

# Identifying the Difficulties of Learning Programming for Non-English Speakers at an Australian University and a Libyan University

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## Introduction

- Programming is a difficult skill.
- Most programming languages are in English.
- This research paper is one piece of a larger research project.
- This research paper will highlight & focus on learning programming issues.

### Literature Review Summary:

- Program design and solving problems concept [1,2,3,5,6,7,8,9]
- Syntax concept [1,2,3,5,6,7]
- Error handling concept [3,4,6,7,9]

# Hypothesis

**Not speaking English is an extra problem for students learning programming**

# Finding

## Research Questions

- 1.0 What are the problems and difficulties that novices face in learning computer programming in general?
  - 1.1 What are the problems and difficulties that have a significant impact on novices at CQUniversity in Australia?
  - 1.2 What are the problems and difficulties that have a significant impact on non-English speakers at Sebha University in Libya?
  - 1.3 What are the differences between novices at CQUniversity and at Sebha University with respect to learning programming skills?

## Programming Issues at CQUniversity

Understanding issues	No. of participants
<b>Loop statements (Do. While)</b>	<b>16</b>
All programming concepts	16
Program design	14
Syntax	11
Programming logic	6
Array and Manipulating arrays of objects	5
Semantics	4
Data types	3
Object oriented programming	2
<b>Error message</b>	<b>2</b>
Condition statements	1

## Programming Issues at Sebha University

Understanding issues	No. of participants
<b>Error messages</b>	<b>52</b>
Pointers	34
Loop statements (Do. While)	29
All programming concepts	17
Array	14
Program design	11
Condition statements	8
Syntax	7
Semantics	1
Data types	1
No issues	1

- **CQUniversity Students** are stuck on **logic, design and syntax.**
- **Sebha University Students** are stuck with **English**, principally in **Error Messages.**
- These issues should have the highest priority for addressing.
- **Error Messages** were mentioned by just **2%** of participants at **CQUniversity**. However, **Error Messages** were listed by **71%** of participants at **Sebha University.**

## Methodology

Mixed methods research approach & Triangulation Mixed Methods Design. Surveys Data collection Method conducted in Term 1, 2016 at Sebha University & in Term 2, 2015 & Term 1, 2016 at CQUniversity.

## Suggestions to Solve These Problems

- Using **Sphero SPRK Robot** Technology as an Assistant Programming Tool to help novice programming with graphical / logic programming.
- Sphero uses **JavaScript** language and **Blocks method.**
- **Error Messages Guide** (interpretation).

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