the participants in the problems' solving like tasks or home works and use their thoughts and perspectives in thinking critically and with the flow of the computer science thinking. We have the biggest percentage with 32.5% of the participants who picked somewhat choice, this can have many reasons maybe because of their previous experiences in solving tasks and home works in English language, maybe in the high school or other job experience however the portion is not much bigger certainly because of the critical thinking, students can not until this day to think critically because the English language is not their first language and it is new for

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their field. Moreover, 22.5% and 25% of the participants choose the not at all and not very much, those kinds of students cannot think critically or even solve their workshops in English because of their poor background of English. The rest of the portions are weak with just 10% of the participants that do not have problems in thinking critically.

Table3. 16. Participants ' struggling in comprehend abstract concepts in English.

Element	Number	Percentage
Not at all	8	20.0%
Not very much	10	25.0%
Somewhat	10	25.0%
Very much	9	22.5%
Extremely	3	7.5%
Total	40	100%

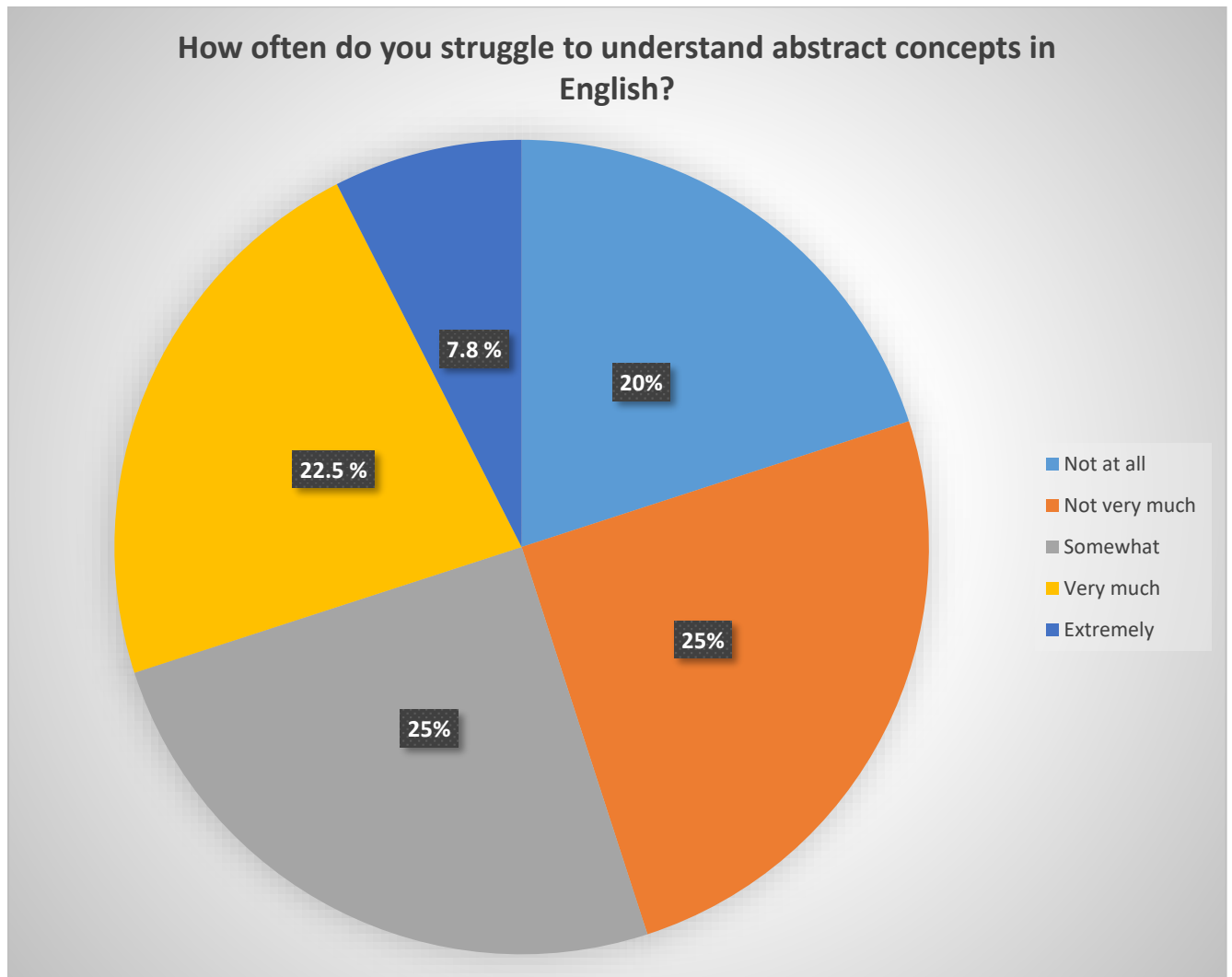


Figure3. 16 present the struggling of the students in understanding abstract concepts in English language.

According to figure 16 which explains and investigate how students suffer in understanding the new concepts that are in English language. significant portion struggle with comprehending abstract concepts, with 20% saying not at all and 25% saying Not very much. Those participants are having the obstacles in understanding and make the total comprehension of the course materials. In addition to quarter 25% find it somewhat manageable, selecting Somewhat because they know that their capacity can help them to reach at least to understand some the giving tasks and terms. additionally , there are students feel capable, with 22.5% responding Very much and 7.5% responding Extremely , perhaps their interests in English language make

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them understand the new technical concepts and their previous experiences and rich background make them comprehend. The data indicates a need for support or strategies to improve comprehension of abstract concepts in English, especially for those struggling.

Table3. 17. The language barriers that hinder the ability to fully understanding technical concepts in English.

Element	Number	Percentage
Not at all	6	15.0%
Not very much	14	35.0%
Somewhat	9	22.5%
Very much	7	17.5%
Extremely	4	10.0%
Total	40	100%

English as Medium of Instruction

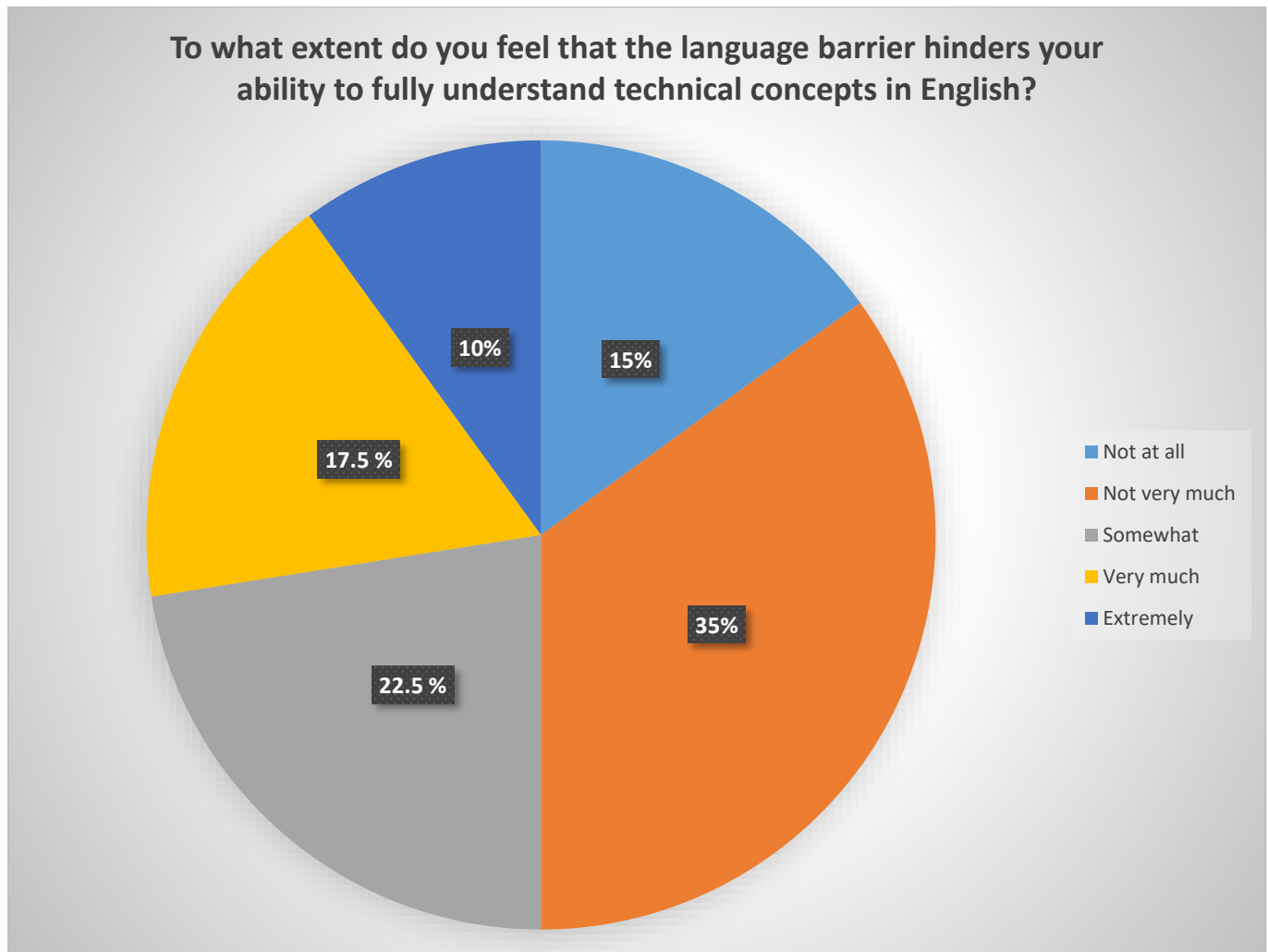


Figure3. 17 show the language barriers of the students that hinder the ability to fully understanding the technical concepts in English.

This figure is illustrating the drawbacks of the language that the students have that limit their capacity in understanding the new used technical concepts in English language. According to the figure, big percentage with 35% said that not very much they have problems in understanding the new technical words, which ensure that the students can understand the new technical words but they not familiar with them to reach their fully comprehension of the coursework. However, other students with 17.5% have problems in understanding the new technical concepts in their field. 22.5% pick somewhat can understand the course materials but not fully comprehension. The last portion with 15% said that do not at all have certain difficulties in making or comprehend technical texts and tasks in English language.

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Table3. 18. Identifying and understanding the technical vocabulary specific in the field of computer science: between easy to difficult.

Element	Number	Percentage
Not at all	1	2.5%
Not very much	20	50.0%
Somewhat	19	47.5%
Total	40	100%

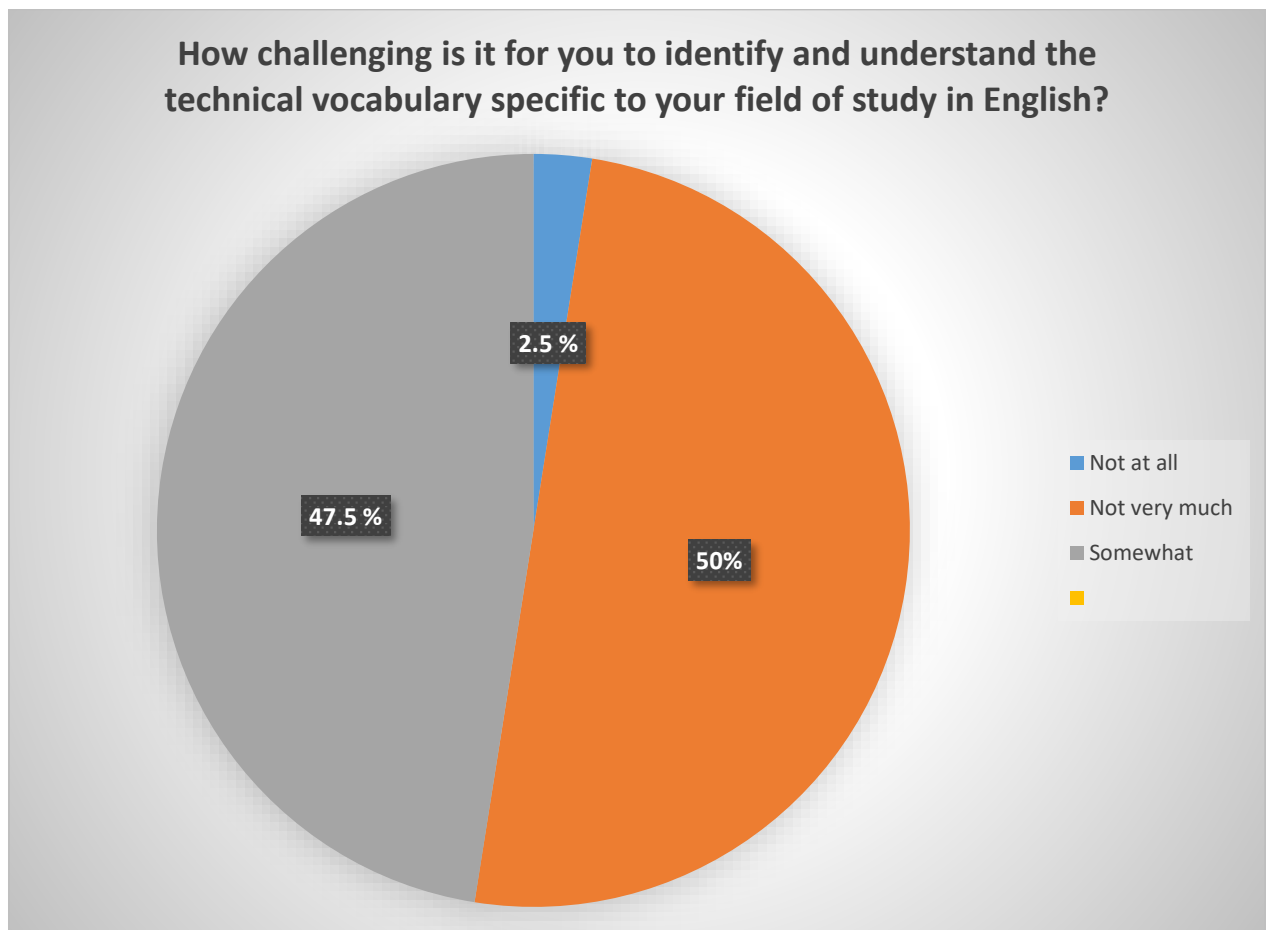


Figure3. 18 identify the understanding of the new English technical concepts which are related in computer science field.

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This figure present to what degree can the learners understand the new technical concepts which are related in computer science field, are this Challenging for them or not. Half of the participants with 50% choose not very much they have obstacles in understanding or deal with the new technical concepts in English language. While there are 47.5% of the participants pick somewhat as description of their understanding the used English language words. Moreover, just 2.5% of the participants who said and choose not at all they comprehend what the teacher say and demand from them to do or even their understanding the technical vocabulary and information in English language.

Section Five: Socio- Emotional Challenges.

Table 3.19. Measuring the anxiety and stressed of the participants about the English language proficiency.

Element	Number	Percentage
Not at all	9	22.5%
Not very much	11	27.5%
Somewhat	12	30.0%
Very much	5	12.5%
Extremely	3	7.5%
Total	40	100%

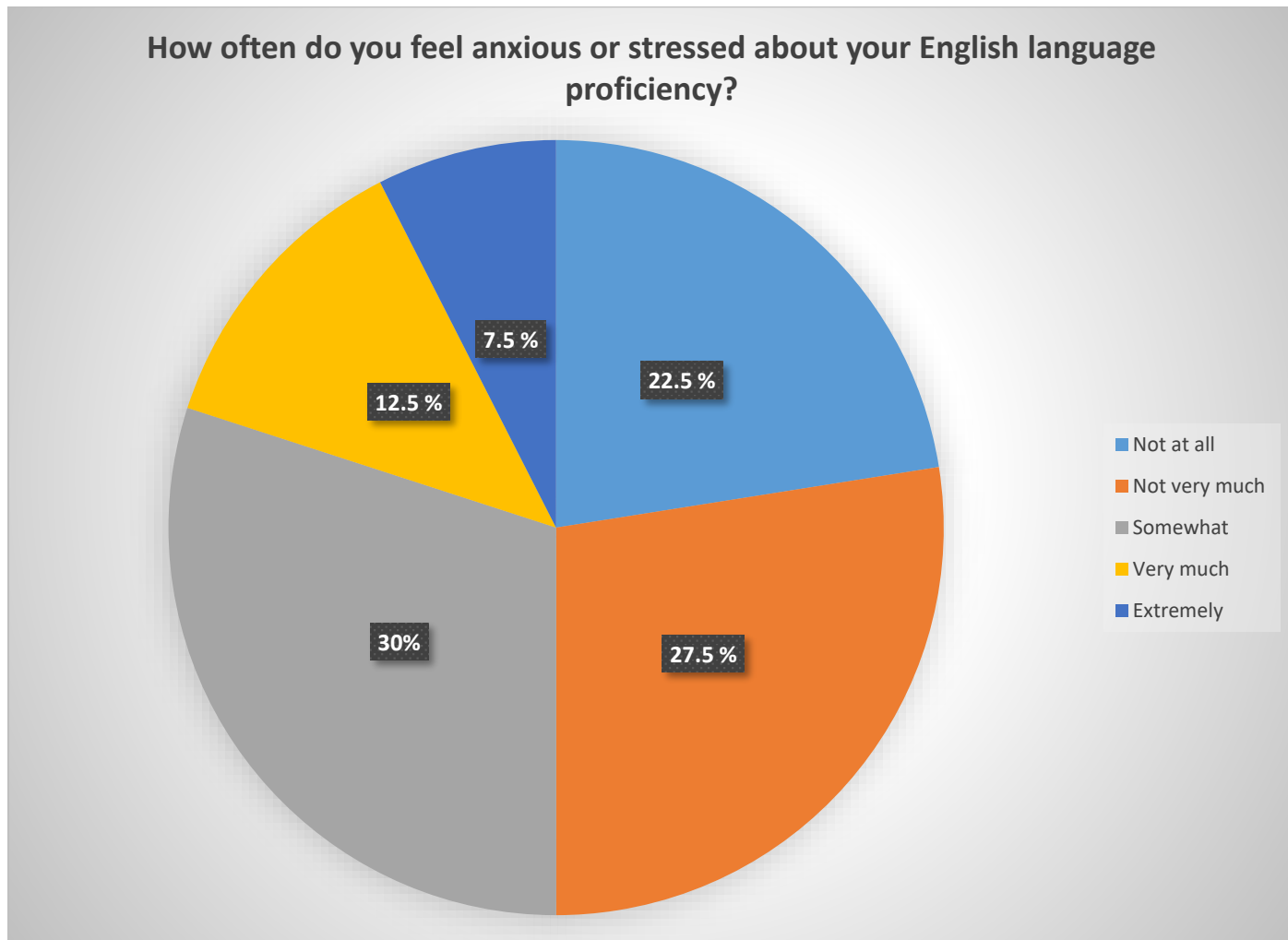


Figure3. 19 exhibit the anxiety and stress measurements of the students in performance of the English language.

According to the figure which measure the students ' performance in the classroom and the additional factors that impact their behaviors like the anxiety and stress, the majority of the participants with 30% agree that the anxiety and stress impact their performance in the classroom which they can do more efforts in the classroom but due to the stress and feeling uncomfortable make their performance backwards. Moreover 27.5% in addition to 22.5% of the students say not very much and not at all the anxiety and stress affect their ability to perform their thoughts and beliefs in the classroom, they can control themselves and maybe follow certain strategies that can help them dealing in such situations or they have and familiar with

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the performance in the classroom. Another different participant chooses 12.5 and 7.5% which they extremely shy and very much cannot perform in the classroom because of the anxiety and stress. These participants are in every class and fields, there are students who can control themselves to give the best of their selves, while others cannot even make one correct sentence because of the anxiety and stress.

Table3. 20/ The students' interaction ' ability in the classroom with colleagues.

Element	Number	Percentage
Not at all	9	22.5%
Not very much	17	42.5%
Somewhat	10	25.0%
Very much	2	5.0%
Extremely	2	5.0%
Total	40	100%

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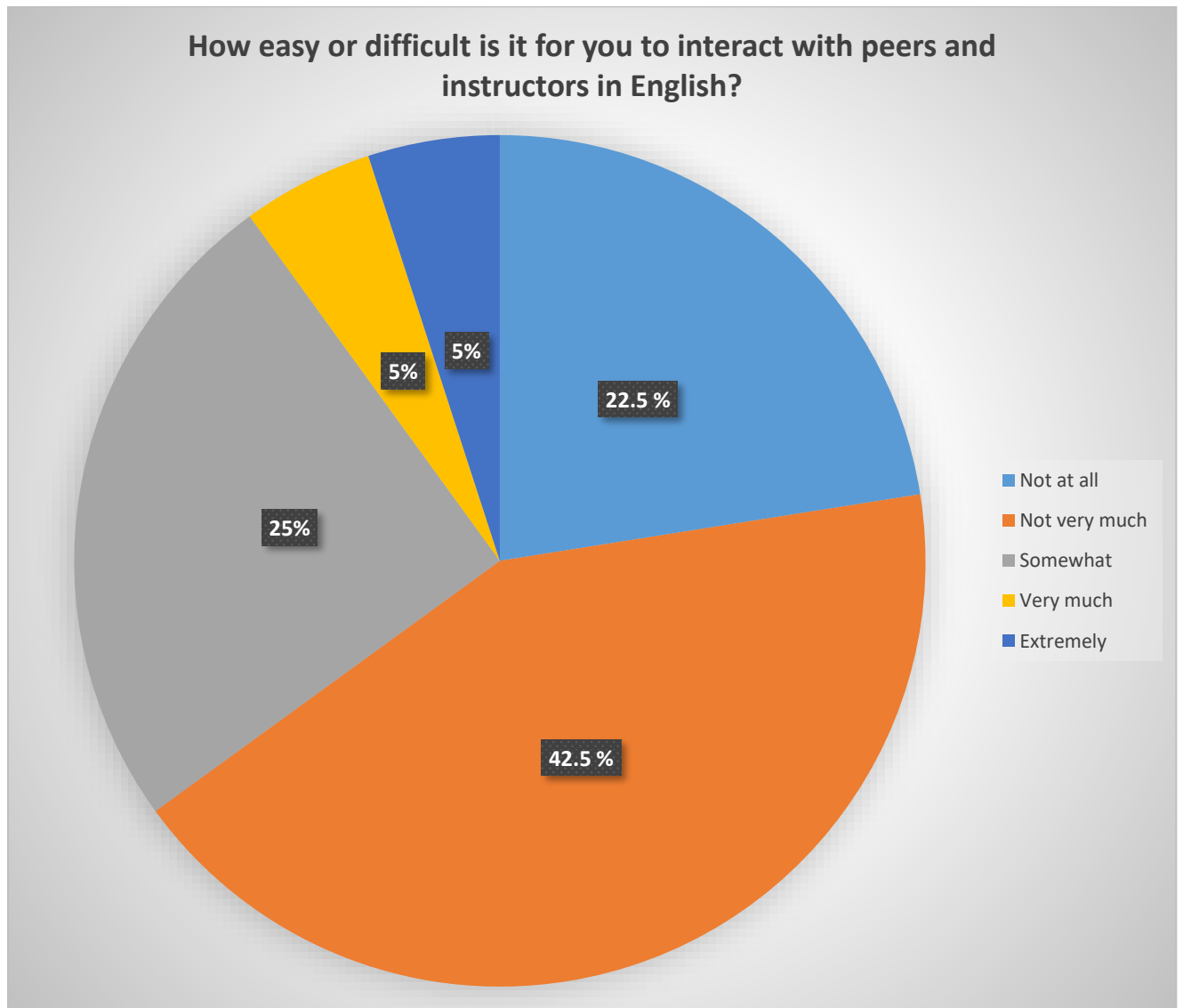


Figure3. 20 reveals to what extent students interact in English language in the classroom with their peers and teachers.

Figure 20 show and witness various perspectives and proportions of the students in the idea of the interaction in the classroom with their colleagues and teachers. What can we conclude in this figure that a great percentage with 42.5% of the students do not interact in English in the classroom whether participating with the teachers or trying to make an English discussion in the classroom. Similar participants with 22.5% said not at all they participating and engage in the classroom atmosphere. In conclusion, not all the participants interact in the classroom whether with the teacher or even with their peers in English language.

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Table3. 21. Evaluating students ' feeling of isolation and exclusion in academic discussion in English.

Element	Number	Percentage
Not at all	9	22.5%
Not very much	14	35.0%
Somewhat	7	17.5%
Very much	6	15.0%
Extremely	4	10.0%
Total	40	100%

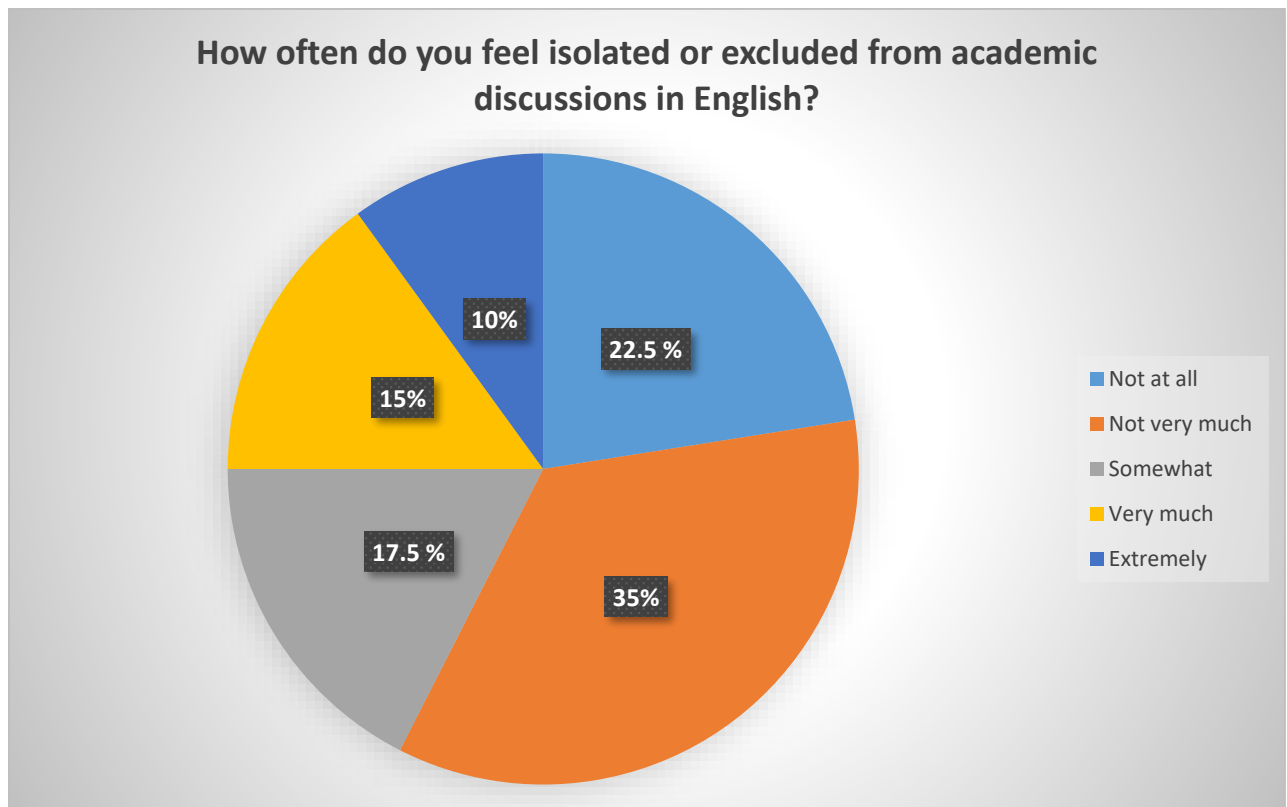


Figure3. 21 show the assessing of the students feeling of isolation and exclusion in academic discussion in English language.

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According to the calculation method that presented in the figure and the table, 35% of the participants choose not very much they have and feel isolated in the classroom discussions in English, they engage in the academic discussion in the classroom but having problem with the terms that used in the computer science field, new technical words and terms used which they are not familiar with them. In addition, there are students with 15% very much have problems and feel isolated in the classroom and academic discussion in the classroom. Those are the big percentages and portions in this figure, the other participants some of them not at all have the feeling of isolation and exclusion, others have the extremely feeling of the exclusion and being far from the classroom atmosphere and discussion . Overall, the figure shows various perspectives and proportions of the participants who declared their opinions and points of view in their feeling of the isolation and exclusion in the classroom academic discussion in English language.

Table3. 22. The English language proficiency that affect the students ' confidence.

Element	Number	Percentage
Not at all	5	12.5%
Not very much	5	12.5%
Somewhat	15	37.5%
Very much	9	22.5%
Extremely	6	15.0%
Total	40	100%

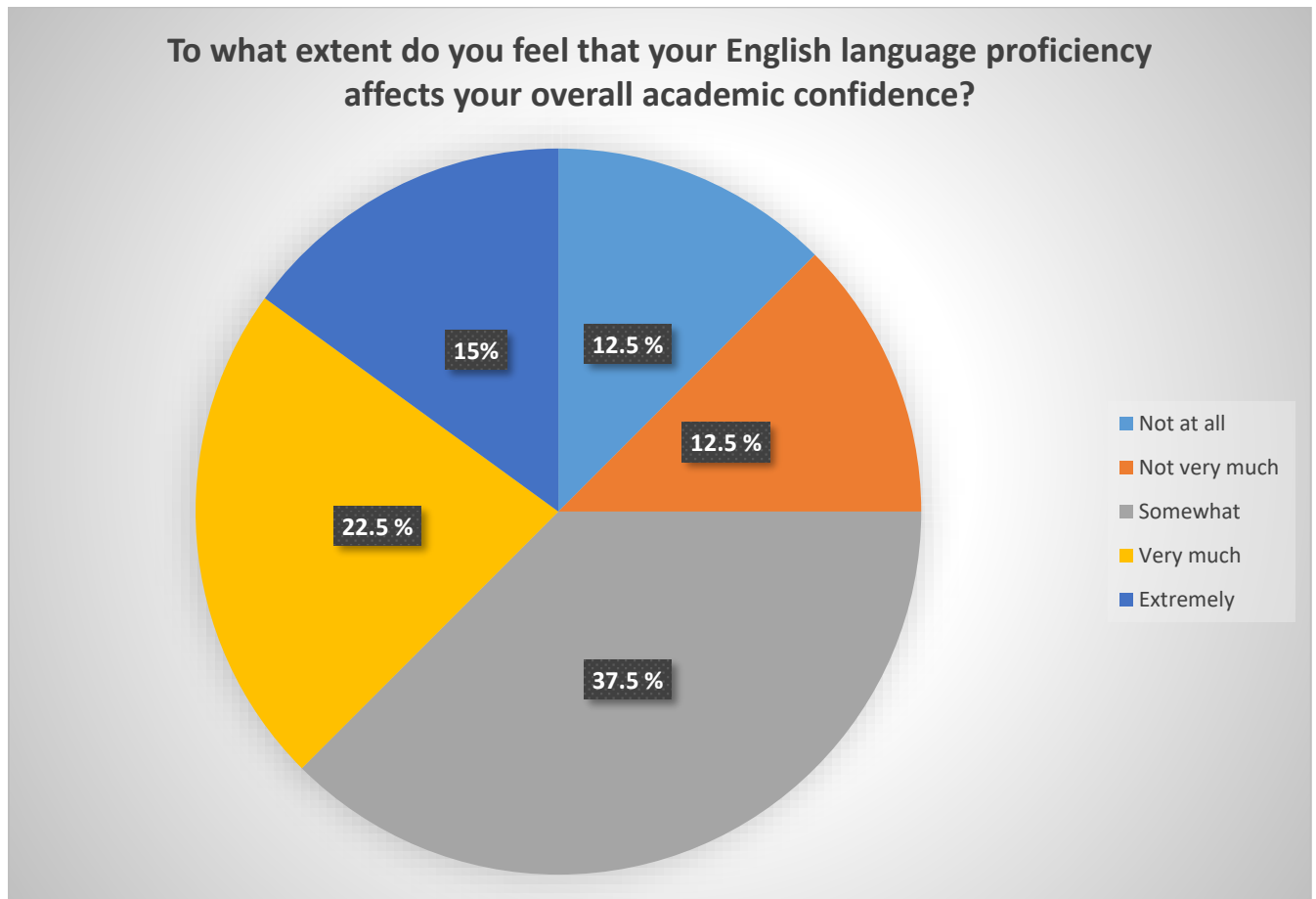


Figure3. 22 exhibit the feeling of the students in English language proficiency and how can affect their academic confidence.

Based on the assessing of the students' perspectives in their feeling of the performance of the English language in the classroom and how can impact their confidence. A big percentages of 37.5% and 22.5% in this pie chart of the students said that somewhat and very much they have this uncomfortable feeling while they perform in the classroom their tasks or presentations . While there are students with 12.5% declare that not at all and not very much they have this fear and unconfident from their English language academic proficiency in the classroom. 15% of the students said that yes they have feeling of their weak and poor English language background can affect their confidence in academic discussion. To conclude, this proportions

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highlights the need for targeted support to enhance English language proficiency and boost students' confidence in academic discussions.

Table3. 23. The feeling of overwhelmed by the demands in studying in English.

Element	Number	Percentage
Not at all	10	25.0%
Not very much	8	20.0%
Somewhat	12	30.0%
Very much	8	20.0%
Extremely	2	5.0%
Total	40	100%

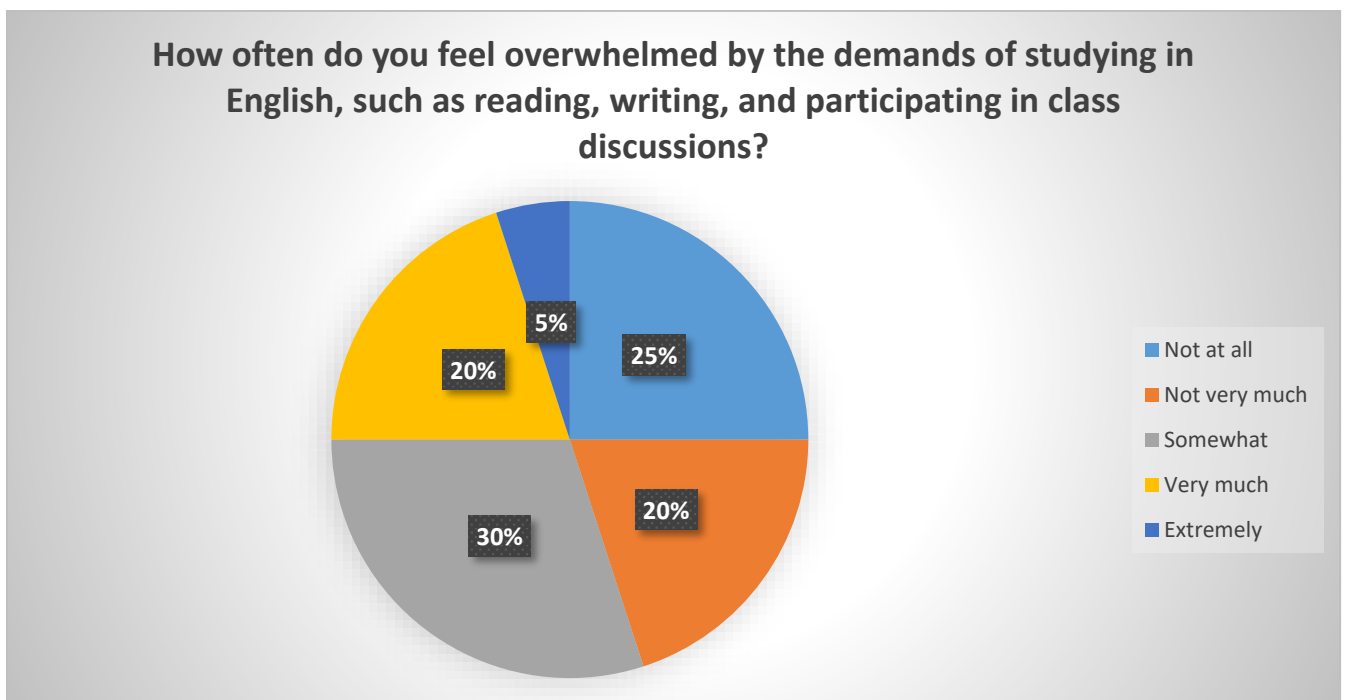


Figure 3.23 present the feeling of overwhelmed in the demands of studying in English like reading, writing and participating in class discussions.

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According to the figure and the table, various perspectives and proportions show how the feeling of the students of stressed in demands of studying in English like reading, writing and participating in classroom discussions. Low feeling of being overwhelmed 25% and 20% report feeling little to no overwhelm, with 25% saying Not at all and 20% saying Not very much. This student do not have the feeling of overwhelmed in the classroom or in the participating in the class discussions. Moreover, moderate feeling of being overwhelmed 30% of respondents report feeling somewhat overwhelmed, these students have somewhat the fear of the stress and uncomfortable in the classroom discussion. In addition, high feeling of being overwhelmed respondents 20% and 5% report feeling significantly overwhelmed, with 20% saying Very much and 5% saying Extremely.

Section Six : Affordances (Benefits) .

Table3. 24. The affection of English on the students ' career opportunities.

Element	Number	Percentage
Not at all	13	32.5%
Not very much	3	7.5%
Somewhat	18	45.0%
Very much	2	5.0%
Extremely	4	10.0%
Total	40	100%

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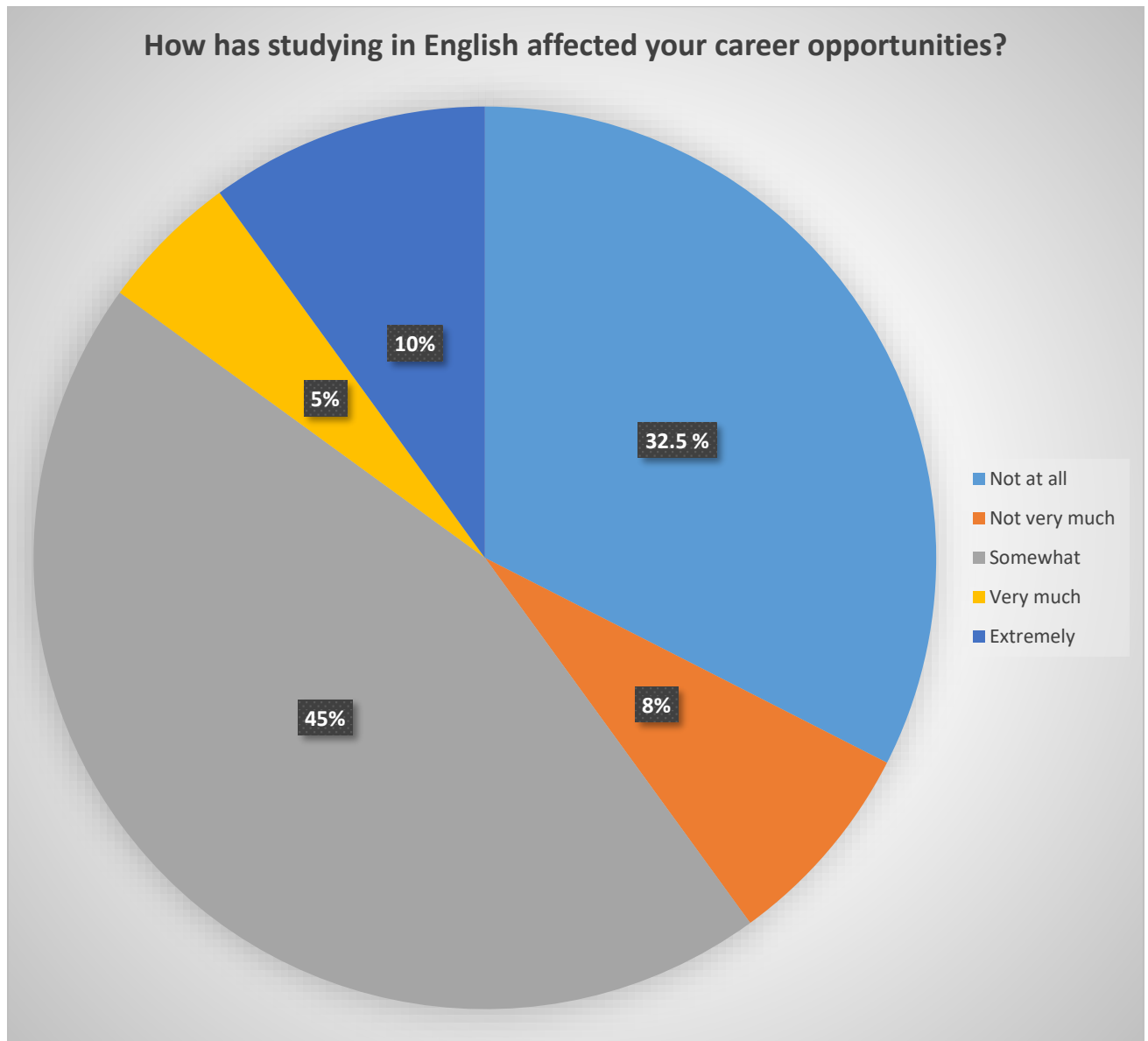


Figure3. 24 show the affection of English language on the students ' career opportunities.

Back to the figure and the table, multiple proportions of the participants who said that the English has affected the students' career and future directions, 45% of the students said that somewhat the English impact their careers, maybe the impact is for the students who are the workers and the ones who get a job and the English help them a lot like the participants with the 5% who said very much they have the affection. While 32.5% of the students feel Not very much they feel the English have impact on their careers maybe because the majority of them

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are still students in the university and do not need it for instance. These findings suggest that English proficiency and its affecting can have varying degrees of influence on students' career prospects, particularly for those already in the workforce.

Table3. 25. The English improvements in critical thinking and problem solving.

Element	Number	Percentage
Not at all	4	10.0%
Not very much	9	22.5%
Somewhat	13	32.5%
Very much	10	25.0%
Extremely	4	10.0%
Total	40	100%

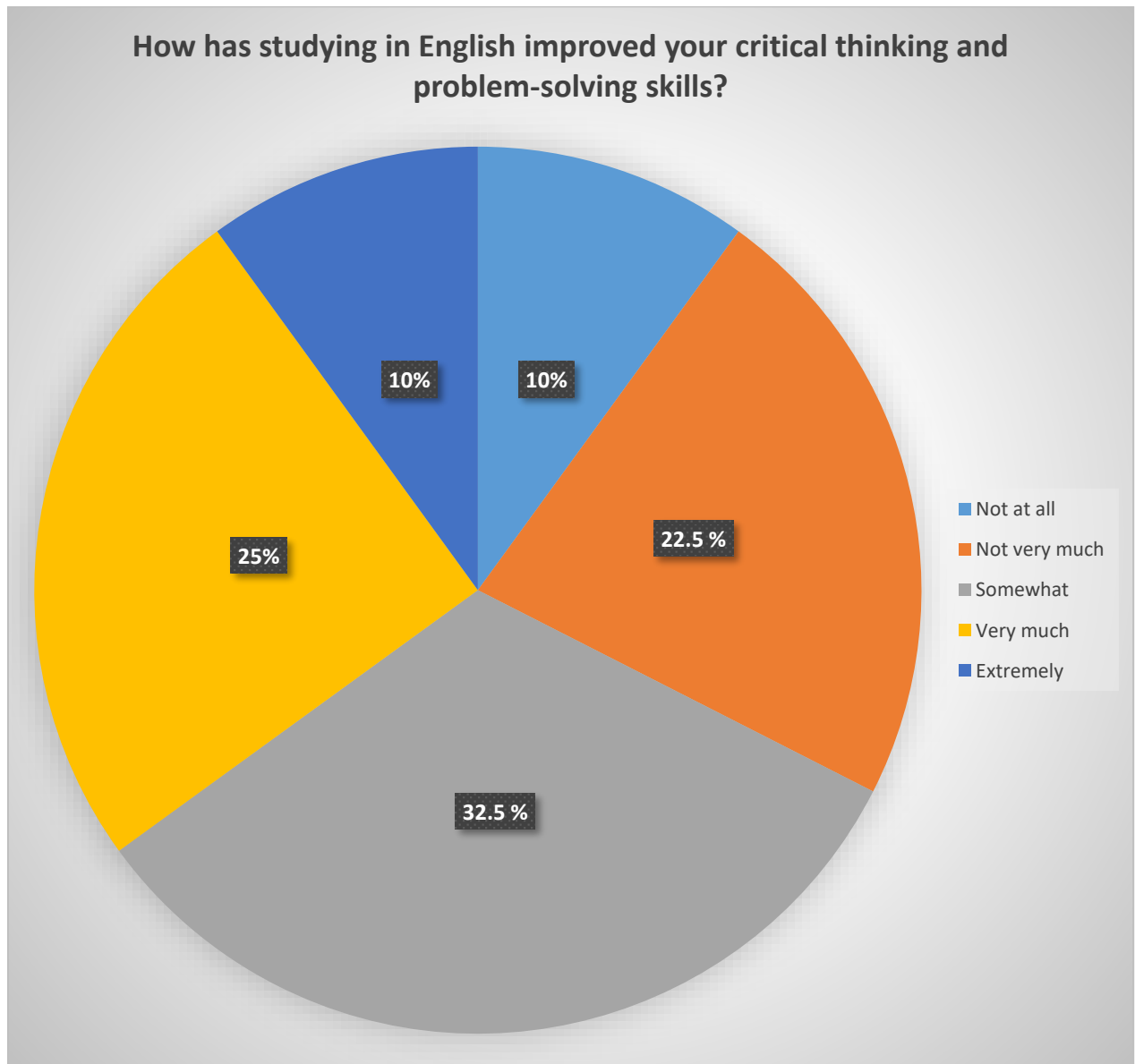


Figure3. 25. show the English improvements in students ' critical thinking and problem solving in the classroom.

According to the figure 24 which present and investigate the students ' improvements in the critical thinking and problem solving in the classroom, noticeable proportions of big and low percentages. 32.5% of the participants said that somewhat the English improve their critical thinking and problem solving of their coursework. However, 22.5% declare that not very much they feel the English improve and make different in their level. 25% of the participants said that very much the English language make difference in their critical thinking and problem solving.

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These findings suggest that English language instruction can play a significant role in developing students' critical thinking and problem-solving skills, but its impact may vary depending on individual students' experiences and perceptions.

Table3. 26. The English Study that broadened the students ' cultural understanding and perspectives.

Element	Number	Percentage
Not at all	2	5.0%
Not very much	14	35.0%
Somewhat	10	25.0%
Very much	9	22.5%
Extremely	5	12.5%
Total	40	100%

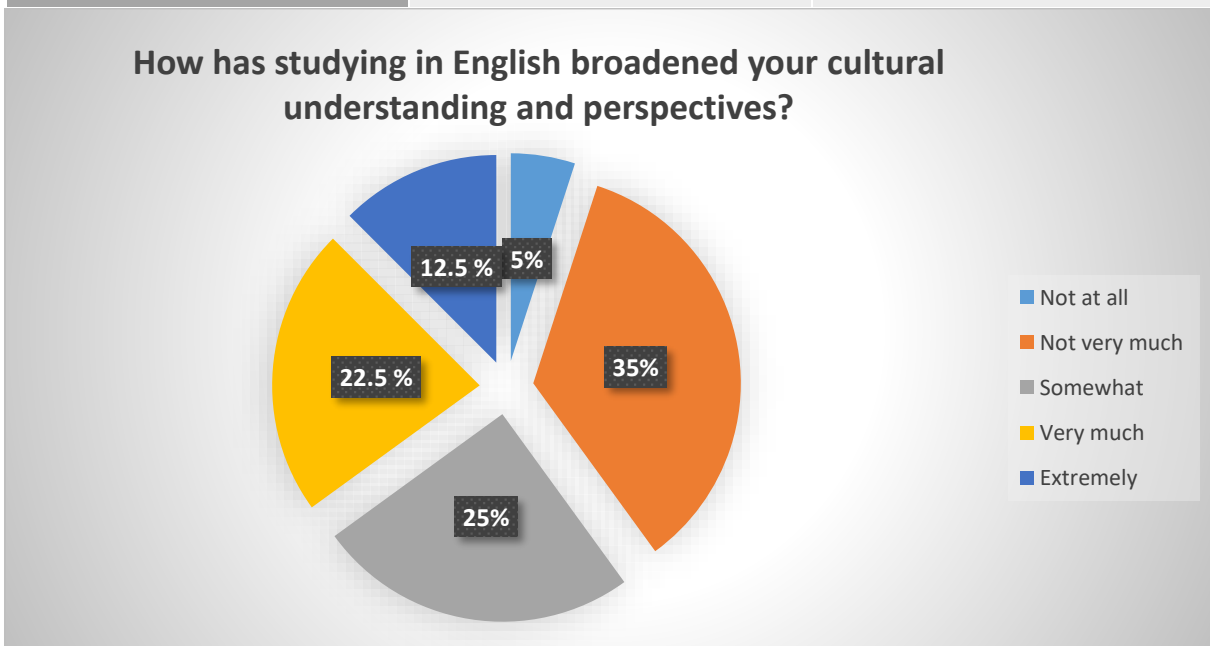


Figure3. 26. Displays the English Study that broadened the students ' cultural understanding and perspectives.

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According to the figure 26 Limited impact of the students report little to no broadening of cultural understanding, with 5% saying Not at all and 35% saying Not very much. In addition to moderate impact of other students with 25% of respondents report that English study somewhat broadened their cultural understanding. Significant impact of respondents 22.5% 12.5% report a substantial broadening of cultural understanding, with 22.5% saying Very much and 12.5% saying Extremely. These findings suggest that English language instruction can be a valuable tool for enhancing cultural understanding, but its effectiveness may vary depending on individual students' experiences and the specific approaches used in the classroom. To maximize the benefits of English language study, educators could consider incorporating more culturally diverse materials and activities into their teaching practices.

Table3. 27/ The studying in English and that enhanced the students ' professional networking opportunities and global connections.

Element	Number	Percentage
Not at all	3	7.5%
Not very much	12	30.0%
Somewhat	11	27.5%
Very much	7	17.5%
Extremely	7	17.5%
Total	40	100%

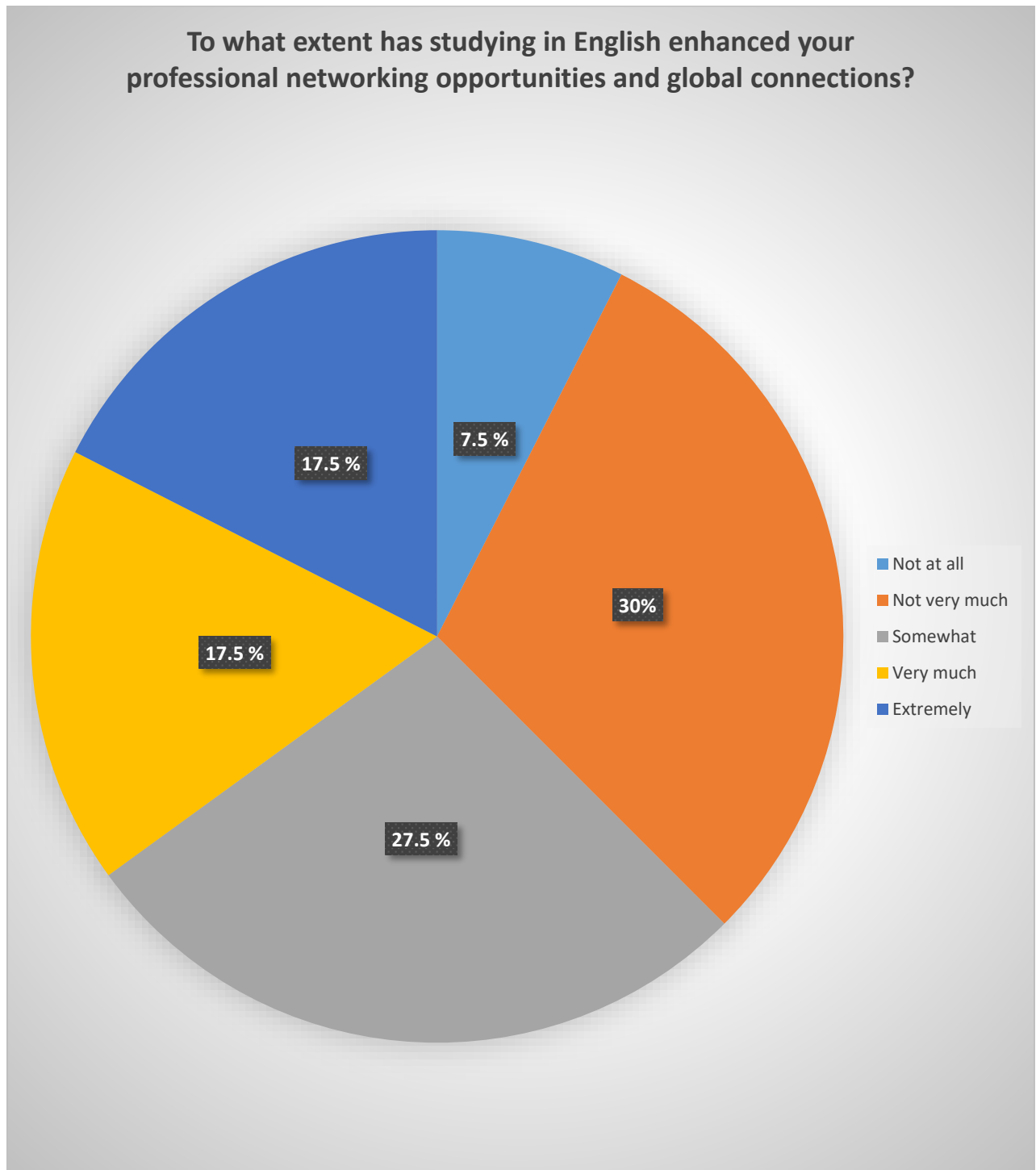


Figure3. 27 show the studying in English and that enhanced the students ' professional networking opportunities and global connections.

This figure is investigating the studying in English and that enhanced the students ' professional networking opportunities and global connections. The study reveals that while

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some students 35% experience significant benefits in terms of professional networking opportunities and global connections through studying in English, others 37.5% report limited gains. These findings suggest that English language instruction can be a valuable tool for enhancing students' global professional prospects, but its impact may vary depending on individual students' experiences and circumstances. To maximize the benefits, educators could consider incorporating more opportunities for professional networking and global engagement into their teaching practices.

Table3. 28. The impact of studying in English on the abilities of the students in engage in international academic and professional resources.

Element	Number	Percentage
Not at all	5	12.5%
Not very much	11	27.5%
Somewhat	13	32.5%
Very much	7	17.5%
Extremely	4	10.0%
Total	40	100%

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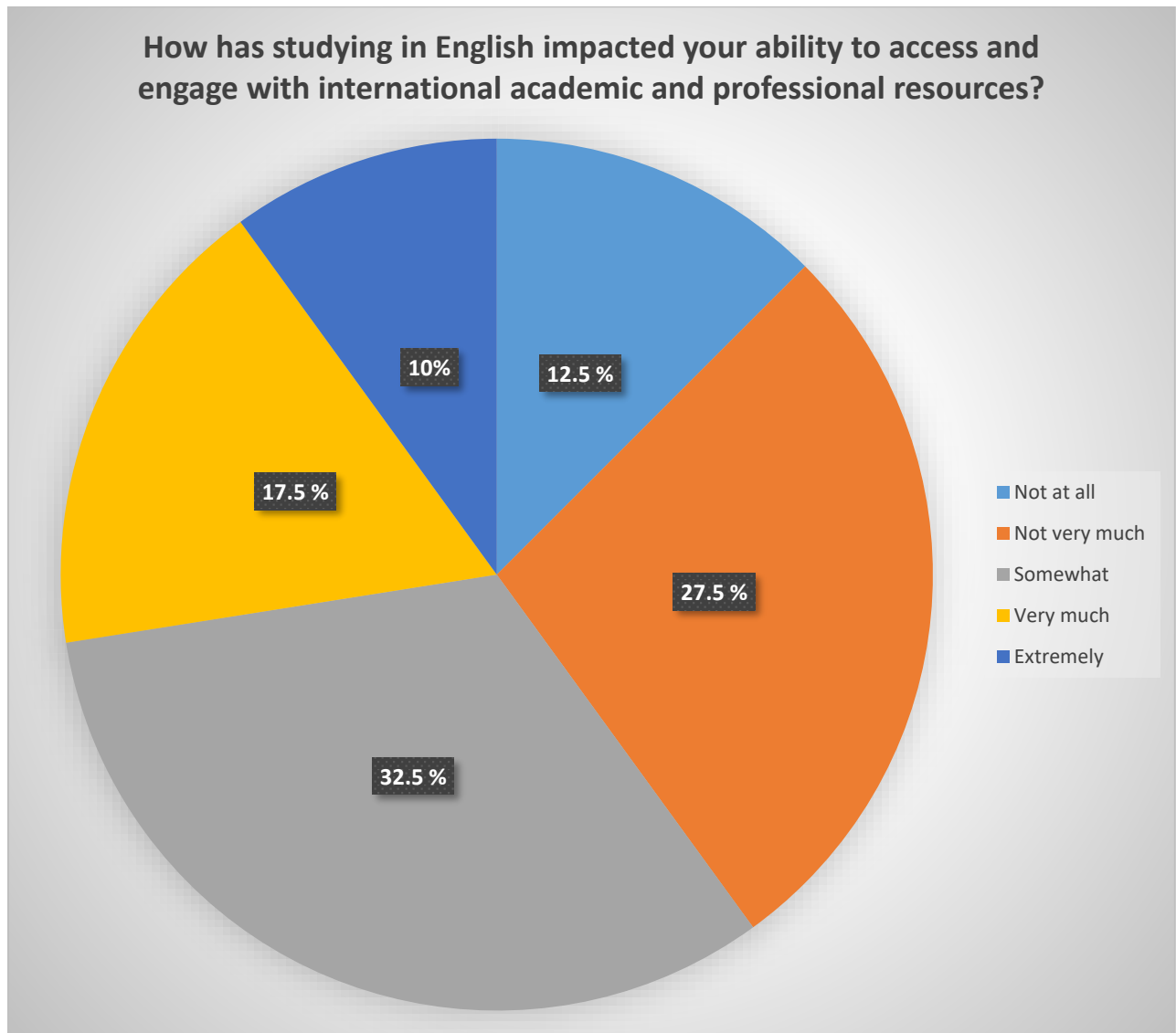


Figure3. 28 display the impact of studying in English on the abilities of the students in engage in international academic and professional resources .

In accordance with the table and the figure that show the effect of the studying in English on the abilities of the students in engage in international academic and professional resources, big percentages with 32.5% and 27% with not very much and somewhat said that they do not have this negative impact, certainly because of multiple reasons like they do not engage at all in the access to the international academic resources, or they weak background of English. In addition to 17.5% of participants are having very much difficulties in English language . The last portion with 12.5% said that not at all they have the fear of the impact. Overall, the data

suggests that the largest group 32.5% experiences a moderate impact. A significant proportion 40% reports a low impact. A smaller but still notable proportion 27.5% experiences a high impact.

9. Teacher's Interview

10. Description of the Teacher's Interview

The teacher interviews were conducted on an individual basis, employ a semi-structured format that incorporated a range of open-ended questions. This approach allowed for an in-depth exploration of the complexities surrounding English as a medium of instruction (EMI). These questions were carefully crafted to capture the teachers' experiences, perspectives, and challenges associated with EMI, as well as their instructional practices.

Through these interviews, the teachers were invited to reflect on their opening experiences teaching first-year computer science students in English, as well as their overall holding teaching in this context. The discussion also seeks into the specific areas where the students struggle with the language proficiency, including reading, writing, speaking, and listening. Furthermore, the interviews sought to uncover any positive outcomes or benefits that teachers had observed in their students as a result of EMI.

The conversations with teachers also provided valuable insights into their recommendations for enhancing EMI performance. By gathering these expert perspectives, the study aimed to identify potential strategies and solutions that could be implemented by instructors, administrators, and policy makers to better support students and teachers in EMI context. In

the end the interviews offered a fine understanding of the opportunities and challenges associated with EMI , and shed the light on ways to perfect effectiveness in higher education settings .

11. Analysis of the teacher's interview

A thematic analysis approach was employed to uncover repeating themes , patterns , and noticable points that emerged from the participant's points that emerged from the participant's narratives .The analytical process entailed coding the interview transcripts to categorize responses .

Theme 1 : Teaching Experience with First-Year Computer Science Students

Teacher 1 :

“ I have been teaching first year computer science students for the past few years . My experience includes delivering introductory courses such as Programming Fundamentals and Algorithms .One of the main is helping students transition from highpractical school thinking to computational thinking .I use practical examples, interactive coding sessions , and regular assesments to keep them engaged .Many students struggle initially with abstract concepts , but with continuous support and hands –on practice , most of them show significant improvement by the end of the semester ”

Teacher 2 :

“Although English is the most suitable language for teaching computer science , students are not truly engaged in the learning process when it is used . First , they lack basic vocabulary and grammar skills , which makes it challenging for the teacher to focus only on the subject matter .Second , the teacher is limited to the use of simple vocabulary when preparing exams , and as a result , it would be difficult to formulate questions with different levels of complexity “

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Teacher 3 :

“Passable”

Teacher 4 :

“I have been teaching first year computer science students for a few years now , and it is been a rewarding experience . I have had the opportunity to introduce students to the fundamentals of programming , data structures , and algorithms . One thing I have noticed is that many students come in with varying levels of prior experiences , so I try to tailor my teaching to meet them where they are”

Teacher 5 :

“My experience has been incredibly rewarding . I have spent years crafting introductory courses that make complex concepts accessible and engaging . I focus on building a strong foundation in programming fundamentals , problem-solving, and critical thinking”.

The responses from the teachers regarding their experiences with first-year computer science students reveal a range of insights and challenges in the teaching process. Teacher 1 highlights the importance of helping students transition from high school thinking to computational thinking through practical examples, interactive coding sessions, and regular assessments, noting that while many students initially struggle with abstract concepts, they show significant improvement with continuous support. Teacher 2, on the other hand, expresses concerns about student engagement when English is used as the medium of instruction, citing students' lack of basic vocabulary and grammar skills as barriers that complicate the teaching process and limit the complexity of exam questions. Teacher 3 provides a brief and vague response, simply stating "Passable," which does not offer much insight. Teacher 4 shares a more positive perspective, describing the rewarding nature of teaching and the need to tailor instruction to accommodate the varying levels of prior experience among students. Finally,

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Teacher 5 emphasizes the rewarding aspect of their experience, focusing on the development of introductory courses that make complex concepts accessible and engaging while aiming to build a strong foundational understanding. Overall, the teachers' comments reflect a mix of challenges and rewards in teaching first-year computer science, with a common emphasis on the need for adaptability and support to enhance student learning.

Theme 2 : Duration of Teaching Computer Science in English

Teacher 1 :

“4 years ago “

Teacher 2 :

“I have been teaching computer science courses in English for approximately 2 years . During this time , I have taught subjects such as Algorithms , Data Structures , and Object-Oriented Programming”

Teacher 3 :

“one year”

Teacher 4 :

“I have been teaching computer science courses , including some in English , many years , long enough to know the main concepts that used and will be used in the coming future.

Teacher 5 :

“I have been teaching for about 5 years now”

The responses from the teachers regarding their experience teaching computer science courses in English reveal a range of durations and contexts. Teacher 1 indicates that they began teaching in English four years ago, while Teacher 2 has approximately two years of experience,

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specifically mentioning subjects such as Algorithms, Data Structures, and Object-Oriented Programming. Teacher 3 has the least experience, with only one year of teaching in English. Teacher 4 mentions a long permanence in teaching computer science courses, including some in English, suggesting a broad understanding of the subject matter but without specifying the exact duration. Finally, Teacher 5 states they have been teaching for about five years. Overall, the teachers' responses reflect varying levels of experience, with some providing specific details about the subjects taught, while others emphasize their general familiarity with the field, indicating a diverse range of backgrounds in teaching computer science in English.

Theme 3 : Challenges in Teaching Computer Science in English to First-Year Student

Teacher 1 :

“No challenges”

Teacher 2 :

“One of the main challenges is that students have limited English proficiency”

Teacher 3 :

“I haven’t yet achieved fluency in spoken English . The students also lack basic vocabulary and grammar skills”.

Teacher 4 :

“The language barrier, some students may not be as fluent in English”

Teacher 5 :

“Bridging the gap between students with varying levels of prior programming experience”

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The responses from the teachers regarding the challenges they face when teaching computer science courses in English to first-year students reveal a mix of experiences. Teacher 1 reports no challenges, suggesting a smooth teaching experience. In contrast, Teacher 2 highlights limited English proficiency for both themselves and their students as a significant challenge. Teacher 3 expresses concerns about their own lack of fluency in spoken English, along with students' weaknesses in basic vocabulary and grammar skills. Teacher 4 also points out the language barrier, noting that some students may struggle with English fluency. Finally, Teacher 5 identifies the challenge of bridging the gap between students with varying levels of prior programming experience. Overall, the responses indicate that while some teachers feel confident, many face challenges related to language proficiency and the diverse backgrounds of their students, which can impact the teaching and learning process in computer science courses.

Theme 4: Positive Impacts on Students and Collaboration Skills

Teacher 1:

“Yes , sure”

Teacher 2 :

“Yes , I’ve noticed that teaching in English has helped improve students’ communication and collaboration skills”

Teacher 3 :

“Unfortunately no”

Teacher 4 :

“Yes, Students have shown improved problem-solving skills and teamwork”

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Teacher 5 :

“No , I haven’t”

The responses from the teachers regarding the positive impacts of teaching computer science courses in English reveal a mixed perspective. Teacher 1 expresses a general affirmation, while Teacher 2 specifically notes that teaching in English has enhanced students' communication and collaboration skills. Teacher 3, however, reports no positive impacts observed. Teacher 4 highlights that students have demonstrated improved problem-solving skills and teamwork, indicating a beneficial outcome from the instruction. Finally, Teacher 5 also states that they have not noticed any positive impacts. Overall, while some teachers recognize improvements in communication, collaboration, and problem-solving skills, others do not observe any significant benefits, reflecting a varied experience among educators in this context.

Theme 5 : Areas of Struggle in English Language Proficiency

Teacher 1 :

“With them all”

Teacher 2 :

“Yes , many students struggle most with speaking and listening , especially during lectures or discussions . They often hesitate to ask questions or participate orally . Some also face challenges with reading technical documentation in English . Writing tends to be easier for them , especially when they time to think and use translation tools”

Teacher 3 :

“I noticed that students struggle with English language proficiency in all of these areas :
reading , writing, and speaking”

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Teacher 4 :

“Yes , many of my first year computer science students struggle with technical vocabulary , reading complex documentation, and writing clearly”

Teacher 5 :

“Yes , I’ve noticed that some students struggle with technical reading and writing , especially when it comes to understanding complex problem descriptions and explaining”

The responses from the teachers regarding students' struggles with English language proficiency reveal a consensus that challenges exist across multiple areas. Teacher 1 indicates that students struggle with all aspects of English. Teacher 2 specifies that many students find speaking and listening particularly difficult, especially during lectures and discussions, and also face challenges with reading technical documentation, while writing is somewhat easier for them when they have time to think and use translation tools. Teacher 3 reflect this feeling , noting difficulties in reading, writing, and speaking. Teacher 4 highlights struggles with technical vocabulary, reading complex documentation, and writing clearly. Finally, Teacher 5 points out that students have difficulties with technical reading and writing, particularly in understanding complex problem descriptions and explanations. Overall, the responses suggest that students face significant challenges in speaking, listening, reading, and writing, particularly in the context of technical language and documentation, which can hinder their learning in computer science courses.

Theme 6 : Recommendations for Supporting Students Studying in English

Teacher 1 :

“No recommendations”

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Teacher 2 :

“I recommend offering English support classes focused on academic and technical vocabulary , especially during the first year . Instructors should be encouraged to use simple , clear language and provide written materials alongside lectures . Administrators could promote workshops or language labs to help students practice speaking and listening”.

Teacher 3 :

“Honestly , I have no idea , as I believe the problem is deeper . In fact , this isn’t just a matter of the English language . The students are not really engaged in the whole learning process”

Teacher 4 :

“Providing language support resources , like tutoring or workshops, to help students improve their technical vocabulary and writing skills”

Teacher 5 :

“Providing clear and concise course materials, and encouraging group work and peer tutoring can be really helpful”.

The responses from the teachers regarding recommendations to support students studying in English present a range of perspectives. Teacher 1 offers no recommendations, indicating a lack of actionable insights. Teacher 2 suggests implementing English support classes focused on academic and technical vocabulary, especially for first-year students, and encourages instructors to use clear language and provide written materials alongside lectures. They also recommend that administrators promote workshops or language labs to enhance speaking and listening skills. Teacher 3 expresses uncertainty, believing that the issues extend beyond language proficiency and relate to student engagement in the learning process. Teacher 4 advocates for providing language support resources, such as tutoring and workshops, to help

students improve their technical vocabulary and writing skills. Finally, Teacher 5 emphasizes the importance of clear and concise course materials and suggests encouraging group work and peer tutoring as effective strategies. Overall, the responses highlight a mix of specific recommendations for language support and broader concerns about student engagement, reflecting the complexity of addressing the challenges faced by students studying in English.

12. Discussion of the Findings :

This section integrates and interprets the quantitative and qualitative data from surveys and interviews with computer science students and instructors. The analysis focuses on the opportunities and advantages of English as medium of instruction (EMI) for future learners , as well as the drawbacks and obstacles faces by both teachers and students . By comparing students and teachers perspectives , the study highlights areas of agreement and disagreement . The goal is to provide a detailed understanding of the findings ‘ implications and their significance for EMI in higher education , shedding light on its broader applications and relevance .

12. 1 : Questionnaire For the Students

To discover more about first-year computer science students' opinions and experiences using English as a Medium of Instruction (EMI), a questionnaire was designed especially for them. Six sections build up the significant tool, which focuses on key aspects of English as a foreign language in the field of computer science. From the structured questionnaire conducted to computer science learners , it is evident that significant portions of the participants perceive English as beneficial for their future need in their future career . The quantitative analysis show that majority of the participants from first year computer science have a serious problem in taught in English language , this is indicated by the high percentages of students who choose very much with the questions like the struggling to understand abstract concepts in English .

Nevertheless, smaller portions of students choose not at all they have problems in taught in English language .

12. 2 : Teachers Interview

The outcomes from the interview with teachers uncover important comments on their opinions concerning teaching English as a language of instruction in a non-English speaking specialty. During the semi structured interviews with experienced teachers of English as a medium of instruction, a number of themes emerged that broadened the scope of understanding concerning their experiences and perspectives. Themes such as what problems do the teachers encounter during their professional practice with first year students computer science. The instructors pointed out the shortcomings of teaching English to non-native students .In addition, the interviews brought period of time spent teaching English as a medium of instruction to non-native speakers, some who are newcomers with short time, while others are experienced in this field with extensive time teaching English as a medium of instruction in higher level educational institutions. Moreover, the interviews exposed participants' proposed suggestions for the students of English as a medium of instruction computer science regarding to their prospective profession and some guiding notes for them. In summary, the statements from the teacher' interview contain rich information to understand the problems and suggestions emerging from English as a medium of instruction in higher education focusing on learners with computer science.

Conclusion

This chapter reveal that the study follows a structured research design, defining the population and selecting a representative sample. Data is collected using a questionnaire and teacher interviews. The questionnaire is described in terms of its purpose and sections, with its reliability assessed to ensure consistency. Quantitative data from the questionnaire are analysed

statistically, while interview responses undergo thematic analysis. Finally, the discussion of findings integrates both data types to provide a comprehensive understanding of the research outcomes.

GENERAL CONCLUSION

This study provides a comprehensive exploration of English Medium Instruction (EMI) in higher education, with a particular focus on its implementation and impact within the Algerian context. The research begins by establishing the broader contextual factors influencing EMI, including the importance of English language instruction, the definition and key factors impacting EMI, its role in accessing international knowledge, and its influence on multilingual identity development, creativity, and innovation. It also addresses challenges such as language anxiety, the need for teacher training, and fostering inclusive learning environments. Moving into the specific Algerian setting, the study examines the landscape of EMI in Algeria, including its challenges and future directions, implementation in computer science programs, and impact on student academic performance. It further investigates attitudes toward EMI, its influence on learners, and a comparative analysis with international models. Finally, it synthesizes both teacher and student perspectives on English language instruction. Employing a mixed-methods approach, this research gathers data through questionnaires and interviews, analysed using statistical and thematic methods respectively. The findings from both quantitative and qualitative data are integrated in the discussion to provide a holistic understanding. Ultimately, this study contributes valuable insights into the complexities of EMI in higher education, offering recommendations for enhancing its implementation and effectiveness, particularly within the unique context of Algerian institutions. The conclusions drawn aim to inform policy, practice, and future research in EMI, promoting equitable and successful educational outcomes for all stakeholders.

Limitations for the study:

EMI in Algerian higher education become a huge part for the new course materials, however it encounters with some limitations like the limited English proficiency among instructors , a lot of teachers do not have sufficient English skills , whichb could hinder effective content delivery and students comprehension . Moreover , the linguistic discontinuity take place in the limitation of this study , students transitioning from Arabic or French – medium of instruction in primary and secondary education to English – medium of instruction in higher education may face significant challenges .

Recommendations for this study:

There should be some recommendations for future learners and even for the future researchers according to the use of EMI in Algerian context of higher education like to develop their English language skills , future learners should focus on improving their English proficiency to better understand EMI programs . In addition to the learners should be active participants in their EMI learning and not hesitate to ask instructors or peers for help when facing challenges in EMI courses.

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APPENDICES

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Appendix A : Questionnaire

Introduction:

This questionnaire aims to investigate the challenges and affordances of English as a Medium of Instruction (EMI) on first-year computer science students. The purpose of this questionnaire is to gather information about your experiences, perceptions, and attitudes towards studying in English.

All responses will be kept confidential and anonymous.

Section one: Demographic Information

Gender: Male Female

Age: 18-20 21-25 26-30

Level of English proficiency: Beginner intermediate Advanced

Previous English language experiences: Yes. No.

Section Two: Linguistic Challenges

Statement	Not at all (1)	Not very much 2	Somewhat 3	Very much 4	Extrem ely 5
1. How confident are you in your ability to understand technical vocabulary in English?					
2. How often do you struggle with grammar and sentence structure in English?					
3. How would you rate your vocabulary range in English?					
4. How easy or difficult is it for you to comprehend technical texts and academic papers in English?					

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5. How confident are you in your ability to express complex technical ideas in English?					

Section three: Academic Challenges

Statement	Not at all	Not very much	Somewhat	Very much	Extremely
1. How easy or difficult is it for you to follow lectures and tutorials in English?					
2. How confident are you in your ability to write assignments and reports in English?					
3. How often do you struggle to understand course materials (lessons) in English?					
4. How comfortable are you participating in class discussions and asking questions in English?					
5. How easy or difficult is it for you to understand and complete assignments and projects that require technical English?					

Section Four: Cognitive Challenges

Statement	Not at all	Not very much	Somewhat	Very much	Extremely
1. How easy or difficult is it for you to process complex technical information in English?					
2. How confident are you in your ability to solve problems and think critically in English?					
3. How often do you struggle to understand abstract concepts in English?					

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4. To what extent do you feel that the language barrier hinders your ability to fully understand technical concepts in English?					
5. How challenging is it for you to identify and understand the technical vocabulary specific to your field of study in English?					

Section Five: Socio-Emotional Challenges

Statement	Not at all	Not very much	Somewhat	Very much	Extremely
1. How often do you feel anxious or stressed about your English language proficiency?					
2. How easy or difficult is it for you to interact with peers and instructors in English?					
3. How often do you feel isolated or excluded from academic discussions in English?					
4. To what extent do you feel that your English language proficiency affects your overall academic confidence?					
5. How often do you feel overwhelmed by the demands of studying in English, such as reading, writing, and participating in class discussions?					

Section Six: Affordances (Benefits)

Statement	Not at all	Not very much	Somewhat	Very much	Extremely
1. How has studying in English affected your career opportunities?					

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2. How has studying in English improved your critical thinking and problem-solving skills?					
3. How has studying in English broadened your cultural understanding and perspectives?					
4. To what extent has studying in English enhanced your professional networking opportunities and global connections?					
5. How has studying in English impacted your ability to access and engage with international academic and professional resources?					

Appendix B : Interview

Introduction:

Thank you for participating in this interview. I'm researching the challenges and benefits of using English as a medium of instruction for first-year computer science students. Your insights as a teacher will be invaluable. Please feel free to share your thoughts and experiences.

1. Can you describe your teaching experience with first-year computer science students?
2. How long have you been teaching computer science courses in English?

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3. 1. What challenges do you face when teaching computer science courses in English to first-year students?
4. Have you noticed any specific areas where students struggle with English language proficiency (e.g., reading, writing, listening, speaking)?
5. Have you noticed any positive impacts on students or collaboration skills?
6. What recommendations do you have for instructors, administrators, or policymakers to better support students studying in English?

Conclusion:

Thank you for sharing your valuable insights and experiences. Your input will help inform strategies to better support students studying computer science courses in English