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Engaging Vulnerable Youth: An exploratory study on youth in Cottonera, youth work and STEAM engagement

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Acronyms

AZ: Agenzija Żgazaġ (Youth Agency)

CRC: Cottonera Resource Centre

ESL: Early school leaver

EU: European Union

ESC: European Solidarity Corps

IBSE: Inquiry-based science education

OECD: The Organisation for Economic Cooperation and Development

IRIS: The Interests and Recruitment in Science Project

MCAST: Malta College of Arts Science and Technology

MEDE: The Ministry for Education and Employment

MUT: Malta Union of Teachers

PISA: The Programme for International Student Assessment

ROSE: The Relevance of Science Education Project

SEBD: Social, emotional and behavioural difficulties

STEM: Science, technology, engineering and math

STEAM: Science, technology, engineering, art and math

SWPBS: School-Wide Positive Behaviour Support

UM: University of Malta

UREC: University Research Ethics Committee

YW: Youth worker

Executive Summary

Introduction

For decades, various attempts have been made to engage and provide support to vulnerable Maltese youth. Efforts have included significant changes to government structures, including the expansion of supportive facilities, such as Leap Centres. Often these initiatives are realised from the perspective of professionals and their ideas of vulnerable youths' needs. As members outside of vulnerable communities, do practitioners and researchers understand how to approach and establish dialogue with these youth?

This report has sought to answer the above question, alongside other aims, in the hopes of helping to address the problem of Early School Leaving (ESL) and explore possibilities of Science, Technology, Engineering, Arts and Maths (STEAM) engagement as a way forward for youth to reach their full potential. The ESL rate is still significantly higher than the EU average (10.6%) with the most current statistics indicating a 19.6% rate in Malta (Schraad-Tischler et al. 2017). A study by Spiteri (2014) looked at the various factors behind ESLs and found they fall into three main categories: education system and labour market, individual characteristics and family related issues.

In addition, the Cottonera region was selected as a study site for its high rate of ESLs and strong concentration of vulnerable youth, which for the purposes of this research have been defined as: at risk of becoming an ESL, at risk of committing crime or already having done so, poor school performance and/or coming from a poor socioeconomic background.

Method

A literature review was performed at the start to provide an overview of the Maltese educational system, understand vulnerable youth performance in education and opportunities for STEM and STEAM engagement. As part of the review, various members of the academic and educational sector were also consulted through informal meetings and interviews.

Research was conducted by the author in the form of field observations, followed by face-to-face interviews with youth and Youth Workers (YW) and a focus group. Although two focus groups were originally planned, the language barrier, organisational problems and difficulty in obtaining consent resulted in only one focus group conducted. As a pilot and exploratory study, a sample size of ten was planned but also could not be accomplished. A total of five youth were interviewed and seven participated in the focus group. Five YWs were also interviewed. Observations were performed as a complete observer and shifted to the complete participant method as advised by YWs.

The interviews and focus groups were conducted in Maltese in a semi-structured format. Questions were planned in advance and YWs and youth were encouraged to direct the conversation and discussions in direction of their choosing. Data analysis consisted of thematic coding using a bottom-up approach, identifying major themes which were further broken down into sub-themes.

Results

The research was able to meet the following aims: identifying potential barriers to youth involvement in future, long-term research, understanding how to approach vulnerable youth for research and developing targeted research questions. However, the aim to identify needs and desires of youth regarding STEAM engagement and to becoming critical thinkers was unfortunately not addressed due mainly to the inability to conduct a second focus group.

Three major themes arose from the analysis: *responsibility*, *education* and *identity*. Under responsibility, commitment, both on the part of the YWs and the youth, emerged as sub-themes. Youth workers are extremely committed to youth, allowing for established long-term relationships founded upon trust. Youth have issues with commitment, especially when it comes to activities and participation in school and civil society events. Bureaucracy, although not directly related to responsibility, is an additional major concern given the governmental procedures required to engage with youth creates a significant barrier to learning and mentoring.

Education came out as a major theme, with the traditional academic structure as a sub-theme which does not address vulnerable youths' needs and desires. Teachers can also be a concern both in terms of them lacking resources and support to do their jobs well and in lacking understanding of the youth themselves. Contrarily, informal learning and informal mentoring providing by youth centres and YWs creates a safe space where youth are heard, supported and engaged in creative activities.

Lastly, identity emerged as a core theme. Vulnerable youth are very opinionated and were able to clearly express their concerns within the education system. They display a strong sense of self, yet through observations and YW interviews, it was revealed that insecurities play a major role in their lack of motivation and initiative. It is suggested that the valuation of money is correlated with valuation of work, such that security is given higher priority than the risk of furthering education. This matches with other data from this study and the literature in which insecurity and the feeling of not fitting into the school system sets a restricted path towards blue collar work to meet basic needs into adulthood.

Discussion

Much of the results from this study corroborate previous findings in similar research. Vulnerable youth, like others, have goals, desires and needs. The barriers that get in the way of living a life that is apart from what is expected by most — caged in minimum wage work with an inability to live beyond simple needs — have been known for a long time. This includes coming from a low socioeconomic background, a lack of supportive staff that have the knowledge and skills to address their issues and deep insecurities which go beyond surface anxieties.

Vulnerable youth are afraid of failure, and thus, learning how to fail and grow from it must become an imperative in educational settings. Revolutionising the schools must also include reforms that speak directly to the kind of learning environment that youth desire. Suggestions may include starting school at a later and more appropriate time, giving relevant, meaningful and less homework assignments, reducing the quantity of mandatory examinations and smaller classroom sizes.

Aside from further recommended research on values and stigma, various research-in-action studies are also proposed. To better understand how STEAM theory can be further incorporated into academic structures and informal settings, it is recommended that jobs and voluntary positions are created to introduce student-centred learning around STEAM subjects with the aim of expanding creative practice, exploration and the development of critical thinking skills.

Another way to encourage STEAM practice is through the development of an interactive app that could be used on social media platforms such as Snapchat, which was mentioned several times as a platform that youth use. Finally, a “Science in the Festa” (in particular localities, such as Birgu) is proposed as an addition to the Science in the City Festival, bringing STEAM directly to youth who often are strongly attached to this traditional, yearly event. The research-in-action is proposed through ongoing observation and evaluation of such activities to determine if they have a positive effect in the long-term.

Conclusion

It is clear that many changes need to be made, that existing support structures and facilities must be improved and that youth work is an extremely integral part of the system to help vulnerable youth gain confidence and reach their full potential. Beyond that, what these conclusions ultimately allude to is a

community, a cohesive supportive network involving all members of a given place feeding into the supportive structure that enhances learning in both formal and informal settings.

What do vulnerable youth need to succeed is the question this report should be tackling, above all else. The answer is complex and multi-faceted, yet simple: a loving community that never gives up on them from administration staff inside the school to the parents, youth workers and elders sharing their neighbourhood streets.

Introduction

For educators, academia and the industrial science sector, getting youth excited about science, technology, engineering and maths (STEM) subjects sounds like the ultimate goal. After all, it is not just the competency and wide-ranging skill set gained in excelling in these subjects, but the wealth of opportunities that await youth in their future careers. For decades, governments, education-oriented organisations, youth centres and teachers have recognised the need to reach out to and enable youth from difficult backgrounds as a result. Yet, do we know how to effectively approach such youth in the first place?

This study has sought to answer the above question, among others, and highlight the importance of youth work in our, sometimes blind, attempts to connect with vulnerable youth. In doing so, the author also explores how to improve critical thinking¹¹“Critical thinking is the use of those cognitive skills or strategies that increase the probability of a desirable outcome. It is used to describe thinking that is purposeful, reasoned and goal directed – the king of thinking involved in solving problems, formulating inferences, calculating likelihoods and making decisions, when the thinker is using skills that are thoughtful and effective for the particular context and type of thinking task.” (Helpert 2013) and argues for applying science, technology, engineering, *arts* and maths (STEAM) initiatives grounded in a student-centred or learning-centred education theory.

1.1 Issues with STEM Engagement

Technological advancement inside a rapidly expanding digitised and virtually interconnected world has been met with a demand for more young adults to enter STEM careers in recent decades (Gago et al. 2005; EU 2014; Shapiro, Østergård, and Hougaard 2015). Indeed, STEM engagement in schools and with youth has been vastly studied as a result (Anderson and Ward 2014; Archer et. al. 2010; Heilbronner 2011; Tytler et. al. 2008). Yet it has only been within the last approximately eight years that the arts have become a recognised tool in engagement. The addition of the arts has led to STEAM, opening the door to making STEM subjects fun and relating creativity to innovative thought (Connor et. al. 2015; Henriksen 2014; Madden et. al. 2013; Miller and Knezek 2013).

Previous studies have found that science education often involves memorisation of facts and theory, or rote memory-based learning. Students do not learn how to make science applicable and relevant to their lives and hobbies (Sjøberg and Schreiner 2010). Furthermore, they are unable to link science with public policy, extending to an inability to connect scientific concepts both directly and indirectly to their health and daily activities (Gatt and Azzopardi 2013; Sjøberg and Schreiner 2010; Tytler et. al. 2008). A teaching approach rooted in facts, theory and a lack of activities, coupled with societal expectations, also helps enforce a stereotypical view of the sciences: a white male-dominated field mainly consisting of the hard sciences, such as physics, biology and chemistry. The viewpoint enforces the idea of science requiring masculine, competitive and aggressive traits. A young person with an interest in science, but also having insecurity issues and/or facing prejudice, may come to view the field as unapproachable (Anderson and Ward 2014; Gatt and Azzopardi 2013; Hines 2003; Tytler et. al. 2008.)

According to a report by the EU Commission (2007), numerous studies have found that the way science is taught in school is directly correlated with students developing an interest in the sciences. The report further advises that for STEM engagement to be effective, teachers should be provided with a network to collaborate with other teachers, promote a deductive teaching approach and introduce the sciences at primary education level. Deductive teaching, as opposed to inductive, includes the students much more by giving them the chance to debate, research, plan, form arguments and ask questions (EU 2007).

1.2 A Closer Look at Malta

A report by Misco (2015) surveyed the Maltese population in 2014 across all socioeconomic backgrounds and age groups to understand public opinion about science. Although the majority of those responding to the questionnaire expressed views in congruence with the findings above – science education should be more hands-on and interactive to promote youth engagement – they also felt disinterested in science and reported few mentions about it in the media. Despite the internet serving as a boon for information acquisition, some Maltese people stated that the lack of knowledge about scientific concepts corresponded with an inability to use the internet for science-related queries. Yet disregarding education level, there was a general positive attitude towards science and most people expressed a desire to be informed and aware of current research.

The results, although encouraging, are from a small sample size and therefore it is impossible to determine whether they are representative of the Maltese population. However, they hint at a possibility that people both within and outside the sciences understand which methods would improve engagement and increase ability to think critically. In fact, hands-on learning has been shown to improve understanding of difficult concepts (EU 2007; OECD 2016b).

The Relevance of Science Education (ROSE) Project (Sjøberg and Schreiner 2010) found results supporting this notion as well. Students up to the age of 15 in formal school settings were evaluated in 40 different countries, although it should be noted that despite Malta not meeting the criteria for data quality, it was still included in some parts of the analysis. Overall, interest in science remains high, regardless of gender. All European countries, including Malta, feel that science and technology contribute to healthier and more comfortable lives. Most Maltese participants also agreed that science and technology make life more interesting and that the benefits outweigh the potential costs or harmful effects. Yet, if science has strong positive associations, what is holding youth back? The authors of the ROSE Project concluded that having input from the youth themselves is an imperative in shaping future education. Students need to understand the relevance of what they are learning in a supportive environment that is connected to their interests and values.

The Interests and Recruitment in Science (IRIS) Project (2012) looked at students from five European countries to understand how to improve participation and gender equity in higher education STEM subjects. Their results complement the conclusions from the ROSE Project, mainly:

- choice continues throughout one’s academic career;
- STEM engagement is through mostly intrinsic factors, such as passion for a particular subject;
- schools, teachers and mentors have a significant influence on decisions to enter STEM fields; and
- informal learning through venues, such as science centres, are inspirational.

Although there is a lack of empirical evidence that students in Malta adhere to the same trends, it is worth noting that such conclusions have been drawn from other studies and circle back to theory that youth require a voice, support and opportunities for informal learning (Askeff-Williams, Cefri and Fabri 2013; Cefai and Cooper 2010; Cefai and Galea 2016).

Malta’s Ministry for Education and Employment (MEDE) has long recognised the country’s need for improvement in comparison with other EU countries. In this regard, Early School Leavers (ESL) has been an ongoing issue and is defined as:

The percentage of persons aged between 18 and 24 years having achieved secondary education or less (ISCED ≤ 2) and are not pursuing further education or training, as a percentage of all persons aged between 18 and 24 years. (NSO 2014)

Although steadily decreasing, the ESL rate is still significantly higher than the EU average (10.6%) with the most current statistics indicating a 19.6% rate in Malta (Bejaković et al. 2017). An EU goal originally set for 2010, all Member States including Malta are meant to lower ESL level to 10% or less by 2020 (Schraad-Tischler et al. 2017). The level of low achievers – those who may become an economic burden to society because they lack basic comprehension of skills that are required to function in modern day society (EU 2016) – remains very high as well, especially in maths and sciences, 37% and 59% respectively, and 33.7% and 33.5% for math literacy and science literacy. The EU 2020 target aims to have less than 15% of the national population classified as a ‘low achiever’.

A study by Spiteri (2014) looked at the various factors behind ESLs and found they fall into three main categories: education system and labour market, individual characteristics and family related issues. Within these categories, classroom size, bullying, parental education and income and ethnic background are among many of the associated factors. It is also possible that the labour market in Malta poses an incentive since a high proportion of male ESLs are found in low skill labour employment. Spiteri (2014) asserts that parents have a significant influence, but it is unclear why.

It is additionally important to consider absenteeism, low skills attainment and competence levels. The MEDE has recently established the “Learning Outcomes Framework”, which among other goals, aims to reduce the number of students falling into the above categories. It addresses the need to reform schools by adopting a student-centred approach rather than a traditional pedagogical one (MEDE 2012a).

Traditional pedagogy may work well for some students who are naturally academically inclined, but for many, corresponds with poor performance and/or abandoning the education system before completing secondary school. A report issued by the MEDE (2012b) analysed feedback from nationwide consultation of parents, teachers, colleges/schools/universities, governmental and political parties and civil society. Although some feedback fell in line with those of participants in this study, a failure to directly include students themselves in the discussion leaves a gap between what others think they need and what they actually do need.

The NCF framework (MEDE 2011) also describes a new vision for science education, from increasing science literacy to attainment of scientific knowledge through informal learning and creating engaging classrooms that encourage exploration – all of which begin at the primary school level. Concluding statements will review whether the vision has been expressed in this study.

1.2.1 Study Site: Cottonera

The Cottonera region was selected as an appropriate study site because of its history, a once booming war economy during British colonialism, and current standing as an impoverished area with a low number of university graduates (Borg and Mayo 2001). Gatt (2012) studied the spatial distribution of inequality through mapping and found that the South Harbor region, including Cottonera, contains the highest number of ESLs. Her findings support the argument that there is a strong correlation between low socioeconomic status and increased truancy, one of the major factors leading to ESLs (Cauchi 2008).

Historically, Cottonera was an important hub for ship building and other maritime activities after World War II. Once Malta gained its independence, this industry was privatised and eventually disappeared leading to high unemployment. Heavy bombing during the war also played a role in the economic breakdown. Cottonera is currently regarded as a socially deprived area with a high human population density and dependence on social benefits, as well as high crime rates (Azzopardi 2005; Cutajar and Vella 2008; Cutajar et al. 2013; Cutajar 2014). Poverty can lead to varying levels of social exclusion, including poor societal integration. It is further associated with familial breakdown, criminal activity, poor health and low income, among other

factors. Prejudice and discrimination follow this exclusion (Deguara 2008). Deguara (2008) also found that Maltese children growing up in poverty are linked with poor school performance and that welfare subsistence is not enough to meet basic needs. Furthermore, in Cottonera specifically, children are rarely encouraged to pursue higher education, rather they are more intent of finding manual labour jobs like their parents. Over generations, education is not seen as an option (Azzopardi 2005).

Yet despite its strong affiliation with the working class, Cottonera contains an interesting juxtaposition of palaces and low-quality social housing/decrepit buildings, among which is the Maritime Museum in the city of Birgu. Borg, Cauchi and Mayo (2003) looked at cultural attitudes in Cottonera regarding this museum. Residents of Cottonera suffer from high illiteracy rates and low level of education coupled with low self-esteem, which the authors argue can be summarised as a general feeling of alienation towards cultural infrastructure and events. Interviews also revealed an “internalised oppression” from schooling disparaging the knowledge and cultural practices of the Cottonera region. In turn, events at the Maritime Museum are seen as elitist. The fact that experts were sourced for the dockyard display, rather than seeking narratives from the community on their struggles, deaths and disabilities following rough labour, only enhance the separation between Cottonera residents and the museum/academia (Borg, Cauchi and Mayo 2003).

Undoubtedly, insecurities and alienation are likely felt in other parts of Malta, but the unique history in Cottonera alongside a recent and unsuccessful attempt to enhance culture through the museum, make this site a prime location to begin understanding vulnerable youth.

1.2.2 Youth Work

Empowering youth, especially those coming from regions like Cottonera, can be done in several ways. Youth work and youth centres have long been recognised as an integral part of the structural support system for youth across all socioeconomic demographics. The following definition describes what is meant by youth work:

‘Youth work’ as defined by the In Defence of Youth Work campaign (IDYW, 2009) is where young people freely engage in universal open-access facilities offering informal education opportunities, addressing issues based on their own perceived concerns and interests. It is a distinct way of working where relationships amongst young people, and between young people and adults, are rooted in mutual respect and trust. (Davies, 2010)

Although providing safe spaces and establishing meaningful, caring relationships that help empower youth, government may not understand how necessary youth centres and youth work are. In turn, funding becomes problematic (Davies 2010; Hughes et al. 2014; Mason 2015). Inability to be seen as a profession can also be an issue and is correlated with the difficulty in finding paid jobs as much of youth work is expected to be voluntary (Mason 2015).

Malta has an interesting history with youth work compared to other parts of Europe. Youth work began in the 1940s (Devlin 2012) when the country was still very much entrenched in Catholicism. Supporting youth was therefore left to religious institutions or voluntary organisations of a particular political leaning. From 1992, a Bachelors degree was specifically developed at the University of Malta (Youth Work and Community Studies) to help steer youth work into the professional sector and a Masters degree was introduced in 2005 (Colley 2005). In addition, an agreement between policy-makers and the Malta Union of Teachers (MUT) was made to integrate youth work into schools, which has been observed in this study. However, it remains questionable whether the agreement can go further so that youth have support outlets other than schools, voluntary organisations and the church (Coussée, Verschelden, and Williamson 2009).

Being a small island nation, changes can spread rapidly. Malta has seen a large shift towards secularism, especially in young adults and youth. The right to divorce and gay marriage have been legalised within the last decade only. Azzopardi (1998) argues that as large cultural and societal shifts take place, youth need

support to find their place within them. Along with necessary support, it becomes an ongoing process to understand what youth want and need. Azzopardi (1998) found that adults working in youth organisations were too dominating. In contrast, youth seek independence and informal education in preparation for future work. The discrepancy, according to Azzopardi, arises in adults projecting what they feel is important on to the youth.

To address the above conclusions at present, it worth exploring how effective youth work is now in providing paid opportunities to trained professionals, safe spaces for youth and developing caring and trusting relationships based on the desires of youth. Agenzija Žgagaž (AZ), a government organisation that aims to empower youth through activities, support and policy implementation in recognition of youth interests, is the current primary employer of youth workers (YWs). As such, they were considered an important collaborator in this study. It should also be noted that according to Devlin (2012), increase in voluntary organisations focused on youth empowerment, government (AZ) and university degrees specifically in this profession have not led to more paid jobs, rather graduates resort to voluntary work.

1.4 Study Aims

The aims of this study were to:

1. identify the needs and desires of youth in regards to STEAM engagement, as well as possible barriers to becoming critical thinkers and attending university;
2. understand how to properly approach vulnerable youth in the context of conducting research;
3. develop targeted research questions based on the data gathered and analysed here; and
4. identify potential barriers to youth participation in future, long-term study.

This was a qualitative pilot study. In sociology, it is crucial for determining the feasibility of the proposed research and testing research questions. There are numerous advantages, including making a case for funding and identifying problem areas within the proposed methods. However, negative aspects should be considered as well, such as making incorrect assumptions or predictions that are applied to future research. Moreover, a pilot does not guarantee that further research will be successful (Teijlingen and Hundley 2002).

The results presented here are based on an exploratory approach with interview questions and focus groups designed to be partially structured, allowing for participants to discuss subjects of their own accord. This was also done to better understand youth perspectives on given topics and enhance their engagement throughout (Morgan and Krueger 1998).

2. Methods

2.1 Data collection

A literature review was conducted before beginning fieldwork on youth work, STEM and STEAM engagement and barriers minorities face relating to education. Data was collected over a period of several months. Several academics and those working in the voluntary sector with vulnerable groups were approached for input in study design and possible partners with whom to collaborate. Interview and focus group questions were then developed for vulnerable youth living in the Cottonera region. Table 1 below lists the organisations and institutions that were consulted.

Persons chosen for consultation included those that the researcher and supervisors already knew and who could contribute valuable feedback, as well as the application of the snowball sampling technique (Atkinson

and Flint 2001), in which the researcher approached organisations and people based on referrals from those previously consulted. An application was sent to the University Research Ethics Committee (UREC) at the University of Malta (UM) for approval once research study design, interview and focus group questions and consent forms had been developed. After the study was approved by UREC, observations began.

Table 1: List of people consulted as represented by their organisation, project and/or faculty.

Name	Type of organisation/project or Location
Faculty for Social Wellbeing	
Faculty of Economics, Management & Accountancy	University of Malta
Cottonera Resource Centre	
Prisms Malta NGO	Non-formal learning and support for youth
Kellimni.com	Solidarity Overseas Service (SOS) Malta
Agenzija Żgħażgħ	Governmental organisation supporting youth

Based on the literature and feasibility of working with vulnerable youth, a partnership was made with AZ. Collaboration was also done with the Cottonera Resource Centre (CRC). The CRC allowed the researcher to attend mentoring sessions and through the AZ, attendance at the Youth Cafe in Birgu, a space especially designed for youth to optionally attend outside of school. Staff, mainly YWs with AZ, agreed to aid the researcher in encouraging youth participation in this pilot study, as well as signing consent forms (Appendix 1 and 2).

Rather than sampling randomly from a population, staff from AZ and CRC were given the criteria for vulnerable youth and consent forms were handed to specific individuals who met the criteria. Vulnerable youth were defined in this study as: at risk of becoming an ESL, at risk of committing crime or already having done so, poor school performance and/or coming from a poor socioeconomic background. This was done to ensure that the pilot study was targeting the appropriate group and does not mean to represent all vulnerable youth in Malta.

The research was broken into two main parts: observations followed by interviews and focus groups. The researcher conducted all observations without a translator and began as a complete observer having little to no interaction with the participants and taking notes (Bernard 2006). However, YWs at AZ noticed that such an approach made some youth uncomfortable. Following advice, the researcher changed the observation method to complete participant – the researcher joins the group being observed without others knowing and notes were recorded afterwards (Barnard 2006). It should be noted, however, that some youth remained aware of the researcher’s purpose after the observation method was changed.

Observations totalled approximately 30 hours and were additionally performed by attending ‘detached’ sessions: YWs from AZ walk around the Cottonera area and speak to youth they encounter to inquire how they are doing, any concerns or needs they may have and to keep note of youth that have dropped out of school or are thinking of doing so. These sessions occurred in the evening after school hours and lasted approximately one and a half to two hours. The researcher spoke directly with YWs and acted as a complete observer whilst YWs interacted with youth and their parents.

Consent forms were handed out before, during and after observation sessions. Once forms had been signed by both the youth and their parents (for those under 18 years of age), focus groups and interviews were performed (Appendix 3 and 4). Based on discussions with project partners from UM and AZ, a sample size of ten youth and five YWs was agreed upon. Getting consent forms signed by both willing youth and their parents proved to be a very difficult endeavour, as well as keeping contact to plan meeting times. A total of seven youth participated in two focus groups and five of those were later interviewed.

Incentives were planned in advance to encourage youth participation. During focus groups, pizza and soda

were provided. After each interview, youth received a gift bag with headphones and other small items. However, poor communication, resulting primarily from a language barrier, caused youth to forget that incentives were involved when the interviews and focus groups took place (sometimes several weeks after signing a consent form). This was noted by the surprised reactions youth expressed when receiving the gift bag.

Focus groups were intended to include no more than five youth in one session. The questions, like in the interviews, were semi-structured and open-ended to avoid bias and provide youth with a comfortable atmosphere. The small group size and length, no more than an hour and a half, is based on focus group planning guidelines (Bernard 2006; Cronin 2011; Morgan and Krueger 1998). The first session included three youth and the second session had four. A document describing the project was handed out to all participants, as well as to those who expressed interest when accepting a consent form (Appendix 5). However, during the focus group session, youth declined to take the document when offered.

This study originally planned for two focus groups, the first to gain trust and attain a rapport and the second to focus more on their engagement with STEAM, as well as their desires and needs regarding possible participation in further research. A local moderator was selected to lead the focus groups and conduct interviews in Maltese and to give the researcher room to act as an observer and take notes. Due to the difficulty in finding appropriate times for both the researcher, moderator and youth to meet, the second focus group did not occur. This was also due to the researcher and moderator travelling abroad for a period and the youth subsequently losing interest in participation. Two of the seven interviews planned were not completed for the same reasons.

2.2 Data analysis

Thematic coding was applied to analyse all the data. Such an approach is a well-established method in qualitative research (Hayes 2000; Miles and Huberman 1994).

Thematic coding is used to identify linkages and themes emerging from interviews, observations and focus groups. The data was read over several times to identify recurring subjects. Patterns that emerged from overlapping subjects were then grouped into major themes. Further sub-themes were established from the major ones. Any data that stood out and expressed isolated, yet significant viewpoints were also noted in the analysis. The coding was done through an inductive or ‘bottom-up’ approach, in which theories are constructed from raw data and specific observations to build conclusions (de Vaus 2014; Frith and Gleeson 2004).

3. Results & Discussion

Three major themes have been identified from theme coding analysis: responsibility, education and identity. Under these umbrella themes, sub-themes are discussed in detail below.

**Note: Quotations below are labelled by type of participant and activity.*

I = Interview; FG = Focus Group

YW = Youth Worker; Y = Youth

3.1 Responsibility

Youth workers display a clear sense of responsibility in their relationship to youth, and thus, remain committed for long periods. Youth, however, seem to show little sense of responsibility and perhaps as a consequence, find commitment very difficult whether in terms of playing a game or going through required preparations for a project. The first two sub-themes explain commitment pertaining to YWs and youth. The third delves into bureaucracy, an invisible hand in accountability that often does more harm than good.

3.1.1 Commitment (Youth Workers)

Socialised health care systems are frequently pressed for more hospital and clinical staff, as well as doctors. The situation becomes even more difficult for mental health, a sector that is only now beginning to get the attention it deserves alongside physical care (unpublished consultations, Ministry for Health 2018). Malta is short on mental health care practitioners, which results in those who seek attention being put on waiting lists followed by inconsistent visits and appointments.

During interviews, YWs spoke of the tiredness youth felt in being passed through many professional hands, from social workers to counsellors and psychologists. Adding to these seldom visits, which may occur only once a month, youth not only grow dreary over the interactions, but also become closed off and unwilling to discuss their personal lives. Formal meetings and appointments with health care practitioners appear to have little positive outcomes according to YW perceptions. Furthermore, the expressed common occurrence of yelling and abusive language from teachers does not yield positive results when it comes to academic performance. Youth themselves expressed lack of confidence in the system and how it can be taken advantage of:

“Apogġ will call people. What will Appogġ do? They will come to your home, see you alone and then that’s it... They will find out what you do... They come to school to speak with you and you obviously enjoy it because that means you skip your lessons.” (Y, FG)

“[Social workers come] in my best free lesson, right after recess. I would be thinking, I’ll play some Xbox at school. They’d come to annoy me there. I tell them you’re tormenting me, it’s a torture here... Why should I talk to her in the first place?” (Y, FG)

As opposed to professional help, YWs are with youth on a consistent basis and are trained to communicate in a supportive way. Their presence allows relationships to become established and grow. Through commitment, trust often follows between YWs and youth. Youth open up about personal issues and seek help with life goals, such as preparing a curriculum vitae (CV) to find work. There is no argument against youth work being considered a profession here, however, the appearance to youth that YWs are not professionals helps them develop trusting relationships in which youth feel safe and comfortable confiding about their personal issues:

“I go with running shoes and a funky t-shirt, I use this <inaudible> which is not pretentious and I use street language with them... If he says something like, my parents don’t understand me,...I wouldn’t say, ‘hm, seeing it from a Freudian perspective’, I mean that would just push them away... [I say instead], ‘that must suck, sometimes parents really don’t get us, eh?’ and [that] helps them not see me as a professional.” (YW, I)

Youth workers are committed on several levels, not just through interactions at the Youth Cafe. They visit schools, participate in programmes and activities on weekends, for example, EU youth exchanges and camping trips, and spend a significant amount of time interacting via social media with youth outside of regular working hours.

Observations and interviews with YWs revealed that youth are much more willing and able to have dialogue in a space that is easily accessible, open and casual. Rather than YWs trying to push their values on the youth themselves and dissect their problems in a psychological way, they simply aim to meet the youth at their level and express compassion over whatever issues are discussed.

“I once had this girl that refused to see anyone. They said, ‘would you like to speak to her?’ and I said okay... She closed the door and said, ‘listen, if you’re a social worker, psychologist, psychotherapist,’ and she mentioned about five different professionals, she said, ‘I’m not going to say a word; I’m just going to walk out of here’... I just basically explained that she can come voluntarily. We don’t give appointments; I’m not giving her therapy. I’m just there for her... She said, ‘okay, I’m going to give you a chance’... And.. then the relationship grew. But it was only on those conditions that I’m not any of the others, I don’t walk in with a briefcase and start taking notes... Some people they’re just fed up of having so many professionals prodding into them... They [professionals] just have such a long list of people..and can’t possibly really get on a personal level with them if they got a list of ten students to see in one day... They’re [professionals] trying their best and sometimes they’re just burnt out. Then you have the courts and the lawyers, the separation between parents and everybody starts trying to pull them apart and there are probation officers in some cases, court orders, and..there’s about ten different professionals and everybody has a small piece, but nobody has the whole piece and they’re [youth] just fed up of having all this.” (YW, I)

3.1.2 Commitment (Youth)

Observations revealed that youth struggle with commitment in terms of participation, but the opposite holds true for relationships and hobbies. When presented with new games or activities, youth as a whole had a short attention span. Games were met with initial enthusiasm and after a period of less than ten minutes on average, youth would begin talking to others and abandon the activity. The short attention span may be correlated with the digital age since youth have access to multiple forms of technology on a regular basis, and the rise of the internet has led to an unprecedented high level of multitasking and media consumption (Brasel and Gips 2011; Lee, Lin and Robertson 2012). However, there are not enough data to definitively conclude that attention span has been reduced in vulnerable youth from technology exposure and research suggests it affects youth across all socioeconomic demographics (Barnes, Marateo and Ferris 2007; Roberts, Foehr and Rideout 2005).

One activity in particular stood out in this study. A postgraduate student planned a set of games for youth at the Youth Cafe, which was initially met with unease because the games involved water. Several youth complained that they were not told in advance and did not want their clothes getting wet. Eventually some of the youth felt bad for the student, whose supervisor was coming to observe, and agreed to join and split into two groups. The games were catered to a younger age group, however, the youth showed competitiveness and excitement. Once a given challenge began taking too long, they began to cheat. This seemed to occur over a desire to finish more quickly, rather than to be the winning team. The quote below illustrates why games for younger age groups can be so appealing for youth:

“... we do experiments [that] are aimed at a much younger demographic and... [I think] they’re going to be bored... but actually, keeping it basic, they love it... They find it really engaging whereas if I was to get something that is for a slightly older team, which involves a little bit more planning and preparation, they would just disengage half-way through because it’s too complicated or it involves too much depth... I think a lot of it is because they’re afraid to fail.” (YW, I)

A discussion was held afterwards led by the student; several said the games were fun when the researcher asked them directly for their opinion. The rush to end the activities suggests a correlation with lack of

commitment given several of the youth when approached afterwards expressed to the researcher that the activity was very fun, although disinterest remains a plausible explanation as well. It is impossible to say whether commitment is lacking in regards to interpersonal relationships, activities, institutions, or a combination of all three.

These observations match with data collected from YW interviews. All interviewees claimed that commitment to a long-term project or research study would be a significant barrier to participation. The Youth Cafe appears successful in seeing certain individuals return each year in part because there is no obligation to do so. Therefore, any future research needs to establish the same kind of flexibility.

For relationships and serious hobbies, youth are clearly committed. Some have been attending the Youth Cafe for over four years. Aside from the visible success the Cafe has had in providing what youth have asked for, this is also a strong indication of what youth consider a supportive and safe environment. Observations indicate that youth attain skills on their own and seek help regarding hobbies that are important to them. BMX bicycles and skateboards are common among mostly male youth. They not only practice on a regular basis, but have taught themselves bicycle repair. Similarly with music, those that are interested in a particular genre, such as metal, spend a lot of time absorbing and reflecting on complex lyrics, as well as practicing instruments like the electric guitar.

Interestingly, youth who have been attending the Cafe for years often do not know their operating hours. A particular conversation with such an individual suggests that a sense of responsibility comes from personal interests, as opposed to environmental influences. This individual asked the researcher when the Cafe will open and discussed his enjoyment of cycling, which he does on a daily basis. Further dialogue indicated he knew some elements of bike repair and was very dedicated to the local “festa”. He was able to recall specific dates and the particular events happening on each day, in addition to volunteering for the event. In the literature and from consultations, youth from poor socioeconomic backgrounds are considered irresponsible with little motivation. Yet this dialogue showed initiative, a sense of belonging to the community and commitment on the part of the youth. Knowing the operating hours of the Cafe, on the other hand, is simply unnecessary as that is something that can be left for adults to manage.

It is clear that youth are able to develop skills on their own and in combination with help from supportive staff, as well as take initiative. Yet when it comes to simple tasks that are not directly related to their hobbies, such as signing-in when they enter the Youth Cafe, they appear completely apathetic. Majority of observations noted YWs walking around the Cafe getting youth to sign-in. Youth, as noted by the staff themselves, are very free when it comes to expression, appearance and where/how they spend their time. Based on YW statements and observations, the author suggests that lack of commitment may be correlated with a feeling that their freedom of movement and expression would be compromised otherwise.

3.1.3 Bureaucracy

Bureaucratic measures are not always tangible, but rather act as invisible lassos that slow down processes in government, education and various projects. As a result, the consequences for this study were significant.

During a YW interview, the issue was explained very clearly. Before the Youth Cafe became part of AZ, youth requested ramps for their bikes and skateboards. The youth together with YWs devised a budget, held a fundraiser and over the course of two months, raised money, acquired materials and built ramps. The interviewee stressed that had this request been made under AZ, the process would have taken around two years and become much more convoluted and overly complex. The government would require, among many other restrictions, an engineer to plan the building of ramps. The funding would also have come through much more slowly. Over a span of two years, youth lose their trust in the organisation and staff. Thus, they distance themselves from the activities and support provided. It should be noted, however, that this is a personal view and thus, it cannot be stated as a fact that under the government, ramps would have taken years to build.

When the researcher attempted to explain the project and consent forms, many youth did not pay attention or only pretended to understand. This was later confirmed by the fact that some youth were surprised when they were told their parents needed to sign a separate form, despite this being said on several occasions prior. As a result, interviews and focus groups ended up occurring months later than originally planned.

The signed consent forms may also have prevented other youth from participating, a conclusion corroborated by previous studies. On top of consent forms being lost or forgotten numerous times, literature suggests that the action of signing over verbal consent may make the research feel too formal for the participant or introduce suspicion (de Vaus 2014). Requiring active parental consent was an additional limitation. There were a few cases in which youth signed the forms, but could not participate because parental consent was not provided. Previous studies have found this to be a barrier in youth recruitment and participation in research, especially when it requires additional tasks upon staff/administration and youth, for example, requiring youth to bring back signed forms to a particular person or place (Crow et al. 2006; McCormick et al. 1999; Pokorny et al. 2001). It is worth considering the required parental consent in this study when it comes to participants between the ages of 15 and 17. Bruzzese and Fisher (2003) found that from the age of 15, youth understand their individual rights and display the mental faculties necessary to provide informed consent. Furthermore, some studies even argue for waiving parental consent when the research is on sensitive subjects, such as sexual orientation (Schelbe et al. 2015). Although this research did not delve into such personal topics, it is possible that youth feel so independent and capable of making their own decisions — according to observations and consultations — that requiring parental consent put them off participation. For example, observations revealed that some youth are allowed to attend music concerts from the age of 11 without parental supervision. Many youth under the age of 18 also had visible tattoos and piercings that were approved by their parents.

A report by Azzopardi (2012) looked at youth participation in the voluntary sector. Despite a plethora of opportunities at hand, participation was found to be low. This is due to several reasons, including bureaucracy. Given EU projects not only require consent forms, but also additional forms as proof that an activity took place and which individuals attended, the author suggests that the findings in this study support the notion that bureaucratic tape in the form of paperwork, including consent forms, and required attendance for activities alienate youth from participation in a wide range of voluntary work and EU programmes. The degree to which youth did not participate purely from lack of interest and apathy could not be ascertained.

3.2 Education

The education system in Malta is quite rigorous, with long syllabi and retention of theory that leave little room for application to modern day society. Arts for example, rather than incorporating modern forms such as spoken word and graffiti, stick to classical within a conservative and academic sphere. However, the Maltese government is seeking to reform the system and it was indeed apparent in this study that youth do want to learn, but one of the barriers to learning come from an unhelpful and outdated education system.

3.2.1 Academic Structure

The MEDE report did mention the need to reach out to students and create a more engaging and nurturing environment with relevant material in the classrooms. However, there were opposing conclusions regarding resources, which the MEDE argues are lacking. All YWs during interviews felt that resources, such as computers, are available and the real issues lay elsewhere. The MEDE report also argues for more therapists and psychologists, which is contrary to what was found in this study. What youth need, according to the YWs, is mentoring, support and safe places where they can indirectly attain life and communication skills:

“The school has everything; it has labs, sports equipment and sports facilities. It also has resources as in people, like teachers. . . In my opinion most of the young people want more practical things; ..they need to experience things rather than sitting there and listening to somebody. It’s the way we deliver our knowledge to the young people; it must be fine-tuned more..you see the murals [at the Youth Cafe], they [youth] have art lessons, but go to a secondary school and you won’t see one mural. The art lesson is the classical art lesson and that gets a limited number of young people there who are interested in art, while if you do something more practical, involve more people..to give them the opportunity to practice, to make things, to fail, [like graffiti art, it’s more effective].” (YW, I)

In this vein, inquiry-based science education (IBSE) may be an appropriate structure to implement in schools. IBSE can start at primary level, in which teachers act as guides for students going through the process of asking questions and exploring a scientific concept. Teachers focus on the learning process, rather than handing out instructions within a top-bottom approach. Like science, art also requires inquiry and the process of conceptualising, as well as discussing the very definition of art itself (Rosenberg 1983). Therefore, IBSE may be impactful in other subjects as well.

The youth themselves had strong opinions about the education system during interviews and focus groups. Among various concerns, youth feel drained from the amount of exams and homework outside of school hours. If they were to dedicate ample study time in preparation for exams, homework aside, they argue there would be no time left for socialising and/or employment. Youth workers often mentioned the importance of making subjects relevant to the present and geared towards student’s interests. One youth mentioned the importance of relevance during a focus group:

“What bothered me most was that you’ll be enrolled in a course..mechanical. . . Why are they teaching me about science and atoms, about gases, liquids and other things. . . English and Maltese alright, I can understand because when you’re a mechanic, you have mechanical vocabulary in Maltese [and] English. What I cannot understand is why we had those subjects as compulsory. Science can be about cars, such as oil and fuses in the car, but why are we learning about the human body and about solids, liquids and gases? . . . These are things we learned about in secondary school and we relearn them in level 2 [in MCAST].” (Y, FG)

In addition, youth feel that school starts too early. Studies have already found that children and adolescents are not getting enough sleep, which coincides with people in general filling their day with too many tasks and an inappropriate amount of exposure to lights from mobiles, computer and tablets (Arora et al. 2013; Currie 2008; Ernest et al. 2014; Hale and Guan 2015). In fact, numerous studies have found that because of changing circadian rhythms, youth go to bed later and thus, should wake up later as well. Lack of sleep from early start times are associated with: reduced cognitive function, daytime fatigue, absenteeism, tardiness, increased risk of car accidents and negative impacts on both physical and mental health (Dewald et al. 2010; Minges and Redeker 2016; Smith et al. 2014; Watson et al. 2017). Having the school day start later ensures that students are more prepared for classroom lectures and activities without the struggle of trying to stay awake (Watson et al. 2017).

A major concern for youth in this study was around homework. Although there are many studies both for and against homework, it is clear that the amount and type of work assigned should be considered by teachers (Cooper, Robinson and Patall 2006; Dettmers, Trautwein and Lüdtke 2009; Marzano and Pickering 2007). In other words, teachers should assign homework that benefits students rather than acting simply because of policy, although more specific recommendations on the way forward are still necessary according to Marzano and Pickering (2007). Youth also expressed feelings of stress regarding examinations, which is a common occurrence in countries that prioritise exams. In the US, standardised tests, rather than reflecting student performance, were found to be associated with ESLs and inappropriate reporting from teachers and schools – since the results are used to rate teachers and their institutions (Bhattacharyya, Junot and Clark 2013; Goldberg 2005; Marchant 2004). Many hours of studying and preparation for exams have been linked to high stress levels and depression (Lee and Larson 2000).

This is not the first study to highlight the voices of vulnerable youth. Cefai and Cooper's (2010) review of several qualitative studies corroborates the findings here. Youth are vocal and very clear on the changes that would help their education, some of the overlapping suggestions include caring teachers and an inclusive and relevant education system.

The greatest improvements to academia may result from consultation with students and youth and thus, restructuring the system in a way that caters directly to their needs and desires. Such an approach is known as student-centred education (SCE), or learner-centred, and has already proven effective in places of implementation (Gunderman et al. 2003; Schellekens 1996; Wright 2011).

3.2.2 Teachers

In schools with limited finances and/or requirements of a minimum number of teaching hours, teachers are also often left in difficult situations. For example, some teachers specialising in science may end up teaching a maths course or be required to go into a level of detail they have not been previously trained to do. According to literature and from the data collected in this study, some teachers admit to teaching subjects at a higher level than they feel comfortable with whilst other reports have found teachers lacking the skills and tools to engage students with the given material (Cefai and Cooper 2006; MEDE 2011; MEDE 2012a; MEDE 2013).

Furthermore, as mental disorders and disabilities are increasingly recognised by appropriate diagnoses, an absence of teachers specialised in dealing with this also has become an issue (Askill-Williams and Cefai 2014; Cafai, Fenech and Galea 2007). Lack of training and patience may have unknown and severe negative effects as well (Cefai and Cooper 2010). One youth in particular illustrated how teachers express prejudice by openly calling out students that they believe will become ESLs due to particular behaviours. This may be linked to claims by youth that teachers commonly have favourites:

“There are a lot of teachers who if they see someone doing something [‘bad’], they say this one will soon leave [drop out of school] and they leave for somewhere else.” (Y, FG)

Exclusion in traditional schools is indeed a problem. Instead of trying to understand why a particular student is failing and offer support, they are sometimes encouraged to leave early and enter the labour market instead (Azzopardi et al. 2013). The frequent misjudging by some teachers, especially of students with social, emotional and behavioural difficulties (SEBD), does little to help. Students with SEBD have reported feeling bullied, excluded, victimised, silenced and bored with heavy academic curriculum (Cefai and Cooper 2010). This becomes more worrying considering approximately 10% of Maltese students have SEBD (Cooper and Cefai 2013). Cefai and Cooper (2010) stress in their review of several qualitative studies that the negative reactions of teachers and systematic abuse are the very factors that directly correspond with increased absenteeism and deviant behaviour, paving the road for social exclusion as young adults. Such conclusions have been drawn in other work, adding that students are put in a position to fail once they are deemed “difficult” (Borg and Calleja 2006).

During focus groups, all youth agreed that some teachers are considered acceptable, but that many others are either unhelpful, apathetic and/or abusive. Youth also mentioned bullying, which was claimed to have been performed by some teachers. A very common assertion was negative reinforcement, that teachers yell and threaten when they feel the students are misbehaving, namely talking during class.

“There are some teachers who are decent with their students as they understand them. There are those teachers... who, for me, only know how to work with threats.” (Y, I) “In secondary art, I never produced anything for the teacher. Honestly the art teacher was a total loss. He wouldn't help you, left you to your own devices. If you made a mistake he would shout at you instead of explaining and helping you fix your mistake and I stopped caring for the subject.” (Y, FG)

In particular, the quote below illustrates the problem of stress, which was identified in another international study by the WHO (2008) that surveyed 11-, 13- and 15-year olds, a high percentage of whom reported

feeling pressured in association with schoolwork:

Interviewer: “So you view school as highly stressful.”

Participant: “Yes because they [teachers] drive you crazy pressuring you to pass the exams. For example, in our half yearly, if you didn’t pass, the teachers would start scolding and complaining.”
(Y, FG)

Studies have found that the opposite method, positive reinforcement, is more effective, and not only is successful at reducing disruptive behaviour, but also helps create beneficial relationships between teachers and students (Atkin-Little et. al. 2004; Luiselli et. al. 2005; Maag 2001). Furthermore, positive reinforcement extends beyond the classroom by encouraging the development of well-rounded individuals that engage in success-seeking thought processes and actions rather than failure-avoiding (Wiegand and Geller 2005).

Studies have also found that interventions and school-wide implementation of positive reinforcement schemes yield rewarding results. School-Wide Positive Behaviour Support (SWPBS) is an example of such, involving measurable outcomes and data-based decision making, as well as an evaluation (Sugai and Horner 2006). The five-step implementation plan displays a very clear beginning, middle and end (Sugai and Horner 2002). It is suggested that a number of public Maltese schools implement a similar structure to test whether it is effective in decreasing disruptive behaviour coinciding with improved relationships between students and school staff.

It is worth noting that there are many teachers who want to improve their relationships with students, in particular those with SEBD. Some teachers have reported depression and increased stress levels in attempting to cope with SEBD youth. Cooper and Cefai (2013) suggest that teachers be trained on how to identify triggers. In addition, it is clear from other local studies that teachers require support and adequate training to not only learn about better approaches to inclusive education, but also to strengthen relationships with the surrounding community, including parents (Askill-Williams and Cefai 2017).

3.2.3 Informal Learning and Mentoring

The debate on formal versus informal learning has spanned decades. Scientists have argued that formal learning does not allow for knowledge transfer between subjects, whilst informal has more context and relevance, as well as providing a holistic environment that encourages creation and growing from experiences and collaboration (Colley, Hodkinson and Malcom 2002).

Informal learning was addressed by all YW interviewees. Rather than the traditional structured, teacher-centred settings that provide little stimulation, informal learning focuses on passive knowledge acquisition through various activities, including mentoring and networking, as well as knowledge transfer in unstructured settings (Colardyn & Bjornavold 2004; Eshach 2007; Marsick & Watkins 2001). In fact, some studies have argued that formal learning, rather than informal and non-formal, may be overly restraining. It is often conducted in specific settings, such as a classroom, is highly structured and requires evaluation. Formal learning is not usually accompanied by dialogue on why given material is necessary and/or relevant to the student. On the contrary, informal learning provides a more supportive atmosphere that is often learner-led and more successful in motivating students, as well as raising interest (Eshach 2007).

Youth workers described various events in which youth were engaged, excitable and tried new things. According to their descriptions, these events directly correspond with informal learning. In fact, the term was used several times in association with ‘hands-on’ and ‘outdoor activities’. Although there are not enough data on the positive outcomes of informal learning, this method was often addressed by interviewees, all of whom also felt informal learning should be expanded. Therefore, it is suggested here that this method may be a successful approach to improve critical thinking, especially for vulnerable youth, and further research should investigate the inclusion of this approach in schools and youth centres.

Mentoring also can be broken into the same categories. Whilst one form should not exclude the other, Colley, Hodkinson and Malcom (2002) found that informal mentoring was overshadowed by a growing formal mentoring scheme, in which topics, measurable outcomes and success pathways for encouragement are planned in advance. Volunteers are rare and most employees come from backgrounds unrelatable to mentees. Informal mentoring, on the other hand, often comes from adults of the same background and socioeconomic class, encourages mentees to direct the dialogue, promotes social and political awareness and allows mentees to identify their personal needs (Colley, Hodkinson and Malcom 2002).

One participant noted that mentoring exists beyond the YWs and is strengthened by creating a community in which people who have already gone through the educational system can aid in providing support for youth:

“... you have YWs who work with young people and they work with them constantly until they’re well into their late 20s, early 30s. I think getting those older young people that have gone through the system..to work with the young people today [to bring] sort of that community collaboration to working with YWs, involving the community and taking it from that grassroots level... [I] think if you get lots of outsiders all the time, it can be detrimental more than helpful... [In] Malta where everyone knows each other, it can create those connections, [which] I think would be more beneficial.” (YW, I)

Establishing this kind of supportive community may perhaps be more effective in helping youth acquire skills that pertain to their interests and achieve personal goals. In this regard, metrics need to be designed to measure success with these youth based on the quote below:

“Sometimes we gauge success [on] the amount of young people that are working and the amount of the young people that are continuing school..[some] don’t go to university... I had a number of young people [with] mental issues. and they used to go to..the young people’s unit [mental hospital]. I used to go there every week, but whilst I still work with them, they didn’t succeed in the programme I was doing with them. They didn’t manage to find a job, but they reduced the amount of time they were spending in the hospital. So for me it was another success, but for society or for the system... it was a failure, because they didn’t find work; they didn’t continue the programme.” (YW, I)

Another YW spoke about the negative experience of doing what a partner organisation felt was right and would lead to success rather than understanding what the individual wanted:

“I try to force another organisation’s agenda on a young person and it totally backfires... You meet with a young person who unfortunately didn’t, because of his reality, he didn’t really strive forward, you know, in our opinion. [But] I’m sure for him, he’s doing fine.” (YW, I)

Although the data are based on a small sample size, it is worth emphasising the potential highly beneficial aspects of informal learning and mentoring. Furthermore, the author suggests that informal mentoring become established in formal settings across the Islands, primarily schools, as a standard part of the academic structure.

3.3 Identity

The way youth identify themselves is undoubtedly according to the individual, however, overlapping characteristics did appear during the study. Youth appear to have strong opinions about particular subjects and well-developed ideologies and belief systems. They know what they like and do not. On the surface, personal strengths and weaknesses are clearly vocalised.

3.3.1 Insecurity and Fear of Failure

Youth workers frequently brought up insecurity issues and the fear of failure, corresponding to observed growth in confidence (from the viewpoint of staff) after spending time in the Youth Cafe and with YWs. Observations only revealed surface insecurities surrounding physical appearance, which one would expect in teenagers, however, deeper insecurities are suggested by the author to be of significance. It is difficult to measure the level of and subject of the youths' insecurities, although it is possible that stigma, bullying and education are all contributing factors (Cefai and Cooper 2006; OECD 2017; MEDE 2013).

As previously stated, the Youth Cafe and other similar youth centres appear to offer a very good alternative for the following reasons: it is a space tailored to their desires, provides support regarding schoolwork and job allocation and always has trained workers that act as mentors and friends, without the daunting formalities of a therapy or evaluation session. Yet the support extends beyond a physical presence. Many youth may have insecurities regarding their behaviour and limit themselves around peers, for example, hiding interest in an activity because surrounding friends are visibly uninterested. The Internet has been a major boon for YWs and youth in this case because it introduces anonymity. Youth can reveal their true concerns and interests without the worry of being judged by friends and without seeing the reaction of the YWs.

During interviews, YWs revealed that a significant amount of interaction with youth occurs online. Although face-to-face is preferred for all, Facebook has become a very close second. Other social media apps mentioned included Snapchat and Instagram. In fact, youth often privately message YWs in the evening to such a degree that some YWs confessed they have to cut-off communication past a certain hour. This is extremely encouraging because it is indicative of established trust and providing youth an alternative safe space to communicate freely and openly.

Several YWs also expressed that some youth lack practical social skills. Aside from recommended future research investigating the causes of this, it is worth noting that some YWs believe attending the Youth Cafe gave them the ability to develop these skills and gain more confidence in general given the necessity of such skills in daily activities, employment and further study.

“I think it is underrated just having a conversation with them [youth]: ‘hello how was your day’, [because] a lot of them don’t know how to do that... Working with them in that sense, just taking it back to basics because it’s... not done anymore... Depending on their upbringing and their background, you don’t know... their home life... if they don’t get it at home, [they] get stuck. So... we get new people that even struggle to hold a simple conversation... I think social skills are a limitation.” (YW, I)

Yet, although youth are gaining confidence, the ‘fear of failure’ remains a highly intriguing issue which likely stems from insecurity. Majority of YWs believe this is a major issue, which falls directly in line with observations that youth routinely engage in activities that are meant for a younger audience. Rather than ascribing this to slow mental development, this is attributed to the guarantee of understanding, and consequently appropriately engaging in, an activity or task. If youth were to try an activity for their age/school level, they run the risk of performing poorly and/or not comprehending what to do, therefore, they run the risk of *failure*.

“...I start with the fun part and that’s maybe something at the moment we’re [Youth Cafe] not trying to convey... [the point is] having fun in getting involved in different activities. Young people, like all of human beings, want to be safe. They don’t want to fail. ‘If I do something new, I don’t want to fail at it. So, rather than moving out of my comfort zone, I’d rather stay not get involved in a game – if we’re doing a game – or not participating in an activity that [a YW] is talking about or my friends are mentioning because I don’t want to fail; I don’t want to embarrass myself.” (YW, I)

Insecurities surrounding education and school may be factors contributing to this fear. Particular topics

brought up in focus groups, such as mathematics and science, were met with fierce opposition. Mathematics especially was viewed in a negative light by all participants. This begs the question, how are schools teaching these subjects? It is rather unusual that every single participant would have a negative outlook on the same subject given each individual has their own interests, strengths and weaknesses. However, considering the small sample size in this study, this may not be a common occurrence throughout Malta.

“If you tell them the word science, technology, in their mind they immediately say ‘no’. It’s like a horrible thing or it’s something [they’re] not interested in, but they do it, they use it, they practice it because for them science..is the theoretical part, the equations they’re doing at school. It’s not the practical things like, you came with your bicycle today, you changed the chain and the wheel...” (YW, I)

STEM subjects are considered too difficult. When approached with an activity related to these subjects, youth effectively ‘shut down’. Yet, some youth explained during focus groups that they liked science or understood how important it is, but that did not appear to serve as motivation to understand the subject. The interest in science and strong epistemic beliefs regarding scientific research in Malta was high in the latest Programme for International Student Assessment (PISA) report (OECD 2016a; please see Appendix 6 for details on PISA results). In addition, some youth were able to go beyond naming subjects when asked what comes to mind with the word ‘science’. One youth mentioned conservation biology²²The youth described what conservation biology is as a current issue and did not provide the name of this science. and another about how Pluto is no longer a planet. Other youth stated that there are different kinds of scientists, which can be men or women, and their importance regarding medicine. Despite being able to comprehend some varying sides of science, including going beyond stereotypes, the long syllabi, hours of homework and strict academic structure with little hands-on experience may be alienating the youth rather than encouraging them to become more scientifically literate and pursue science careers.

3.3.2 Values and Opinions

Although some participants remained relatively quiet during the focus groups, hard opinions were communicated often and by most youth. This was also noted during observations and before and after focus groups. Youth workers explained during observations and interviews that youth absorb the belief systems of their immediate family and stay with them, as one YW noted, because becoming affiliated with another political party is like an act of betrayal.

When asked what comes to mind regarding the word ‘money’ during focus groups, some youth referred to desires and needs. Whilst a few felt that money is not a necessity in life and therefore should not matter, this statement went against what was said in casual discussions during observations. One youth in particular explained that he did not care about money and spends it as soon as he has it, but during a private discussion, also expressed a desire to travel or even eventually settle down in another country – both of which require the ability to manage and save income.

The author argues that valuation of money is correlated with valuation of work given that many youth were observed either looking for work and ask YWs for advice on finding jobs, or else come to the Youth Cafe to get help with their CVs. Having a job means money for going out and to invest in hobbies, as well as tattoos and piercings. Although youth have future goals, their activities centre around being in front of a computer/laptop or PlayStation, hanging out in parks and streets generally and playing sports. Youth from the southern areas also do not travel outside of their region often – or at all – according to data from this study. Reasons for this may vary from the comfort of staying in one’s own community to insecurities about using public transport. Whilst it is easy to see this as a negative, the identity gained from staying in the same place and working labour jobs may override the consequence of reduced exposure to new environments.

“...youth from Cottonera have a stronger sense of community and they stick up for each other; they have a sense of pride in a way of their origins rather than other high class areas where

they are more self-absorbed and don't care about their surroundings..sometimes the good sense of work ethics [as well]. They've been exposed to the work industry in a way [that] they're not pampered; they know what work is." (YW, I)

During interviews, YWs claimed that for youth, they care about having a home and being settled with a family. There appears to be an even stronger correlation for youth that speak poor or no English given that for UM, fluency in English is a requirement.³³MCAST has recently altered qualifications making it much simpler to get in. One major change is the it is no longer necessary so speak English fluently. Some YWs see this as both a positive and negative change. It is unknown exactly what percentage of youth are automatically excluded from higher education for this reason, however, one can ascertain that without English, youth become limited in their options and therefore may not value education.

"Maybe sometimes they just feel that if you're not achieving something, they'd better stop and go to work. Many of them tell us that, they want to go to work and stop wasting their time. . . I've seen other youth..in the church schools, for example; they're happy to loaf around from college to college, from course to course because they seem to be getting support at home." (YW, I)

3.3.3 Goals

During interviews, all youth were able to discuss goals, including future careers. They ranged from learning languages, travel, becoming a car mechanic and owning a home. It is evident that youth do aspire to 'become someone when they grow up', however, many vulnerable youth are in danger of not attaining such goals. For example, if an individual drops out of school, they may not meet the requirements to complete vocational training in mechanics.

This fascinating contrast between having clear goals and a failure to follow through in later years has been documented in other countries. A podcast from the news organisation, National Public Radio (NPR) in America discussed the struggle vulnerable youth face in a poor Florida town:

"R: Almost a quarter of North Port kids drop-out of high school. Fights break out in the courtyard all the time. These kids may have grand ideas about who they want to become, but they aren't exactly doing the things you need to do to get there."

... T: I would get upset sometimes with my students because of negative self-talk about North Port and about our school. Oh, our school sucks and we suck and everything is terrible here." R: So big dreams, fuzzy about how to get there. . ." (Rosin and Spiegel 2017)

The last line is extremely telling and perhaps reflects what youth in the Cottonera region are facing today. A discussion with a YW mirrored such sentiment regarding a particular individual who said he wanted to become a veterinarian. The YW explained that he had done nothing to improve his marks or get the necessary requirements to later on study veterinary medicine. In fact, this individual eventually gave up on the goal.

It is difficult to find motivation to move forward, and without motivation, it may become an added challenge to locate and take advantage of opportunities. Indeed, high motivation to learn is associated with higher levels of wellbeing (Lovat, Toomey and Clement 2010). Furthermore, lack of support from a young age, as well as being labelled a deviant by teachers, add to the increased likelihood that goals will not be followed through. Given a label, a student is likely to adopt the caricature along with society (Borg and Calleja 2006; Cefai and Cooper 2006). In contrast, positive relationships between youth and their teachers, peers and family, alongside schools with low levels of bullying are associated with prosocial skills and higher self-esteem and self-efficacy (Cefai and Camilleri 2011).

Yet another factor that may inhibit youth from trying to achieve their goals is public shaming, which the author suggests may be correlated with regional prejudice. A study by Clark (2012) found that for offenders in

Malta, regardless of their reputation before the crime or any amount of good behaviour after imprisonment, an offender will always be labelled as a criminal. The shaming extends to the offender's family. During observations, a youth expressed his personal experience with such shaming directly to the researcher. He recalled being rejected by many in his neighbourhood because of his father's involvement in the drug business.

3.4 Limitations

3.4.1 Consent Forms

Gathering signed consent forms was the most challenging aspect during the data collection period. Many youth lost the papers handed to them by the researcher during observations. Despite being told that as minors, their parents needed to sign a separate form, youth either did not pay attention to what was said or misunderstood. It is also possible that youth simply displayed apathy over the situation.

Indeed, there are many issues surrounding consent, including how much information to give the participant without affecting their responses, and no appropriate way of deducing that they are fully cognisant of the research aims. Signed consent may in fact have a greater negative impact than verbal consent (de Vaus 2014). This finding falls in line with the way youth behaved when handed forms, some took the sheets with observed unease whilst others refused outright. However, it should be noted that their reasons for not wishing to participate may have had nothing to do with the forms themselves. It is impossible to determine whether the parents of youth fully understood the study before giving their consent as well.

3.4.2 Language

Although most of the youth could speak English, ranging from fluent to semi-fluent, language was a barrier for the English-speaking researcher when conducting observations. Some youth felt uncomfortable interacting in English whilst others had very little understanding of the language. The researcher was also limited to focusing mostly on behaviours, physical gestures and facial expressions during observations since youth always spoke in Maltese with one another. When the researcher shifted into a participatory method of observation, direct dialogue in English occurred and YWs also aided in translating what some discussions between youth were about.

3.4.3 Interviews/Focus Groups

Despite participants having a willingness to participate in interviews and focus groups, it was difficult to ascertain whether this was out of pity for the researcher, giving in to peer pressure, or genuine interest. It is likely that it was a combination of the three for most of the participants, however, all visibly displayed disinterest after the researcher and interviewer were absent for over four weeks.

In fact, one participant who had signed a consent form at one point refused to continue participation. He was no more inclined to participate after a friend showed him the gifts she received from being interviewed. The situation was explained to a YW who was present and in turn she agreed to speak with the participant and remind him of the commitment he had made. The following day, this participant agreed to be interviewed.

It is expected that the presence of a researcher had a direct and significant correlation to participation. If youth had seen the researcher consistently over a period of several weeks, they felt more inclined to participate in the study. The absence, therefore, had the consequence of creating an alienation from the researcher.

3.4.4. Interview and Focus Group Questions

Although the interviews and focus groups were meant to be semi-structured, the pre-planned questions were sometimes reworded to an extent that it may have affected the responses. As such, this made it difficult to compare the data. This is partially due to some questions being overly long. In many cases, questions had to be repeated and explained. This was especially true for interviews with YWs. It is advised that future research refer to examples only when necessary and develop concise, clear questions.

Questions about STEAM were not understood by most participants. It is also recommended that before data collection begins, researchers take time to explain theories and concepts that are the focus of their research.

Lastly, many examples were given, which may have biased the responses because interviewees tend to answer based on the confines of stated examples (Bernard 2006). The moderator felt inclined to give examples as a form of encouragement, however, in future research it is advised to slightly re-word questions and provide alternative support before resorting to examples.

4. Conclusion

4.1. Addressing research aims

The majority of the aims – how to approach youth, possible barriers to future participation in research and developing targeted research questions – were successfully addressed in this pilot study. Moving forward, there is a better understanding of how to work with vulnerable youth and which direction future research should take. It is interesting to conclude that the major barrier in working with vulnerable youth in a long-term study is commitment and bureaucracy. As previously stated, it is essential to remove paperwork and other lengthy bureaucratic measures from future inquiry, however, commitment regarding trying a new activity or attending an event and participating in project evaluation must be considered. Future research should be designed with the recognition that different youth may be coming in and out of the study throughout a period of several years.

Furthermore, incentives need to be more overt and targeted. It is suggested that monetary incentives be provided for parents if seeking interviews and that they be done in person rather than distributing a questionnaire. For youth, monetary incentives may also be more useful than the ones employed in this study.

That last aim, to identify the needs and desires of youth in regards to STEAM engagement, as well as possible barriers to becoming critical thinkers and attending university, was unfortunately more difficult to ascertain. This is mainly due to not being able to conduct the second focus group, which included questions regarding this topic, as well as an activity for the participants to create their own scientific experiment. It is recommended that future research approach youth informally during participatory observations about their views on critical thinking, academia and perceived barriers to education. In this vein, specific research questions are presented here that should be pursued in a separate study alongside the suggested research-in-actions (in section 4.2):

1. Are vulnerable youth consciously aware of stigma and does this directly affect their education and work pathways?
2. Do parents from low socioeconomic backgrounds value education and to what extent are they directly and indirectly involved in their children's schooling?
3. How do parental values relate to school performance?
4. What are the root causes for youth insecurities and do teaching methods and parenting styles have a direct correlation?

4.2 All STEAM Ahead

The philosophy behind STEAM focuses on methods of teaching and learning that studies have found not only peak individual interest in STEM subjects, but also increase the chances of students choosing to work towards a career in the sciences and become informed citizens capable of making appropriate decisions based on their understanding of scientific concepts (Immerman 2011; Land 2013).

Advocates of STEAM argue for student-centred learning, similar to the deductive teaching approach mentioned earlier, which gives students a sense of ownership over their learning experience, thus increasing their motivation. Lecture-based teaching, on the other hand and like the inductive approach, does not promote problem-solving or require creative and critical thought. By incorporating the arts into STEM subjects, students are encouraged to explore and offered an environment that blurs disciplines to find connections between subjects and integrate different skill sets (Connor et al. 2015; Pepler 2013). Teachers are able to set appropriate expectations marrying the motivation level of students, as well as providing ongoing support and encouragement (Connor et al. 2015). Incorporating art is also fundamental to enhancing the creative thought process that some researchers assert is necessary for the science and technological world of today that demands global networking and innovation (Madden et al. 2013).

Land (2013) argues that incorporating the arts leads to comprehension and forces students to arrive at their own conclusions rather than practicing simple memorisation. In addition, Land (2013) notes that the arts are crucial to provide necessary skills in STEM jobs. The creative skills attained through the arts can easily fit alongside analytical skills to provide motivation. Increased curiosity and genuine desire to learn more about science also develop from a STEAM approach (Henriksen 2014).

Blending subjects to encourage creative thinking is an emerging theory to how education should be taught. Boy (2013) asserts that teaching subjects separately is not effective given we are expanding into a more interconnected global society. A system should be understood as a whole rather than breaking it down into its individual parts, thus a cross-disciplinary approach becomes essential (Boy 2013; Madden et al. 2013). Boy continues by arguing that reduced interest in STEM is due to lack of motivation, which lessens from mundane daily practices in place of creativity.

Furthermore, the arts can be a very effective form of communication and engagement beyond the school environment (Bequette and Bequette 2012; Guyotte et al. 2014). Studies have shown that behaviour change is not influenced by information, but emotional reactions. Arts become a powerful tool in eliciting positive behaviour change in this regard (Reeves 2002; The Crossroads Project 2018; Jensen 2001). In his book about how art impacts the brain, Jensen (2001) explains that the arts play a large role in developing a well-rounded individual with increased cultural awareness and preparedness for the professional working sector. In a school setting, the arts can encourage students to take risks and experiment, which are essential habits in the sciences as well (Bequette and Bequette 2012).

Although STEAM theory has been introduced in Malta, it has yet to be integrated on a national scale. This report argues that vulnerable youth and other minority groups have the potential to significantly improve their academic performance through STEAM and thus, increase their chances of entering the STEM fields regardless of socioeconomic factors that place them at a disadvantage. In addition, the author argues that integrating STEAM theory in activities and organisations outside of school will help vulnerable Maltese youth become critical thinkers and develop skills that can aid in daily life apart from career goals.

4.2.1 Moving forward with STEAM engagement in Malta

When approaching youth who may be struggling in school and/or are from low socioeconomic backgrounds, consent is recommended to be obtained orally. It is advisable to conduct a research-in-action study in

which the researcher, as well as interns and volunteers, interact directly with youth on a regular basis. As previously stated, all interviews, observations and interaction during focus groups are indicative that building a relationship and establishing rapport are what drive youth to cooperate in different activities and answering questions.

Numerous suggestions were made during interviews on how to engage youth and address their needs in the future. Among the myriad ideas that YWs presented, the following are considered the most tangible and realistic for future research and collaboration with other youth organisations and institutions. It should be noted that these suggestions also require additional, long-term funds. They are in the form of research-in-action which aim to evaluate the effectiveness of such programmes and measure engagement levels with STEAM subjects and activities:

1. Partnering with a university to design a work placement, employing someone through an Erasmus+ internship or employing someone through ESC to work with a particular group of youth for a minimum of one year to conduct observations and informal interviews through pre-planned STEAM activities. The interviews will act as a means to evaluate STEAM activities and youth engagement.
2. Design an online platform to engage youth with STEAM in the form of a simple, interactive application with virtual rewards and/or short, informative and entertaining STEAM videos that can be accessed through Facebook and Snapchat. This initiative should be followed by an evaluation with analysis of statistics, for example, number of users and length of time spent on a particular application.
3. ‘Science in the Festa’: a spin-off from the Science in the City Festival, which brings easily comprehensible and interesting scientific concepts directly to youth, many of whom make sure to attend festas each year and consider it an important tradition.

Studies and surveys are often not followed through with action plans or implementation of new protocols based on the findings. The NCF framework (MEDE 2011) emphasised the need for informal and interactive learning in efforts to improve science education. Yet, despite providing key implementation actions, data suggest that at least in some areas, the proposed framework has not been successfully adapted. However, YWs were observed successfully engaging youth in simple science activities and experiments during observations.

It is imperative to conduct evaluations of programmes and large-scale projects in conjunction with action plans like the NCF framework, although they are rarely performed. By securing long-term funds to establish any of the above suggestions with ongoing data collection, analysis and project/research evaluation on a regular basis, it becomes increasingly likely that results geared towards empowering vulnerable youth and increasing their scientific literacy will be achieved. The author asserts that outcomes should always factor in what youth themselves desire to achieve, followed by the researchers and other parties involved.

4.3. Persistence, support, hope

Regardless if Malta and the rest of the world are in dire need of more scientists, engineers and mathematicians, we will always require critical thinking and creativity. It is arguably part of human nature to engage our creative sides and as members of modern society – from appropriate decision-making on food choice to electing political officials – the skills that correctly implemented STEAM initiatives promote point towards a strong, integrated and caring global society.

4.3.1. Community

Community has been frequently referenced both during this study and in literature. A well-connected community allows for a more inclusive education system that supports youth in their development. Communities

help ensure equity, providing accessible support and care and encourage learning (Sahlberg 2007). The diagram below (Figure 1) provides a simple example of how given a community could be connected:

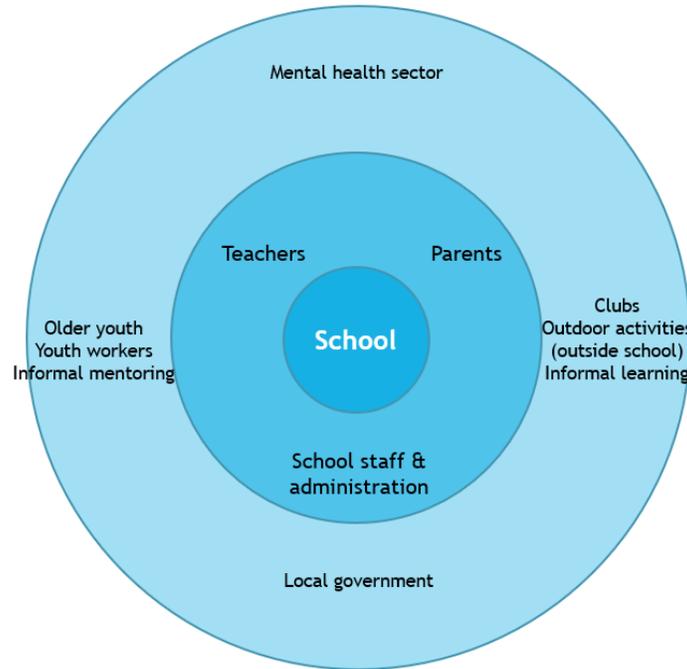


Figure 1: an inclusive education system with the school at the centre requires connections and well-established relationships between all members of the surrounding community. Parents, teachers and school staff should play a large role in providing support for youth.

As mentioned in the introduction, STEAM theory is grounded in the very methods of education and learning that literature strongly argues in favour of. From providing a pedestal for student and youth voices, to enabling teachers through appropriate training and networking, to creating a secure and harmonic system of support that focuses on student learning through experimentation, creative and critical thinking and exploration. The diagram above is meant to serve as a basic representation of what a community structure could involve. Partnerships between all parties help ensure that inclusive initiatives are taken beyond school grounds (Askill-Williams and Cefai 2017). Elements of STEAM could be incorporated throughout such a model, that is, not only within the school system.

4.3.2. Beyond STEAM

Youth workers argued during interviews that youth often do not see the end point when asked to try something new or participate in an activity. However, when 'the means to an end' is made clear, this increases their chances of participating for the entirety of a given project. Indeed, investing time into getting to know them and providing a comfortable space to understand initiatives and lessons presented is key. Furthermore, vulnerable individuals are faced with different and difficult barriers. The author firmly concludes that none of them are to a point that positive behaviour change become impossible. This view is strongly backed by literature in that hope may be our best tool when working with youth (Cefai and Camilleri 2011). What they need, like any other person, is long-term support on their level and in their way.

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Appendices

Appendix 1: Consent forms for participants in English and Maltese

Consent form for participant:

I the undersigned (referred to as participant) _____, holder of identity card number ____-____ herby gives consent to participate in the study entitled: “Engaging Youth: an exploratory study on identifying barriers to science literacy and entering STEAM”. The participant agrees to one interview and two focus group sessions (if a student and one focus group session if a staff member of Cottonera) at the Cottonera Resource Centre.

The participant understands the research taking place requires their cooperation, participation and honesty. The participant will request translations when necessary and speak in the language they feel most comfortable (i.e. English or Maltese).

The participant understands that all information gathered throughout the study in the form of interviews and focus groups will be confidential and shared only amongst those directly involved in the research, including: the Researcher from the organisation Greenhouse, the Supervisor from the University of Malta, Greenhouse board members and the Director of the Cottonera Resource Centre, Dr. JosAnn Cutajar.

A translator will be made available and thus, also exposed to the interviews and focus groups where necessary. Before participation, they will agree not to disclose any information gathered throughout the course of this study.

The participant understands that their identity will be fully protected and their participation will remain anonymous with no disclosure of personal details in any future reports published. Finally, the participants understand that they will be encouraged to express their willingness to participate in a future, long-term study in collaboration with Greenhouse, the Centre and the University of Malta.

Date and Signature

Formolatal-kunsens gall-parteċipant:

Jiena, is-sottoskritt (imsemmi tat bala parteċipant) _____, bin-numru tal-karta tal-identita' _____, qieged nagti kunsens biex nipparteċipa fl-istudju msemmi: “Engaging Youth: an exploratory study on identifying barriers to science literacy and entering STEAM” (“Ninvolvu ż-Żagħag: studju esploratorju fuq l-identifikazzjoni tal-ostakli gal-litteriżmu fix-xjenza u dul fi STEAM”). Il-parteċipant jaċċetta li jieu sehem f'intervista wada kif ukoll żewġ sessjonijiet ta' *focus groups* jekk student, u sessjoni wada ta' *focus groups* jekk membru tal-persunal tal-Cottonera Resource Centre, li ser iseu fil-Cottonera Resource Center.

Il-parteċipant jifhem li waqt din ir-riċerka hemm bżonn tal-kooperazzjoni, parteċipazzjoni u onesta' taghom. Il-parteċipant ser jitlob traduzzjoni fejn hemm bżonn u jitkellem bil-lingwa preferuta (Ingliż jew Malti).

Il-parteċipant jifhem li l-informazzjoni kollha provduta waqt l-intervisti u *focus groups* ser tinżamm kunfidenzjali u d-data miġbura ser tiġi diskussa biss ma' dawk involuti direttament fl-istudju, inklużi: ir-riċerkatriċi mill-organizzazzjoni Greenhouse, is-superviżur mill-Universita' ta' Malta, membri tal-bord tal-Greenhouse, u d-direttriċi tal-Cottonera Resource Centre, Dr. JosAnn Cutajar.

Traduttur ser ikun preżenti fejn hemm bżonn, u b'hekk ikun espost gal xi intervisti u l-*focus groups* ukoll. Qabel il-parteċipazzjoni tiegħu, it-traduttur irid jaqbel li ma jiżvelax informazzjoni li tingabar waqt dan l-istudju.

Il-parteċipant jifhem ukoll li d-dettalji personali tiegu mhux ser ikunu żvelati f'pubblikazzjonijiet futuri, u b'hekk ser tinżamm l-anonimita' tal-parteċipanti. Finalment, il-parteċipant jifhem li ser jiġi imegġeg ġesprimi ir-rieda tiegu li jipparteċipa fi studju fit-tul li ser isir fil-futur, b'kollaborazzjoni ma' Greenhouse, il-Cottonera Resource Centre, u l-Universita' ta' Malta.

Data u Firma

Appendix 2: Consent forms for parents of participants in English and Maltese

Consent form for parents:

I the undersigned (referred to as parent) _____, holder of identity card number _____ herby gives consent for my child _____ to participate in an exploratory study entitled: "Engaging Youth: an exploratory study on identifying barriers to science literacy and entering STEAM".

The parent gives their permission for this child to participate in one interview and two focus group sessions in which the child will be asked a series of questions about their background, identity, general interests and general needs. The interviews will be semi-structured and the focus groups will be open-ended, encouraging the child to speak about issues that concern them within the theme expressed in the study title.

The parent understands that all information provided from the participant will remain strictly confidential and the data collected will be discussed only with those directly involved in the study, including: the Researcher from the organisation Greenhouse, the Supervisor from the University of Malta, Greenhouse board members and the Director of the Cottonera Resource Centre, Dr. JosAnn Cutajar.

A translator will be made available and thus, also exposed to the interviews and focus groups where necessary. Before participation, they will agree not to disclose any information gathered throughout the course of this study.

The parent also understands that their child's personal details will not be disclosed in any future publications, and thus anonymity will be maintained. Finally, the parent understands that the child will be encouraged to express their willingness to participate in a future, long-term study in collaboration with Greenhouse, the Centre and the University of Malta.

Date and Signature

Formola tal-kunsens gal-ġenturi:

Jiena, is-sottoskritt (imsemmi tat bala ġenitur/gwardjan/ghandi kustodja tat-tifel/tifla) _____, bin-numru tal-karta tal-identita' _____, nagti permess lit-tifel/tifla _____ j/tipparteċipa fi studju esploratorju "Engaging Youth: an exploratory study on identifying barriers to science literacy and entering STEAM" ("Ninvolvu ż-Żagħag: studju esploratorju fuq l-identifikazzjoni tal-ostakli gal-litteriżmu fix-xjenza u dul fi STEAM").

Il-ġenitur/gwardjan/dak li ghandu kustodja jagti permess li it-tifel/tifla tiegu j/tipparteċipa f'intervista wada u żewġ sessjonijiet ta' *focus groups*, fejn it-tfal ser ikunu mistoqsija ammont ta' domandi dwar it-trobbija, identita', interessi ġenerali u bżonnijiet taghom. L-intervisti ser ikunu semi-strutturati u l-*focus groups* ser ikunu *open-ended*, biex jinkoraġġixxu lit-tfal jitkellmu dwar problemi li jikkonċernaw lilhom relatati mat-tema tal-istudju.

Il-ġenitur /gwardjan/dak li ghandu kustodja jifhem li l-informazzjoni kollha provduta mill-parteċipant ser tinżamm kunfidenzjali u d-data miġbura ser tiġi diskussa biss ma' daww involuti direttament fl-istudju,

inkluzi: ir-riċerkatriċi mill-organizzazzjoni Greenhouse, is-supervizur mill-Universita' ta' Malta, membri tal-bord tal-Greenhouse, u d-direttriċi tal-Cottonera Resource Centre, Dr. JosAnn Cutajar.

Traduttur ser ikun preżenti fejn hemm bżonn, u b'hekk ikun espost gal xi intervisti u l-*focus groups* ukoll. Qabel il-parteciċipazzjoni tiegu, it-traduttur irid jaqbel li ma jiżvelax informazzjoni li tingabar waqt dan l-istudju.

Il-ġenitur/gwardjan/dak li ghandu kustodja jifhem ukoll li d-dettalji personali tat-tifel/tifla tiegu mhux ser ikunu żvelati f'pubblikazzjonijiet futuri, u b'hekk ser tinżamm l-anonimita' tal-parteciċipanti. Finalment, il-ġenitur/gwardjan/dak li ghandu kustodja jifhem li t-tfal ser jiġu imegġa jesprimu r-rieda taghom li jipparteciċipaw fi studju fit-tul li ser isir fil-futur, b'kollaborazzjoni ma' Greenhouse, il-Cottonera Resource Centre, u l-Universita' ta' Malta.

Data u Firma

Appendix 3: Questions for Focus Group Session One (completed) and Focus Group Session Two (incomplete) in English and Maltese

Focus Group One

First focus group will be focused on getting to know the students and their situations.

1. Introduction: ask everyone to tell a bit about themselves, including the Moderator and Assistant Moderator
2. How do you feel when you're at school? (Give examples if students are shy... Is there anything that excites you? Do you ever get bored?)
3. Do your parents know what you are learning? Do they respond to your homework assignments and test scores?
4. What comes to mind when I say the following words... Science; Art; Technology; Math; Engineering; Education; Money
5. Do you think that science is important? Why?
6. Is there anything you want to tell me about? Is there anything that concerns you in regards to science, education and/or EU programmes?

Focus Group Two

The second focus group will be focused on understanding their desires and needs, as well as determining what they would require to participate in a long-term study and encourage them to produce their own ideas on what the study design should be.

1. Check-ins: how is everyone feeling today?
2. Is there anything you want to discuss stemming from the last focus group?
3. If you could change the school system, what would you change and how? (If students are shy, give examples like having more time to play sports every day – as part of a physical education program – having options to take music classes instead of another requirement or having different teachers - If it's the case of changing teachers, then ask them to explain why they don't like their current teachers and what kind of teachers they want.)
4. What comes to mind when I say “after-school program”?
5. How do you feel about the Cottonera Resource Centre?
6. How do you feel about your school performance? (If they say it needs improvement, then ask what resources they want/need to facilitate that.)
7. Would you be interested in participating in EU-funded volunteer schemes?
8. What does the term “research” mean to you?
9. What would make you want to attend an after-school program that is part of a several years long research study which aims to help kids like yourselves to realise their education and career opportunities?

10. Activity: Let's design a long-term study together (and ask them what they think needs to go into a scientific study).

****Note: second focus did not take place.**

Focus Group One – Domandi gall-iStudenti

L-ewwel focus group ser ikun immirat biex insiru nafu aktar dwar l-istudenti u s-sitwazzjonijiet taghom.

1. Introduzzjoni: Kulladd ser jigi mistoqsi biex jitkellem ftit fuqu nnifsu, inkluż il-moderatur u assistent moderatur.
2. Kif tossok waqt li tkun l-iskola? (Aghti eżempji jekk l-istudenti jzommu lura... Hemm xi aġa li tkun erqan galiha? Ġieli tiddejjaq?)
3. Il-ġenituri tiegħek jafu x'qiegħed titgallem? Jirreagixxu lejn ir-riżultati tax-xogħol u t-testijiet tiegħek?
4. X'jigi f'mokom meta ngid dawn il-kliem: Xjenza; Arti; Teknologija; Matematika; Inġinerija; Edukazzjoni; Flus
5. Tasbu li x-xjenza hi importanti?
6. Hemm xi aġa li tridu tkellmuni fuqha? Hemm xi aġa li tikkonċernakom rigward ix-xjenza, edukazzjoni u/jew programmi tal-UE?

Focus Group Two – Domandi gall-iStudenti

It-tieni focus group ser ikun immirat biex insiru nafu aktar dwar ix-xewqat u l-bżonnijiet tal-istudenti, kif ukoll biex jiddetermina xi jkollom bżonn biex jiedu sehem fi studju fit-tul, u jeġġiġhom joorġu bl-ideat taghom dwar kif għandu jkun id-disinn tal-istudju.

1. *Check-ins* : Kif qiegħed iossu kuladd illum?
2. Hemm xi aġa li tixtiequ tiddiskutu wara l-aar focus group?
3. Kieku tistgħu tbiddu is-sistema' tal-iskejjel, xi tbiddu? U kif? (Jekk ikun hemm bżonn semmi eżempji bal li jkun hemm aktar in gal sport bala parti minn programm tal-edukazzjoni fiżika, ikun hemml-opportunita' li jattendu lezzjonijiet tal-mużika minnflok xi suġġett ieor jew, li jkollom galliema differenti u staqsi galiex ma jogġbuhomx l-galliema li gandhom issa u x'tip ta' galliema kieku jixtiequ.)
4. X'jigi f'mokom meta nsemmi "after-school program"?
5. Kif tossok dwar il- Cottonera Resource Centre?
6. Kif tossok dwar kif sejjer fl-iskola? (Jekk jgħidu li gandha bżonn tkun ajar saqsi x'riżorsi gandhom bżonn/iridu biex jgħinuhom iwettqu dan.)
7. Tkun interessat tiegħi sehem fi skemi volontarji iffinanzjati mill-UE?
8. Xi tfisser il-kelma riċerka galik?
9. X'jista' jeġġek tattendi *after-school program*, li hu parti minn riċerka twila diversi snin immirata biex tgħin tfal balkom jirrealizzaw l-opportunitajiet taghom fl- edukazzjoni u karriera?
10. Attività: Ejja niddisinnaw studju fit-tul flimkien (staqsi x'jasbu li għandu jkun hemm fi studju xjentifiku).

Appendix 4: Interview questions for youth in English and Maltese and youth work participants (*note: interviews conducted by the researcher in English)

Interview questions for youth participants:

1. How old are you?
2. Who do you live with at home?
3. Are you religious?
4. Are you working?
5. Is there something that you are you good and bad at?
6. Can you describe yourself? (If student looks confused, then expand: What characteristics would you attribute to yourself **OR** how to do you identify yourself? Then can give examples, like identity in the form of religion, nationality, musical taste, etc.)

7. How do you feel about school and your teachers?
8. What do you do when you're not at school?
9. Can you tell me what you like about Malta? And what do you dislike about Malta?
10. What would you like to do when you're an adult? (If student looks confused, then give examples, like have you thought about a job you might like or owning a house or travel?)
11. How do you feel about STEAM subjects?
12. Have you heard about any EU programmes? If so, can you recall some of their names?

Domandi gall-istudenti tal-Cottonera:

1. Kemm gandek żmien?
2. Ma' min tgix id-dar?
3. Inti religjuz?
4. Tadem?
5. Hemm xi aġa li inti tajjeb fiha? U xi haġa li inti ażin fiha?
6. Tista tiddeskrivi lilek innifsek? (Jekk l-istudent jidher konfuż, espandi: X'inhuma il-karatteristiċi tiegħek **JEW** kif tidentifika ruck? Aġti eżempji, bal identita' fil-forma ta' religjon, nazzjonalita', mużika preferuta, etc.)
7. Kif tossok fuq l-iskola u l-galliema tiegħek?
8. X'tagmel meta ma tkunx l-iskola?
9. Tista tgidli x'jogħbok dwar Malta? U x'idejjeq dwar Malta?
10. X'tixtieq tagmel meta tikber? (Jekk l-istudent jidher konfuż, aġti eżempji, bal jekk asbux fuq xogħol li jajarhom, jew jixtiequ jixtru dar, jew isiefru?)
11. Kif tossok dwar is-sugġetti ta' STEAM?
12. Ġieli smajt dwar xi programmi tal-UE? Jekk iva, tiftakar x'jisimhom?

Interview questions for youth worker participants:

1. How old are you, where do you live and what is your educational and work background?
2. Why did you decide to become a youth worker and how long have you been one?
3. Please define the kind of youth you mostly work with.
4. What is your experience working with youth organisations and youth engagement initiatives? Have you observed any tangible outcomes over a given period of time, for example, deliverables or changes in youth over one to two years?
5. If you could change the structure of these <above mentioned> youth programmes and/or organisations in some way, would you and how?
6. Can you tell me about some of your most memorable positive and negative experiences working directly with youth?
7. How long do you feel it takes to establish trust with youth (including those from poor socioeconomic backgrounds) and have you ever had an individual in which you weren't able to achieve that?
8. What do you think these youth, for example in terms of available resources and tutoring, need to successfully complete their education?
9. Do you think there is a certain limit, like age for example, in which it is impossible to reach out to youth and help them change their life trajectory in a positive way?
10. Are there any common themes you've observed as a YW pertaining to barriers youth may face in engaging with STEAM (science literacy, volunteering at NGOs that conduct research) and completing their education?
11. If you were given the funding and other necessary resources to manage a STEAM outreach campaign, what do you think would be an effective approach to engaging youth with STEAM?
12. Is there a residual stigma towards people in the Cottonera region? Do you think this has an effect on – or connection to – youths' values, work and school performance?
13. How do you think youth spend their time outside of school and the Youth Cafe?

14. Do you think it would be possible to get youth to participate in a long-term research-in-action study in the form of a STEAM after school program?
15. What do you think are the potential facilitators and barriers to such a study?
16. As a youth worker, have you learned of or developed any approaches or methods to engage youth in learning or activities outside of what they normally enjoy doing?

Appendix 5: Description of research study handed to participants in English and Maltese

Research description document in English:

Dear Participant,

Thank you for agreeing to take part in the study: “Engaging Youth: an exploratory study on identifying barriers to science literacy and entering STEAM”.

This is a short-term study intended to develop an understanding of the various barriers faced by young people from lower income families in entering science, technology, engineering, arts and maths (STEAM) subjects and developing science literacy.

Before beginning interviews and focus groups, the Researcher will act as an observer for three weeks at the Cottonera Resource Centre and the Cottonera region to become familiar with the area and the students who agree to participate.

The study is purposefully open-ended to allow space for participants to discuss matters in relation to the themes that they feel are most relevant and important. A total of ten students from the Centre will be interviewed and participate in two focus group sessions (with five students per group, totalling four sessions). An additional focus group will be held with teachers and mentors from the Centre. The interviews will be semi-structured with a set of pre-planned questions and space for participants to focus on subjects of their preference. There will be no obligation to answer all the proposed questions. The focus groups will have a Moderator and Assistant Moderator who will be taking notes.

The focus groups will also be semi-structured with a set of questions and room for participants to take the discussion in preferred directions. Participants are further encouraged to be open about their interests, needs and willingness to participate in future research. The interviews and focus groups will all be conducted at the Cottonera Resource Centre unless any individuals express discomfort over this location.

The results of this study will be used to develop a robust, long-term research in action study in collaboration with the Centre and the Greenhouse NGO, as well as the University of Malta.

All answers and discussions from the sessions will be strictly confidential. The data collected will be analysed by the Researcher, Nika Levikov from the Greenhouse NGO, and discussed with the Supervisor, Dr. Edward Duca of the University of Malta. The Researcher/Moderator, Assistant Moderator and translator will not discuss the data outside of those directly involved in this study.

A final report will be published and made available to the public, however, no names or other personal details of the participants will be published. All participants will remain anonymous in any future publications stemming from this work.

Thank you again for your cooperation.

Sincerely,

Nika Levikov

Researcher

Greenhouse Malta NGO

Research description document in Maltese:

Gażiż/a Partecipant/a,

Grazzi talli aċċettajt li tiegħi sehem f'dan l-istudju: "Engaging Youth: an exploratory study on identifying barriers to science literacy and entering STEAM" ("Ninvolvu ż-Żagħag: studju esploratorju fuq l-identifikazzjoni tal-ostakli gal-litteriżmu fix-xjenza u dul fi STEAM").

Dan huwa studju qasir bl-gan li jkun hemm żvilupp fil-fehma tad-diffikultajiet li jaffaċċjaw żagħag li għejjin minn sitwazzjoni soċjoekonomika batuta biex jidlu fis-sugġetti: xjenza, teknoloġija, inġinerija, arti u matematika (STEAM) u fl-akkwist ta' litteriżmu fix-xjenza.

Qabel ma jsiru l-intervisti u l-focus groups, ir-riċerkatriċi ser taġixxi bala osservatriċi gal tliet gimgat fil-Cottonera Research Centre u fir-reġjun tal-Cottonera, alli issir familjari mal-post u l-istudenti li ser jippartecipaw.

L-istudju huwa open-ended intenzjonalment biex il-partecipanti jkollhom l-opportunita' jiddiskutu affarijiet relatati mat-tema li jossu li huma l-aktar relevanti u importanti. B'kolloxx, ser jippartecipaw fl-intervisti u focus groups gaxar studenti mill-Cottonera Research Centre. Focus group addizzjonali ser isir mal-galliema tal-Cottonera Research Centre. L-intervisti ser ikunu semi-strutturati b'sett ta' domandi ppjanati minn qabel, u bl-opportunita' gall-partecipanti jiffukaw fuq sugġetti preferuti. M'hemm l-ebda obligazzjoni biex jitwiegħu il-mistoqsijiet proposti. Il-focus groups ser isiru bi gruppi ta' ames persuni flimkien ma' moderatur u assistent moderatur li ser ikunu jiedu n-noti.

Il-focus groups ser ikunu semi-strutturati b'sett ta' domandi u tingata l-opportunita' lill-partecipanti jiedu id-diskussjoni fid-direzzjoni preferuta minnhom. Il-partecipanti huma meġġa jiftu qalbhom dwar l-interessi u l-bżonnijiet tagħom, u jekk humiex lesti jippartecipaw fi studji futuri. L-intervisti u l-focus groupsser isiru kollha fil-Cottonera Resource Centre, lief jekk xi partecipant/i jesprimi li jossu skomdu f'dan il-post.

Ir-riżultati ta' dan l-istudju ser jintużaw fl-iżvilupp ta' studju robust u aktar fit-tul li ser ise fuq il-post, f'kollaborazzjoni mal-Cottonera Research Centre u l-Greenhouse NGO, flimkien mal-Universita' ta' Malta.

Ir-risposti u d-diskussjonijiet li jsiru waqt is-sessjonijiet ser jinżammu strettament kunfidenzjali. Id-data li tingabar ser tiġi analizzata mir-riċerkatriċi, Nika Levikov mill-Greenhouse NGO, u diskussa mas-supervizur, Dr. Edward Duca mill-Universita' ta' Malta. Ir-riċerkatriċi/moderatura, assistent moderatura u traduttur mhumiex ser jiddiskutu id-data lief ma' dawh li huma direttament involuti f'dan l-istudju.

Rapport finali ser jiġi ppublikat u miftu gall-pubbliku, pero' mhumiex ser jiġu żvelati jew ippublikati ismijiet jew dettalji ora personali tal-partecipanti. Il-partecipanti kollha ser jibqgu anonimi f'pubblikazzjonijiet futuri bbażati fuq dan ix-xogħol. Nerġa' niringrazzjak gall-kooperazzjoni tiegħek.

Sinċerament, Nika Levikov Riċerkatriċi Greenhouse

Malta NGO

Appendix 6: The Programme for International Student Assessment (PISA) Reports

The Programme for International Student Assessment (PISA) has been studying student performance since 2000 and suggests how to improve communities and education systems based on exhaustive results. Malta has participated in the assessment for several years, although it is a partner country and not under the Organisation for Economic Cooperation and Development (OECD). Below is a summary of relevant results that help explain Maltese students' science performance. Table 2 outlines some of the major correlating factors.

Table 2: General trends for OECD and partner countries in 2015 assessment (OECD 2016a; OECD 2016b):

Science performance against other factors:	Correlation*
GDP	Positive
Education spending	Positive
Parents' education (tertiary)	Positive
Disadvantaged students	Negative
Responsibility for school governance internal (teachers and principal)	Positive
Responsibility for school governance external (regional and national education authorities)	Negative

*Note: the assessment is done exclusively on 15-year olds who have had at least six formal years of schooling.

*Note: figures can be found in reports Volume I and Volume II

Compared with other countries, the mean science performance for Malta is significantly lower than the OECD average. Out of six levels describing competence, majority of students fell into level two. This is considered the baseline level of science knowledge that is required to understand and act upon science-related issues as an informed citizen. Between the assessment in 2012 and 2015, there has been no improvement in science performance for Maltese students (OECD 2016a). Yet initiatives in Malta to improve science performance have been undertaken in recent years. The Science in the City Festival, for example, Malta's largest science communication event attracting thousands, has been ongoing since 2012.

Grade repetition, which PISA found to be associated with worsened school performance over-time, has increased in Malta from 2009 to 2015. However, Malta is above the OECD average when it comes to providing resources and activities related to science education. It has more science competitions and science activities outside of school. PISA has found that students perform better in science when they are in general programmes, rather than a vocational and pre-vocational programme from a young age. Being forced to make a choice in early development may result in a given individual never having the chance to learn science (OECD 2016b).

Malta has additionally performed higher than the OECD average for teacher-directed science instruction, which is strongly positively correlated with high science performance (OECD 2016b). Reflecting on the above statistics, it is difficult to pinpoint the specific areas where schools, teachers, parents and the MEDE are lacking given Malta has done very well with providing resources both inside and outside of school. More research should be done to understand how infrastructure relates to and influences student mentality towards education and school performance.