



## Malta Secretariat for Catholic Education C-Pen ReaderPen™ Research Project

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### AIM OF THE STUDY

To undertake an evaluation of the impact of using a C-Pen ReaderPen™ on primary school children who have literacy issues. The evaluation focused on the impact on three key areas of learning reading and comprehension, knowledge or familiarity to technological devices and attitudes to information technology.

Since students with Learning difficulties have individual strengths, weaknesses, interests, and experiences, a device that may be appropriate for one person may be inappropriate for another (Bryant, D.P et al., 1998).

Research on the C-Pen ReaderPen™ among students with learning difficulties shows improved understanding of text, facilitation of reading and boost in self- confidence (Garner Education Services, 2017, Mortimore, T., 2018).

### SELECTION STUDENTS

St. Jeanne Antide had been selected for the 8-week project that started on 21<sup>st</sup> October 2019 and terminated on 12<sup>th</sup> December 2019. Before the onset of the project, meetings were held between the school SMT, the dyslexia specialist from Secretariat for Catholic Education and the Complementary teacher working at the same school and, who is also a Dyslexia Specialist. The meetings were held in late June and early September of 2019 where a timeline of the project was devised (Appendix A). In June, teachers from years 4 to 6 were given a professional development session of the C-Pen ReaderPen™ where Ms. Abby Camilleri Pearson, the representative of the Robocoach provided a hands on session how to use the C-Pen

ReaderPen™. The aim of this session was to familiarise educators with this particular assistive technology device.

Students who were in years 4, 5 and 6, and had a profile of Dyslexia were identified. Eighteen students were selected to participate in the project. Since the Supplier could only distribute 15 ReaderPens for the project, fifteen students were selected. The selection process depended on the results from the scores attained in word reading and comprehension from two standardised tests.

### DESIGN OF THE STUDY

Students' attainment level in literacy before the onset of the study had been taken into account to establish their current levels in reading, fluency and comprehension skills. However, their attainment levels on the same skills were also measured with the use of the C-Pen ReaderPen™ to evaluate whether the assistive technology device had any impact on the students' reading and comprehension performance.

Two criterion referenced standardized tests were selected to measure the students' competency levels in reading and comprehension. These tests were administered between 21<sup>st</sup>-25<sup>th</sup> October 2019 and were re-administered at the end of the project in mid-December, where students had to use the C-Pen ReaderPen™. The tests were

- 1 **Neale's Analysis of Reading Ability (M. D. Neale, 1997)**
- 2 **Suffolk Reading Test (2008, Glassessments)**

## INTERPRETATION OF RESULTS

### 1. Pre-and Post-testing in reading, fluency and comprehension

Comparing the means of the scores attained in pre-and post-testing for reading, comprehension and fluency reveal that there were differences in scores with and without the C-Pen ReaderPen™. The results from the four criterion referenced standardized tests show:

- minor difference in the means attained in pre-and post-testing in Suffolk reading test—a mean difference of 1.06 points on standardized scores that is a 3-month difference (8.00 to 8.03 years).
- No difference was noted in the mean time between pre-and post- testing which means that students on average spent the same amount of time with and without the C-Pen ReaderPen™ in the silent reading comprehension.
- The reading accuracy in read aloud graded text (NARA-II) revealed a mean difference between pre-and post-testing of 7.04 points on standardized scores that is from 6.11 to 8.00 years—a difference of 13 months.
- The comprehension component of the same test showed a mean difference between pre-and post-testing of 6.2 points on standardized scores that is from 6.09 to 7.07 years - a difference of 10 months.

### THE PRE-TESTING QUESTIONNAIRE OF THE C-PEN READERPEN™

During the four weeks of the project most of the participants found the C-Pen ReaderPen™ a helpful device. This accounts to 73% of the cohort. The component in the device which participants used most was the reader accounting to 80% compared to 6.7% who used the dictionary only and 6.7% who used dictionary and a reader (Tables 16 and 17).

Table 16

		Frequency	Percent
Valid	helpful	11	73.3
	slightly helpful	3	20.0
	Total	14	93.3
Missing		1	6.7

Table 17

Which component of the C-Pen ReaderPen™ you used often?			
		Frequency	Percent
Valid	Reader	12	80.0
	Dictionary	1	6.7
	both	1	6.7
	Total	14	93.3
Missing		1	6.7
Total		15	100.0

### THE POST-TESTING QUESTIONNAIRE OF THE C-PEN READERPEN™

At the end of the project, the following results show that:

- 87% of the students claim that the C-Pen ReaderPen™ besides being user friendly it also helped them in reading and comprehension
- 60% of the students used the C-Pen ReaderPen™ without assistance where only 40% of the students were assisted by an LSE.

There was slight difference between students who used independently the C-Pen ReaderPen™ at home and those who used the device with the help of adults (Table 21 and Table 23).

Table 18

Do you think the C-Pen ReaderPen™ helped you in reading and comprehension?			
		Frequency	Percent
Valid	yes	13	86.7
	no	2	13.3

Table 19

Which component of the C-Pen ReaderPen™ you used often?			
		Frequency	Percent
Valid	Reader	10	67.7
	Dictionary	1	6.7
	both	4	26.7

Table 20

Was it easy to use the C-Pen ReaderPen™?			
		Frequency	Percent
Valid	yes	13	86.7
	no	2	13.3

**Table 21**

How many times did you use the C-Pen ReaderPen™ in class?			
		Frequency	Percent
Valid	often	3	20.0
	sometimes	9	60.0
	never	3	20.0

**Table 22**

With whom did you use the C-Pen ReaderPen™?			
		Frequency	Percent
Valid	My own	9	60.0
	LSE	3	20.0
	others	3	20.0

**Table 23**

How many times did you use the C-Pen ReaderPen™ at home?			
		Frequency	Percent
Valid	always	1	6.7
	often	2	13.3
	sometimes	10	66.7
	never	2	13.3

**Table 24**

With whom did you use the C-Pen ReaderPen™?			
		Frequency	Percent
Valid	my own	8	53.3
	parents/guardian	6	40.0
	others	1	6.7

**RECOMMENDATIONS**

The current study has shown how the C-Pen ReaderPen™ improved the understanding and reading of English texts. However, integrating AT within the framework of school curriculum requires commitment, effort and collaboration educators, school administrators and parents.

The commitment to change teaching and learning practices rests on the assumption that educators who are facing new realities in their classrooms feel the need to renew their professional practices. Realities of students with different learning needs and ethnicities summons for an inclusive school environment.

In this case, the C-Pen ReaderPen™ should serve as a tool that help students with learning needs to integrate better in the school curriculum.

How can this be achieved?

- The school senior management should acknowledge that the C-Pen ReaderPen™ offers better access to learning. However, commitment entails that such new practices should not be shelved at word level but has to be included in the school action plan after students have been identified to benefit from AT device.
- Educators who are committed for change practice will be given the access to be trained in the functions and operation of the C-Pen ReaderPen™.
- Educators should encourage students with LD to use the C-Pen ReaderPen™ at school. This should not be limited to particular lessons but the device can be used in any English based subjects. In this manner educators will be fostering independent reading.
- The role of the LSE is seminal when assisting students with learning needs. Besides encouraging the student to use the reader pen in school tasks, the LSE is also rearing in children to become independent readers.
- Collaboration with parents is a key feature to render the utility of the C-Pen ReaderPen™. The perception that AT devices should be limited solely to school does not foster a culture of inclusion in schools in particular and in society in general. Parents should be encouraged to help their children to use the C-Pen ReaderPen™ to become independent readers.
- Students do need some support at the outset. They benefit from some scaffolding of the types of activity that the pen might support. These activities should reflect the individual needs of the learner who should have a sense of control over how the pen is used.
- Pen use should be carefully targeted at those whose needs seem appropriate to foster familiarisation and control of the device.

