Maltese as a Resource for Learning Measurement at Primary level: a Curriculum Design Project.

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Dedication

This project is dedicated to the resilient students who, despite facing challenges, continued to trust in me and believe in my abilities as an educator. Your firm faith and support have been a constant source of inspiration throughout this journey.

Abstract

In mathematics education, equity means ensuring equal opportunities for all students, irrespective of their language preference, ethnicity, gender, or socioeconomic status, to participate in classroom experiences that promote meaningful learning of mathematics. An effective approach to supporting a solid foundation in mathematics literacy is the incorporation of students' native languages in early childhood mathematics education. This project focuses on using the Maltese language as a valuable resource to teach mathematics, specifically focusing on the measurement strand of the curriculum of Year 2 level (i.e. 6-7 year olds). The primary objective is to create an Integrated Curriculum Handbook that provides educators with practical ideas and strategies for seamlessly integrating mathematics into other subject areas, such as Religious Studies, Social Studies, and Nurture groups. This handbook adopts the emergent approach, with a specific focus on utilizing the Maltese language as a resource, particularly in teaching and learning the measurement strand. It aims to empower educators with a diverse range of resources and activities that can be utilised as indicated in the handbook or easily adapted to suit the specific needs of each lesson. The activities promote cross-curricular connections and a holistic approach to learning, creating inclusive and supportive environments where students effectively comprehend and articulate mathematical concepts. By utilizing the potential of the Maltese language as a cognitive tool, educators can facilitate a more engaging and accessible mathematics education experience, particularly in the measurement strand of the curriculum, ultimately fostering an inclusive and effective learning environment.

Keywords: early childhood, mathematics learning, measurement, Integrated Curriculum Handbook

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Chapter 1 – Introduction

Various studies suggest that mathematics and language are intertwined, demanding students to be proficient in both understanding and in using mathematical language (Boero et al., 2008; Chen & Li, 2008; Kazima, 2007; Kotsopoulos, 2007; Schleppegrell & O'Hallaron, 2011; Slavin & Lake, 2008). According to Boero et al. (2008), “only if students reach a sufficient level of familiarity with the use of natural language in the proposed mathematical activities can they perform in a satisfactory way” (Boero et al., 2008, p. 262). Given the steady increase in multilingual pupils in Maltese schools, language and mathematics must be viewed as key components in the learning of the mentioned subject area. Therefore, educators must recognize and address the unique challenges that arise when teaching mathematics to students with limited English proficiency. Specifically, educators should develop appropriate instructional strategies and support systems that can help students overcome language barriers and promote their comprehension and mastery of mathematical concepts.

In this introductory chapter, I provide an overview of the purpose and scope of this Integrated Curriculum Handbook, which focuses on the use of the Maltese language as a resource for teaching the mathematical concept of measurement. The aim of this project is to develop a handbook of activities that can help educators to engage students in meaningful learning experiences and promote their understanding of measurement concepts. In this chapter, I begin by outlining the rationale behind the development of the Integrated Curriculum Handbook. Specifically, I emphasise the significance of using the Maltese language to facilitate

mathematics learning within a social context and pointing out the benefits of bilingualism in this regard. Following this, I provide a concise overview of the emergent approach to integrating the measurement strand. Finally, I explain the handbook's design and structure, as well as introducing the research questions that serve as a guiding framework for this project.

1.1 The rationale for the Integrated Curriculum Handbook

The motivation behind undertaking this project was inspired by my first-hand experiences both as a Learning Support Educator (LSE) and as a trainee teacher. As an LSE, I worked with students from diverse linguistic and cultural backgrounds, many of whom faced challenges in learning mathematics due to limited English proficiency. As a trainee teacher, I observed that many students struggled to grasp mathematical concepts and engage in meaningful learning experiences when they lack a solid foundation in the English language. These students required explanations to be delivered in Maltese in order for them to have a better understanding of, and to grasp, the concepts being taught. Through my experiences, I have gained a deeper understanding of the potential of the Maltese language as a valuable resource for teaching mathematics, particularly in the context of measurement.

For me, it was key to support these learners' mathematical development by accepting and encouraging the use of the Maltese language in mathematics learning. Indeed, as highlighted by researchers, such as Moschkovich (2007a) and

Planas & Setati-Phakeng (2014), it is important to recognize that students' home languages can be valuable resources for learning mathematics, rather than viewed solely as hindrances. These observations led me to explore the use of the Maltese language as a means of promoting mathematics learning among students with limited English proficiency. By developing a handbook of activities that incorporate the Maltese language, I aim to provide educators with a practical resource that can help students to overcome language barriers and achieve success in mathematics. The idea that using the first language creates a smoother path for the young learner to understand and acquire basic maths concepts, knowledge, and skills is supported by a number studies and literature (Arzadon, 2010; Azurin, 2010; Baguingan, 2000; Espada, 2012; Limjap, 1999; Tupas & Martin, 2017). Research carried out by Chen & Li (2008) suggests that students' acquisition of mathematical vocabulary progresses more quickly when they have access to and use their native tongue.

Additionally, each student in the classroom has their own distinctive combination of past knowledge, interests, motivations, as well as personality and learning preferences. An environment that fosters an open exchange of ideas is key to enabling children to create, investigate, and evaluate their own knowledge. This approach grants all students, regardless of their academic abilities, the freedom to actively participate in the learning process. The introduction of the Emergent Curriculum demands the need for an improvement in the current teaching and learning pedagogies for the early years. Therefore, it is fundamental that we, the educators, update the way we teach and learn.

I am hereby presenting an Integrated Curriculum Handbook based on the collaborative methodology and associated with real-life situations, which Year 2 students may easily encounter and therefore relate to. The handbook is designed to facilitate learning through emergent approaches, and it provides educators with practical activities and examples that incorporate the Maltese language to teach mathematics in a way that is engaging and meaningful for all students. This approach is aligned with the principles of the Emergent Curriculum and recognizes the importance of using students' home language to facilitate their learning. By providing educators with this handbook, I hope to promote a more inclusive and effective approach to mathematics education in Malta, and contribute to the development of a more linguistically and culturally responsive pedagogy.

1.2 Mathematical Communication within a Social Context

Research in mathematics education emphasises the importance of language skills for students' success in maths (Cobb & McClain, 2004; Moschkovich, 2005; National Council of Teachers of English, 2008; Slavin & Lake, 2008). Students are encouraged to communicate their understanding of mathematical concepts through writing, talking, and reading (National Council of Teachers of Mathematics, 2000), and to apply these concepts to real-world scenarios (Slavin & Lake, 2008; Franke et al., 2007). However, linguistic interference can hinder students' ability to reason at higher cognitive levels (Anthony & Walshaw, 2009; Cobb & McClain, 2004; Ferrari, 2004; Kotsopoulos, 2007; Schleppegrell & O'Hallaron, 2011).

The situated-sociocultural approach to mathematics advocated by Moschkovich (2002) emphasises the social context of learning and the importance of shifting focus from students' deficiencies to their skills and resources. This approach sees mathematics as a discursive process that takes place in a socio-cultural setting, where the use of registers is crucial for conveying mathematical concepts through language. In this regard, Moschkovich (2002) views mathematics as the process of "constructing multiple means for words rather than acquiring a list of words" (p.193). Therefore, I strongly believe that students should be provided with the best opportunities to construct their own meaning by actively participating throughout their educational journey as mathematics learning should be experience-oriented, and based on everyday situations (Boaler & Dweck, 2015). This can also be done collaboratively in groups, by posing mathematical content into real life situations and allowing students to negotiate between them and manipulate material things. This whole process leads to building a critical frame of mind, during which students discuss and share their own ideas even with the Maltese language. As the physical, social, and cultural context of the learning activity affects the learning process, the language of communication used at home, at school, and in the community will have an impact on the child's ability to engage with their most significant ones (LaRocque, Kleiman, & Darling, 2011).

Within the context of bilingual education, Moschkovich's approach underscores the significance of recognizing students' home languages as resources in mathematics education. Bilingualism enables students to bring diverse perspectives and negotiate them effectively, which is vital for mathematics learning. Furthermore, bilingualism facilitates the use of multiple registers for conveying

mathematical concepts, which aligns with Moschkovich's view of mathematics learning as constructing multiple meanings for words rather than just acquiring a list of them. Thus, bilingual education can be a powerful tool for promoting effective mathematics learning by leveraging the resources of diverse student populations (Moschkovich, 2002). By embracing students' home languages and promoting the use of multiple registers, bilingual education can foster a richer, more inclusive mathematics learning environment that recognizes and values the skills and resources of all learners.

1.3 Bilingual Education in Malta

The official languages of Malta are Maltese and English, with both languages being widely spoken and used (Vella, 2013). Bilingualism is therefore a common phenomenon in Malta, with many individuals being proficient in both languages. Research studies have explored the effects of bilingualism on language development, cognitive abilities, and academic achievement in Malta. A study conducted by Agius and Kellerman (2018) found that bilingualism in Maltese and English positively affects children's language abilities, as bilingual students outperform their monolingual peers in listening, speaking, reading, and comprehension in both languages. Another study by Mifsud and Farrugia (2019) examined the relationship between bilingualism and academic achievement in Maltese and English. The study found that bilingual students performed better academically compared to their monolingual peers, particularly in subjects such as English, Maltese, and Mathematics. Furthermore, a study by Briffa and Gatt (2020) investigated the cognitive benefits of bilingualism in Maltese and English. The study

found that bilingual individuals had enhanced cognitive flexibility and attentional control compared to monolingual individuals. Overall, these findings highlight the importance of promoting bilingualism in education and society in Malta.

1.4 Integrating the Measurement strand through the Emergent Approach

'Measurement' is an essential part of early childhood education (Moss et al, 2015). Measurement skills allow children to compare and describe objects and understand concepts such as size, weight, volume, time, and temperature (NCTM, 2000). It can be integrated with other subject areas to provide a more meaningful and holistic learning experience for young children as it helps them to make connections and to develop a deeper understanding of concepts (Ríordáin et al, 2016). For instance, when learning about measurement in a social studies context, children might measure the distance between different locations on a map and use this information to plan a route for a journey. This not only helps children develop measurement skills, but also promotes an understanding of geography and encourages critical thinking about spatial relationships. A study conducted by Johnson, Schmitt, and Hornbeck (2019) found that integrating measurement activities with other subject areas improved children's understanding of measurement concepts, increased their motivation to learn, and developed important skills such as critical thinking, problem solving and decision making. Furthermore, a study by Clements and Sarama (2014) examined the effectiveness of a comprehensive early childhood mathematics curriculum that integrated measurement with other mathematical concepts. The study found that children who received the integrated curriculum demonstrated better understanding of

measurement concepts and had higher scores on standardised tests compared to those who received a traditional curriculum.

In addition to this, the emergent curriculum is a teaching approach that builds on children's interests and experiences, allowing them to learn through exploration and discovery (Jones & Nimmo, 2014). For instance, a study by Williams and Cirtwill (2018) found that using an emergent curriculum in early childhood education led to significant improvements in children's measurement skills, including the ability to measure and compare lengths, weights, and volumes. Additionally, studies have shown that using an emergent curriculum and integrated learning can have a positive impact on children's learning outcomes in mathematics, including measurement skills (Welsh et al., 2010). Integrated learning is an educational approach that combines different subjects or disciplines into a single learning experience and encourages students to make connections between various fields of study, fostering critical thinking, problem-solving, and creativity (Baranova et al., 2019).

Therefore, research suggests that by connecting measurement activities with other subject areas and building on children's interests and experiences, educators can create a more engaging and meaningful learning environment for young children. Thus, this Integrated Curriculum Handbook aims to explore the benefits of using an emergent curriculum and integrated learning to teach the mathematical strand of measurement in early childhood education.

1.5 Overview of the handbook design

The objectives stipulated by the Learning Outcome Framework were taken into consideration throughout the whole process of this project. The main objective is to provide educators with proposals of how mathematics can be integrated into other subject areas, which are generally delivered in the Maltese language. Educators can use these suggestions as they are or else adapt them to cater for different lessons' objectives and learning abilities. All activities can be implemented in both mainstream and Nurture Group classrooms. Activities are designed in the Maltese language and aim to reinforce the mathematical strand of measurement. This Integrated Curriculum Handbook also intends to make it easier for the students to communicate their mathematical knowledge and ideas more effectively, as activities promote communication. All of the activities are taught through stories or role-plays that the students can easily relate to, and which enables educators to use their students' prior knowledge to further solidify the mathematical concept of measurement. Students are to be actively involved throughout all the sessions, and have the chance to express their different points of view. Educators are to scaffold help through open-ended questions attempting to aid the reformulation of ideas.

The Integrated Curriculum Handbook has a fundamental aim of making learning a meaningful experience for all students. With inclusion at its core, the project promotes multiple ways of representation to enable full participation and communication of learning for students of all backgrounds and abilities. The handbook seeks to support educators in assessing their students' knowledge and understanding of the concepts being taught. Ultimately, the goal is to make

mathematics more accessible, motivational, and relevant to all students, and to cultivate an appreciation for the integral role that mathematics plays in the world we live in.

For all these reasons, this Integrated Curriculum Handbook addresses the following research questions:

1. How can the Maltese language, as used through other school subjects, support students to learn about Measurement, and its application in the world around them?
2. How can the Maltese language, mathematics and other areas of learning be integrated within the school curriculum?

1.6 Conclusion

The Maltese National Curriculum Framework (NCF) (Ministry of Education and Employment, 2012) states that, “All children need to experience mathematics as a rewarding and enjoyable experience” (NCF, 2012, p. 53)**.** This Integrated Curriculum Handbook has been drawn with the intention to aid this statement to become reality. I truly wish that learners nurture a more positive view of mathematics in order for them to achieve success in this subject area. I also aspire for my work to raise greater awareness about the Maltese language’s potential and its positive contribution towards not only struggling second language learners, but to all students. I sincerely hope that my Integrated Curriculum Handbook provides educators with further insight on how to utilise the Maltese language as a resource, to support pupils encountering difficulties in understanding mathematics, not

because of the subject itself but rather because of their poor command of the English language.

In this dissertation, I present my project in the following way: Chapter 2 offers a critical literature review, exploring the use of the first language for mathematics learning. Chapter 3 provides an overview of my methodology, including my conceptual framework and how it influenced the planning and development of the Integrated Curriculum Handbook. Finally, I present the Integrated Curriculum Handbook itself. This handbook includes a variety of topics that are likely to be of interest to Year 2 students. It also equips educators with ideas and strategies on how to integrate mathematics with other subjects, promoting inclusivity and an engaging approach to learning and teaching mathematics.

Chapter 2: Literature Review

2.1 Introduction

Researchers in mathematics education (Planas et al., 2018) have increasingly recognised the fundamental role played by language in the learning and teaching of mathematics. Different views, however, exist on the function of language, which language-related behaviours should be promoted, and even what the term 'language' effectively refers to (Navés, 2009). Mathematics education has been evolving into a mature field of study with substantial consideration given to theorising and problematizing the discipline's elements, concepts, and methodologies, including language (Lesh & Sriraman, 2010). According to Lerman (2000), the development of linguistic awareness represents the 'social turn' in the field of mathematics education. The importance of language and other forms of communications within a social context has inevitably led to a deeper appreciation of the relevance of the social environment within which mathematical instruction takes place. Classroom practices, professional discourse, and policies have all changed to recognize the importance of language-rich activities in the classroom. These are sometimes referred to as "conversations," "discussions," and "discourses," along with changes in the field's theoretical perspective (González-Howard & McNeill, 2016).

The importance of language in mathematics education is highlighted in research by Aukerman (2007), which focuses on the theoretical distinction between social and academic language, the latter of which refers to the language used in

classrooms and by which pupils learn efficiently in schools. This is crucial, especially in the contemporary setting where students are expected to actively participate in their education rather than simply sit passively, listen to their teachers, and repeat what they have learned. Furthermore, mathematical learning presents challenges for students who are learning English as a second language, as it calls for a number of linguistic skills that second-language learners may not have already mastered (Barwell, 2014).

2.2 The Teaching and Learning of Mathematics

Mathematics plays a fundamental and distinctive role in human societies as it serves as a strategic key in the advancement of all humanity (Palmer & Scribner, 2010). Like languages, arts, or religion, mathematics forms part of human's nature and history. One way that mathematics forms part of human nature is through our ability to recognize and use patterns. Our brains are wired to perceive patterns, and mathematics is the language that allows us to express and analyse these patterns. This is evident in the development of counting and numeracy systems in different cultures, which demonstrate the universality of mathematical concepts (Ginsburg, 2013). Thus, mathematics is also an important element for thinking and reasoning (Polanyi, 2012). Studies reveal that children who have difficulty with mathematics suffer consequences that negatively affect both their day-to-day functioning and their prospects for a future career (Douglas & Attewell, 2017; Bratman et al., 2012; Gunderson et al., 2012; Clements & Sarama, 2011).

2.3 Mathematics goes beyond rote learning

Despite the importance of mathematics, there is a common perception among students that mathematics is a difficult and burdensome subject (Leppma & Darrah, 2022; Mazana, Suero Montero & Olifage, 2019; Rosli et al., 2019; Tsai & Chang, 2009). This can lead to negative attitudes and disengagement with the subject. One reason why students may perceive mathematics as a burden is due to the way it is traditionally taught. Mathematics instruction can be a challenging and daunting task for many students, as it often involves a focus on memorization and procedures that can become tedious and repetitive (Boaler, 2015). This emphasis on getting the correct answer, combined with the fear of making mistakes, can create a stressful learning environment that can affect students' attitudes towards mathematics (Finlayson, 2014). Studies carried out by Lai and Hwang (2016) shows that rote learning causes low achievement among mathematics students. Arsaythamby & Zubainur (2014) state that teaching and learning mathematics in primary schools is more effective when it is performed through group activities. To ensure effective teaching and learning in mathematics, it is crucial that students are placed at the centre of the learning process (Emaliana, 2017). Educators can promote a supportive learning environment through creative teaching practices (Schettino, 2016; Yusof et al., 2012), which can ultimately lead to meaningful learning experiences for students (Chiang & Lee, 2016; Haridza & Irving, 2017).

There is more to mathematics than rote knowledge and application of rules. Mathematics has hierarchical, structured, logical, and systematic concepts, from the most basic to the most complex notions (Ganter & Willie, 2012). Febriani and Sidik

(2020) maintain that in order to learn mathematics, one has to master prerequisites before understanding the next concept. If students can relate concepts, methods, and ideas from previously studied material to newly acquired lessons, their grasp of mathematics will likely improve (Posamentier & Smith, 2020). In this regard, Ritchhart and Perkins (2008) sustain that when something is built on prior knowledge, students can learn it more quickly. Arithmetic proficiency is considered to be one of the most essential goals in early education as simple notions become the foundations of a person's ability to learn complex mathematical concepts (Carpenter et al., 2003). A study conducted by Clements & Sarama (2011) suggests that learning mathematics within the early years has some characteristics. They propose that educators should use a spiral method, which involves the learning of new content to be always connected with knowledge that the learner has already mastered (Bruner, 1960). Thus, learning mathematics should imply the concept of learning occurring through an inductive way, where it begins through the provision of simple concepts leading to more complex ones (Selvianiresa & Prabawanto, 2017).

2.4 Mathematics and 21st century education

To meet the demands of 21st century development, education must prepare children with the necessary skills and abilities for success. As noted by Kurniawan et al. (2019), this includes problem-solving skills, as well as creative thinking skills (Birgili, 2015) and sound cognitive abilities (Hidayah et al., 2017). The National Council of Teachers of Mathematics (NCTM, 2000) outlines five key process standards that support these goals: problem solving, reasoning and proof, communication, connections, and representation. By incorporating these standards

into curriculum and instruction, educators can help prepare students to thrive in a rapidly changing world.

According to Kay and Greenhill (2011), students need to develop three important skills: communication, critical thinking and problem-solving, with the latter being considered as a critical element for a comprehensive 21st century education (Szabo et al., 2020). Various professionals support this idea and argue that the primary goal of education is to instil in students the ability to reason, think critically, and solve problems (Tan, 2021; Živkovic, 2016; Abrami et al., 2015; Ndofirepi, 2014; Moore, 2013; Ebiendele, 2012; Synder & Synder, 2008). In line with this, students can select a strategy for problem-solving activities depending on their own potential, which helps them to move from the current condition to the desired one (Lucenario et al., 2016).

2.5 The Role of Problem Solving in Developing Mathematical Thinking and Competence

Mathematics provides a powerful tool for reasoning and problem solving. As Polya (1957) stated, "The art of reasoning consists in getting hold of the subject at the right end, of seizing on the few important points that illuminate the whole." Mathematics helps us identify these important points, allowing us to reason logically and make informed decisions.

Problem solving is a fundamental skill that is necessary for success in many areas of life (Szabo et al., 2020). It involves the ability to identify, analyse, and solve problems in a systematic and effective way. While problem-solving is a broad concept that applies to many domains, there are important differences between general problem-solving and mathematics problem-solving.

General problem solving involves the ability to solve problems in a variety of domains, such as science, engineering, business, and everyday life. According to Mayer (2014), general problem-solving involves three main processes: problem representation, problem solution, and problem verification. Problem representation refers to the ability to understand and define the problem, problem solution involves generating and evaluating possible solutions, and problem verification involves checking the solution for accuracy and completeness. Research has shown that general problem-solving skills are important predictors of academic and career success (Friedman et al., 2016; Seo et al., 2020).

Mathematics problem solving, on the other hand, involves the ability to apply mathematical concepts and techniques to solve problems. According to Hiebert and Grouws (2007), mathematics problem-solving involves four main components: understanding the problem, devising a plan, carrying out the plan, and evaluating the solution. Understanding the problem involves interpreting the problem, identifying relevant information, and formulating a mathematical model. Devising a plan involves selecting an appropriate strategy for solving the problem, such as drawing a diagram, using algebraic equations, or applying a formula. Carrying out the plan

involves implementing the chosen strategy, whereas evaluating the solution involves checking the answer for correctness and completeness.

Research has shown that mathematics problem-solving is a complex and challenging process that requires a combination of procedural knowledge (that is., knowledge of mathematical techniques and procedures) and conceptual knowledge (that is, understanding of mathematical concepts and principles) (Verschaffel et al., 2017). Mathematics problem-solving skills are important for success in academic and career settings that require quantitative reasoning, such as science, technology, engineering, and mathematics (STEM) fields (Byun et al., 2012; Guo et al., 2018).

2.6 Mathematics as an interdisciplinary field of study

Despite the fact that mathematics is frequently portrayed as a collection of distinct strands or standards, it is an interdisciplinary field of study as it intersects with various other fields such as science, engineering, computer science, economics, and many more (Roth, 2020). One way that mathematics intersects with other fields is through the use of mathematical models. Mathematical models are used to represent real-world phenomena, and they provide a way to analyse and predict the behaviour of these phenomena. One way of how mathematics intersects with Social Studies is through data analysis and statistics. Mathematics provides the tools necessary to analyse data and draw meaningful conclusions.

Therefore, students' comprehension of mathematics deepens and becomes more enduring when they connect related concepts, and start to perceive mathematics as a cohesive whole (Aguirre et al., 2013; Rowland, 2013). Mathematical connections relate to links between concepts in mathematics, the relationship between mathematical ideas and other areas of study, and the link between mathematical concepts and real life situations (NCTM, 2000, p. 274). The following examples illustrate how mathematical connections can be used to enhance learning and understanding of the concept of measurement:-

1. Link between concepts in mathematics: The educator could explain the relationship between units of measurement. For example, there are 30 centimetres in a foot, and 3 metres in a yard.
2. Relationship between mathematical ideas and other areas of study: The educator could explain how measurement is used in science. For example, measurements of temperature, volume, and mass are essential in science experiments.
3. Link between mathematical concepts and real-life situations: The educator could explain how measurement is used in construction. For example, when building a house, accurate measurements of length, width, and height are essential.

Students find mathematical connections in their own interests and experiences, in the complex interplay of mathematical topics and in settings that connect mathematics to other areas of study (NCTM, 2000). When it comes to the mathematical strand of measurement, students may measure the length of their own

feet, the height of their friends, or the weight of their backpacks. By engaging with measurement in this way, students can gain a more concrete understanding of the concept and see its relevance to their everyday lives. In addition, students can find mathematical connections in the complex interplay of measurement themes. For example, measurement concepts such as units, conversions, and estimation are all related and interconnected. By recognizing these connections, students can develop a deeper understanding of measurement and see how different concepts within the strand are related to one another. Finally, students can find mathematical connections in settings that connect measurement to other areas of study. Through such connections, students can see the practical applications of the concept and gain a deeper appreciation for its usefulness.

Therefore, mathematical connections ease the process of making sense and highlighting the relevance of mathematical concepts being studied and once understood, they help individuals to deal with everyday problems related to mathematics (Reys et al., 2014). This implies the importance of students acquiring the competence of 'mathematical connection' as early as possible (NCTM, 2000). In this regard, the NCTM (2000) aims "to help students build a disposition to use a connection in solving mathematical problems, rather than see mathematics as a set of disconnected, isolated concepts and skills" (p. 64). The NCTM (2000) goes on to say that "When students can connect mathematical ideas, their understanding is deeper and more lasting" (NCTM, 2000, p 64). Consequently, the ability of mathematical connections forms an integral part within the whole process of learning mathematics and it cannot be separated from other disciplines and problems of everyday life (NCTM 2000, p 275). Sawyer (2008) argues that such connections

form the basis of mathematics education and states that this is highly influenced by the teaching practices adopted.

2.7 Contextual Teaching and Learning

Contextual Teaching and Learning (CTL) promotes meaningful learning as students connect concepts to their real world (Afni, 2020). Berns and Erickson (2001) argue that

> "Contextual Teaching and Learning is a conception of teaching and learning that helps teachers relate subject matter content to real world situations; and motivates students to make connections between knowledge and its applications to their lives as family members, citizens, and workers; and engage in the hard work that learning requires." (Berns & Erickson, 2001, pg.3)

CTL is based on students' unique skills, interests, experiences and cultures. It integrates all these aspects into what, and how, students learn, as well as to how educators are to assess their learners' knowledge and understanding. It does not only incorporate the content and the 'what' of learning, but also involves the reasoning behind the importance of that learning. CTL consists of interdisciplinary activities across content areas and involve problem-based learning strategies that place students' learning in the context of communities (Glynn & Winter, 2004). Consequently, CTL promotes interactive and collaborative activities, which help

students in becoming self-regulated learners as it fosters interdependence among individuals and their learning groups (Johnson, 2002).

According to Selvianiresa and Prabawanto (2017), the CTL approach is comprised of seven components, which are:

1. Constructivism: Constructivism is a component of learning that emphasises the importance of building on students' prior knowledge and experiences to help them construct new knowledge and understanding. This involves facilitating students to build their own understanding by encouraging them to discover, investigate, and solve problems on their own (Bada & Olusegun, 2015). According to Lev Vygotsky (2012), language plays a central role in learning and development. Vygotsky emphasised the importance of social interactions in the learning process, and argued that language is a powerful tool for mediating those interactions. In a constructivist classroom, language is used as a tool for scaffolding students' learning. Educators may use open-ended questions to prompt students to think more deeply about a topic, or provide feedback on students' ideas to help them refine their understanding. Furthermore, students may work together in groups, using language to share their ideas and learn from one another, allowing for a more social and collaborative approach to learning.
2. Inquiry-based learning: Inquiry-based learning is a component of education that involves asking questions, making observations, and investigating problems in order to generate knowledge and understanding. It encourages students to become active learners and to take responsibility for their own

education by developing a deeper understanding of topics through exploration and inquiry. In an inquiry-based classroom, students are encouraged to ask their own questions, make their own connections, and draw their own conclusions, fostering a deeper understanding of the material being studied.

3. Problem-based learning: Problem-based learning is a component of education that places a strong emphasis on using real-world problems to engage students in the learning process. It involves presenting students with authentic problems that require them to apply their knowledge and skills in meaningful ways. In a problem-based classroom, students work collaboratively to investigate and solve complex problems, which fosters a deeper understanding of the material being studied. This approach encourages students to become active learners who take ownership of their own education and learn through hands-on, practical experience.

4. Authentic assessment: Authentic assessment is a component of education that places a strong emphasis on assessing students' knowledge and understanding in ways that are relevant and meaningful to their lives. It involves using a variety of assessment methods, such as projects, presentations, and portfolios that allow students to demonstrate their knowledge and skills in authentic ways. In contrast to traditional testing methods that focus on memorization and regurgitation of information, authentic assessment provides a more holistic view of a student's abilities and offers valuable insights into their learning progress. This approach encourages students to take an active role in their own education and provides them with opportunities to showcase their strengths and areas for improvement.

5. Collaboration: Collaboration is a crucial component of effective learning, as it enables students to work together and share ideas in order to solve problems and generate knowledge. In a collaborative learning environment, students are encouraged to work in groups, developing key skills such as communication, cooperation, and collaboration. By working together with others, students can gain a deeper understanding of the subject matter and develop important interpersonal skills that will serve them well in their future endeavours.

6. Reflection: Reflection is a critical component of the learning process, which allows students to develop a deeper understanding of their own learning and promote metacognition. It involves encouraging students to reflect on what they have learned, how they learned it, and what they could do differently in the future, in order to improve their learning outcomes and skills. Reflection also helps students to make connections between different concepts and ideas, and to develop a more holistic view of the subject matter.

7. Authentic learning environment: An authentic learning environment is one that is designed to be relevant and meaningful to students, incorporating students' interests and experiences into the learning process. It requires creating a classroom culture of respect, trust, and openness, where students feel comfortable taking risks and exploring new ideas. Additionally, an authentic learning environment fosters interdependence among individuals and their learning groups, promoting collaboration and the sharing of ideas and resources to deepen understanding and knowledge (Johnson, 2002).

2.8 Realistic Mathematics Education (RME)

Realistic Mathematics Education (RME) can be identified as a learning approach that can enhance and improve learners' mathematical connection skills (Van den Heuvel-Panhuizen & Drijvers, 2020). This approach is based on the Freudenthal Perception, where the contexts used in the teaching and learning of mathematics have to be parallel to the students' environment and life experience. Realistic context is a fundamental aspect of RME, where the problems and questions presented to students must be relatable and relevant to their everyday lives. This connection to their experiences enables them to find meaning in the mathematical concepts and solutions presented to them (Arsaythamby & Zubainur2014). RME instructions are student-centred as learners are actively engaged in hands-on activities, which involve a lot of interaction between peers, aiding in building interest in mathematics learning (Ahmad et al., 2002).

RME's main characteristic is to provide students with rich, realistic situations as the foundation of their learning process. Van den Heuvel-Panhuizen and Drijvers (2020) state that RME incorporates a number of fundamental teaching concepts. They mention six principles, namely:

- The Activity Principle - RME students are to be actively involved throughout the whole learning process as a lot of emphasis is placed on the fact that mathematics is learned best by actually doing mathematics. This is a strong reflection of Freudenthal's interpretations of mathematics as he describes it as a human activity (Freudenthal, 2006).

- The Reality Principle - This principle conveys the value placed on the objective of mathematics education, which includes students' capacity to use mathematics in "real-life" situations. Mathematics instruction should first begin with problem scenarios that are relevant to the students, providing them with the opportunity to give meaning to the mathematical structures they create when solving problems. In RME, instruction begins with problem solving situations put in rich contexts that require mathematical organisation, as opposed to beginning with teaching abstractions or definitions to be applied later.
- The Level Principle - Learning mathematics requires pupils to move through multiple comprehension stages: from informal context-related solutions to the development of various levels of schematizations and shortcuts to gaining understanding of the relationships between ideas and methods. Models are crucial for bridging the gap between informal, context-related mathematics and formal mathematics. According to Streefland (1985, 1993, 1996, as cited in Den Heuvel-Panhuizen, 2003), to perform this bridging function, models must go from being "models of" one specific circumstance to being "models for" a variety of different but related situations.
- The Intertwinement Principle - Mathematical content, such as geometry and measurement, should be heavily integrated with other domains rather than being considered as isolated curriculum topics. For instance number sense, mental arithmetic and estimations can be taught in connection to each other. This provides pupils with the opportunity to experience rich problems in which they can use different mathematical tools and knowledge.

- The Interactivity Principle - Van den Heuvel-Panhuizen and Drijvers (2020) state that learning mathematics through RME can be both an individual and a social activity. It encourages students to indulge in group projects and whole-class discussions as it offers students the opportunity to share their creations. Consequently, students learn how to improve their strategies. RME also encourages contemplation, helping students to absorb concepts at a deeper level.
- The Guidance Principle - Based on Freudenthal's idea of "guided reinvention" of mathematics, RME educational programs should include scenarios that have the ability to operate as a lever to achieve shifts in students' knowledge. In order to achieve this, educators should take an active role in their students' learning. This necessitates the curriculum and instruction to be built upon consistent, long-term teaching and learning approaches (Freud, 1973, as cited by Jahnke et al., 2022).

Therefore, RME acts as a starting point for the development of mathematical concepts, methods, and processes in a context that students can subsequently apply to real-life situations as the learning increasingly becomes more formal, generic, and context-free (Michelsen, 2006). Bray and Tangney (2016) regard RME to be the best method of instruction as it involves students solving mathematical problems in circumstances that appeal to their interests while being scaffolded by their educators. Even though realistic problems relate to real-world situations, 'realistic' has a broader connotation within RME. Educators are allowed to provide their students with problem situations which they can imagine, aiming to create something real in their mind. In RME, problems can therefore be presented to students from

both the actual world and even from fairy tales, as long as the situations are experientially real in the students' minds. Various studies confirm the benefits of RME on students' performance and demonstrate how learners are able to comprehend mathematical topics more fully through open-ended and contextual questions that encourage students to think about mathematics rather than simply practise it (Bonotto & Santo, 2015; Hidayat & Iksan 2015; Domínguez, 2011).

Research reveals that RME is an effective approach for improving critical mathematical thinking and quality character development compared to conventional mathematics education. Quality character development in mathematics involves fostering traits such as persistence, collaboration, critical thinking, creativity, and a growth mindset (Drake & Reid, 2018). These character traits are important for success in mathematics and other areas of life. Conventional mathematics education involves a teacher-centred approach with an emphasis on memorisation and achieving correct answers, rather than on developing a deep understanding of mathematical concepts and their applications (Laurens et al., 2017). Research indicates that the RME approach is effective in enhancing students' critical thinking and problem-solving skills, as demonstrated by studies conducted by Pratiwi & Waziana (2018). Additionally, research by Palinussa (2013) has found that RME is also associated with positive outcomes for students' character development in mathematics.

2.9 Curriculum Integration

Willis (2010) suggests that humans process information through patterns and connections rather than through bits and pieces of information. The idea of connecting subject areas has a lot of face validity since, in real world situations, people's lives are not separated into distinct subjects (Fink, 2013). Consequently, meaningful learning happens as students embed new knowledge and skills in a context, thus making connections among ideas. Several studies imply that Curriculum Integration (CI) aids in helping learners to form deeper understanding (Christopoulous & Sprangers, 2021; Boymurodov, 2020; Wall & Leckie, 2017; Shaidullina et al., 2015; Brough, 2012; Kuh, 2008; Morris, 2003). This means that they see the 'big picture', thus making the curriculum more relevant. Students learn to make connections among central concepts and ideas whilst also becoming more interested and motivated towards their learning (You, 2017). Mertens et al., (2016) state that CI "engages students as active learners who make the most of the decisions about what they study" (p. 123).

Beane (2005) defines CI as meaningful learning organised in such a way as to support democracy. Beane mentions four aspects of integration that highlight issues and adherence with democratic principles, namely

- integration of experiences - referring to the blending of past and present knowledge in the attempt to promote new learning.

- social integration - happening when students from many cultural backgrounds engage in common learning activities.
- integration of knowledge - occurring when concepts from different subject areas are put together by focusing on problem solving issues.
- integration as a curriculum design - placing focus on project-based learning and other knowledge applications (Beane, 1993).

The fundamental goal of CI is to establish strong connections between growth and learning, highlighting not only the content but also the abilities and concepts (English, 2016). Parker (2005, p. 452-453) defined integration as

> "A curriculum approach that purposefully draws together knowledge, perspectives, and methods of inquiry from more than one discipline to develop a more powerful understanding of a central idea, issue, person, or event. The purpose is not to eliminate the individual disciplines but to use them in combination. " (as cited in Hinde, 2005, p. 106).

The terms ‘cross-curricular’ and ‘integrated’ are often used interchangeably. Both terms relate to the planning and teaching strategies that aim to integrate elements from different subject areas that are taught concurrently and contribute in a significant and suitable manner to a topic’s overall learning objectives. Learning in one area must be supported by learning in the other areas, and each topic must contain core information that is typically centred on one or potentially two central themes (Martin, 2002). According to Barlow and Brook (2010), an important

component of any cross-curricular approach is the idea that one theme may offer many opportunities for high quality learning across several subject areas. This aids in saving time and avoiding repetition, whilst creating broader and more cohesive learning experiences, with greater consideration given to how students learn.

The Maltese National Curriculum Framework (Ministry for Education and Employment, 2012), specifically mentions the "move away from an exclusively subject-based approach that favours fragmentation and compartmentalization of knowledge to a more cross-curricular, thematic, interdisciplinary, and collaborative approach that reflects real life situations" (Ministry for Education and Employment, 2012, p. 31). A method of integration is also encouraged by the Learning Outcomes Framework (Directorate for Quality and Standards in Education, 2015). This framework also promotes mathematics instruction in the first two years of primary school (Grades 1 and 2, or ages 5-7) that is interdisciplinary and motivated by the interests of the students.

Loepp (1999) argues that a successful CI should be “relevant, standards based and meaningful for students whilst providing them with a challenge to solve real world problems” (p. 21). Loepp (1999) also affirms that integration can result in “greater intellectual curiosity, improved attitude towards schooling, enhanced problem solving, and higher achievement” (p. 21). According to Springer (2006), “curriculum integration takes as its ultimate aim helping students live better lives now as well as in the future, not merely gathering more information for possible later use” (p. 14). Dowden (2007) takes a similar approach and states that the main purpose

of CI is to “resituate subject matter into relevant and meaningful contexts” (p.52). Pate (2013) consolidates this idea and maintains that a successful CI must provide the allowance of a model in which “students become teachers and teachers become learners” (p. 174).

2.10 Language and Mathematics Education

Language is a crucial aspect of the teaching and learning process, particularly in the context of mathematics. Researchers have shown that language not only serves as a means to teach mathematics but also aids students in constructing mathematical meaning (Moschkovich, 2010; Moschkovich, 2007b; Chapman, & Education, 2003). Sociocultural theory provides a theoretical framework for analysing language as a mediating tool in the teaching-learning process, as it posits that higher mental processes result from social interaction (Cross, 2010).

While speaking more than one language has been shown to have cognitive benefits such as better problem-solving and higher-order thinking skills (Lauchlan et al., 2013), transitioning between languages can be challenging, particularly in mathematics (Moschkovich, 2007b). For instance, using a second language for mathematical procedures may require a longer response time. Moreover, the use of language and its lack of comprehension can have a negative impact on students' attitudes towards mathematics and their appreciation of the subject, ultimately leading to lower self-efficacy (NCTM, 2000). Bandura (2001, 1986) supports this

idea, suggesting that an individual's level of efficacy directly affects their effort, persistence, and resilience. Consequently, poor language use and lack of comprehension in mathematics can result in reduced self-efficacy, which can in turn, hinder a student's motivation and ability to persist in the subject.

2.11 Mathematical practices and discourse

Schoenfeld (2016) states that,

"The person who thinks mathematically has a particular way of seeing the world, of representing it, of analysing it. Only within that overarching context do the pieces—the knowledge base, strategies, control, beliefs, and practices—fit together coherently." (Schoenfeld, 2016, p.31)

Effective communication plays a critical role in learning mathematics as it supports conceptual understanding. The more opportunities students have to make connections between multiple representations, the more they can enhance their conceptual comprehension. In this regard, Moschkovich (2013) stresses the importance of paying attention to the language being used during mathematics lessons. She states that language should include the full spectrum of mathematical proficiency, which demands educators to balance computational fluency with tasks that require conceptual understanding. She believes that paying attention to the language supports students' participation during lessons and that mathematical practices should focus on reasoning and justifying, not just vocabulary or accuracy in using single words. According to Moschkovich (2015, 2016), everyday situations and home language should be seen as a resource rather than a deficit in

mathematics education. By doing so, students can negotiate meaning for mathematical language in context, instead of learning definitions separate from mathematical activity. This approach can help students feel more comfortable and engage in the learning process, as they are able to use their prior knowledge and experiences to make sense of new mathematical concepts and problems (Moschkovich, 2015, 2016).

Therefore, classroom communication should include evidence-based arguments focused on explanations and justifications, and incorporate multiple modes of communication such as talking, listening, writing, and drawing (Belland et al., 2011). Moreover, to facilitate the recall of information and build mathematical proficiency, it is necessary to comprehend, elaborate and organise what is already known (Bransford et al., 2000; Kilpatrick et al., 2002). According to Moschkovich (2013), a sociocultural viewpoint can improve engagement in mathematical tasks such as problem solving, sense making, reasoning, modelling, and looking for patterns and structure. Hence, a classroom that promotes multiple modes of communication and embraces sociocultural viewpoints can provide students with opportunities to enhance their conceptual understanding and mathematical proficiency.

2.12 The Current Maltese Context and the Emergent Approach

The Maltese educational setting requires compulsory attendance for pupils between the ages of 5 and 16, or a total of 11 years of primary (6 years) and

secondary (5 years) education. The official position in Malta is that the educational process emphasises a person's potential for self-realisation (Ministry of Education, 1999). This policy is being promoted through initiatives to make learning an active and pertinent process that depends on students having access to the learning objectives and teachers being aware of what students are getting out of their educational experiences. The method to achieve these objectives includes initiatives toward "a more formative assessment" (Ministry of Education, 1999). In this emerging context, success will no longer be defined as only passing a test but rather as knowing that all students, regardless of performance, have received support to grow holistically and to the best of their potential. These education policies aim to provide everyone with a quality education, facing the difficult task of overcoming a deeply ingrained highly traditional educational culture (Grima & Malta Ministry of Education, Youth Employment, 2005).

The National Curriculum Framework (NCF) offers guidance to stakeholders by establishing monitoring mechanisms to facilitate its effective implementation (Ministry for Education and Employment, 2012). The NCF aims to develop children's knowledge, skills, abilities and values whilst also meeting their individual needs. It outlines the main principles that should underpin the National Curriculum, promoting personal growth, independence and inclusivity. The NCF focuses on the potential of each individual student by moving away from a one-size fits all curriculum to a more student-centred approach. The NCF highlights "The ability to develop and apply mathematical thinking in order to solve a range of problems in everyday situations is important for all learners." (p. 35). Students who are more proficient in mathematics have the opportunity to improve their mathematical reasoning, formally engage in

abstract and logical thought, and better grasp and utilise the communication opportunities that mathematics offers (Baxter et al., 2005). The NCF stipulates that being successful at mathematics means that "learners acquire a sound knowledge of numbers, measures and structures, basic operations and basic mathematical presentations, an understanding of mathematical terms and concepts, and an awareness of the questions to which mathematics can offer answers" (p. 35).

Piaget (1973) believed that young children learn best through play, and sustains that "to understand is to invent". Jones & Reynolds (2015) argue that "young children learn the most important things, not by being told, but by constructing knowledge for themselves in interaction with the physical world and with other children - and the way they do this is by playing" (p.1). The Emergent Curriculum (EC) has been developed to counter the 'Theme of the week' method of program delivery. It is founded on the idea that children learn best when curricular experiences take into account their interests, skills, needs and own lived realities. Yu-le (2004) defines the Emergent Curriculum (EC) as:

> "….. a constructive curriculum in which the teachers, students, teaching materials and environment interact in the context of dialogue. It departs away from the idea 'everything is predefined' and maintains that 'everything is developing'. Curriculum activity, instead of pure cognitive activity, is the dynamic process in which teachers and students display and create the significance of the life." (Yu-le, 2004, p. 1)

Emergent education, as opposed to the traditional predetermined curriculum, achieves learning via reflection on experience rather than memorization of facts or mechanical practice of skills (Yu-le, 2004). Ness and Farenga (2007) claim that young children's cognitive behaviours can be compared to those of scientists and mathematicians as they view children just as capable and sophisticated in their ability to generate theories. For example, in an experiment carried out by Kamii (1999) two groups of children were considered; one learning from textbooks and the other one through constructivist practices. In a constructivist classroom, educators act as facilitators, guiding students to discover and explore mathematical concepts on their own. Students are encouraged to share their own ideas and interpretations of mathematical concepts with each other, thus building on each other's ideas to create a collective understanding of the topic at hand. Kami's (1999) experiment demonstrated that learners achieve better results when they are encouraged to engage in their own thinking and are given the opportunity to develop their potential for logical thinking (p. 122).

Recently, a revision of the mathematics syllabus for the primary years was carried out, and classified mathematics knowledge into four strands: Number and Algebra; Measurement; Space and Shapes; and Data Handling (Department of Curriculum Management, 2014). These four strands also form the basis of the Learning Outcome Framework (LOF) (Ministry of Education and Employment, 2015) which is intended to replace the 2014 syllabus (Department of Curriculum Management, 2014). The LOF designed for the Junior Years divides the four strands into seven parts: 'Number and Algebra' has been split into three, namely,

- Strand 1 – The Number System,
- Strand 2 – Numerical Calculations
- Strand 3 – Fundamentals of Algebra;
- Strand 4 - ‘Shape, Space and Measure’ have been joined and divided into Measures,
- Strand 5 – Euclidean Geometry,
- Strand 6 – Transformation Geometry,
- Strand 7 - ‘Statistics and Data Handling’ falls under the heading of ‘Data Handling & Chance.

2.13 Educators’ Role within the Emergent Context.

The EC is built through negotiation with the students (Fyfe & Forman, 1996) as educators promote interactions among, and with, them in order to observe, listen attentively to, and ultimately acknowledge their interests (Rinaldi 2006). Stacey (2011) views the EC “as a cycle that involves watching and listening to children with care; reflecting on and engaging in dialogue with others about what is happening; and responding thoughtfully in ways that support children’s ideas, questions and thinking” (p. 1). Stacey (2011) expands the definition by stating “In an emergent curriculum setting, a teacher’s response to children needs to be original because children’s ideas are often unexpected, thought-provoking, or just plain puzzling” (p.1). Tal (2012) argues that when students coordinate the discourse, it becomes even more dialogic compared to when the educator coordinates it, leading to an enhancement of their creativity. Children’s theory generation is sophisticated to

comprehend, both due to the fact that they are not limited by current 'correct' information and also because they are more willing to take risks. In this regard, David Elkind states that,

> "Children have their own curriculum priorities and construct their own math, science and technology concepts. These concepts, while age-appropriate, may appear wrong from an adult perspective ... young children's thinking has to be understood on its own terms and in its own context, not from the perspective of adult thought." (Elkind, 1998, p 3).

Since the EC is founded on constructivist thinking, educators' approaches to both indoor and outdoor settings and how they affect children's learning and well-being, are to be perceived as 'primary players' or occasionally 'as the third teacher' (Tal, 2016). This implies that educators are to be seen as curriculum researchers and creators rather than being transmitters of knowledge (Wette, 2010). The idea of a tree of knowledge developing in an ever-increasing hierarchical form is challenged by Malaguzzi's image of the 'Tangle of spaghetti' (Malaguzzi, 1998 as cited in Tarr, 2010), where the spaghetti on the plate is twisted and interwoven, making it impossible to see the individual strands of pasta. Rinaldi (2006) believes that "the timing and styles of learning are individual and cannot be standardised with those of others" (p. 125).

As from the scholastic year commencing 2023, educators are going to be requested to implement such a teaching approach and use observations of students throughout the day in order to create curriculum content. Such a shift of pedagogy

aims to provide students with meaningful learning opportunities, ultimately assisting critical developmental skills. After students have achieved mastery through repeated practice, educators can further advance the learning process by designing and implementing increasingly challenging activities. Children develop a sense of competence as learners as they repeatedly face and overcome 'achievable problems'. In addition to this, the curriculum's congruence with students' interests and societal realities acknowledges all forms of diversity and fosters a desire for life-long learning.

2.14 Translanguaging and Bilingualism

Within our education, Maltese and English are taught concurrently as early as from pre-school. The bilingual situation in Malta is considered "as the basis of the educational system" (NCM, 1999, p. 37) as all subjects are taught in either English or Maltese, with frequent code switching throughout the majority of lessons. Most of the reading and writing for several subjects is done in English as English textbooks are more readily available than Maltese ones. According to Kecskes and Papp (2000), the interaction between the two language channels in the bilingual language processing system can lead to one language overtaking the other and changes in linguistic forms.

The mentioned two languages are also used for mathematics education. In this regard, researchers contend that mathematics learning opportunities emerge when educators encourage their learners to engage in conversations by using

practical language techniques, like code switching and translanguaging (Planas, 2018; Tavares, 2015). The latter mentioned studies also demonstrate that educators can use bilingual solutions if they are aware of the language constraints that second-language learners experience, such as giving restricted mathematical answers. Canagarajah (2011) defines translanguaging as "the ability of multilingual speakers to shuttle between languages, treating the diverse languages that form their repertoire as an integrated system" (p.401). Translanguaging is distinct from code-switching as the latter presupposes that the bilingual possesses two independent monolingual codes for each of the two languages that may be employed independently of one another. According to Celic and Seltzer (2011), translanguaging indicates that bilinguals have a single linguistic system from which they choose lexical, syntactic, and pragmatic aspects to improve their communication abilities. Various researchers refer to translanguaging as the natural language practices used by bilinguals and multilinguals who view languages as merged repertoires they can explore rather than as formally distinct and socially created systems (Baker, 2011; García, 2009; Otheguy et al., 2015) . Gort and Sembiante (2015) maintain that translanguaging is not unique or unusual but rather a normative way that bilinguals interact with members of multilingual societies, since "bilinguals pragmatically draw on their entire linguistic repertoires to maximise understanding and performance across a variety of contexts, to shape experiences, and to make sense of the world" (p. 8).

Translanguaging pedagogy can aid curriculum access as well as provide support to students' mastery of language (Durán & Henderson, 2018). Evidence shows that translanguaging helps people to communicate more easily since it allows

them to express themselves more freely in settings like classrooms (Garcia 2011). In addition to this, translanguaging also enables students to apply both their creative and critical skills, while defying the conventions of standard language use, as they utilise all of their linguistic resources to ask questions, discuss, and express opinions (Wei, 2011). Thus, bilingualism focuses on the observable behaviours of bilingual individuals in making sense of their multilingual environment, rather than solely on the languages they speak (Mazak & Herbas-Donoso, 2015). This perspective implies the use of translanguaging, which goes beyond code switching and involves what Gutiérrez et al. (1999) refer to as "hybrid language use." This involves a systematic, strategic, affiliative, and sense-making process within multilingual contexts (p. 88). By implementing bilingual strategies and practices, participation and interaction during lessons may be enhanced, as students are able to use their complete language repertoire as a resource without feeling self-conscious (Park, 2013).

2.15 Teaching Mathematical Content in a Second Language

The language of mathematics uses a variety of technical phrases that are subject-specific and has a tendency to be more analytical in character due to its intention of explaining abstract concepts, logical links, and universal phenomena (Tai, 2022). The challenge for mathematics teachers to balance teaching content in a second language is highlighted by studies conducted by Lo (2015). Particular

focus has been given to students who are still struggling to develop their second language scientific and mathematical literacies at the same time as their second language proficiency.

Malta's language policy supports the development of bilingualism and multilingualism whilst encouraging young students to have favourable attitudes toward English, Maltese, and other languages (Malta Ministry of Education and Employment, 2015). Lack of, or limited, English proficiency has been, and continues to be, a major concern when it comes to student evaluation. Statistical analysis revealed a strong association between Year 6 students' mathematics and English exam outcomes in a study conducted by Caruana Anastasi (2003), indicating that 'performance in mathematics is dependent on language competence' (p.54). Children grow up in households where one language is spoken and then attend schools where another language is spoken, or they might pick up a second language while attending school. This means that students engage in translanguaging, regardless of how they become bilingual or multilingual (García, 2009).

Translanguaging pedagogies aid in mitigating challenges within multilingual classroom environments and enhance a rational use of language mixing. Such an approach enables students to reach their full potential as they would feel at ease to think, discuss and communicate in the language they feel most comfortable in (Beres, 2015; García & Wei, 2014). Baker (2011) sustains that translanguaging is the most efficient way to build understanding since 'pre-existing knowledge is a foundation for further learning and there is ease of cross linguistic transfer as two languages are interdependent' (p. 280 - 281). Baker and Sienkweicz (2000) argue

that the subject matter needs to be properly 'digested and reconstructed' especially when two languages are used for instruction (p.82). In this regard, Baker (2003) sustains that translanguaging gives 'a deeper and fuller understanding of the subject matter' (p. 82). Furthermore, Lewis et al., (2012) highlight the fact that the process of translanguaging 'uses various cognitive processing skills in listening and reading, the assimilation and accommodation of information, choosing and selecting from the brain storage to communicate in speaking and writing' (p. 644). Ultimately, the development of these abilities leads to a greater comprehension of subject matter than when only one language is employed.

In multilingual classrooms, translanguaging has been seen as a valuable pedagogical tool for fostering student inclusion (García & Kleyn, 2016; Garcia & Wei, 2014;). Different countries place a great importance on inclusive pedagogy, and teachers are required to manage the demands of fostering social inclusion and equality in the classroom as well as the diversity of learners as they grow (Miles & Singal, 2010; Ainscow et al., 2006).

Thus, merging and including translanguaging into pedagogical strategies is to be considered as one way forward to promote true inclusive learning and equitable education for all learners (Scaglione & Caruana, 2018; Cenoz, 2017; García, 2005). Educators must understand how crucial it is to distinguish between language used for evaluation reasons and language utilised as a tool for learning and communication. According to the particular situation and the demands of the activity at hand, translanguaging promotes the strategic switching between two

languages throughout class time (Hamman, 2018). The usage of the target language would be encouraged for publishing, presenting, creating a final written product, or for evaluation purposes, but educators might also encourage students to use their whole linguistic repertoire during brainstorming sessions, discussions, debates, or oral presentations (Daniel et al., 2019).

2.16 Language as a Resource in Mathematics Education

Language diversity in mathematics education (ME) refers to the presence of multiple languages within an educational setting, where students and educators come from different linguistic backgrounds (Phakeng, 2016). It involves recognizing and utilizing various languages as pedagogical resources to enhance students' learning experiences. On the other hand, the resource mindset, closely associated with language diversity, signifies a shift in ME away from deficit viewpoints towards culturally responsive approaches that leverage the linguistic and cultural knowledge of students (Austin & Howson, 1979; Travares, 2015).

While Austin and Howson (1979) had argued that bilingualism could impede children's linguistic, cognitive, and educational development in mathematics, contemporary perspectives highlight the significance of social and cultural contexts of language use in mathematics teaching and learning (Robertson & Graven, 2020). Travares (2015) emphasizes that the use of the first language in mathematics instruction can have a significant impact on student learning, particularly during cognitively challenging situations. However, Planas (2014) notes that the focus of

language diversity and mathematics learning often centres more on the challenges faced by linguistically diverse learners rather than the opportunities they offer. The language as a resource perspective has recently drawn a lot of study attention, whereby researchers take a deeper look at the opportunities and challenges that are present in this area (Chiteria 2011; Moschkovich, 2002; Turner & Celedón-Pattichis, 2011; Planas & Civil, 2013).

Multilingual classrooms, where educators and students may not share the same native language and may even have to employ an imposed language, present specific challenges (Setati & Adler, 2000). Research emphasizes moving away from deficit mindsets and accepting learners' diverse linguistic backgrounds as pedagogical resources in mathematics classrooms (Planas & Civil, 2013). Although there are studies recognizing diverse viewpoints and multiculturalism in math classrooms (Barwell, 2016; Chronaki, 2009, 2011), the resource metaphor remains dominant.

The metaphor of language as a resource has gained traction in ME, describing the shift away from deficit viewpoints and towards embracing language diversity as a valuable pedagogical and epistemological resource (Chronaki & Planas, 2018). It highlights the importance of considering language of instruction, instructional approaches, student interactions, and learning resources as essential aspects of education for diversity (Hunter, 2017). The shift from a deficit to a resource perspective aligns with the global "maths for all" movement for social

justice, which has propelled an expansion of language-related research in ME (Planas et al., 2018).

Acknowledging the ethical imperative of embracing linguistic diversity, it is crucial to discern the aspects that receive emphasis and those that are overlooked. This is particularly important when examining the relationship between language diversity and universal access to ME (Shademan et al., 2016). By critically evaluating these considerations, one can better understand the implications of language diversity for equitable and inclusive educational practices. Shademan et al. (2016) highlight the influential role of our perspectives and how bilingualism is handled in school systems, stating that it can either be perceived as a threat or an opportunity. Building upon this idea, Palviainen et al. (2016) further support the notion of employing flexible language practices within classrooms. They argue that this approach allows knowledge and understanding to develop naturally or spontaneously over time through first-hand experiences. Consequently, learning occurs in a more natural and dynamic process of acquiring knowledge. Local studies conducted by Mifsud & Vella (2018) advocate for a flexible approach to language use in classrooms, challenging the notion of a 'one size fits all' policy, particularly in the early years, as they argue that it is essential to meet the specific needs of students.

The National Curriculum Framework (NCF, 2012) acknowledges the significance of a revised National Language Policy, which should offer clear guidance on the language used for instruction and assessment (p.41). It

emphasizes the importance of incorporating multiple languages across various learning areas, particularly aligning with the 1999 National Minimum Curriculum (NMC) recommendation for schools to develop their own language policy tailored to their specific needs. The NCF recognizes the necessity for educators to be proficient in both Maltese and English and to develop resources in both languages as required and utilize the Maltese language for specific purposes. Furthermore, UNESCO recognizes the fundamental right of children to use their first language during the early years of education, considering it an indispensable condition for their holistic educational development (Malaki et al., 2022).

2.17 The use of concrete manipulatives in Mathematical Instruction

According to McGuire et al. (2012), the early childhood years, from 0 to 8 years, are crucial for a child's development. They emphasise the need of exploring instructional methodologies that complement and cater to the young child's development and knowledge of their environment. Witzel & Allsopp (2007) affirm that the use of manipulatives can effectively further the development of conceptual understanding in mathematics. Uribe-Florez & Wilkins (2010) support this idea, as they believe that manipulatives aid students to link concrete ideas to abstract ideas and informal approaches to formal approaches. Manipulatives are defined as "physical objects that are used as teaching tools to engage students in the hands-on-learning of mathematics'' (TeacherVision, 2009, p.1). Smith (2009) (as cited by Jones & Tiller, 2017) states that, "A good manipulative bridges the gap between informal maths and formal maths. Separate research conducted by Moyer (2001) and Moch (2001) (as cited by Jones & Tiller, 2017) suggest that concrete

manipulatives in mathematics instructions enhance students' interest in mathematics learning and demonstrate that this is true regardless of whether the experience takes place in a formal learning environment, like a classroom, or an informal learning environment, like a family's kitchen.

The use of concrete materials help children to learn new concepts and to connect them to what they have already learned, as they create custom mental models (Chi, 2013). According to Witzel et al., (2001), students' engagement with Mathematical concepts can be increased through interactive activities. The use of hands-on contact with concrete manipulatives allows learners of all levels of mathematical knowledge to begin instruction on a level playing field rather than diving right into an abstract idea. It is fundamental for all students to have access to in order to be able to connect, and engage with, the mathematical concept, both through direct and hands-on participation (Witzel et al., 2001; Devlin, 2000; Maccini & Gagnon, 2000). Students should be given the chance to show that they have grasped the intended mathematical concepts by demonstrating their ability to manipulate and represent abstract ideas using everyday objects that are familiar to them (Witzel et al., 2001; Devlin, 2000; Maccini & Gagnon, 2000).

2.18 Conclusion

The EC requires that instruction and preparation must be done in a way that results in meaningful experiences, and that responds to the students' interests and needs. Studies show that language is an important factor in the process of acquiring

mathematical knowledge in the classroom (Gorgorió & Planas, 2001). The ability to express oneself in a preferred language, helps strengthen the value of questioning, whilst also maximising individual's participation throughout the learning process. Gervasoni (2018) argues that 'ensuring that all children thrive mathematically' cannot be simply associated with well-being at the individual level, but 'ultimately the economic and cultural prosperity of a society' (p. 115). Gervasoni's (2018) quote emphasises the importance of ME not just for individual success, but also for the economic and cultural well-being of a society. In today's global and technology-driven world, proficiency in mathematics is essential for fields such as science, engineering, finance, and technology. Moreover, ME can foster critical thinking, problem-solving, and analytical reasoning, which are necessary skills for informed decision-making and addressing complex societal issues.

However, students' ability to "thrive" mathematically can be threatened by circumstances that force them to learn mathematics through a language other than their native language. This can jeopardise inclusion commitments recommended by policies and hinder their ability to succeed academically, leading to negative implications for their future economic prospects and the broader societal benefits of mathematics education. Therefore, it is crucial to ensure that all students have access to quality ME in a language that they understand, to promote their success and contribute to the economic and cultural prosperity of the society as a whole.

When creating this project, I was mindful of the fact that some educators find teaching using Concrete, Representational, and Abstract (CRA) (Reyes, 2021) and

Emergent Curricula to be challenging (Kashin, 2007). This Integrated Curriculum Handbook aims to support educators by offering them activities that address Measurement in the Maltese language. Additionally, this project aims to offer suggestions as to how to accomplish this using readily available resources. Educators can utilise the activities as they are or adapt them according to their students' or lessons' needs. Students are to be put in the centre of all activities whilst fostering collaborative learning, in the hope of building healthy relationships amongst peers. My aim is to create a flexible and adaptable problem solving and inquiry based learning environment, to which all learners can relate and feel free to express and share their ideas. The activities intend to enhance motivation for learning, promote inclusion, and develop students' research skills so that they can be in a better position to take control of their own education.

Chapter 3 – Methodology

3.1 The rationale behind the Integrated Curriculum Handbook

In the Maltese education system, mathematics is introduced to children from as early as three years old, with the aim of building their knowledge through real-life contexts (Suharto & Widada, 2019). Educators must commit to adopting emergent content in the classroom and maintaining children's interest through ongoing experiences that motivate and enhance their development, while considering their individual abilities (Bell, 2010).

The definition of curriculum has evolved over time, from Bobbitt's 1918 (as cited by Campbell-Phillips, 2020) description of it as a series of experiences for children to develop skills for adult life, to Young's (2014) view of it as an all-encompassing structure that shapes the activities of educators and students alike. As Duffy & Jonassen (1992) note, the curriculum is a product of human agency and is guided by a set of values and ideas about how students should learn. Thijs, Annette, and Jan Van Den Akker (2009) add that the curriculum consists of three levels - planned, taught, and experienced. Therefore, it is essential for educators to develop a curriculum that considers the requirements of all learners and ensures that it can be applied practically.

The Integrated Curriculum Handbook was developed with the aim of providing a practical approach to understanding the measurement strand of the primary mathematics curriculum. It was designed to accommodate all types of learners,

including those who have difficulty with English, by utilising the Maltese language as a resource for measuring performance. To achieve this, the handbook was thoughtfully crafted to reflect the values and ideas required to create a learning environment that promotes students' growth and achievement. Additionally, the handbook was designed to be flexible and dynamic, adapting to the Emergent Curriculum approach that allows educational content to be tailored to students' interests and needs. This approach ensures the handbook's continued relevance by remaining responsive to evolving values and expectations.

3.2. Connecting the Measurement Strand and Learning Outcomes for Year 2 Students

As defined by UNESCO in 2013-2024, a comprehensive curriculum consists of four crucial components: Intended Learning Outcomes, Content, Teaching and Learning Methods, and Assessment Evaluation. To create a well-structured curriculum, these components must be meticulously organised into a logical sequence through curriculum design. Based on these elements, I began drafting my Integrated Curriculum Handbook. To ensure it reflected the pedagogical approaches, and needs outlined in the current mathematics Syllabus, first I established the curriculum topics, being:-

- Mass (Weight)
    - Understanding and usage of the vocabulary related to mass to compare two masses by direct comparison; extend to more than two.
    - Measuring using uniform non-standard units.

- Capacity
    - Understanding and usage of the vocabulary related to capacity.
    - Comparing two capacities by direct comparison extend to more than two.
- Length, Perimeter and Area
    - Understanding and using the vocabulary related to length.
    - Comparing two lengths / heights by direct comparison extend to more than two.
    - Suggesting suitable standard or uniform non-standard units and measuring units to estimate.
    - Measuring the length or height of an object using non-standard units.
- Time
    - Understanding and the usage of the vocabulary related to time.
    - Ordering familiar events in time.
    - Knowing the days of the week in order and the seasons of the year.
    - Reading the time to the hour.
    - Showing the time to the hour on an analogue clock.
- Money
    - Recognising coins of different values up till two euro.
    - Working out change from twenty cent.
    - Understanding notation € for euro and c for cent.

Alongside adhering to the principles outlined in the mathematics curriculum, then, I had to also consider the forthcoming changes in Year 2 classrooms, where the subject area will align with specific Learning Outcomes commencing from the

upcoming academic year. Recognizing this shift, it becomes crucial for the Integrated Curriculum handbook to reflect this change in order to maintain its relevance and utility for both educators and students. In order to achieve this, I undertook the task of identifying the Learning Outcomes that primarily pertain to the Measurement strand in the Early Years, as shown on pages vii to xiii of the Integrated Curriculum Handbook.

Additionally, the handbook aims to accommodate students of all abilities, including highly capable students. To fulfil this purpose, the activities were carefully designed to be easily adaptable to meet the specific needs of each student. Moreover, in order to support educators in assessing students' knowledge and understanding, I have meticulously identified and incorporated the LOs for level 5 in both mathematics and Maltese, presenting a practical assessment resource. The identified LOs are shown on pages xiv to xvii of the Integrated Curriculum Handbook.

3.3 The Title, “Il-Kejl fil-Prattika”

The title, "Il-Kejl fil-Prattika", is an appropriate and effective choice for a project focused on teaching the mathematical strand of measurement. The title I have selected for the project reflects a practical and an interactive approach to teaching measurement, which aligns with the adoption of problem-based learning and the emergent curriculum approach. This approach emphasises hands-on learning experiences that encourage students to take an active role in the learning process and develop their problem-solving skills. By using this approach, I aim to foster a positive and engaging learning environment that supports students in

achieving their educational goals. Furthermore, I opted for a short and catchy title, as I believe that this helps in grabbing the attention of potential users, and aids in making the project more memorable. In this regard, research has shown that short, catchy titles can be more effective in attracting attention and promoting engagement (Baum, 2014). Besides this, I strongly believe that the project's title can effectively convey the significance of learning measurement concepts within real-world contexts. By highlighting the practical applications of measurement, the title can enhance the project's accessibility and appeal to both educators and students alike. Such an approach can not only encourage educators to adopt the project but also help sustain students' engagement throughout the sessions, as they can see the relevance of what they are learning to their daily lives.

Additionally, to ensure the handbook is visually appealing and easy to navigate, attention was given to the layout and design. The use of appropriate headings, subheadings, and bullet points were employed to organise the information in a clear and concise manner. Graphics and images were also incorporated to enhance understanding and engagement. In the next sections, I discuss the formatting details, including the selection of title, font, spacing, alignment, colour, and more.

3.4 The selection of font, spacing, alignment and colour

The choice of font, spacing, and colour can greatly influence the readability and accessibility of a document, particularly for individuals with low vision and dyslexia (Rello, Luz & Baeza-Yates, 2013). Thus, careful consideration was given

when selecting Arial font, size 12, with 1.5 line spacing, and pastel colours for the Integrated Curriculum Handbook.

The selection of Arial font was based on its clean and simple design, which helps individuals with low vision or dyslexia read and distinguish between letters (Yoliando, 2020). Additionally, the study conducted by Rello, Luz and Baeza-Yates (2013) suggests that serif fonts, such as Times New Roman, can be more challenging for individuals with dyslexia to read, making Arial a more suitable choice for the handbook.

The font size of 12 was chosen as it is large enough to be easily readable, yet not too large to make the document appear cluttered (Yoliando, 2020). The 1.5 line spacing was selected as it allows for enough space between lines to make the text easier to read, without taking up too much space on the page. Left alignment without justification was used to avoid inconsistencies in word spacing.

Finally, the decision to use pastel colours in the Integrated Curriculum Handbook, including a cream background and dark text colour (not black), was made with the intention of reducing visual stress and improving overall readability for individuals with low vision or dyslexia. According to research, using a single colour background (Rello & Bigham, 2017) and avoiding patterns can significantly increase reading speed performance, particularly when compared to cool background colours such as blue and green (Yoliando, 2020) as shown in Figure 3.1.

Figure 3.1

Background Colour

In conclusion, the font, spacing, and colour selection for the Integrated Curriculum Handbook were thoughtfully chosen with the goal of creating a dyslexia-friendly document, ensuring that all users have access to the content without difficulty.

3.5 Purpose and Guidance for Users

The primary objective of the problem-based learning project is to foster students' comprehension of measurement concepts by integrating real-world contexts and promoting effective communication skills through the use of the Maltese language. To achieve this goal, I have designed this comprehensive booklet aiming to provide a diverse range of practical activities in order to enable all students to apply their knowledge of measurement in a variety of contexts. My intention is to provide guidance on how to incorporate the Maltese language into these activities, to foster students' linguistic and cultural competencies.

The Integrated Curriculum Handbook begins with an introduction that emphasises the crucial role of language in mathematics learning and highlights the aims of the booklet. It is written in a way that encourages educators by presenting the current situation and motivating them to use it, especially with the new shift from the traditional curriculum to the emergent approach in the pipeline. Moreover, the handbook provides guidance on how to use it effectively in the classroom, making it easier for educators to incorporate it into their teaching practices. It also includes the Learning Outcomes associated with the mathematical strand of measurement in Maltese, which further facilitates the teaching and learning process. Importantly, the Learning Outcomes cater to both mainstream and highly-abled students, promoting inclusivity in the classroom. Overall, the introduction sets the tone for the rest of the handbook and provides valuable guidance for educators looking to integrate language and mathematics learning effectively.

The Integrated Curriculum Handbook not only provides the convenience of being accessible in both hard copy and soft copy formats but also offers a flexible design that empowers educators to personalize their teaching experience. In addition to comprehensive mind maps and resources, the handbook incorporates additional space specifically allocated for educators to jot down their own points, ideas, and materials as shown in Figure 3.2.

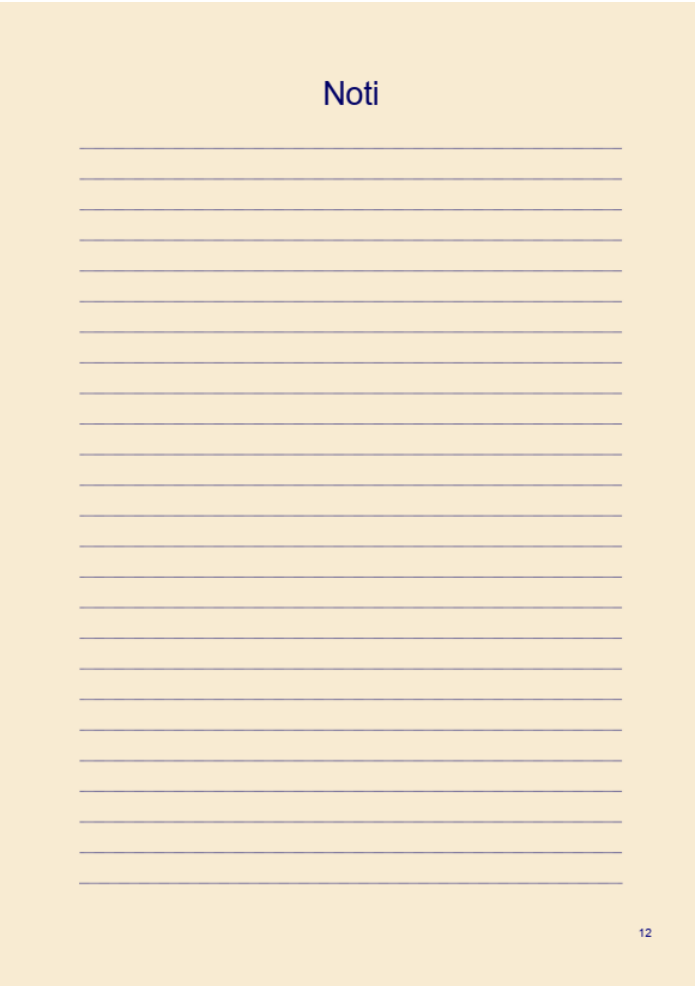
Figure 3.2

Resource List

This feature enables educators to seamlessly integrate their unique teaching methods and adapt the content to suit their classroom dynamics. Moreover, recognizing the importance of reflection and note taking, the handbook includes dedicated pages at the end of each chapter, inviting educators to record their own notes and observations as shown in Figure 3.3. By fostering this interactive and customizable approach, the Integrated Curriculum Handbook empowers educators to actively engage with the material and create a truly personalized learning experience for their students.

Figure 3.3

Note Page

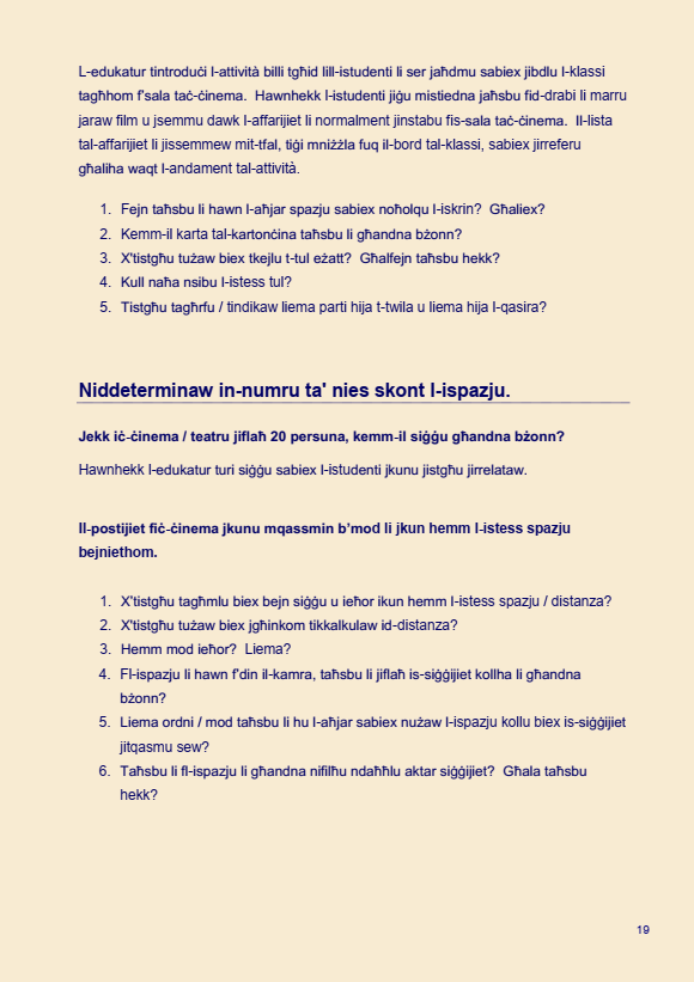


3.6 Practice in Action

Throughout the designing process of this project, I have placed great emphasis on aligning it with the learning outcomes of Level 4 for Year 2 students, focusing on essential topics such as estimation, measurement tools, and units of measurement as shown in Figure 3.4.

Figure 3.4

Open-Ended Questions



L-edukatur tintroduċi l-attività billi tgħid lill-istudenti li ser jaħdmu sabiex jibdlu l-klassi tagħhom f'sala taċ-ċinema. Hawnhekk l-istudenti jiġu mistiedna jaħsbu fid-drabi li marru jaraw film u jsemmu dawk l-affarijiet li normalment jinstabu fis-sala taċ-ċinema. Il-lista tal-affarijiet li jissemmew mit-tfal, tiġi mniżżla fuq il-bord tal-klassi, sabiex jirreferu għaliha waqt l-andament tal-attività.

1. Fejn taħsbu li hawn l-aħjar spazju sabiex noħolqu l-iskrin? Għaliex?
2. Kemm-il karta tal-kartonċina taħsbu li għandna bżonn?
3. X'tistgħu tużaw biex tkejlu t-tul eżatt? Għalfejn taħsbu hekk?
4. Kull naħa nsibu l-istess tul?
5. Tistgħu tagħrfu / tindikaw liema parti hija t-twila u liema hija l-qasira?

Niddeterminaw in-numru ta' nies skont l-ispazju.

Jekk iċ-ċinema / teatru jiflaħ 20 persuna, kemm-il siġġu għandna bżonn?

Hawnhekk l-edukatur turi siġġu sabiex l-istudenti jkunu jistgħu jirrelataw.

Il-postijiet fiċ-ċinema jkunu mqassmin b'mod li jkun hemm l-istess spazju bejniethom.

1. X'tistgħu tagħmlu biex bejn siġġu u ieħor ikun hemm l-istess spazju / distanza?
2. X'tistgħu tużaw biex jgħinkom tikkalkulaw id-distanza?
3. Hemm mod ieħor? Liema?
4. Fl-ispazju li hawn f'din il-kamra, taħsbu li jiflaħ is-siġġijiet kollha li għandna bżonn?
5. Liema ordni / mod taħsbu li hu l-aħjar sabiex nużaw l-ispazju kollu biex is-siġġijiet jitqasmu sew?
6. Taħsbu li fl-ispazju li għandna nifilħu ndaħħlu aktar siġġijiet? Għala taħsbu hekk?

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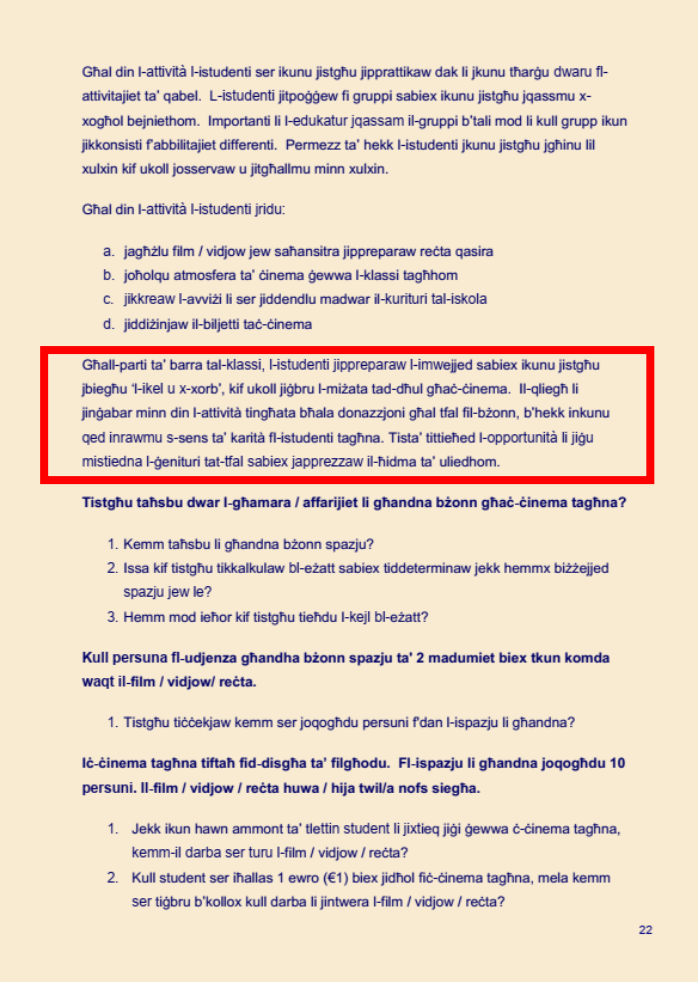
The project activities have been thoughtfully designed to ensure they are adaptable to a variety of classroom settings, including Nurture group classes. The practical activities are engaging and accessible to students of all abilities and learning styles, providing an inclusive learning experience for everyone involved. Special emphasis has been given to create flexible activities that educators can integrate into their existing curriculum and customised to suit their specific classroom needs.

The Integrated Curriculum Handbook acknowledges the crucial role of parents in education and proposes interactive activities that promote collaboration. One such activity, 'Jum iċ-Ċinema,' immerses students in a cinema experience, including the collection of entrance fees. Through this hands-on process, students not only gain a deeper understanding of the value of money but also enhance their grasp of measurement concepts. The act of setting up the cinema scenario allows them to explore practical applications of measurement in real-life situations. Moreover, their active involvement extends to charitable giving, nurturing empathy and an appreciation for altruistic acts as shown in Figure 3.5.

Figure 3.5

Enhancing Altruistic Acts



Għal din l-attività l-istudenti ser ikunu jistgħu jipprattikaw dak li jkunu tħarġu dwaru fl-attivitajiet ta' qabel. L-istudenti jitpoġġew fi gruppi sabiex ikunu jistgħu jqassmu x-xogħol bejniethom. Importanti li l-edukatur jqassam il-gruppi b'tali mod li kull grupp ikun jikkonsisti f'abbilitajiet differenti. Permezz ta' hekk l-istudenti jkunu jistgħu jgħinu lil xulxin kif ukoll josservaw u jitgħallmu minn xulxin.

Għal din l-attività l-istudenti jridu:

a. jagħżlu film / vidjow jew saħansitra jippreparaw reċta qasira
b. joħolqu atmosfera ta' ċinema ġewwa l-klassi tagħhom
c. jikkreaw l-avviżi li ser jiddendlu madwar il-kurituri tal-iskola
d. jiddiżinjaw il-biljetti taċ-ċinema

Għall-parti ta' barra tal-klassi, l-istudenti jippreparaw l-imwejjed sabiex ikunu jistgħu jbiegħu 'l-ikel u x-xorb', kif ukoll jiġbru l-miżata tad-dħul għaċ-ċinema. Il-qliegħ li jinġabar minn din l-attività tingħata bħala donazzjoni għal tfal fil-bżonn, b'hekk inkunu qed inrawmu s-sens ta' karità fl-istudenti tagħna. Tista' tittieħed l-opportunità li jiġu mistiedna l-ġenituri tat-tfal sabiex japprezzaw il-ħidma ta' uliedhom.

Tistgħu taħsbu dwar l-għamara / affarijiet li għandna bżonn għaċ-ċinema tagħna?

1. Kemm taħsbu li għandna bżonn spazju?
2. Issa kif tistgħu tikkalkulaw bl-eżatt sabiex tiddeterminaw jekk hemmx biżżejjed spazju jew le?
3. Hemm mod ieħor kif tistgħu tieħdu l-kejl bl-eżatt?

Kull persuna fl-udjenza għandha bżonn spazju ta' 2 madumiet biex tkun komda waqt il-film / vidjow/ reċta.

1. Tistgħu tiċċekjaw kemm ser joqogħdu persuni f'dan l-ispazju li għandna?

Iċ-ċinema tagħna tiftaħ fid-disgħa ta' filgħodu. Fl-ispazju li għandna joqogħdu 10 persuni. Il-film / vidjow / reċta huwa / hija twil/a nofs siegħa.

1. Jekk ikun hawn ammont ta' tlettin student li jixtieq jiġi ġewwa ċ-ċinema tagħna, kemm-il darba ser turu l-film / vidjow / reċta?
2. Kull student ser iħallas 1 ewro (€1) biex jidħol fiċ-ċinema tagħna, mela kemm ser tiġbru b'kollox kull darba li jintwera l-film / vidjow / reċta?

22

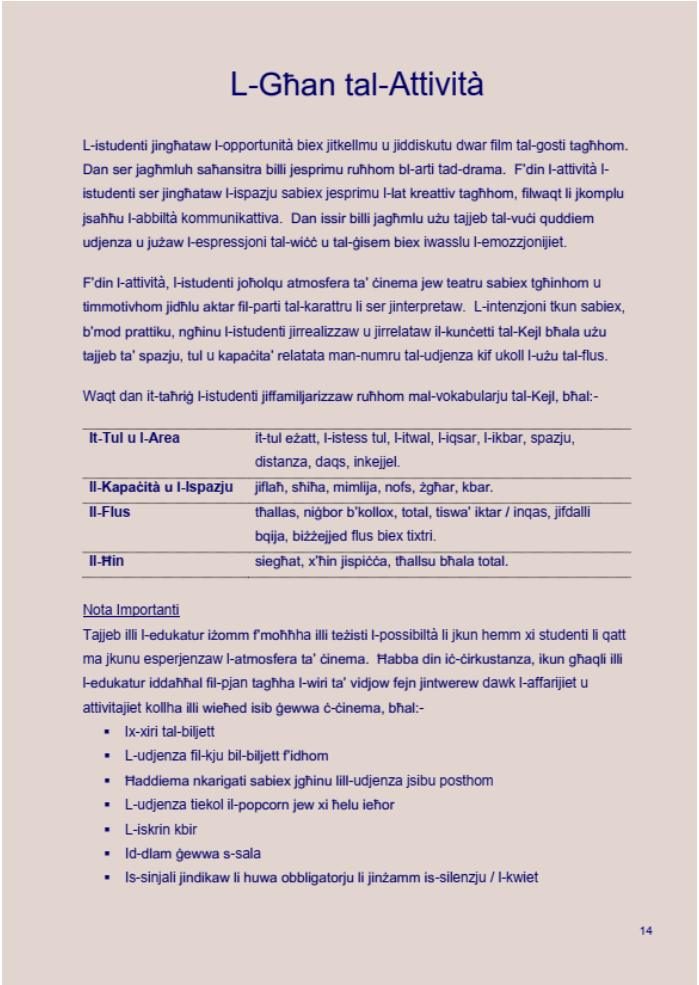
This integrated approach not only cultivates mathematical literacy but also underscores the significance of positively impacting others' lives. By involving parents, the home-school connection is strengthened, empowering students with empathy and a profound appreciation for the role of measurement in their learning journey.

3.7 The choice of topics and related activities

The activities within the Integrated Curriculum Handbook relate to topics, which are likely to capture Year 2 students' attention and interest, whilst at the same time addressing the material and terminology that are required for the curricula for the same year group as shown in Figure 3.6.

Figure 3.6

Targeted Vocabulary



L-Għan tal-Attività

L-istudenti jingħataw l-opportunità biex jitkellmu u jiddiskutu dwar film tal-gosti tagħhom. Dan ser jagħmluh saħansitra billi jesprimu ruħhom bl-arti tad-drama. F'din l-attività l-istudenti ser jingħataw l-ispazju sabiex jesprimu l-lat kreattiv tagħhom, filwaqt li jkomplu jsaħħu l-abbiltà kommunikattiva. Dan issir billi jagħmlu użu tajjeb tal-vuċi quddiem udjenza u jużaw l-espressjoni tal-wiċċ u tal-ġisem biex iwasslu l-emozzjonijiet.

F'din l-attività, l-istudenti joħolqu atmosfera ta' ċinema jew teatru sabiex tgħinhom u timmotivhom jidħlu aktar fil-parti tal-karattru li ser jinterpretaw. L-intenzjoni tkun sabiex, b'mod prattiku, ngħinu l-istudenti jirrealizzaw u jirrelataw il-kunċetti tal-Kejl bħala użu tajjeb ta' spazju, tul u kapaċita' relatata man-numru tal-udjenza kif ukoll l-użu tal-flus.

Waqt dan it-taħriġ l-istudenti jiffamiljarizzaw ruħhom mal-vokabularju tal-Kejl, bħal:-

It-Tul u l-Area	it-tul eżatt, l-istess tul, l-itwal, l-iqsar, l-ikbar, spazju, distanza, daqs, inkejjel.
Il-Kapaċità u l-Ispazju	jiflaħ, sħiħa, mimlija, nofs, żgħar, kbar.
Il-Flus	tħallas, niġbor b'kollox, total, tiswa' iktar / inqas, jifdalli bqija, biżżejjed flus biex tixtri.
Il-Ħin	sieħat, x'ħin jispiċċa, tħallsu bħala total.

Nota Importanti

Tajjeb illi l-edukatur iżomm f'moħħha illi teżisti l-possibiltà li jkun hemm xi studenti li qatt ma jkunu esperjenzaw l-atmosfera ta' ċinema. Ħabba din iċ-ċirkustanza, ikun għaqli illi l-edukatur iddaħħal fil-pjan tagħha l-wiri ta' vidjow fejn jintwerew dawk l-affarijiet u attivitajiet kollha illi wieħed isib ġewwa ċ-ċinema, bħal:-

- Ix-xiri tal-biljett
- L-udjenza fil-kju bil-biljett f'idhom
- Ħaddiema nkarigati sabiex jgħinu lill-udjenza jsibu posthom
- L-udjenza tiekol il-popcorn jew xi ħelu ieħor
- L-iskrin kbir
- Id-dlam ġewwa s-sala
- Is-sinjali jindikaw li huwa obbligatorju li jinżamm is-silenzju / l-kwiet

14

Such selection requires meticulous planning in order to provide information that would pique learners' curiosity whilst at the same time present it in a simple way for students to easily relate to and that can be easily adapted to potential projects. An illustrative example of this approach is the topic 'Noħolqu atmosfera ta' Ċinema / Teatru.' This type of activity offers a unique opportunity to integrate various projects and explore how the mathematical concept of measurement can intersect with other subject areas. Some examples include:

- Language Arts: Engaging students in show-and-tell or retelling of a story, where they are encouraged to develop their own scenarios and create props that enhance the narrative.
- Social and Emotional Learning: Presenting students with a situation or problem, and facilitating group discussions to collaboratively find possible solutions. This exercise not only promotes social and emotional skills but also helps students grasp the concept of time as they are given a specific timeframe to present their solutions.

This activity can also serve as a foundation that can be adapted for a similar project, such as 'Our Broadcasting Station.' In this project, students can be encouraged to:

- Create a program schedule for their station, providing them with a hands-on opportunity to learn about the concept of time management.
- Develop an educational program focusing on animals, which could be prepared for the Pets Awareness Week. Students can conduct research on

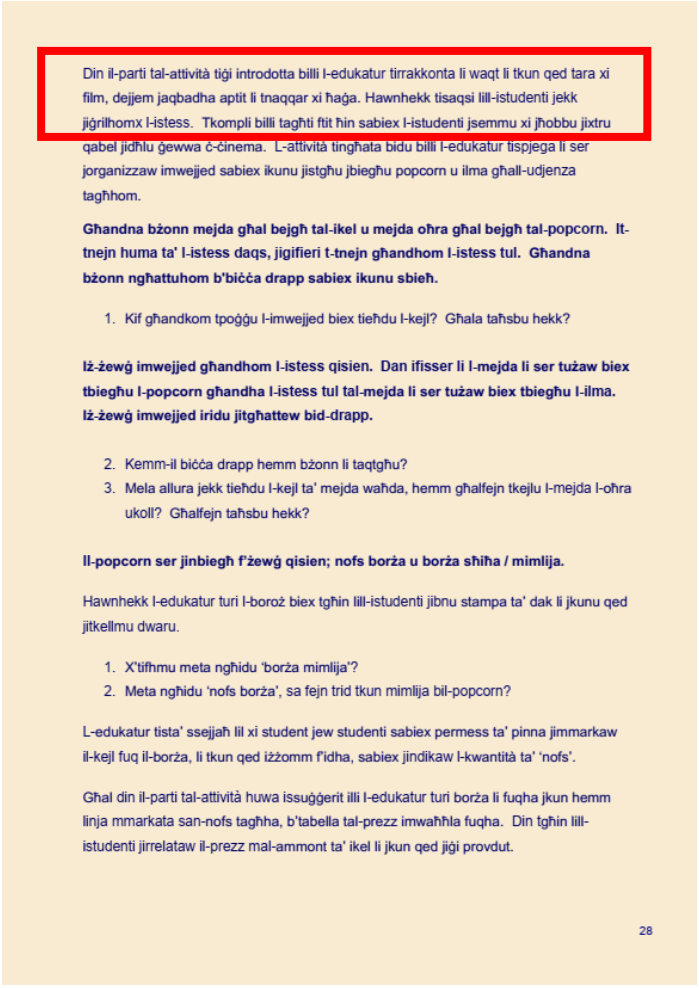
various aspects such as life expectancy, weight, height, and other interesting facts about animals.

- Organize a culinary program that intertwines with science and healthy eating. Through this activity, students can explore concepts related to mass, capacity, and nutrition.
- Present a weather report, connecting it with Social Studies, where students learn about temperature, climate, and its impact on various regions.
- Incorporate sports news, which can be linked to physical education lessons and promote a holistic understanding of sportsmanship, achievements, and sports-related events.

Whenever it was possible, the narratives were written with a sense of wit, fun, and imagination, aiming to maximise the effect of interest (Henriksen, Richardson, & Mehta, 2017) as shown in Figure 3.7.

Figure 3.7

Narratives with a Sense of Wit, Fun, and Imagination



Din il-parti tal-attività tiġi introdotta billi l-edukatur tirrakkonta li waqt li tkun qed tara xi film, dejjem jaqbadha aptit li tnaqqar xi ħaġa. Hawnhekk tisaqsi lill-istudenti jekk jiġrilhomx l-istess. Tkompli billi tagħti ftit ħin sabiex l-istudenti jsemmu xi ħobbu jixtru qabel jidħlu ġewwa ċ-ċinema. L-attività tingħata bidu billi l-edukatur tispjega li ser jorganizzaw imwejjed sabiex ikunu jistgħu jbiegħu popcorn u ilma għall-udjenza tagħhom.

Għandna bżonn mejda għal bejgħ tal-ikel u mejda oħra għal bejgħ tal-popcorn. It-tnejn huma ta' l-istess daqs, jigifieri t-tnejn għandhom l-istess tul. Għandna bżonn ngħattuhom b'biċċa drapp sabiex ikunu sbieħ.

1. Kif għandkom tpoġġu l-imwejjed biex tieħdu l-kejl? Għala taħsbu hekk?

Iż-żewġ imwejjed għandhom l-istess qisien. Dan ifisser li l-mejda li ser tużaw biex tbiegħu l-popcorn għandha l-istess tul tal-mejda li ser tużaw biex tbiegħu l-ilma. Iż-żewġ imwejjed iridu jitgħattew bid-drapp.

2. Kemm-il biċċa drapp hemm bżonn li taqtgħu?
3. Mela allura jekk tieħdu l-kejl ta' mejda waħda, hemm għalfejn tkejlu l-mejda l-oħra ukoll? Għalfejn taħsbu hekk?

Il-popcorn ser jinbiegħ f'żewġ qisien; nofs borża u borża sħiħa / mimlija.

Hawnhekk l-edukatur turi l-borż biex tgħin lill-istudenti jibnu stampa ta' dak li jkunu qed jitkellmu dwaru.

1. X'tifhmu meta ngħidu 'borża mimlija'?
2. Meta ngħidu 'nofs borża', sa fejn trid tkun mimlija bil-popcorn?

L-edukatur tista' ssejjaħ lil xi student jew studenti sabiex permess ta' pinna jimmarkaw il-kejl fuq il-borża, li tkun qed iżżomm f'idha, sabiex jindikaw l-kwantità ta' 'nofs'.

Għal din il-parti tal-attività huwa issuġġerit illi l-edukatur turi borża li fuqha jkun hemm linja mmarkata san-nofs tagħha, b'tabella tal-prezz imwaħħla fuqha. Din tgħin lill-istudenti jirrelataw il-prezz mal-ammont ta' ikel li jkun qed jiġi provdut.

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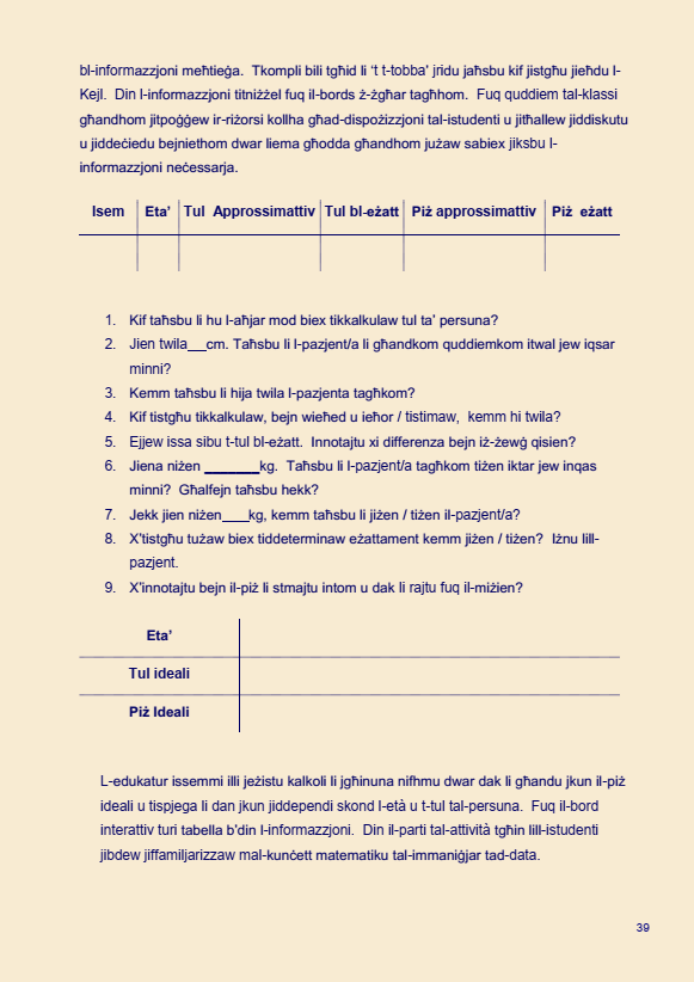
In addition to this, activities are planned in such a way to strive learners to be inquisitive, to compare and contrast, to estimate and evaluate as well as to effectively explore how the concept of measurement is used in real life situations as shown in Figure 3.8.

Figure 3.8

Exploring the Concept of Measurement in Real Life situations



bl-informazzjoni meħtieġa. Tkompli bili tgħid li 't t-tobba' jridu jaħsbu kif jistgħu jieħdu l-Kejl. Din l-informazzjoni titniżżel fuq il-bords ż-żgħar tagħhom. Fuq quddiem tal-klassi għandhom jitpoġġew ir-riżorsi kollha għad-dispożizzjoni tal-istudenti u jitħallew jiddiskutu u jiddeċiedu bejniethom dwar liema għodda għandhom jużaw sabiex jiksbu l-informazzjoni neċessarja.

Isem	Eta'	Tul Approssimattiv	Tul bl-eżatt	Piż approssimattiv	Piż eżatt

1. Kif taħsbu li hu l-aħjar mod biex tikkalkulaw tul ta' persuna?
2. Jien twila___cm. Taħsbu li l-pazjent/a li għandkom quddiemkom itwal jew iqsar minni?
3. Kemm taħsbu li hija twila l-pazjenta tagħkom?
4. Kif tistgħu tikkalkulaw, bejn wieħed u ieħor / tistimaw, kemm hi twila?
5. Ejjew issa sibu t-tul bl-eżatt. Innotajtu xi differenza bejn iż-żewġ qisien?
6. Jiena niżen _____kg. Taħsbu li l-pazjent/a tagħkom tiżen iktar jew inqas minni? Għalfejn taħsbu hekk?
7. Jekk jien niżen___kg, kemm taħsbu li jiżen / tiżen il-pazjent/a?
8. X'tistgħu tużaw biex tiddeterminaw eżattament kemm jiżen / tiżen? Iżnu lill-pazjent.
9. X'innotajtu bejn il-piż li stmajtu intom u dak li rajtu fuq il-miżien?

Eta'	
Tul ideali	
Piż Ideali	

L-edukatur issemmi illi jeżistu kalkoli li jgħinuna nifhmu dwar dak li għandu jkun il-piż ideali u tispjega li dan jkun jiddependi skond l-età u t-tul tal-persuna. Fuq il-bord interattiv turi tabella b'din l-informazzjoni. Din il-parti tal-attività tgħin lill-istudenti jibdew jiffamiljarizzaw mal-kunċett matematiku tal-immaniġjar tad-data.

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3.8 The structure of the activities

The Integrated Curriculum Handbook is designed to engage students in rich mathematical activities using the Problem-Based Learning (PBL) approach, which follows a progression from simple to complex teaching and learning activities. The handbook is centred around different measurement concepts and includes carefully designed activities with a clearly defined objective that outlines the expected learning

outcomes for students. The tasks are structured around three phases: introduction, development, and discussion as shown in Figure 3.9.

Figure 3.9

The Structure of the Activities

L-attività tibda billi l-edukatur juri stampa ta' Marsaxokk. Jistaqsi lill-istudenti biex jidentifikaw il-lokalità u jespandi l-argument billi jistaqsi x'jafu dwar il-post. L-edukatur ikompli jistimula l-ħsieb tal-istudenti sakemm jiġi msemmi s-sajd, biex b'hekk ikun jista' jagħti bidu għal din l-attività.

Is-sajjieda jistadu kemm minn fuq il-blat kif ukoll joħorġu b'xi luzzu jew kajjik fuq il-baħar. Huma jużaw għodda differenti sabiex jistadu; daqqa jużaw ix-xbieki, drabi oħra jużaw makkinarju u hemm drabi fejn jużaw il-qasab ta' diversi tul.

Tkun idea tajba jekk jintwerew stampi tal-affarijiet li jkunu qed jissemmew, biex b'hekk tgħin lill-istudenti jirrelataw magħhom aktar faċilment.

1. Aħsbu ftit f'liema sitwazzjonijiet jew ċirkustanzi jużaw dawn l-għodda li semmejna. Tistgħu tagħtu eżempji?
2. Min jaf jispjegalna d-differenza bejn baħar fond u baħar baxx?
3. Fejn taħsbu li nsibuh il-ħut kbir?
4. Għalfejn insibuh fil-baħar ..... u mhux fil-baħar .....?

Semmejna li s-sajjieda joħorġu 'l barra fil-baħar sabiex jaqbdu l-ħut.

1. Meta ngħidu 'l barra, x'inkunu qed infissru bl-eżatt?
2. X'daqs jarawha l-art meta jkunu 'l barra?
3. Jekk is-sajjieda joħorġu 'l barra ħafna, jaslu malajr jew jieħdu l-ħin biex jaslu?

Is-sajjieda jaħdmu kemm bin-nhar u anke matul il-lejl.

1. X'tifhmu biha din il-frażi?
2. Allura dan ifisser li s-sajjieda ma jorqdux?
3. Kif jimexxielhom jaħdmu fid-dlam?

Meta s-sajjieda joħorġu jistadu fuq il-baħar, jagħmlu diversi ġranet jaħdmu qabel ma jerġgħu lura d-dar. Hemm grupp ta' sajjieda li pjanaw li jaħdmu għal 5 t'ijiem sħaħ fuq il-baħar. Huma telqu t-Tnejn filgħodu.

1. Tistgħu tikkalkulaw meta tkun dik il-ġurnata li jaslu lura d-dar?

L-istudenti jkunu mħeġġa jagħmlu użu minn kalendarju.

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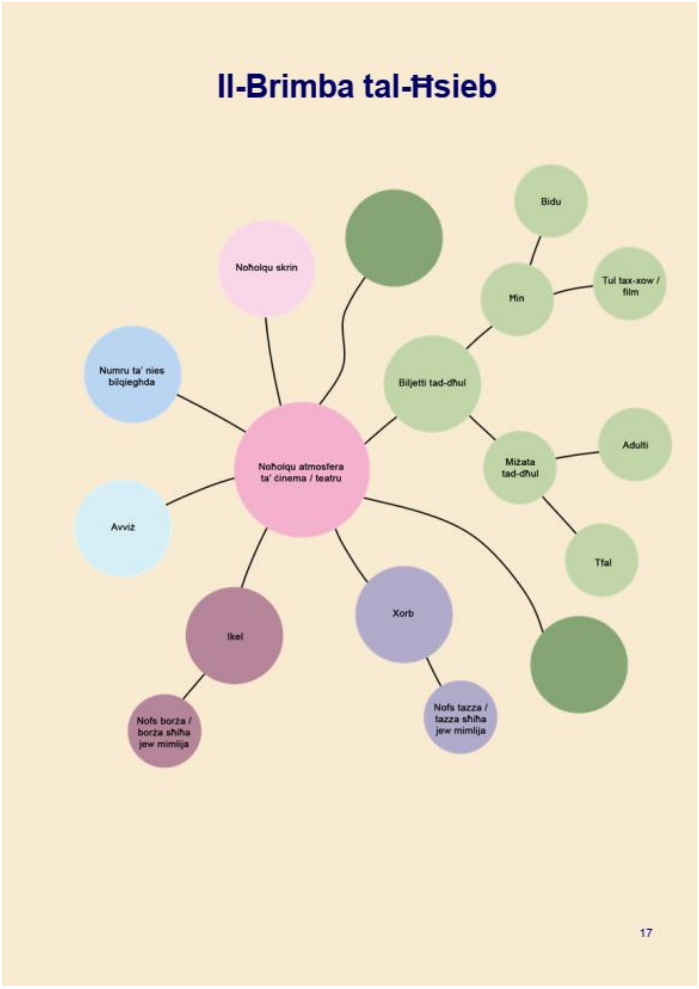
Activities are designed to elicit discussions in order to enhance learners' critical and creative thinking. Narratives are used to generate interest and stimulate feelings, creating a connection between abstract mathematics and everyday life. Role-playing activities motivate learners to become active participants in their

educational journey (Hidayati & Pardjono, 2018), while the use of tangible items is encouraged to increase students' interest in the activities and help them better understand the concept being taught (Chan, 2020).

To promote active learning, enhance creativity, and improve critical thinking skills, the use of mind maps during the activity is encouraged as shown in Figure 3.10. The handbook also emphasises the importance of providing students with ample time to discuss and share their ideas, and supporting students' reasoning by encouraging them to explain their thought processes.

Figure 3.10

Mind Map



3.9 The negotiation of ideas

This project enhances student learning by giving the class, as a whole, control over the focal point of the activity. Educators and learners question and listen attentively to one another, within a classroom environment that emphasises on exchanging strategies and negotiating meanings (Franke, Kazemi, & Battey, 2007). Activities are designed to create and maintain a classroom environment conducive to the discussion of ideas, where students are encouraged to be actively involved, throughout all the sessions. Ultimately, educators are put in a good position to determine whether their students are making a sincere effort to learn as they are

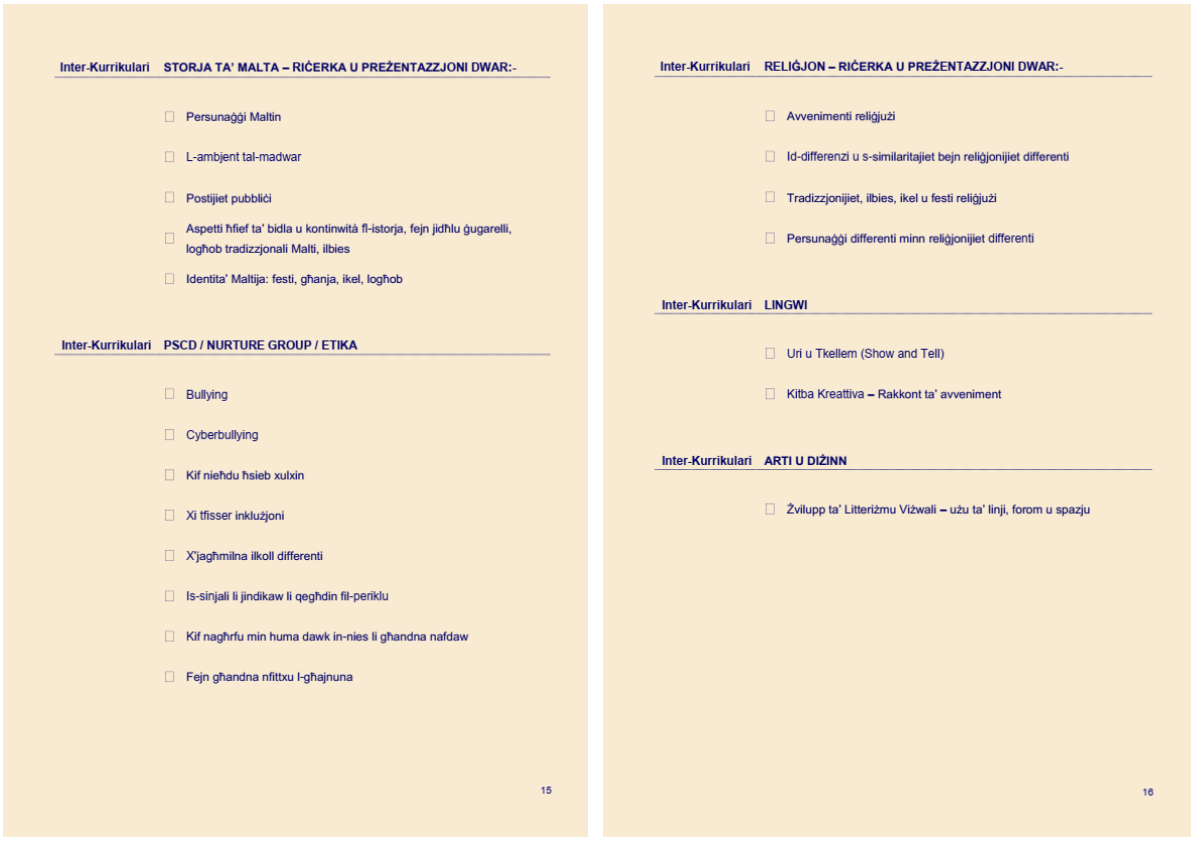
encouraged to discuss the topics and engage in productive discussions about potential solutions.

3.10 Using the Maltese language as a teaching tool to reinforce learning

From my working experience, I have observed that students tend to switch to their home language during discussions in small groups or as a classroom. Therefore, learners engage more meaningfully with mathematical content when they are allowed to interact in their native language. Thus, the home language and the language of instruction are to be considered as interconnected since both influence how students think and learn mathematics (Setati, 2005). For this reason, the project targets subject areas that are typically delivered in Maltese, such as religious and social studies as shown in Figure 3.11, as possible opportunities to reinforce the mathematical content strand of measurements. Students are encouraged to use what they know to make sense of what they are requested to do and their home language is certainly part of what most of the learners know (Setati, Molefe & Langa, 2008).

Figure 3.11

Inter-Curricular Opportunities



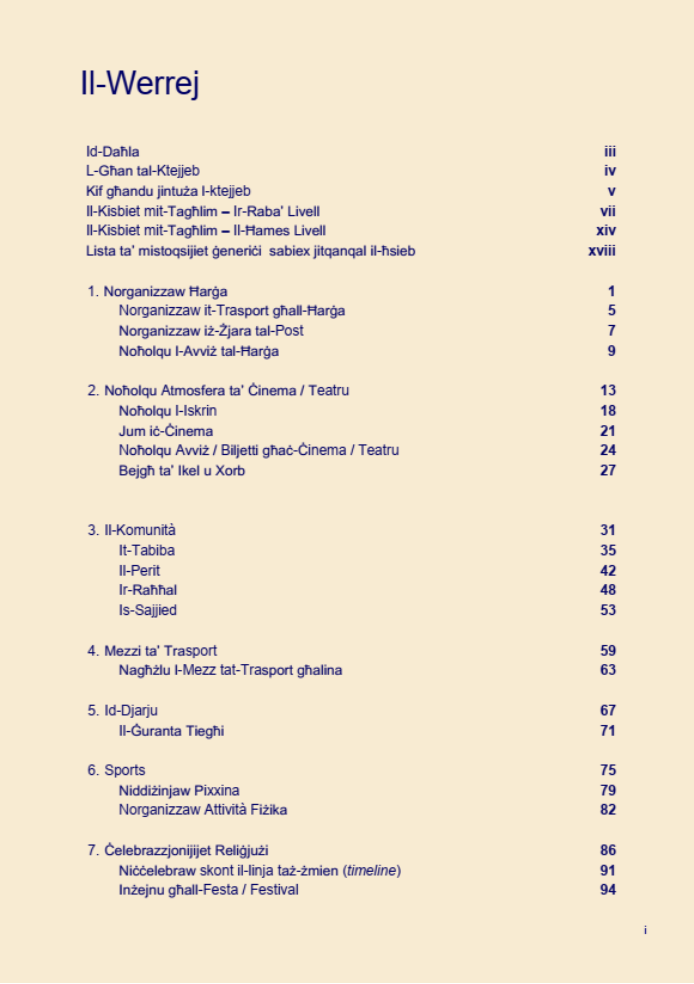
3.11 The Handbook Graphical Layout

When designing the graphical layout for this handbook, several factors have been taken into consideration in order to make the content accessible and engaging for the targeted audience (Clark & Lyons, 2010). It was also crucial to take into account the Maltese language and culture, as well as the utilisation of local circumstances, thus making the project more relatable and interesting for the educators to use it.

The Integrated Curriculum Handbook includes a table of contents that provides users with a clear overview of the handbook's structure and organisation. It lists all the activities and their respective page numbers, making it easy for users to locate the information they need as shown in Figure 3.12.

Figure 3.12

Table of Contents



Il-Werrej

i

The handbook is designed to present information clearly and in an organized manner, making it easy for educators to follow. All activities are explained in a

straightforward and understandable format, following a logical and structured organization. This is achieved through the use of clear and concise visuals, such as pictures, mind maps and tables (Stokhof et al., 2013). The use of headings and subheadings, as well as other organisational tools, help to break down the content into manageable sections. This helps in making it easier for educators to find what they need quickly, as well as to better plan and structure their lessons. The size, colour, and style of the typography is consistent throughout the handbook, providing a cohesive and uniform design. The selection of colours was carefully considered to make sure that they are visually appealing without being distracting (Brown et al., 2016). Bold colours are used to highlight key information or to draw attention to important concepts. Nonetheless, care was taken to use these colours sparingly and to balance them with more neutral hues, in order to prevent the reader from becoming too overwhelmed.

Lastly, it was crucial to ensure that both the handbook and its content are inclusive and accessible to all educators and to all learners, regardless of their abilities or backgrounds. Thus it was vital to ensure the use of clear and simple language throughout the whole project, including appropriate illustrations and visual aids, apart from a well structured and easy to navigate layout.

3.12 The Use of Open ended and Higher order Questions

In line with the PBL approach, this project has employed short open-ended questions to facilitate the acquisition of the mathematical concepts and skills of measurement through problem-solving scenarios (MacLeod & van der Veen, 2020).

By leveraging the power of inquiry-based learning, these questions encourage students to explore, analyse and critically evaluate mathematical problems, thereby enhancing their ability to apply theoretical concepts in real-world situations (Kintsch, 2005). The wording of the questions has been carefully chosen to encourage student engagement and cooperative learning rather than competition. The type of questions used can be categorised into three, namely; verification, focusing and inquiry questions. Verification questions are intended to test students' comprehension and provide brief, concise responses in an effort to promote the development of mathematical thinking *(such as, "Taħsbu li vann wieħed biżżejjed għalina biex immorru l-ħarġa?").* Focusing questions are created with the intention of supporting and guiding students' own thoughts *(such as, "X'taħsbu li jiġri jekk inġibu vann wieħed biss?")*. On the other hand, inquiry questions are constructed in a way to serve as an evaluation of students' thinking *(such as, "Jekk vann wieħed mhux biżżejjed, kemm għandna bżonn vannijiet?")*. Additionally, it helps the educator to understand the students' problem-solving approaches and provides opportunities to challenge them in ways that promote the development of their mathematical skills.

The Integrated Curriculum Handbook encompasses a collection of general questions specifically designed to foster critical thinking skills in students. These questions can be readily applied to any project, serving as a valuable tool for enhancing students' ability to think critically. In addition to this, all activities include higher order questions. This aims to promote learners' critical thinking skills as they are expected to apply, analyse, synthesise and evaluate the information provided. Questions require pupils to transfer knowledge learned from one context to another and use familiar ideas to create new ones (Tanujaya, Mumu, & Margono, 2017). To

fully comprehend the material, students are required to analyse its various components, including the context and environment in which events take place, the individuals and their traits involved in the narrative, shared ideas, making inferences, and drawing their own conclusions (Ferreira, 2022). To facilitate the development of accurate mathematical understanding, students must be able to identify and correct any misconceptions or errors in their prior knowledge. This process involves carefully analysing and breaking down their existing mathematical knowledge, examining its underlying assumptions and logic, and then reconstructing it based on sound reasoning and evidence-based practices. The educator challenges their students through questions in order for them to share their ideas regardless of whether they are incomplete, confusing or even wrong, and reflect on them (Seman et al, 2017). Learners' interactions are monitored as they can be asked to keep a record of their work to support the collective discussion. The discussion of activities goes beyond merely providing the solution. It aims to improve the mathematical quality of the students' presentations and facilitate interactions by soliciting clarifications and justifications underlying the rationale behind the strategies and reasoning being presented. This verbalization aids educators in gauging the level of knowledge and comprehension of the measurement concept among their students.

3.13 Limitations

A notable limitation of this project is the lack of testing and evaluation of the practical activities included in the Integrated Curriculum Handbook. This is due to the fact that testing the activities was not a requirement of the Faculty of Education Masters in Teaching and Learning project. Without empirical evidence, it is

impossible to determine the effectiveness of the activities in promoting student learning, and it may be necessary to modify them to better align with the needs of students and educators. This limitation is particularly significant because the handbook's ultimate goal is to improve student learning outcomes through integrated teaching.

Furthermore, the emergent curriculum approach used in the handbook is relatively new, and some educators may be hesitant to adopt it without evidence of its effectiveness. An evaluation of the handbook with educators could have provided valuable insights into how it can be improved to better meet their needs and promote the adoption of the emergent curriculum approach. This would help ensure that the handbook achieves its intended goal of enhancing student learning outcomes.

Another limitation of this project is the selection of topics covered in the Integrated Curriculum Handbook. While the handbook uses the Maltese language as a resource to teach the mathematical concept of measurement, it is difficult to predict which specific topics or themes will be most engaging and useful for students and educators. Educators' contribution might suggest topics or themes that are likely to be brought up by students, as they are more experienced in teaching and understand students' needs better. They might also suggest areas that students find most challenging when learning mathematical concepts. Addressing these difficulties could improve the effectiveness of the handbook and promote better student learning outcomes.

It is essential to consider these limitations and address them in future iterations of the handbook. Identifying the most effective topics for integration and adapting them to better meet the needs and interests of students and educators could significantly enhance the handbook's impact on student learning outcomes.

3.14 Future Research

While I believe that, the Integrated Curriculum Handbook has good potential in using the Maltese language as a resource to teach the mathematical concept of measurement, additional research is necessary as the activities have not been tested with students or evaluated by educators. Hence, it is recommended that future research focuses on testing these activities to assess their efficacy in enhancing student learning and identifying potential adjustments that better cater to the specific needs of both students and educators.

Another limitation is the relative novelty of the emergent curriculum approach, which may discourage some educators from adopting this innovative teaching method. Future research should aim to evaluate the handbook's impact on educators' teaching practices, student-learning outcomes, and its potential for promoting the adoption of emergent curriculum approaches.

Furthermore, although students will inevitably acquire some knowledge from the topics covered in the handbook, the current selection of topics may not be the most effective or aligned with the needs and interests of educators. To address this, future research should actively engage educators in the research process to identify

the most effective topics for integration. By involving educators, their insights can offer valuable guidance on selecting topics that are engaging and beneficial for both students and teachers, making the research highly valuable for improving the overall learning experience.

In light of the limited research available on the integrated approach to mathematics learning using the Maltese language, further investigation is necessary to explore its potential benefits. By conducting additional research in this area, we can gain valuable insights into the effectiveness of this integrated approach and its impact on students' understanding and engagement in mathematics. Moreover, it would be valuable to explore the specific areas of mathematics where the integrated approach with the Maltese language could be most beneficial. Focusing on different mathematical strands or concepts and assessing the impact of the language integration on students' comprehension and problem-solving abilities within those areas would provide valuable insights for educators.

3.15 Conclusion

Despite the aforementioned limitations, it is my hope that the Integrated Curriculum Handbook for Year 2 educators can still be a valuable resource for promoting student learning. While further research is needed to evaluate the effectiveness of the practical activities and explore additional themes and topics that may be of interest to educators and students, the handbook serves as a starting point for integrating the Maltese language into the teaching of mathematical concepts. By providing a range of activities that encourage critical thinking, problem

solving, and creativity, the handbook has the potential to engage students and foster a love of learning that extends beyond the classroom. Ultimately, it is my goal that the handbook will inspire educators to experiment with new approaches to teaching and learning and contribute to the ongoing development of innovative and effective teaching practices.

Hence, this methodology chapter has outlined the systematic approach used to develop a project that aims to utilise the Maltese language as a resource to teach the mathematical content strand of measurement. Through such an approach, this project has the potential to improve the learning outcomes of all students, enhance their language skills, and promote a more inclusive and culturally responsive education system in Malta. For such a purpose, this project addresses the following research questions:

1. How can the Maltese language, as used through other school subjects, support students to learn about measurement, and its application in the world around them?
2. How can the Maltese language, mathematics and other areas of learning be integrated within the school curriculum?

References

Abrami, P. C., Bernard, R. M., Borokhovski, E., Waddington, D. I., Wade, C. A., & Persson, T. (2015*). Strategies for teaching students to think critically: A meta-analysis*. Review of Educational Research, 85(2), 275-314. https://doi.org/10.3102/0034654314551063

Afni, N. (2020). Contextual teaching and learning (CTL) as a strategy to improve students' Mathematical literacy. In *Journal of Physics: Conference Series (Vol. 1581, No. 1, p. 012043)*. IOP Publishing. https://doi.org/10.1088/1742-6596/1581/1/012043

Agius, G., & Kellerman, A. (2018). Bilingual language development in Malta: A study of young Maltese-English bilinguals. *Journal of Multilingual and Multicultural Development, 39(3)*, 221-236. https://doi.org/10.1080/01434632.2017.1383832

Aguirre, J. M., Turner, E. E., Bartell, T. G., Kalinec-Craig, C., Foote, M. Q., Roth McDuffie, A., & Drake, C. (2013). Making connections in practice: How prospective elementary teachers connect to children's Mathematical thinking and community funds of knowledge in Mathematics Instruction. *Journal of Teacher Education, 64(2)*, 178-192. https://doi.org/10.1177/0022487112466900

Ainscow, M., Booth, T., & Dyson, A. (2006). *Improving schools, developing inclusion*. Routledge. https://doi.org/10.4324/9780203967157

Anthony, G., & Walshaw, M. (2009*). Mathematics Education in the Early Years: Building Bridges*. Contemporary Issues in Early Childhood, 10(2), 107-121. https://doi-org.ejournals.um.edu.mt/10.2304/ciec.2009.10.2.107

Arsaythamby, V., & Zubainur, C. M. (2014). How a realistic mathematics educational approach affect students' activities in primary schools? Procedia-Social and Behavioral Sciences, 159, 309-313. https://doi.org/10.1016/j.sbspro.2014.12.378

Aukerman, M. (2007). *A culpable CALP: Rethinking the conversation/academic language proficiency distinction in early literacy instruction.* The Reading Teacher, 60(7), 626- 635. https://doi.org/10.1598/RT.60.7.3

Austin, J. L., & Howson, A. G. (1979*). Language and Mathematical education*. Educational studies in mathematics, 10(2), 161-197. https://doi.org/10.1007/BF00230986

Bada, S. O., & Olusegun, S. (2015). Constructivism learning theory: A paradigm for teaching and learning. *Journal of Research & Method in Education, 5(6)*, 66-70. https://doi.org/10.9790/7388-05616670

Baguingan, G. D. (2000). Grassroots legitimacy: the first language component bridging program pilot project of region 2 and CAR. *Philippine journal of Linguistics, 31(2),* 93-105. http://pascal-francis.inist.fr/vibad/index.php?action=getRecordDetail&idt=13415601

Baker, C. (2003). *Biliteracy and transliteracy in Wales: Language planning and the Welsh national curriculum*. Bilingual education and bilingualism, 71-90. https://doi.org/10.21832/9781853596568

Baker, C. (2011). *Foundations of bilingual education and bilingualism*. Multilingual matters.

Baker, C., & Sienkewicz, A. (2000). *The care and education of young bilinguals: An introduction for professionals*. Multilingual Matters.

Bandura, A. (1986). *Social foundations of thought and action*. Englewood Cliffs, 1986 (23-28).

Bandura, A. (2001). *Social cognitive theory: An agentic perspective*. Annual review of psychology, 52(1), 1-26. https://doi.org/10.1146/annurev.psych.52.1.1

Baranova, T., Khalyapina, L., Kobicheva, A., & Tokareva, E. (2019). *Evaluation of students' engagement in integrated learning model in a blended environment*. Education Sciences, 9(2), 138. https://doi.org/10.3390/educsci9020138

Barlow, C., & Brook, A. (2010). *Geography and Art: Local Area Work*. Primary Geographer, 72(1), 16-17.

Barwell, R. (2014). *Centripetal and centrifugal language forces in one elementary school second language Mathematics classroom*. ZDM, 46(6), 911-922. https://doi.org/10.1007/s11858-014-0611-1

Barwell, R. (2016). *Formal and informal Mathematical discourses: Bakhtin and Vygotsky, dialogue and dialectic*. Educational Studies in Mathematics, 92(3), 331-345. https://doi.org/10.1007/s10649-015-9641-z

Baum, N., M.D. (2014). Titles Are Terrific: Creating Titles that Will Attract Attention. *The Journal of Medical Practice Management : MPM, 30(3),* 166-167. https://ejournals.um.edu.mt/login?url=https://www.proquest.com/scholarly-journals/titles-are-terrific-creating-that-will-attract/docview/1644486297/se-2

Baxter, J. A., Woodward, J., & Olson, D. (2005). *Writing in mathematics: an alternative form of communication for academically low-achieving students*. Learning Disabilities Research & Practice, 20(2), 119-135. https://doi.org/10.1111/j.1540-5826.2005.00127.x

Beane, J. A. (1993). A middle school curriculum: From rhetoric to reality. National Middle School Association.

Beane, J. A. (2005). *A reason to teach: Creating classrooms of dignity and hope: The power of the democratic way*. Heinemann.

Bell, S. (2010). *Project-based learning for the 21st century: Skills for the future*. The clearing house, 83(2), 39-43. https://doi.org/10.1080/00098650903505415

Belland, B.R., Glazewski, K.D. & Richardson, J.C. (2011) *Problem-based learning and argumentation: testing a scaffolding framework to support middle school students' creation of evidence-based arguments*. Instr Sci 39, 667–694. https://doi.org/10.1007/s11251-010-9148-z

Beres, A. M. (2015). *An overview of translanguaging: 20 years of 'giving voice to those who do not speak'*. Translation and Translanguaging in Multilingual Contexts, 1(1), 103-118. https://doi.org/10.1075/ttmc.1.1.05ber

Berns, R. G., & Erickson, P. M. (2001). *Contextual Teaching and Learning: Preparing Students for the New Economy*. The Highlight Zone: Research@ Work No. 5. https://files.eric.ed.gov/fulltext/ED452376.pdf

Birgili, B. (2015). Creative and critical thinking skills in problem-based learning environments. *Journal of Gifted Education and Creativity, 2(2)*, 71–80. https://doi.org/10.18200/JGEDC.2015214253

Boaler, J. (2015). *Mathematical mindsets: Unleashing students' potential through creative math, inspiring messages and innovative teaching*. John Wiley & Sons.

Boaler, J., & Dweck, C. (2015). *Mathematical Mindsets*. Chichester: John Wiley & Sons, Incorporated. https://ebookcentral-proquest-com.ejournals.um.edu.mt/lib/ummt/detail.action?docID=4444210

Boero, P., Douek, N., & Ferrari, P. L. (2008). 12 *Developing mastery of natural language*. In L. D. English (Ed.), Handbook of international research in mathematics education (pp. 262). Routledge. https://books.google.com.mt/books?hl=en&lr=&id=ggU3AgAAQBAJ&oi=fnd&pg=PA262&dq=boero+et+al+2008+mathematics&ots=UbkIWf3nGB&sig=rmEPHmA0RdG6xJaQIS2C3f00SaQ&redir_esc=y#v=onepage&q=boero%20et%20al%202008%20mathematics&f=false

Bonotto, C., & Santo, L. D. (2015). *On the relationship between problem posing, problem solving, and creativity in the primary school*. In Mathematical problem posing (pp. 103-123). Springer.https://doi.org/10.1007/978-1-4614-6258-3_5

Boymurodov, A. (2020). Integration of general educational schools and higher education institutions in the innovative cluster of pedagogical education. *European Journal of Research and Reflection in Educational Sciences Vol, 8(8).*

Bransford, J. D., Brown, A. L., & Cocking, R. R. (2000*). How people learn (Vol. 11).* National academy press.

Bratman, G. N., Hamilton, J. P., & Daily, G. C. (2012*). The impacts of nature experience on human cognitive function and mental health*. Annals of the New York academy of sciences, 1249(1), 118-136. https://doi.org/10.1111/j.1749-6632.2011.06400.x

Bray, A., & Tangney, B. (2016). Enhancing student engagement through the affordances of mobile technology: a 21st century learning perspective on Realistic MathematicsEducation. *MathematicsEducation Research Journal, 28(1),* 173-197. https://doi.org/10.1007/s13394-015-0158-7

Briffa, E., & Gatt, D. (2020). *Bilingualism and executive functions in Maltese-English bilinguals: A comparison with Maltese monolinguals*. Language, Cognition and Neuroscience, 35(7), 880-894. https://doi.org/10.1080/23273798.2020.1720585

Brough, C. J. (2012). Implementing the democratic principles and practices of student-centred curriculum integration in primary schools. *Curriculum Journal, 23(3)*, 345-369. https://doi.org/10.1080/09585176.2012.703498

Brown, N. E., Bussert, K., Hattwig, D., & Medaille, A. (2016). *Create and Use Images.* American Library Association. http://hdl.handle.net/1773/49475

Bruner, J. S. (1960). *The Process of Education, Harvard, Univ*. Press, Cambridge, Mass.

Canagarajah, S. (2011). Code meshing in academic writing: Identifying teachable strategies of translanguaging. *The Modern Language Journal, 95(3),* 401-417. https://doi.org/10.1111/j.1540-4781.2011.01207.x

Campbell-Phillips, S. (2020). Education and curriculum reform: The impact they have on learning. *Budapest International Research and Critics in Linguistics and Education (BirLE) Journal, 3(2),* 1074-1082. https://doi.org/10.33258/birle.v3i2.1036

Carpenter, T. P., Franke, M. L., & Levi, L. (2003). *Thinking Mathematically*. Heinemann.

Caruana Anastasi, C. (2003). Exposure to language: its role in exams. https://www.um.edu.mt/library/oar/handle/123456789/44620

Celic, C., & Seltzer, K. (2011*). Translanguaging: A CUNY-NYSIEB Guide for Educators*. The Graduate Center. The City University of New York.

Cenoz, J. (2017). Translanguaging in school contexts: International perspectives. *Journal of Language, Identity & Education, 16(4),* 193-198. https://doi.org/10.1080/15348458.2017.1327816

Chan, K. K. (2020). Using tangible objects in early childhood classrooms: A study of Macau pre-service teachers. Early Childhood Education Journal, 48(4), 441-450. https://doi.org/10.1007/s10643-019-01011-w

Chapman, A., & Education, M. S. I. (2003). *Language practices in school mathematics*. The Edwin Mellen Press Ltd.

Chen, X., & Li, Y. (2008). *Language proficiency and mathematics learning*. School Science and Mathematics, 108(3), 90+. https://link.gale.com/apps/doc/A178188464/AONE?u=anon~5bc8a380&sid=googleScholar&xid=e6d9c846

Chi, M. T. (2013). *Self-explaining expository texts: The dual processes of generating inferences and repairing mental models*. In Advances in instructional psychology (pp. 161-238). Routledge. https://doi.org/10.4324/9780203774526

Chiang, C. L., & Lee, H. (2016). The effect of project-based learning on learning motivation and problem-solving ability of vocational high school students. *International Journal of Information and Education Technology, 6(9),* 709–712. https://doi.org/10.7763/IJIET.2016.V6.779

Chitera, N. (2011). Language of learning and teaching in schools: an issue for research in Mathematics teacher education*? Journal of Mathematics Teacher Education, 14(3)*, 231-246. https://doi.org/10.1007/s10857-010-9167-3

Christopoulos, A., & Sprangers, P. (2021). *Integration of educational technology during the Covid-19 pandemic: An analysis of teacher and student receptions.* Cogent Education, 8(1), 1964690. https://doi.org/10.1080/2331186X.2021.1964690

Chronaki, A. (2009). *An entry to dialogicality in the maths classroom: Encouraging hybrid learning identities*. In Social interactions in multicultural settings (pp. 117-143). Brill. https://doi.org/10.1163/9789087907174_007

Chronaki, A. (2011). *"Troubling" essentialist identities: Performative Mathematics and the politics of possibility.* In Children, development and education (pp. 207-226). Springer. https://doi.org/10.1007/978-94-007-0243-1_13

Chronaki, A., & Planas, N. (2018). *Language diversity in Mathematics education research: A move from language as representation to politics of representation*. ZDM, 50(6), 1101-1111. https://doi.org/10.1007/s11858-018-0942-4

Clark, R. C., & Lyonsjonas, C. (2010). *Graphics for learning: Proven guidelines for planning, designing, and evaluating visuals in training materials*. John Wiley & Sons.

Clements, M. A., Keitel, C., Bishop, A. J., Kilpatrick, J., & Leung, F. K. (2012). *From the few to the many: Historical perspectives on who should learn mathematics*. In Third international handbook of Mathematics education (pp. 7-40). Springer. https://doi.org/10.1007/978-1-4614-4684-2_1

Clements, D. H., & Sarama, J. (2011). *Early childhood mathematics intervention*. Science, 333(6045), 968-970. https://doi.org/10.1126/science.1204537

Clements, D. H., & Sarama, J. (2014). *Improving early mathematics learning: What do we know?* Educational Researcher, 43(6), 352-360. https://doi.org/10.3102/0013189X14545513

Cobb, P., & McClain, K. (2004). *Principles of instructional design for supporting the development of students' statistical reasoning*. The Challenge of Developing Statistical Literacy, Reasoning and Thinking, 375–395. https://doi.org/10.1007/1-4020-2278-6_16

Cross, R. (2010). Language teaching as sociocultural activity: Rethinking language teacher practice. *The modern language journal, 94(3),* 434-452. https://doi.org/10.1111/j.1540-4781.2010.01058.x

Daniel, S. M., Jiménez, R. T., Pray, L., & Pacheco, M. B. (2019). Scaffolding to make translanguaging a classroom norm. *Tesol Journal, 10(1),* e00361. https://doi.org/10.1007/978-3-030-82973-5_6#DOI

Den Heuvel-Panhuizen, V. (2003). *The didactical use of models in realistic Mathematics education: An example from a longitudinal trajectory on percentage*. Educational studies in Mathematics, 54(1), 9-35. https://doi.org/10.1023/B:EDUC.0000005212.03219.dc

Department of Curriculum Management. (2014). Mathematics: a revised syllabus for primary schools. https://curriculum.gov.mt/en/Curriculum/Year-1-to-6/Documents/pr_syllabi/syllab_pr_mathematics_yr1_to_yr6.pdf

Devlin, K. (2000). *Finding your inner mathematician: As the abstraction turns*. The Education Digest, 66(4), 63.

Domínguez, H. (2011*). Using what matters to students in bilingual Mathematics problems.* Educational Studies in Mathematics, 76(3), 305-328. https://doi.org/10.1007/s10649-010-9284-z

Douglas, D., & Attewell, P. (2017). *School Mathematics as gatekeeper*. The Sociological Quarterly, 58(4), 648-669. https://doi.org/10.1080/00380253.2017.1354733

Dowden, T. (2007). *Relevant, challenging, integrative and exploratory curriculum design: Perspectives from theory and practice for middle level schooling in Australia*. The Australian Educational Researcher, 34(2), 51-71. https://doi.org/10.1007/BF03216857

Drake, S. M., & Reid, J. L. (2018). Integrated curriculum as an effective way to teach 21st century capabilities. *Asia Pacific journal of educational research, 1(1),* 31-50. https://doi.org/10.3389/feduc.2020.00122

Duffy, T. M., & Jonassen, D. H. (1992). *Objectivist and constructivist conceptions of learning and instruction.* Constructivism and the Technology of Instruction: A conversation. Lawrence Erlbaum Associates.

Durán, L., & Henderson, K. I. (2018). Pockets of hope: Cases of linguistic flexibility in the classroom. *Euro American Journal of Applied Linguistics and Languages, 5(2),* 76-90. http://dx.doi.org/10.21283/2376905X.9.156

Ebiendele, E. P. (2012). Critical thinking: Essence for teaching Mathematics and Mathematics problem solving skills*. African Journal of Mathematics and Computer Science Research, 5(3)*, 39-43. http://dx.doi.org/10.5897/AJMCSR11.161

Elkind, D. (1998). Educating Young Children in Math, Science, and Technology.

Emaliana, I. (2017). Teacher-centered or student-centered learning approach to promote learning? *Jurnal Sosial Humaniora (JSH), 10(2),* 59-70. http://dx.doi.org/10.12962/j24433527.v10i2.2161

English, L. D. (2016). STEM education K-12: Perspectives on integration. *International Journal of STEM education, 3(1),* 1-8. https://doi.org/10.1186/s40594-016-0036-1

Espada, J. P. (2012). The native language in teaching kindergarten mathematics. *Journal of International Education Research (JIER)*, *8*(4), 359-366. https://doi.org/10.19030/jier.v8i4.7282

Febriani, W. D., & Sidik, G. S. (2020). The Effect of Realistic Mathematics Education (Rme) on the Understand Mathematical Concepts Skills of Elementary Students Using Hypothetical Learning Trajectory (Hlt). PrimaryEdu: *Journal of Primary Education, 4(1),* 89-99.

Ferrari, P. L. (2004). Mathematical Language and Advanced Mathematics Learning. International Group for the Psychology of Mathematics Education. https://files.eric.ed.gov/fulltext/ED489743.pdf

Ferreira, M. (2022). A Theoretical Essay about Inclusion and the Role of Teachers in Building an Inclusive Education. *European Journal of Education and Pedagogy, 3(3)*, 97-104. https://doi.org/10.24018/ejedu.2022.3.3.353

Finlayson, M. (2014). Addressing math anxiety in the classroom. Improving Schools, 17(1), 99-115. https://doi.org/10.1177/1365480214521457

Fink, L. D. (2013). *Creating significant learning experiences: An integrated approach to designing college courses*. John Wiley & Sons.

Fyfe, B., & Forman, G. (1996). The negotiated curriculum. Innovations, 3(4), 4-7.

Franke, M. L., Kazemi, E., & Battey, D. (2007). *Mathematics teaching and classroom practice*. Second handbook of research on mathematics teaching and learning, 1(1), 225-256.

Freudenthal, H. (2006). *Revisiting Mathematics education: China lectures (Vol. 9).* Springer Science & Business Media.

Ganter, B., & Wille, R. (2012). Formal concept analysis: Mathematical foundations. Springer Science & Business Media.

García, O., & Wei, L. (2014). *Language, bilingualism and education*. In Translanguaging: Language, bilingualism and education (pp. 46-62). Palgrave Pivot. https://doi.org/10.1057/9781137385765

García, O. (2011). Bilingual education in the 21st century: A global perspective. John Wiley & Sons.

García, O. (2005). Positioning heritage languages in the United States. *The Modern Language Journal, 89(4),* 601-605. https://www.jstor.org/stable/3588631

García, O., & Kleyn, T. (2016). *Translanguaging with multilingual students. Learning from classroom moments.* Routledge.

García, O., & Wei, L. (2014). *Language, bilingualism and education. In Translanguaging: Language, bilingualism and education (pp. 46-62).* Palgrave Pivot. https://doi.org/10.1057/9781137385765_4

García, O. (2009). *Education, multilingualism and translanguaging in the 21st century.* In Social justice through multilingual education (pp. 140-158). Multilingual Matters. https://doi.org/10.21832/9781847691910-011

Gervasoni, A. (2018). *The impact and challenges of early Mathematics intervention in an Australian context.* In Invited Lectures from the 13th International Congress on Mathematical Education (pp. 115-133). Springer, Cham.

Glynn, S. M., & Winter, L. K. (2004). Contextual teaching and learning of science in elementary schools. *Journal of elementary science education, 16(2),* 51-63. https://doi.org/10.1007/BF03173645

González-Howard, M., & McNeill, K. L. (2016). Learning in a community of practice: Factors impacting English-learning students' engagement in scientific argumentation. *Journal of Research in Science Teaching, 53(4),* 527-553. https://doi.org/10.1002/tea.21310

Gorgorió, N., & Planas, N. (2001). Teaching Mathematics in multilingual classrooms. Educational studies in mathematics, 47(1), 7-33. https://doi.org/10.1023/A:1017980828943

Gort, M., & Sembiante, S. F. (2015). Navigating hybridised language learning spaces through translanguaging pedagogy: Dual language preschool teachers' languaging practices in support of emergent bilingual children's performance of academic discourse. *International Multilingual Research Journal, 9(1),* 7-25. https://doi.org/10.1080/19313152.2014.981775

Grima, G., & Malta. Ministry of Education, Youth Employment. Review Committee. (2005). MATSEC : Strengthening a national examination system. Floriana: Ministry of Education, Youth and Employment. https://hydi.um.edu.mt/permalink/f/1b6nr0f/356MALT_alma212786585000395 6

Gunderson, E. A., Ramirez, G., Levine, S. C., & Beilock, S. L. (2012). The role of parents and teachers in the development of gender-related math attitudes. Sex roles, 66(3), 153-166. https://doi.org/10.1007/s11199-011-9996-2

Gutiérrez, K. D., Baquedano-López, P., Alvarez, H. H., & Chiu, M. M. (1999). *Building a culture of collaboration through hybrid language practices.* Theory into practice, 38(2), 87-93. https://doi.org/10.1080/00405849909543837

Hamman, L. (2018). *Translanguaging and positioning in two-way dual language classrooms: A case for criticality*. Language and Education, 32(1), 21-42. https://doi.org/10.1080/09500782.2017.1384006

Haridza, R., & Irving, K. E. (2017). Developing critical thinking of middle school students using problem based learning 4 core Areas (PBL4C) model. *Journal of Physics: Conf. Series, 812*. https://doi.org/10.1088/1742-6596/812/1/012081

Henriksen, D., Richardson, C., & Mehta, R. (2017*). Design thinking: A creative approach to educational problems of practice. Thinking skills and Creativity, 26,* 140-153. https://doi.org/10.1016/j.tsc.2017.10.001

Hidayat, R., & Iksan, Z. H. (2015). *The effect of realistic mathematic education on students' conceptual understanding of linear programming*. Creative Education, 6(22), 2438. http://dx.doi.org/10.4236/ce.2015.622251

Hidayah, R., Salimi, M., & Susiani, T. S. (2017). Critical thinking skill: konsep dan inidikator penilaian. Taman Cendekia: Jurnal Pendidikan Ke-SD-an, 1(2), 127-133. https://doi.org/10.30738/tc.v1i2.1945

Hidayati, L., & Pardjono, P. (2018). The implementation of role play in education of pre-service vocational teacher. In IOP Conference Series: Materials Science and Engineering (Vol. 296, No. 1, p. 012016). IOP Publishing. https://doi.org/10.1088/1757-899X/296/1/012016

Hinde, E. (2005). Revisiting Curriculum Integration: A Fresh Look at an Old Idea. Social Studies (1934), 96(3), 105-111. https://doi.org/10.3200/TSSS.96.3.105-111

Hunter, R. (2017). *Mathematical discourse that breaks barriers and creates space for marginalized learners*. BRILL.

Jahnke, H. N., Jankvist, U. T., & Kjeldsen, T. H. (2022). *Three past mathematicians' views on history in Mathematics teaching and learning: Poincaré, Klein, and Freudenthal.* ZDM–Mathematics Education, 1-13. https://doi.org/10.1007/s11858-022-01376-0

Johnson, E. B. (2002). Contextual teaching and learning: What it is and why it's here to stay. Corwin Press.

Johnson, J. E., Schmitt, K. L., & Hornbeck, R. (2019). Integrating Mathematics and Science: A Review of the Literature on Integrated STEM Teaching in Early Childhood Education*. Early Childhood Education Journal, 47(6),* 737-747. https://doi.org/10.1007/s10643-019-00975-8

Jones, E., & Nimmo, J. (2014). Emergent Curriculum. In Encyclopedia of Early Childhood Development. Centre of Excellence for Early Childhood Development. https://www.child-encyclopedia.com/curriculum-early-childhood-education/according-experts/emergent-curriculum

Jones, E., & Reynolds, G. (2015). The play's the thing: Teachers' roles in children's play. Teachers College Press.

Jones, J. P., & Tiller, M. (2017). *Using concrete manipulatives in Mathematical instruction*. Dimensions of Early Childhood, 45(1), 18-23.

Kamii, C. (1999). Young children reinvent arithmetic: Implications of Piaget's theory.

Kashin, D. L. (2007). Reaching the top of the mountain: The impact of emergent curriculum on the practice and self-image of early childhood educators. Teachers College Press.

Kay, K., & Greenhill, V. (2011). *Twenty-first century students need 21st century skills. In Bringing schools into the 21st century (pp. 41-65).* Springer. https://doi.org/1007/978-94-007-0268-4_3

Kazima, M. (2007). Malawian students meaning for probability vocabulary. Educational Studies in Mathematics, 64(2), 169–189. https://doi.org/10.1007/s10649-006-9032-6

Kecskes, I., & nde Papp, T. (2000). Foreign language and mother tongue. Psychology Press. https://doi.org/10.4324/9781410606464

Kilpatrick, J., Swafford, J., & Findell, B. (2002). Adding it up: Helping children learn mathematics. The National Academies Press.

Kotsopoulos, D. (2007). Mathematics discourse: It's like hearing a foreign language. The Mathematics Teacher, 101(4), 301-305. https://doi.org/10.5951/MT.101.4.0301

Kuh, G. D. (2008). Why integration and engagement are essential to effective educational practice in the twenty-first century. Peer Review, 10(4), 27+. https://link.gale.com/apps/doc/A203770125/AONE?u=anon~266cdb62&sid=googleScholar&xid=eac7dc45

Kurniawan, E., Muslim, S., Rahmadyanti, E., Aribowo, W., Kusumawati, N., Ismayati, E., & Basuki, I. (2019). *Vocational students readiness in the face of the Industrial Revolution 4.0 and the demands of life in the 21st Century Skills.* Celebes Education Review, 1(1), 40-52. https://doi.org/10.37541/cer.v1i1.118

Lai, C. L., & Hwang, G. J. (2016). A self-regulated flipped classroom approach to improving students' learning performance in a Mathematics course. Computers & Education, 100, 126-140. https://doi.org/10.1016/j.compedu.2016.05.006

LaRocque, M., Kleiman, I., & Darling, S. M. (2011). *Parental involvement: The missing link in school achievement. Preventing school failure*. Taylor & Francis Group, 55(3), 115-122. https://doi.org/10.1080/10459880903472876

Lauchlan, F., Parisi, M., & Fadda, R. (2013). Bilingualism in Sardinia and Scotland: Exploring the cognitive benefits of speaking a 'minority' language. *International journal of bilingualism, 17(1),* 43-56. https://doi.org/10.1177/1367006911429622

Laurens, T., Batlolona, F. A., Batlolona, J. R., & Leasa, M. (2017). How does realistic mathematics education (RME) improve students' mathematics cognitive achievement? *Eurasia Journal of Mathematics, Science and Technology Education, 14(2)*, 569-578. https://doi.org/10.12973/ejmste/76959

Leppma, M., & Darrah, M. (2022). Self-efficacy, mindfulness, and self-compassion as predictors of math anxiety in undergraduate students*. International Journal of Mathematical Education in Science and Technology, 1-16.* https://doi.org/10.1080/0020739X.2022.2054740

Lerman, S. (2000). *The social turn in Mathematics education research*. In J. Boaler (Ed.), Multiple perspectives on Mathematics teaching and learning (pp. 19-44). Ablex.

Lesh, R., & Sriraman, B. (2010). *Re-conceptualizing Mathematics education as a design science*. In Theories of Mathematics education (pp. 123-146). Springer. https://doi.org/10.4324/9781410602541

Lewis, G., Jones, B., & Baker, C. (2012). *Translanguaging: Origins and development from school to street and beyond.* Educational Research and Evaluation, 18(7), 641-654. https://doi.org/10.1080/13803611.2012.718488

Limjap, A. A. (1999). Enhancing the Deductive Reasoning of Mathematics Teachers in a Constructivist Environment. The Asia-Pacific Education Researcher, 8(1), 1-1.

Lo, Y. Y. (2015). How much L1 is too much? Teachers' language use in response to students' abilities and classroom interaction in Content and Language Integrated Learning. *International Journal of Bilingual Education and Bilingualism, 18(3),* 270-288. https://doi.org/10.1080/13670050.2014.988112

Loepp, F. L. (1999). Models of Curriculum Integration. The Journal of Technology Studies, 25(2), 21–25. http://www.jstor.org/stable/43603912

Lucenario, J. L. S., Yangco, R. T., Punzalan, A. E., & Espinosa, A. A. (2016). Pedagogical content knowledge-guided lesson study: Effects on teacher competence and students' achievement in chemistry. Education Research International, 2016. https://doi.org/10.1155/2016/6068930

Maccini, P., & Gagnon, J. C. (2000). *Best practices for teaching Mathematics to secondary students with special needs.* Focus on exceptional children, 32(5).

Malaki, M., Aminifar, E., Mesgarani, H., & Alipour, M. (2022). *Learning opportunities in mathematics: the role of first language in bilingual settings.* SN Social Sciences, 2(1), 1-24. https://doi.org/10.1007/s43545-021-00304-5

Malta Ministry of Education and Employment. (2015). A language policy for the early years in Malta and Gozo. Floriana, Malta: Malta Ministry of Education and Employment. https://education.gov.mt/en/nationalliteracyagency/Documents/Policies.pdf

Malta Ministry of Education and Employment. (2012). A National Curriculum Framework for All: Malta Ministry of Education and Employment. https://curriculum.gov.mt/en/Resources/The-NCF/Documents/NCF.pdf

Mazana, Y. M., Suero Montero, C., & Olifage, C. R. (2019). Investigating students' attitude towards learning mathematics. http://dx.doi.org/10.29333/iejme/3997

Mifsud, C. L., & Farrugia, R. (2019). The Relationship between Bilingualism and Academic Achievement in Maltese and English. *Journal of Language, Identity & Education, 18(1),* 33-47. https://doi.org/10.1080/15348458.2018.1521191

Ministry of Education. 1999. Creating the future together: National minimum curriculum. Floriana, Malta: Ministry of Education

Martin, F. (2002). Primary Historians and Geographers learning from each other: making supportive cross-curricular links to enhance learning and teaching. Primary History, 30(January), 18-21.

MacLeod, M., & van der Veen, J. T. (2020). Scaffolding interdisciplinary project-based learning: a case study. *European journal of engineering education, 45(3),* 363-377. https://doi.org/10.1080/03043797.2019.1646210

Mazak, C. M., & Herbas-Donoso, C. (2015). Translanguaging practices at a bilingual university: A case study of a science classroom. *International journal of bilingual education and bilingualism, 18(6),* 698-714. https://doi.org/10.1080/13670050.2014.939138

McGuire, P., Kinzie, M. B., & Berch, D. B. (2012). Developing number sense in pre-k with five-frames. *Early Childhood Education Journal, 40(4),* 213-222. https://doi.org/10.1007/s10643-011-0479-4

Mertens, S. B., Caskey, M. M., & Flowers, N. (Eds.). (2016). The encyclopedia of middle grades education. IAP.

Michelsen, C. (2006). *Functions: a modelling tool in Mathematics and science.* ZDM, 38(3), 269-280. https://doi.org/10.1007/BF02652810

Mifsud, C. L., & Vella, L. A. (2018). *To mix languages or not? Preschool bilingual education in Malta.* In Preschool Bilingual Education (pp. 57-98). Springer. https://doi.org/10.1007/978-3-319-77228-8_3

Miles, S., & Singal, N. (2010). The education for all and inclusive education debate: Conflict, contradiction or opportunity? *International journal of inclusive education, 14(1),* 1-15. https://doi.org/10.1080/13603110802265125

Ministry for Education and Employment. (2012). A national curriculum framework for all. Floriana, Malta: MEE. https://curriculum.gov.mt/en/Resources/The-NCF/Documents/NCF.pdf

Ministry for Education and Employment (2015). Learning Outcomes Framework (LOF). http://www.schoolslearningoutcomes.edu.mt/en/

Moore, T. (2013). Critical thinking: Seven definitions in search of a concept. Studies in Higher Education, 38(4), 506-522. https://doi.org/10.1080/03075079.2011.586995

Morris, R. C. (2003). A guide to curricular integration. Kappa Delta Pi Record, 39(4), 164-167. https://doi.org/10.1080/00228958.2003.10516399

Moschkovich, J. (2002). *A situated and sociocultural perspective on bilingual mathematics learners.* Mathematical thinking and learning, 4(2-3), 189-212. https://doi.org/10.1207/S15327833MTL04023_5

Moschkovich, J. (2007a). *Using two languages when learning mathematics*. Educational studies in Mathematics, 64(2), 121-144. https://doi.org/10.1007/s10649-005-9005-1

Moschkovich, J. (2007b). Examining Mathematical discourse practices. For the learning of mathematics, 27(1), 24-30. https://www.jstor.org/stable/40248556

Moschkovich, J. N. (2010). *Language(s) and learning mathematics: Resources, challenges, and issues for research*. In J. N. Moschkovich (Ed.), Language and Mathematics education: Multiple perspectives and directions for research (pp. 1–28). IAP Information Age Publishing.

Moschkovich, J. N. (2013). *Issues regarding the concept of Mathematical practices.* In Proficiency and beliefs in learning and teaching Mathematics (pp. 257-275). Brill.

Moschkovich, J. N. (2015). Academic literacy in Mathematics for English learners. *The Journal of Mathematical Behavior, 40, 43-62.* https://doi.org/10.1016/j.jmathb.2015.01.005

Moschkovich, J. (2016). Hearing Mathematical competence expressed in emergent language. Cases for Mathematics teacher educators: Facilitating conversations about inequities in Mathematics classrooms, 161-170.

Moss, J., Bruce, C. D., & Bobis, J. (2015). *Young children's access to powerful mathematics ideas: A review of current challenges and new developments in the early years*. Handbook of international research in mathematics education, 165-202. https://doi.org/10.4324/9780203448946

NAEYC (1986) Position Statements on Developmentally Appropriate Practice in Early Childhood Programs Serving Children From Birth Through Age 8. Washington, DC: National Association for the Education of Young Children, 41(6), 3–19. http://www.jstor.org/stable/42725817

National Council of Teachers' of English. (2008). English language learners: A policy research brief produced by the National Council of Teachers of English. http://www.ncte.org/library/NCTEFiles/Resources/PolicyResearch/ELLResearchBrief.pdf

National Council of Teachers of Mathematics. (2000). Principles and standards for school mathematics. Reston, VA: National Council of Teachers of Mathematics. https://www.nctm.org/Standards-and-Positions/Principles-and-Standards/

Navés, T. (2009). Effective content and language integrated learning (CLIL) programmes. Content and language integrated learning: Evidence from research in Europe, 22-40. https://doi.org/10.21832/9781847691675

Ndofirepi, A. P. (2014). Is Critical Thinking Desirable for Children? Mediterranean Journal of Social Sciences, 5(10), 325. http://dx.doi.org/10.5901/mjss.2014.v5n10p325

Ness, D., & Farenga, S. J. (2007). *Knowledge under construction: The importance of play in developing children's spatial and geometric thinking.* Rowman & Littlefield Publishers.

Otheguy, R., García, O., & Reid, W. (2015). *Clarifying translanguaging and deconstructing named languages: A perspective from linguistics.* Applied Linguistics Review, 6(3), 281-307. https://doi.org/10.1515/applirev-2015-0014

Palinussa, A. L. (2013). Students' critical Mathematical thinking skills and character: Experiments for junior high school students through realistic Mathematics education culture-based. *Journal on Mathematics Education, 4(1)*, 75-94. https://doi.org/10.22342/jme.4.1.566.75-94

Palmer, P. J., Zajonc, A., & Scribner, M. (2010). *The heart of higher education: A call to renewal*. John Wiley & Sons.

Palviainen, Å., Protassova, E., Mård-Miettinen, K., & Schwartz, M. (2016). Two languages in the air: A cross-cultural comparison of preschool teachers' reflections on their flexible bilingual practices. *International Journal of Bilingual Education and Bilingualism, 19(6),* 614-630. https://doi.org/10.1080/13670050.2016.1184615

Park, M. S. (2013). Code-switching and translanguaging: Potential functions in multilingual classrooms. https://doi.org/10.7916/D8HH6JPQ

Parker, W. C. (2005). Social studies in elementary education. 12th ed. Columbus, OH. Pearson Merrill, Prentice-Hall. Public Agenda. 2000. A sense of call.

Pate, P. E. (2013). Academically excellent curriculum, instruction, and assessment. Research to guide practice in middle grades education, 165-186.

Phakeng, M.S. (2016). *Mathematics Education and Language Diversity*. In: Halai, A., Clarkson, P. (eds) Teaching and Learning Mathematics in Multilingual Classrooms. SensePublishers. https://doi-org.ejournals.um.edu.mt/10.1007/978-94-6300-229-5_2

Piaget, J. (1973). To understand is to invent: The future of education.

Planas, N. (2014). *One speaker, two languages: Learning opportunities in the Mathematics classroom.* Educational Studies in Mathematics, 87(1), 51-66. https://doi.org/10.1007/s10649-014-9553-3

Planas, N. (2018). *Language as resource: A key notion for understanding the complexity of Mathematics learning*. Educational Studies in Mathematics, 98(3), 215-229. https://doi.org/10.1007/s10649-018-9810-y

Planas, N. (2021). *How specific can language as a resource become for the teaching of algebraic concepts?* ZDM–Mathematics Education, 53(2), 277-288. https://doi.org/10.1007/s11858-020-01190-6

Planas, N., & Civil, M. (2013). Language-as-resource and language-as-political: Tensions in the bilingual Mathematics classroom. *Mathematics Education Research Journal, 25(3),* 361-378. https://doi.org/10.1007/s13394-013-0075-6

Planas N, & Setati M. (2014) *On the process of gaining language as a resource in Mathematics education.* ZDM Math Educ 46(6):883–893. https://doi.org/10.1007/s11858-014-0610-2

Planas, N., Morgan, C., & Schütte, M. (2018). *Mathematics education and language: Lessons and directions from two decades of research*. Developing research in Mathematics education, 196-210. https://doi.org/10.4324/9781315113562

Polanyi, M. (2012). Personal knowledge. Routledge.

Posamentier, A. S., & Smith, B. (2020). Teaching secondary school mathematics: Techniques and enrichment. https://doi.org/10.1142/9789811211423_0001

Pratiwi, R., & Waziana, W. (2018). The Effect of Realistic Mathematics Education on Student's Mathematical Communication Ability*. Malikussaleh Journal of Mathematics Learning, 1(1),* 31-35. https://doi.org/10.29103/mjml.v1i1.741

Principles, N. C. T. M. (2000). standards for school mathematics. Reston, VA: The National Council of Teachers of Mathematics.

Rello, L., & Baeza-Yates, R. (2013, October). Good fonts for dyslexia. In Proceedings of the 15th international ACM SIGACCESS conference on computers and accessibility (pp. 1-8). http://dx.doi.org/10.1145/2513383.2513447

Rello, L., & Bigham, J. P. (2017, October). Good background colors for readers: A study of people with and without dyslexia. In Proceedings of the 19th international ACM SIGACCESS conference on computers and accessibility (pp. 72-80). https://doi.org/10.1145/3132525.3132546

Reys, R., Lindquist, M., Lambdin, D. V., & Smith, N. L. (2014). Helping children learn mathematics. John Wiley & Sons.

Reyes, J. D. (2021). Effectiveness of Concrete-Representational-Abstract sequence of instruction in probability on select-groups of eight graders. *International Journal of Multidisciplinary Research and Growth Evaluation, 2(1),* 438-443.

Rinaldi, C., & e. (2006). Reggio Emilia: Listening, researching and learning.

Ritchhart, R., & Perkins, D. (2008). Making thinking visible. Educational leadership, 65(5), 57.

Ríordáin, M. N., Johnston, J., & Walshe, G. (2016). Making mathematics and science integration happen: key aspects of practice. *International journal of mathematical education in science and technology, 47(2),* 233-255. https://doi.org/10.1080/0020739X.2015.1078001

Robertson, S. A., & Graven, M. (2020). Language as an including or excluding factor in Mathematics teaching and learning. *Mathematics Education Research Journal, 32(1),* 77-101. https://doi.org/10.1007/s13394-019-00302-0

Roth, W. M. (2020). Interdisciplinary approaches in mathematics education. Encyclopedia of mathematics education, 415-419. https://doi.org/10.1007/978-3-030-15789-0

Rowland, T. (2013). The knowledge quartet: The genesis and application of a framework for analysing Mathematics teaching and deepening teachers' Mathematics knowledge. *Sisyphus—Journal of Education,* 1(3), 154-43.

Sawyer, A. (2008). *Making connections: Promoting connectedness in early Mathematics education*. In Proceedings of the 31st Annual Conference of the Mathematics Education Research Group of Australasia (Vol. 2, pp. 429-435).

Scaglione, S., & Caruana, S. (2018). *Migration and plurilingualism in Southern European homes and schools.* In The multilingual edge of education (pp. 139-164). Palgrave Macmillan. https://doi.org/10.1057/978-1-137-54856-6_7

Schettino, C. (2016). A framework for problem-based learning: Teaching Mathematics with a relational problem-based pedagogy. Interdisciplinary Journal of Problem-Based Learning, 10(2), 12. https://doi.org/10.7771/1541-5015.1602

Schleppegrell, M. J., & O'Hallaron, C. L. (2011). *Teaching academic language in L2 secondary settings.* Annual Review of Applied Linguistics, 31, 3-18. https://doi.org/10.1017/S0267190511000067

Schoenfeld, A. H. (2016). Learning to think Mathematically: Problem solving, metacognition, and sense making in Mathematics (Reprint). *Journal of education, 196(2),* 1-38. https://doi.org/10.1177%2F002205741619600202

Selvianiresa, D., & Prabawanto, S. (2017, September). Contextual teaching and learning approach of mathematics in primary schools. In *Journal of Physics: Conference Series (Vol. 895, No. 1, p. 012171).* IOP Publishing. https://doi.org/10.1088/1742-6596/895/1/012171

Seman, S. C., Yusoff, W. M. W., & Embong, R. (2017). Teachers challenges in teaching and learning for higher order thinking skills (HOTS) in primary school. *International Journal of Asian Social Science, 7(7),* 534-545. https://doi.org/10.18488/journal.1.2017.77.534.545

Setati, M. (2005). Teaching mathematics in a primary multilingual classroom. *Journal for research in Mathematics Education, 36(5),* 447-466. https://doi.org/10.2307/30034945

Setati, M., & Adler, J. (2000). *Between languages and discourses: Language practices in primary multilingual Mathematics classrooms in South Africa.* Educational studies in mathematics, 43(3), 243-269. https://doi.org/10.1023/A:1011996002062

Setati, M., Molefe, T., & Langa, M. (2008). *Using language as a transparent resource in the teaching and learning of mathematics in a Grade 11 multilingual classroom.* Pythagoras, 2008(1), 14-25. https://hdl.handle.net/10520/EJC20899

Shademan, K., Baykan, A., & Gorji, R. (2016). Bilingualism in Iranian educational system. *Journal of Pouyesh in Education and Consultation (JPEC), 1395(3)*, 81-104. https://dorl.net/dor/20.1001.1.2783154.1395.1395.3.6.0

Shaidullina, A. R., Pavlova, N. A., Minsabirova, V. N., Burdukovskaya, E. A., Yunusova, A. B., Letyaev, V. A., & Afanasev, A. S. (2015). Integration processes in education: Classification of integration types. Rev. Eur. Stud.7, 27. https://doi.org/10.5539/res.v7n4p27

Slavin, R. E., & Lake, C. (2008*). Effective Programs in Elementary Mathematics: A Best-Evidence Synthesis.* Review of Educational Research, 78(3), 427-515. https://ejournals.um.edu.mt/login?url=https://www.proquest.com/scholarly-journals/effective-programs-elementary-mathematics-best/docview/214120806/se-2

Springer, M. (2006). Soundings: A democratic, student-centered education. National Middle School Association.

Stacey, S. (2011). The unscripted classroom: Emergent curriculum in action. Redleaf Press.

Stokhof, H., De Vries, B., Bastiaens, T., & Martens, R. (2019). *Mind map our way into effective student questioning: A principle-based scenario*. Research in Science Education, 49, 347-369. https://doi.org/10.1007/s11165-017-9625-3

Suharto, S., & Widada, W. (2019, April). *The cognitive structure of students in understanding mathematical concepts.* In International Conference on Educational Sciences and Teacher Profession (ICETeP 2018) (pp. 65-69). Atlantis Press. https://doi.org/10.2991/icetep-18.2019.16

Szabo, Z. K., Körtesi, P., Guncaga, J., Szabo, D., & Neag, R. (2020). *Examples of problem-solving strategies in Mathematics education supporting the sustainability of 21st-century skills.* Sustainability, 12(23), 10113. https://doi.org/10.3390/su122310113

Tai, K. W. (2022). *Translanguaging as Inclusive Pedagogical Practices in English-Medium Instruction Science and MathematicsClassrooms for Linguistically and Culturally Diverse Students*. Research in Science Education, 52(3), 975-1012. https://doi.org/10.1007/s11165-021-10018-6

Tal, C. (2012). *Discourse and Reflection Competencies Developed by Student Teachers through Repeated Children's Book Read Alouds: A Multiple Case Study.* International Scholarly Research Notices, 2012. https://doi.org/10.5402/2012/308198

Tal, C. (Ed.). (2016). Moral classroom management in early childhood education. Nova Science Publishers.

Tan, O. S. (2021). Problem-based learning innovation: Using problems to power learning in the 21st century. Gale Cengage Learning.

Tanujaya, B., Mumu, J., & Margono, G. (2017). *The Relationship between Higher Order Thinking Skills and Academic Performance of Student in Mathematics Instruction*. International Education Studies, 10(11), 78-85. https://doi.org/10.5539/ies.v10n11p78

Tarr, P. (2010). Tangled threads: Mentoring within a community of practice. McGill *Journal of Education/Revue des sciences de l'éducation de McGill, 45(2),* 273-285. https://doi.org/10.7202/045608ar

Tavares, N. J. (2015). How strategic use of L1 in an L2-medium Mathematicsclassroom facilitates L2 interaction and comprehension. *International Journal of Bilingual Education and Bilingualism, 18(3),* 319-335. https://doi.org/10.1080/13670050.2014.988115

TeacherVision. (2009) Using manipulatives. http://www.teachervision.fen.com/pro-dev/teaching-methods/48934.html.

Thijs, Annette, and Jan Van Den Akker. Curriculum in development. Netherlands Institute for Curriculum Development (SLO), 2009. https://www.academia.edu/5132063/Curriculum_in_development_1_?email_work_card=title

Tsai, Y. L., & Chang, C. K. (2009). Using combinatorial approach to improve students' learning of the distributive law and multiplicative identities. *International Journal of Science and Mathematics Education, 7(3),* 501-531. https://doi.org/10.1007/s10763-008-9135-x

Tupas, R., Martin, I.P. (2017). *Bilingual and Mother Tongue-Based Multilingual Education in the Philippines*. In: García, O., Lin, A., May, S. (eds) Bilingual and Multilingual Education. Encyclopedia of Language and Education. Springer, Cham. https://doi.org/10.1007/978-3-319-02258-1_18

Uribe-Flórez, L. J., & Wilkins, J. L. (2010). *Elementary school teachers' manipulative use*. School Science and Mathematics, 110(7), 363-371. https://doi.org/10.1111/j.1949-8594.2010.00046.x

Van den Heuvel-Panhuizen, M., & Drijvers, P. (2020). *Realistic Mathematics education.* Encyclopaedia of Mathematics education, 713-717. https://link.springer.com/content/pdf/10.1007/978-3-030-15789-0_170.pdf

Vella, A. (2013). Languages and language varieties in Malta. *International Journal of Bilingual Education and Bilingualism, 16(5),* 532-552. https://doi.org/10.1080/13670050.2012.716812

Verschaffel, L., Greer, B., & De Corte, E. (2000). Making sense of word problems. Lisse, 224, 224.

Vygotsky, L. S. (2012). Thought and language. MIT press.

Wall, A., & Leckie, A. (2017). *Curriculum integration: an overview*. Current Issues in Middle Level Education, 22(1), 36-40.

Wei, L. (2011). Moment analysis and translanguaging space: Discursive construction of identities by multilingual Chinese youth in Britain. *Journal of pragmatics, 43(5),* 1222-1235. https://doi.org/10.1016/j.pragma.2010.07.035

Welsh, J. A., Nix, R. L., Blair, C., Bierman, K. L., & Nelson, K. E. (2010). The development of cognitive skills and gains in academic school readiness for children from low-income families. *Journal of educational psychology, 102(1),* 43. https://psycnet.apa.org/doi/10.1037/a0016738

Wette, R. (2010). Professional knowledge in action: How experienced ESOL teachers respond to feedback from learners within syllabus and contextual constraints. System, 38(4), 569-579. https://doi.org/10.1016/j.system.2010.09.017

Williams, G., & Cirtwill, K. (2018). Measuring up: Using an emergent curriculum approach to teach measurement concepts to young children. *Early Childhood Education Journal, 46(2)*, 189-196. https://doi.org/10.1007/s10643-017-0878-7

Willis, J. (2010). The current impact of neuroscience on teaching and learning. Mind, brain and education: Neuroscience implications for the classroom, 45-68.

Witzel, B. S., & Allsopp, D. (2007). *Dynamic concrete instruction in an inclusive classroom.* Mathematics Teaching in the Middle School, 13(4), 244-248. https://doi.org/10.5951/MTMS.13.4.0244

Witzel, B., Smith, S. W., & Brownell, M. T. (2001). How can I help students with learning disabilities in algebra? Intervention in School and Clinic, 37(2), 101-104. https://doi.org/10.1177%2F105345120103700205

UNESCO. (2013). Education for All Global Monitoring Report. https://unesdoc.unesco.org/ark:/48223/pf0000227211

UNESCO. International Bureau of Education. (2013, 2014). What Makes a Quality Curriculum? https://unesdoc.unesco.org/permalink/PN-6610708f-3123-48d5-93ec-7964aafe1baa

UNESCO. (2016). If you don't understand, how can you learn? Policy Paper 24 of Global Education Monitoring Report. https://unesdoc.unesco.org/ark:/48223/pf0000243713.locale=en

Yoliando, F. T. (2020, December). *A comparative study of dyslexia style guides in improving readability for people with dyslexia.* In International Conference of Innovation in Media and Visual Design (IMDES 2020) (pp. 32-37). Atlantis Press. https://doi.org/10.2991/assehr.k.201202.050

Young, M. (2014). What is a curriculum and what can it do? *Curriculum Journal, 25(1)*, 7-13. https://doi.org/10.1080/09585176.2014.902526

You, H. S. (2017). Why teach science with an interdisciplinary approach: History, trends, and conceptual frameworks. *Journal of Education and Learning, 6(4), 66-77.* http://doi.org/10.5539/jel.v6n4p66

Yu-le, Z. (2004). Some thoughts on emergent curriculum. Paper presented at the Forum for Integrated Education and Educational Reform sponsored by the Council for Global Integrative Education, Santa Cruz, CA, October 28-30. http://chiron.valdosta.edu/whuitt/CGIE/yule.pdf.

Yusof, K. M., Hassan, S. A. H. S., Jamaludin, M. Z., & Harun, N. F. (2012). Cooperative problem-based learning (CPBL): Framework for integrating cooperative learning and problem-based learning. Procedia-Social and Behavioral Sciences, 56, 223–232. https://doi.org/10.1016/j.sbspro.2012.09.649

Živkovic, S. (2016). A model of critical thinking as an important attribute for success in the 21st century. Procedia -Social and Behavioral Sciences, 232, 102–108. https://doi.org/10.1016/j.sbspro.2016.10.034

Appendix

Il-Kejl fil-Prattika

Attivitajiet għat-tieni sena tal-iskola Primarja

Analise Caruana

Il-Werrej

Id-Daħla

Il-lingwa tilgħab parti importanti fit-tagħlim u tħalli impatt fuq dak li l-edukatur jipprova jwassal lill-istudenti (Vygostsky, 2002). Diversi studji jikkonfermaw l-importanza li l-lingwa għandha fit-tagħlim tal-matematika għaliex il-lingwa sservi mhux biss bħala mezz ta' kif jiġi mgħallem is-suġġett, iżda ukoll isservi ta' mezz kif individwu jifhem u jibni l-kunċetti tal-matematika (Moschkovich, 2010).

Is-sitwazzjoni preżenti f'Malta tirrikjedi li t-tagħlim tal-matematika jsir bil-lingwa Ingliża. Dan jiffaċilita l-proċess tat-tagħlim għaliex il-kotba li jintużaw huma kollha miktuba f'din il-lingwa. Din is-sitwazzjoni titfa' piż fuq dawk l-istudenti kollha li għandhom diffikultà jikkomunikaw bit-tieni lingwa tagħhom. In-nuqqas ta' profiċjenza fil-lingwa Ingliża twassal għal diffikultajiet li ma jkunux neċessarjament assoċjati direttament mal-kunċett matematiku. Il-problema prinċipali tkun in-nuqqas tal-fehem tal-lingwa (Barwell, 2020). Għaldaqstant, meta kunċett matematiku jiġi ippreżentat fil-lingwa li student iħossu komdu jikkomunika biha, tgħinu aktar sabiex jirraġuna u jfittex it-triq li twasslu għas-soluzzjoni. B'hekk, huwa neċessarju illi l-istudenti kollha jingħataw l-opportunità li jesperjenzaw it-tagħlim tal-matematika fil-lingwa li tagħmel is-suġġett aktar aċċessibli u relevanti għalihom.

Dan il-ktejjeb għandu jservi bħala gwida għall-edukaturi billi jipprovdi alternattivi differenti kif, permezz tal-lingwa Maltija, jista' jiġi mgħallem u integrat b'mod Inter-Kurrikulari l-kunċett tal-Kejl. L-attivitajiet huma relatati mas-sillabu tat-Tieni Sena tal-iskola Primarja, kif ukoll abbinati mal-Kisbiet tat-Tagħlim Livell 4, maħruġa mid-Direttorat għal Kwalità u Standards fl-Edukazzjoni. Peress li l-attivitajiet jistgħu jiġu adattati għall-abilitajiet differenti, dan il-ktejjeb jinkludi lista mill-Kisbiet tat-Tagħlim Livell 5, kemm dak tal-matematika kif ukoll tal-Lingwa Maltija, għal dawk l-istudenti li jkunu aktar avvanzati għall-età tagħhom.

L-Għan tal-Ktejjeb

Is-sillabu tal-matematika huwa vast u jirrikjedi ħafna prattika. Bl-introduzzjoni tal-Kurrikulu msejjes fuq l-interessi tat-tfal, magħruf bl-Ingliż bħala 'Emergent Curriculum', l-edukatur ser ikun meħtieġ illi jibbaża t-tagħlim kollu fuq dawn l-interessi. L-għan ta' dan il-ktejjeb huwa li jiffaċilita x-xogħol tal-edukatur billi jipprovdi ideat ġenerali li jistgħu jiġu utilizzati fuq **firxa ta' topiks differenti**, kif ukoll **integrati b'mod Inter-Kurrikulari**. Minkejja l-fatt illi ma hemmx Kisbiet tat-Tagħlim direttament indirizzati lejn is-suġġett tal-matematika, dan il-ktejjeb jipprovdi l-istudenti b'esperjenzi relatati mal-kunċett tal-Kejl. Permezz ta' dawn l-esperjenzi, l-istudenti jkunu f'pożizzjoni aħjar sabiex jifhmu iktar il-kunċett u jirrelataw dwar kif jiġi prattikat fil-ħajja ta' kuljum.

Eżempju:- It-tfal għandhom tendenza jimpressjonaw ruħhom b'persunaġġi li jkunu ltaqgħu magħhom f'xi film. L-edukatur jista' jieħu spunt minn dan il-persunaġġ li t-tfal ikollhom għal qalbhom u jħajjarhom sabiex, fi gruppi, jtellgħu reċti minn partijiet tal-istess film.

It-tfal ikunu mħeġġa sabiex fil-klassi joħolqu ambjent ta' ċinema. Din l-attività tinkorpora diversi dixxiplini bħal; matematika (is-sistema tan-numri, kalkoli numeriċi, kejl), drama (l-użu tal-ġisem, l-espressjonijiet tal-wiċċ, il-proġettazzjoni tal-vuċi), kif ukoll l-użu tal-lingwa (il-ħila li twassal messaġġ u titkellem quddiem udjenza).

L-attivitajiet li jinsabu f'dan il-ktejjeb jutilizzaw il-lingwa Maltija bħala riżorsa sabiex jissaħħaħ il-fehem tal-kunċett tal-Kejl. Għaldaqstant, ingħatat referenza għall-Glossarju Bilingwi ta' Termini tal-Matematika Is-Snin Bikrin u tal-Primarja, biex b'hekk ikun assigurat li jintużaw it-termini proposti f'dan id-dokument. L-attivitajiet huma iddiżinjati b'tali mod li **jistgħu jiġu adattati skont il-livell tal-istudenti** kif ukoll **implimentati bħala klassi sħiħa, fi gruppi jew inkella b'mod individwali**. Matul il-proċess ta' dan il-ktejjeb ingħatat prijorità lis-**sens tal-inklużjoni** biex b'hekk l-istudenti kollha, irrelevanti mill-abbiltà tagħhom, jkunu jistgħu jipparteċipaw b'mod sħiħ flimkien mal-kumplament tal-klassi. Għaldaqstant, fil-ktejjeb hemm imniżżla kemm il-Kisbiet mit-Tagħlim tal-livell 4, kif ukoll tal-livell 5, liema kisbiet huma mmirati għal dawk l-istudenti avvanzati għall-eta' tagħhom.

Kif għandu jintuża l-ktejjeb

L-attivitajiet kollha jibdew billi tinbena 'Brimba tal-Ħsieb'. Din tipprovdi ideat ġenerali li jservu bħala pedament li fuqhom jinbena t-tagħlim. Il-lezzjonijiet huma kollha bbażati fuq mistoqsijiet miftuħa, bl-intenzjoni li jqanqlu kemm il-ħsieb kritiku, kif ukoll dak kreattiv. L-istudenti jiġu provduti bl-opportunità sabiex, **b'mod kollettiv, jew anke b'mod individwali**, jiddiskutu u jirraġunaw biex isibu soluzzjoni għas-sitwazzjonijiet preżentati lilhom.

Matul kull attività, l-istudenti ser ikunu l-atturi prinċipali, billi jkunu attivi f'kull parti tat-taħriġ. Dan isir billi kontinwament jiddiskutu u jesprimu l-ideat u r-raġunar tagħhom. B'dan il-mod, inkunu qed ngħinu l-istudenti tagħna b'mod ħolistiku, fejn mhux biss ikomplu jsaħħu ħiliet bħal dak tas-smigħ u t-taħdit, iżda ukoll jitgħallmu kif għandhom jaħdmu u jġibu ruħhom bħala membri attivi u relevanti fil-komunità.

Ir-rwol tal-edukatur m'għandux ikun wieħed fejn jissuġġerixxi l-ideat, iżda li jqanqal il-ħsieb kritiku u kreattiv tal-istudenti. Il-'Brimba tal-Ħsieb' li hawn fil-ktejjeb jipprovdu xi punti ġenerali, kif ukoll spazju fejn jitniżżlu oħrajn differenti minn dawk imsemmija. Meta titlesta l-'Brimba tal-Ħsieb', l-edukatur jista' jagħżel li jaqsam il-klassi fi gruppi jew inkella jiddeċiedi li jistgħu jaħdmu flimkien bħala klassi sħiħa. L-attività tiżvolġi billi l-istudenti jiġu preżentati b'sitwazzjonijiet differenti. Huma jkunu meħtieġa jiddiskutu dawn ix-xenarji u jsibu s-soluzzjonijiet għalihom. L-edukatur jgħin billi jistaqsi għadd ta' mistoqsijiet miftuħa, bl-għan li jkompli jistimola il-ħsieb kritiku tal-istudenti.

Matul il-proċess, it-tfal ikunu mħeġġa jaqsmu ma' xulxin is-soluzzjoni tagħhom. Hawnhekk l-edukatur irid ikompli jibni u jsaħħaħ il-ħiliet tat-tfal billi jitlobhom jispjegaw il-ħsieb wara r-raġunar tagħhom. Il-ktejjeb jinkludi ukoll suġġerimenti ta' riżorsi li jistgħu jiġu utilizzati sabiex ikunu ta' għajnuna għall-istudenti kollha, b'mod speċjali dawk li jirnexxilhom jaħdmu aħjar bl-għajnuna tal-affarijiet tanġibli. L-użu tal-oġġetti reali jgħinu l-istudenti jirrelataw it-tagħlim mal-ħajja ta' kuljum, għaldaqstant, jagħtu aktar sens dak li jkunu qed jesperjenzaw fil-klassi (Kotsopoulos et al., 2017).

L-attivitajiet huma pjanati b'tali mod illi jistgħu jkunu adattati skont it-tema li tinħareġ mill-interessi tal-istudenti, bħal per eżempju l-attività **'Norganizzaw Ħarġa'.** Huma diversi l-ħarġiet edukattivi li jiġu organizzati matul is-sena skolastika. B'hekk, fil-ktejjeb hemm

maħsuba attività li tiddeskrivi kif it-tfal jistgħu jorganizzaw il-ħarġa tagħhom huma stess. Id-daħla tal-attività tinkludi l-vokabularju relatat mal-kunċett tal-Kejl li qed ikun jiġi indirizzat, liema vokabularju għandu jingħata prominenza matul l-attività kollha.

Fil-bidu tal-ktejjeb hemm lista ta' Kisbiet mit-Tagħlim minn fejn l-edukatur jagħżel dawk li huma l-aktar adattati għall-iskop tal-lezzjoni li tkun qed tiġi ippreżentata, kif ukoll sezzjoni b'lista sħiħa ta' mistoqsijiet ġeneriċi, li jistgħu faċilment jiġu adattati skont in-neċessità tal-attività. Permezz ta' mistoqsijiet bħal "Jekk ikollna nagħmlu …… x'taħseb li jiġri?", "Għalfejn użajt dan il-metodu?", "X'seta' ġara kieku…..?", l-edukatur mhux biss ikun qed jqanqal il-ħsieb kritiku tal-istudenti, iżda ukoll jistimola diskussjoni fil-klassi. Għal kull attività qed jiġi ukoll suġġeriet kif din tista' tiġi integrata b'mod Inter-Kurrikulari.

Il-Kisbiet mit-Tagħlim

Ir-Raba’ Livell

Eżitu tat-Tagħlim: 2) Tfal li għandhom immaġini pożittiva tagħhom infushom.

Kisbiet relatati: Tfal li jemmnu fihom infushom u kompletament konxji tal-potenzjal u l-kapaċitajiet tagħhom.

☐ Inħossni komdu nuża l-immaġinazzjoni u l-kurżità tiegħi biex noħloq ideat ġodda u naqsamhom ma' ħaddieħor.

☐ Infittex soluzzjonijiet diversi biex insolvi problema.

Kisbiet relatati: Tfal li jiżviluppaw attitudnijiet pożittivi li jippermettulhom li jieħdu l-inizjattiva u li jsiru persuni li lesti jieħdu riskji.

☐ Inħossni kunfidenti li naħdem waħdi meta jkun hemm bżonn.

☐ Nipparteċipa b'mod attiv f'attivitajiet li jitolbu minni li nieħu iniżjattiva, eż, it-tisjir, il-logħob ta' barra, eċċ..

☐ Inħossni kunfidenti nieħu inizjattivi sabiex niftaħ aktar it-tagħlim tiegħi.

Eżitu tat-Tagħlim: 3) It-tfal jafu jġibu ruħhom sew f'ambjent soċjali.

Kisbiet relatati: Tfal li kapaċi jibnu relazzjonijiet ma' oħrajn.

☐ Nuża prattiċi interattivi, eż. nikkopera, naqsam mal-oħrajn, ninkoraġġixxi, naġixxi meta jkun imissni, eċċ., li jgħinuni niġi aċċettat mill-oħrajn

☐ Nista' nistaqsi għall-għajnuna kull meta neħtieġ.

☐ Nuri li nagħti kas meta nikkopera ma' oħrajn fl-ambjent tiegħi.

☐ Nista' nikkollabora ma' oħrajn fir-rutina ta' kuljum, f'avvenimenti u f'esperjenzi.

☐ Nista' naqsam l-ideat tiegħi u nikkontribwixxi biex jittieħdu deċiżjonijiet li jaffettwaw l-ambjent tiegħi.

Eżitu tat-Tagħlim: 4) It-tfal li huma komunikaturi effettivi.

Kisbiet relatati: Tfal li huma kapaċi jużaw forom differenti ta' midja għall-komunikazzjoni. (L1 hija l-ewwel lingwa, L2 hija t-tieni lingwa.)

☐ Kapaċi nitkellem bil-lingwa nattiva tiegħi b'mod koerenti u b'sekwenza ċara.

☐ Waqt taħdit ma' sħabi u mal-adulti, kapaċi nuża l-lingwa u l-ħila tas-smigħ u nagħti ċans lil min ikun imissu.

Kisbiet relatati: Tfal li jinteraġixxu ma' u jsiru midħla ta' testi diversi u materjal stampat li jżidu l-għarfien tagħhom dwar skop / funzjoni.

☐ Kapaċi noħloq sinjali / simboli tiegħi sabiex nikkomunika informazzjoni għal skopijiet rilevanti u kuntestwali.

Kisbiet relatati: Tfal li huma familjari mas-simboli u l-mudelli u l-użu tagħhom.

☐ Kapaċi nirrikonoxxi simboli bażiċi matematiċi u nista' nuri li fhimt dak li jirrappreżentaw permezz tal-impenn tiegħi u l-komputazzjoni ta' somom li jinkludu simboli bħal dawn.

☐ Kapaċi nifhem il-valur matematiku tal-muniti bażiċi fil-munita tal-pajjiż fejn ngħix u kapaċi ngħodd xi muniti flimkien biex jagħmlu totali differenti.

Kisbiet relatati: Tfal li huma versatili fl-użu tan-numri, maniġġjar ta' data, forom u kejl u stampar f'kuntest li jgħinhom jaslu biex jipproduċu għarfien u informazzjoni kif ukoll joħorġu t-tifsir u juru fehim.

☐ Nista' nuża n-numri, l-għamliet, il-kejl u l-istampar biex inkun nista' nikkomunika l-ħsibijiet u l-ideat tiegħi.

☐ Jien nista' nuri li fhimt il-valur tan-numri eż. permess ta' azzjonijiet f'waqthom f'numru ta' kanzunetti, taqbiliet u stejjer, eċċ.

☐ Kapaċi napplika l-kunċetti matematiċi li rnexxieli nitgħallem biex insolvi problemi reali u matematiċi.

Eżitu tat-Tagħlim: 5) It-tfal li jrawmu attitudnijiet pożittivi lejn it-tagħlim u jsiru studenti impenjati u kunfidenti.

Kisbiet relatati: Tfal li jiżviluppaw firxa ta' ħiliet konjittivi fosthom l-abbiltà li jittikkettaw / jidentifikaw, jirrikonoxxu, jikklassifikaw, jipotizzaw, ibassru, iqabblu, jissekwenzaw u jiggruppaw.

☐ Jien kapaċi nsib informazzjoni minn sorsi differenti biex nitgħallem dwar id-dinja ta' madwari, inkluż billi nittiketta, nidentifika, nirrikonoxxi inqiegħed fi gruppi, inpoġġi f'sekwenza, nipotizza, nesplora, nesperimenta, norganizza, nippjana, nagħżel, nimmemorizza, inbassar, nanalizza, niġġustifika, ninterroga, nantiċipa u nivverifika.

☐ Nagħmel u nesprimi għażliet, pjanijiet u deċiżjonijiet.

☐ Naf norganizza l-oġġetti skont iktar minn kriterju wieħed.

☐ Kapaċi ninvestiga biex nifhem kif u għaliex iseħħu l-affarijiet.

☐ Naf nuża s-sensi tiegħi biex niġbor informazzjoni dwar oġġetti jew avvenimenti u naħkem il-vokabularju meħtieġ biex naqsam l-iskoperti tiegħi.

☐ Inqabbel billi ninota xebh u differenzi fl-affarijiet.

☐ Naf nikklassifika oġġetti skont il-kwalitajiet tagħhom eż. id-daqs, il-kulur eċċ. u billi noħloq kategoriji u sottokategoriji.

☐ Kapaċi nitkellem dwar relazzjonijiet ta' kawża u effett.

Kisbiet relatati: Tfal li jiżviluppaw dispożizzjonijiet pożittivi li jinkludu l-entużjażmu u l-motivazzjoni, il-kurżità, l-interrogazzjoni, il-konċentrazzjoni, il-perseveranza, l-immaġinazzjoni, il-kapaċità li jaċċettaw kritika / suġġerimenti alternattivi.

☐ Nistaqsi dwar l-ambjent tiegħi biex nipprova nagħmel sens minnu billi noħroġ b'mistoqsijiet, niġbor l-informazzjoni, ninterpreta l-informazzjoni, niskopri relazzjonijiet, inqabbel riżultati, niddiskuti s-sejbiet u naġġusta mill-ġdid fejn meħtieġ.

☐ Nagħmel osservazzjonijiet, noħloq mistoqsijiet, nippjana investigazzjonijiet u naqtà l-kurżità tiegħi billi neżamina l-evidenza disponibbli.

☐ Nikkonċentra fuq il-biċċa xogħol li jkolli quddiemi.

☐ Jien miftuħ għal ideat ġodda, inċertezza u perspettivi differenti.

☐ Nuri determinazzjoni u perseveranza meta nħabbat wiċċi ma' sfidi u kapaċi nilqa' għall-frustrazzjonijiet.

☐ Jien nuża informazzjoni biex niżviluppa teoriji li għadhom qed jiġu pruvati dwar kif taħdem id-dinja.

☐ Għandi biżżejjed indipendenza fit-tagħlim tiegħi biex nagħmel għażliet.

☐ Naqsam dak li nitgħallem mal-oħrajn, nitkellem dwar id-diffikultajiet involuti u l-istrategiji użati biex negħlibhom.

☐ Nesprimi sodisfazzjon kull meta nlesti biċċa xogħol li jkolli f'idejja.

☐ Naċċetta suġġerimenti oħra u kritika kostruttiva.

☐ Nagħmel konnessjonijiet u assoċjazzjonijiet bejn dak li diġà naf u tagħlim ġdid.

☐ Kapaċi nuża l-immaġinazzjoni tiegħi biex naħseb f'modi ġodda biex insolvi l-problemi.

☐ Nuża l-immaġinazzjoni tiegħi biex nistaqsi domandi u nesplora ideat, spazji, materjal u teknoloġiji.

Kisbiet relatati: Tfal li jwessgħu l-għarfien tagħhom u jsaħħu l-fehim tagħhom permezz tad-disponibbiltà u l-aċċess għal diversi sorsi ta' informazzjoni.

☐ Kapaċi nittrasferixxi u nadatta dak li nitgħallem minn kuntest għal ieħor.

Il-Kisbiet mit-Tagħlim

Il-Ħames Livell

Kisbiet mit-Tagħlim għall-istudenti avvanzati

Matematika - Livell 5

L-Aspett tas-Suġġett: Forom, spazju u kejl – Kejl (Tul, Erja, Volum, Massa & Kapaċità)

- ❏ Kapaċi nifhem li t-tul ta' oġġett huwa kejl tad-distanza bejn il-punti tat-tarf ta' oġġett.
- ❏ Kapaċi nifhem li l-massa ta' oġġett huwa l-kejl tal-ammont ta' materjal f'oġġett.
- ❏ Kapaċi nifhem li l-kapaċità ta' kontenitur huwa l-ammont totali ta' fluwidu li jista' jitferra' fil-kontenitur.
- ❏ Kapaċi naqra u nikteb il-vokabolarju relatat mat-tul, massa u kapaċità.
- ❏ Kapaċi nistima, inkejjel u nqabbel tulijiet, mases u kapaċitajiet.
- ❏ Kapaċi nissuġġerixxi u nuża tagħmir tal-kejl biex nistima u/jew inkejjel tul, massa u kapaċità.

L-Aspett tas-Suġġett: Forom, spazju u kejl – Kejl (Ħin)

- ❏ Kapaċi naqra u nikteb il-vokabolarju relatat mal-ħin.
- ❏ Kapaċi nuża unitajiet tal-ħin jiġifieri sigħat u minuti.
- ❏ Kapaċi nuża unitajiet standard tal-ħin u naf ir-relazzjonijiet ta' bejniethom.
- ❏ Kapaċi nistma u nkejjel il-ħin billi nuża minuti u sigħat.
- ❏ Kapaċi naqra u nuża kalendarju.

L-Aspett tas-Suġġett: Forom, spazju u kejl – Kejl (Teknoloġija Assistiva & Riżorsi Oħra)

- ❏ Kapaċi nuża t-teknoloġija assistiva, *eż. tablets u kompjuters* u riżorsi oħra, *eż. flus tal-plastik, arloġġi tal-kartun, forom 2D u 3D tal-plastik, strumenti tal-kejl* xierqa għal dan il-livell biex nitgħallem dwar il-kejl.

L-Aspett tas-Suġġett: Forom, spazju u kejl – Ġeometrija Euclidean (Linji & Segmenti tal-Linji)

- ❏ Kapaċi niddeskrivi u npinġi stampi u sekwenzi.

L-Aspett tas-Suġġett: Forom, spazju u kejl – Ġeometrija tat-trasformazzjoni (Moviment)

- ❏ Kapaċi nifhem xi jfissru lemin, xellug, fuq u isfel, u kapaċi mmexxi oġġett f'kull waħda minn dawn id-direzzjonijiet. Kapaċi wkoll niddeskrivi l-moviment tal-oġġett f'kull waħda minn dawn id-direzzjonijiet.

Kisbiet mit-Tagħlim għall-istudenti avvanza

Malti - Livell 5

L-Aspett tas-Suġġett: It-taħdit fil-ħajja ta' kuljum, it-tħaddim tal-grammatika u l-letteratura.

- ❑ Nitkellem li ninstema' u ninftiehem sewwa bi pronunzja u b'intonazzjoni tajba, b'enfasi fejn meħtieġ.

➔ ***Is-smigħ u t-taħdit***

- ❑ Inwassal messaġġ sempliċi bil-fomm bla ma nħalli xejn essenzjali barra minnu.
- ❑ Nagħmel mistoqsijiet u talbiet bi strutturi grammatikali u sintattiċi korretti, bl-użu ta' pronomi u kliem interrogattiv ieħor, b'mod edukat u pulit, biex nikseb it-tagħrif li nkun neħtieġ mingħand xi ħadd li jien midħla tiegħu bħal meta nitlob xi ħaġa lil xi ħadd waqt attività fil-klassi u lil hinn minnha.
- ❑ Inwieġeb mistoqsijiet biex nuri li fhimt dak li smajt kemm minn testi fattwalii kif ukoll dawk letterarji u nitkellem dwarhom.
- ❑ Inħaddem lingwaġġ matematiku, xjentifiku u teknoloġiku fit-taħdit tiegħi ta' kuljum bħal meta ngħid in-numri, nitkellem fuq forom sempliċi u kunċetti xjentifiċi elementari, niżen u nkejjel, u ngħid il-ħin.

➔ ***Prattika***

- ❑ Nieħu sehem f'diskussjonijiet fi gruppi żgħar, fejn nesprimi l-fehmiet u l-ħsus tiegħi bi struttura grammatikali u sintattika tajba, skont il-firxa tal-vokabularju tal-età tiegħi u b'intonazzjoni tajba fejn meħtieġ.

➔ ***Nitgħallem kif***

- ❑ Nieħu sehem f'diskussjoni mingħajr tkarkir u tlaqliq żejjed u nipparteċipa mhux biss bil-kliem imma wkoll b'għadd ta' sinjali, ġesti nonverbali, karatteristiċi paralingwistiċi oħra bħall-enfasi fuq il-kliem ċavetta u l-bdil tar-ritmu skont id-diskors.
- ❑ Nisma' l-fehmiet tal-oħrajn filwaqt li nistenna u meta jmissni nagħti tiegħi.

➔ ***Il-Komunikazzjoni għad-diversità***

- ❑ Nikkontrolla l-volum ta' leħni skont il-kuntest, il-post u s-sitwazzjoni li nkun fihom.
- ❑ Fit-taħdit ma' sħabi, inkun konxju tad-diversità lingwistika, ngħidu aħna, ta' xi kliem li nużaw fil-lingwi ewlenin li nafu (fosthom il-lingwi tal-istudenti barranin) biex infissru l-istess oġġett.

Kisbiet mit-Tagħlim għall-istudenti avvanza

Malti - Livell 5

L-Aspett tas-Suġġett: Is-smigħ fil-ħajja ta' kuljum, it-tħaddim tal-grammatika u l-letteratura.

- ❑ Naqbad u nifhem xi punti speċifiċi / dettalji meta xi ħadd jitkellem miegħi jew ma' oħrajn fi djalogu jew diskursata qasira.

➔ ***Nitgħallem inkun jien***

- ❑ Nifhem avviż/i sempliċi mogħti/ja bil-fomm u marbut/a mal-ħajja tiegħi u madwari li jinkludi/u d-data, il-ħin u xi dettalji ħfief oħra, bħal: Nhar it-Tnejn 10 ta' Novembru se mmorru ħarġa ma' tal-iskola. Nitilqu fid-disgħa.

- ❑ Nisma', insegwi u nifhem siltiet qosra fuq suġġetti midħla tagħhom li jkun fihom informazzjoni li nitgħallem minnha bħal silta informattiva li taqra l-edukatura jew sħabi tal-klassi jew li nisma' / nara minn fuq il-mezzi tax-xandir u l-internet.

➔ ***It-tagħlim konjittiv***

- ❑ Nisma' u nifhem il-lingwaġġ matematiku, xjentifiku u teknoloġiku li nuża fil-ħajja tiegħi ta' kuljum bħan-numri, il-forom sempliċi, il-kejl, l-użin u l-ħin.

➔ ***It-tagħlim soċjali***

- ❑ Nifhem mistoqsijiet sempliċi li jsiruli u nweġibhom bil-fomm, bil-kitba u bil-ġesti.

L-Aspett tas-Suġġett: Il-qari fil-ħajja ta' kuljum, it-tħaddim tal-grammatika u l-letteratura.

➔ ***Il-qari u l-fehim***

- ❑ Naqra u nifhem il-lingwaġġ matematiku, xjentifiku u teknoloġiku li nuża fil-ħajja tiegħi ta' kuljum bħan-numri, il-forom sempliċi, il-kejl, l-użin u l-ħin.

L-Aspett tas-Suġġett: Il-kitba fil-ħajja ta' kuljum, it-tħaddim tal-grammatika u l-letteratura.

➔ ***Il-kitba***

- ❑ Inżomm djarju bil-ġrajjiet l-iktar importanti għalija tal-ġurnata.

Lista ta’ mistoqsijiet ġeneriċi sabiex jitqanqal il-ħsieb

1. X’seta’ ġara kieku .....?
2. Xi stajna nagħmlu biex .....?
3. X’taħseb dwar .....?
4. Għalfejn taħseb li .....?
5. X’taħseb li ser jiġri?
6. Kif stajna nsibu / niskopru / nsolvu .....?
7. Fejn taħseb li .....?
8. Għalfejn użajt dan il-metodu?
9. X’taħseb li jiġri kieku…….?
10. Jekk aħna ..... x’taħseb li jiġri?
11. Kif jista’ jkun li .....?
12. X’aktar jista’ jiġri kieku .....?
13. X’seta’ ġara kieku .....?
14. Minn fejn tista’ ssib l-informazzjoni li għandek bżonn?
15. X’taħseb li jmiss issa?
16. Liema kliem taħseb li huma importanti? Għalfejn?
17. X’għandhom x’jaqsmu / Kif jirrelataw ma’ xulxin ..... u ..... ?
18. X’hemm l-istess / differenti?
19. Tista’ ssemmi eżempju meta nużawha fil-ħajja tagħna?
20. Hemm metodu / soluzzjoni oħra li tista’ tintuża ukoll jew inkella taħdem aħjar?
21. Hemm xi ħadd li għandu riżultat differenti?
22. Liema taħseb li huwa l-aħjar metodu?
23. Hemm mod ieħor kif tispjega dak li qed tosserva?
24. Kif tispjega dak li qed tosserva / dak li skoprejt / dak li taf s’issa?
25. X’tgħallimt s’issa?
26. Qed tinnota xi pattern partikolari? Jekk iva, iddiskrivih.
27. Liema topiks / kunċetti tal-matematika qegħdin nużaw?
28. Tista’ terġa’ tispjega x’għamilna / x’seħħ / x’ġara billi tuża kliem li tgħallimna waqt il-matematika?

1

Norganizzaw Ħarġa

L-Għan tal-Attività

L-istudenti ser jingħataw l-opportunità biex, huma stess, jorganizzaw ħarġa relatata mat-topik tal-interess tagħhom. L-intenzjoni tkun sabiex ngħinu lill-istudenti japprezzaw kif kunċetti tal-ispazju, tal-ħin u tal-flus jintużaw b'mod prattiku.

Waqt din l-attività l-istudenti jiffamiljarizzaw ruħhom ma' vokabularju relatat mal-kunċetti differenti tal-Kejl, bħal per eżempju:

Il-Ħin	siegħa, sagħtejn, nofsinhar, filgħodu, ġurnata / ġranet, ngħodd il-ġranet, il-Ġimgħa, qabel, jumejn qabel, fil-ħin, għal x'ħin, tard, l-vjaġġ idum.
Il-Kapaċità u l-Ispazju	jiflaħ, jesa', kollha f'daqqa, joqogħdu, inkopru, ngħattu.
Il-Flus	tħallas, niġbor b'kollox, total, tiswa', biżżejjed / mhux biżżejjed, iħallas b'kollox, total, muniti, iħallas kull persuna

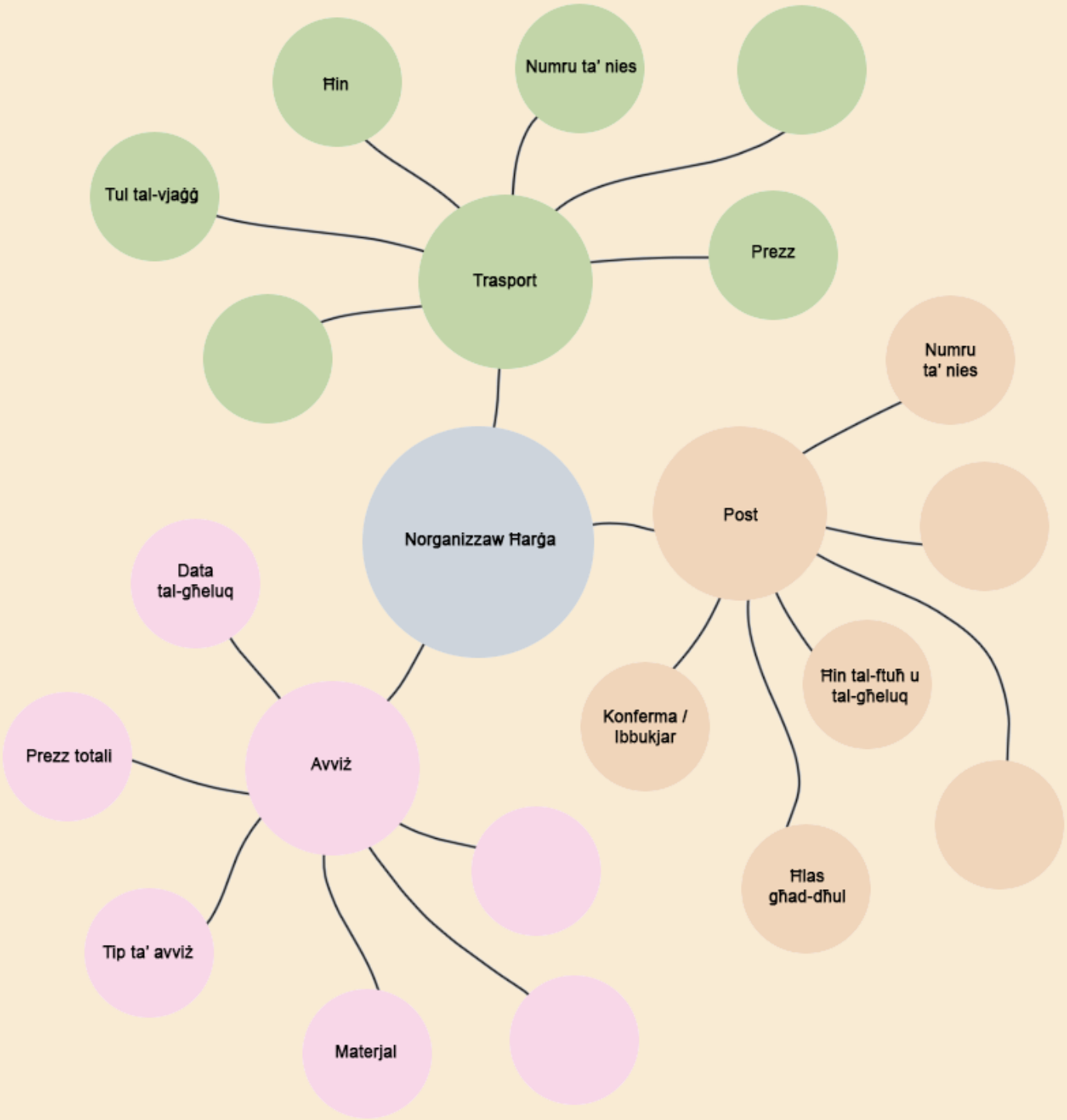
Inter-Kurrikulari LINGWI

- ☐ Kitba Kreattiva – proċess ta’ ordni / sekwenza / kitba ta’ avviż
- ☐ Taħdidiet

Inter-Kurrikulari PSCD / NURTURE GROUP

- ☐ Ħiliet ta’ Indipendenza – organizzazzjoni, immaniġjar ta’ flus, ippjanar

Il-Brimba tal-Ħsieb



Norganizzaw it-Trasport għall-Ħarġa

RIŻORSI

- ☐ Muniti / Karti - 1c, 2c, 5c, 10c, 20c, 50c, €1, €2, €5
- ☐ Stampi tal-post fejn ser issir il-ħarġa
- ☐ Stampi ta' vannijiet
- ☐ Kalamiti ikkuluriti
- ☐ Arloġġ
- ☐ Kalendarju
- ☐ Kartonċin
- ☐ .....
- ☐ .....

Aħna qegħdin 20 student fil-klassi. Vann wieħed jesa' 15-il persuna.

1. Taħsbu li vann wieħed biżżejjed għalina biex immorru l-ħarġa? Għalfejn?
2. X'taħsbu li jiġri jekk inġibu vann wieħed biss?
3. Jekk vann wieħed mhux biżżejjed, kemm għandna bżonn vannijiet?
4. X'nistgħu nużaw bħala mezz ta' trasport ieħor biex inkunu nistgħu mmorru kollha f'daqqa? Għalfejn għażiltu .....? X'differenzi hemm bejn _____ u vann?

Ikun ideali jekk l-edukatur twaħħal jew turi stampa ta' vann fuq il-bord interattiv. L-għoxrin student jistgħu jkunu rappreżentati bl-istess ammont ta' kalamiti kkuluriti. B'hekk l-istudenti jkunu jistgħu 'jtellgħu' t-tfal ġewwa l-vann, u b'mod viżiv, ikunu jistgħu jiddiskutu u jiddeċiedu dwar il-mistoqsijiet li jkunu meħtieġa jwieġbu.

Biex persuna tuża t-trasport, trid tħallas ewro (€1).

1. Liema muniti nista' nuża biex ikolli ewro (€1)?
2. Taħsbu li hemm muniti oħra, li meta ngħoddhom flimkien jammontaw għal ewro (€1)?
3. Mela jekk aħna qegħdin 20 student, kemm taħsbu rridu niġbru flus b'kollox?

Il-vjaġġ huwa twil nofs siegħa.

1. Tistgħu tfakkruni kemm fiha minuti nofs siegħa?

Irridu naslu fuq il-post fid-disgħa (9) ta' filgħodu.

1. Fi x'ħin taħsbu li rridu nitilqu mill-iskola?
2. U jekk ninqabdu fit-traffik, jirnexxielna naslu fil-ħin?
3. X'jaqblilna nagħmlu?

Norganizzaw iż-Żjara tal-Post

RIŻORSI

- ☐ Muniti / Karti - 1c, 2c, 5c, 10c, 20c, 50c, €1, €2, €5
- ☐ Arloġġ
- ☐ Kalamiti ikkuluriti
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....

Il-post jiflaħ 10 persuni.

1. Taħsbu li aħna nistgħu nidħlu f'daqqa?
2. Kif nistgħu nagħmlu?
3. Kemm-il grupp taħsbu li ser ikollna bżonn niffurmaw?

Hawnhekk tista' tintuża l-istess sistema li ġiet issuġġerita fl-attività 'Norganizzaw it-trasport għall-ħarġa' billi l-edukatur tipprovdi stampa tal-post fejn ser issir iż-żjara, u l-istudenti jużaw il-kalamiti sabiex jevalwaw jekk l-istudenti jistgħux jidħlu kollha f'daqqa inkella fi gruppi. B'mod viżiv ikunu jistgħu, għal darboħra, janalizzaw is-sitwazzjoni u jidentifikaw kemm-il grupp huwa meħtieġ li jingħaqdu sabiex l-istudenti jkunu jistgħu jżuru l-post.

Il-miżata tad-dħul tiswa żewġ ewro (€2) kull persuna.

1. Jekk f'kull grupp ser inkunu 10 studenti, kemm irid iħallas b'kollox kull grupp?
2. B'liema muniti nistgħu nħallsu?

Waqt dan il-punt, ikun tajjeb li t-tfal ikollhom il-muniti aċċessibli sabiex jgħinuhom jidentifikaw il-muniti neċessarji sabiex iħallsu l-miżata.

Il-post jiftaħ fid-9 ta' filgħodu u ż-żjara ddum sagħtejn.

1. Jekk aħna nibdew iż-żjara tagħna fid-9, għal x'ħin taħsbu li nkunu lesti?
2. F'każ li naslu tard u nibdew iż-żjara nofs siegħa wara, taħsbu li sal-ħdax nkunu lesti?

L-istudenti jkunu mħeġġa jużaw l-arloġġ sabiex jgħinhom waqt ir-raġunar tas-sitwazzjoni preżentata lilhom.

Il-post jagħlaq f'nofsinhar.

1. Aħna ser inlaħħqu nżuruh?
2. Għala taħsbu hekk?

Noħolqu l-Avviż tal-Ħarġa

RIŻORSI

- ☐ Kartonċin
- ☐ Kalendarju
- ☐ Muniti / Karti - 1c, 2c, 5c, 10c, 20c, 50c, €1, €2, €5
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....

Indendlu l-avviż mal-bord ta' barra l-klassi

1. Kemm-il karta tal-kartonċina taħsbu li għandna bżonn biex nimlew / inkopru l-bord kollu?
2. Ejjew niċċekjaw!

Hawnhekk l-edukatur toħroġ ammont ta' kartonċin u flimkien mal-istudenti jiskopru kemm karti tal-kartonċin hemm bżonn biex jimlew l-ispazju tal-bord.

Nifformulaw l-informazzjoni għal fuq l-avviż

1. B'liema mod nistgħu nagħmlu l-avviż attraenti u jiġbed lill-istudenti sabiex jaqraw x'fih?
2. Xi kliem nistgħu nużaw sabiex nattiraw lil sħabna l-istudenti jiġu għall-ħarġa?

Din il-parti tiffoka aktar fuq il-ħila tal-kitba. Importanti li l-gruppi jkunu mqassma b'abbiltajiet differenti, sabiex dawk l-istudenti li għandhom aktar kunfidenza f'dan il-qasam ikunu jistgħu jgħinu dawk li jbatu fil-kitba jew fil-kreattività.

3. Jekk ħa nużaw stampi jew tpinġija, kif ikun l-aħjar mod ta' tqassim sabiex indaħħlu kemm il-kliem u anke t-tiżjin?

It-trasport jiswa ewro (€1) kull persuna filwaqt li l-miżata tad-dħul tiswa żewġ ewro (€2) kull persuna.

4. Mela tistgħu tikkalkulaw kemm irid iħallas kull student?
5. Jekk għandi ħames ewro (€5), jkolli biżżejjed biex inħallas?
6. Kemm jifdalli bqija?
7. Fejn jaqblilna npoġġu l-prezz totali, sabiex kulħadd jarah sew? Għala taħsbu hekk?
8. X'differenza tagħmel jekk nagħmluh _____ minflok _____?
9. Jekk niddeċiedu li nagħmluh fin-nofs tal-ispazju li għandna, kif l-aħjar li nagħmlu sabiex inkunu ċerti li kull naħa jkollna l-istess spazju?
10. X'għodda nistgħu nużaw biex tgħinna?

X'muniti tistgħu tużaw biex tħallsu?

Tistgħu ssibu 3 modi differenti?

(L-istudenti jingħataw il-muniti sabiex jgħinuhom fil-proċess tar-raġunar tagħhom.)

Il-ħarġa ser isseħħ nhar [ġurnata] ta' [xahar]. Il-post irid ikun ibbukjat tlett ijiem qabel id-data tal-ħarġa.

1. Tafu tgħiduli f'liema ġurnata tridu tibbukjaw?
2. X'tistgħu tużaw sabiex jgħinkom tgħoddu il-ġranet sew?

(Hawnhekk jiġi issuġġerit li l-edukatur tipprovdi lill-istudenti b'kalendarju sabiex ikunu jistgħu jirrelataw miegħu waqt l-ippjanar tal-ġranet.)

3. Jekk tridu tibbukjaw minn qabel, kif tridu timxu fuq il-kalendarju? Għalfejn_____ u mhux _____?
4. Minn liema ġurnata tridu tibdew tgħoddu lura; mill-ġurnata tal-..... jew mill-.....?
5. Għalfejn mill-..... u mhux mill- ……?

Noti

2

Noħolqu Atmosfera ta’ Ċinema / Teatru

L-Għan tal-Attività

L-istudenti jingħataw l-opportunità biex jitkellmu u jiddiskutu dwar film tal-gosti tagħhom. Dan ser jagħmluh saħansitra billi jesprimu ruħhom bl-arti tad-drama. F'din l-attività l-istudenti ser jingħataw l-ispazju sabiex jesprimu l-lat kreattiv tagħhom, filwaqt li jkomplu jsaħħu l-abbiltà kommunikattiva. Dan issir billi jagħmlu użu tajjeb tal-vuċi quddiem udjenza u jużaw l-espressjoni tal-wiċċ u tal-ġisem biex iwasslu l-emozzjonijiet.

F'din l-attività, l-istudenti joħolqu atmosfera ta' ċinema jew teatru sabiex tgħinhom u timmotivhom jidħlu aktar fil-parti tal-karattru li ser jinterpretaw. L-intenzjoni tkun sabiex, b'mod prattiku, ngħinu l-istudenti jirrealizzaw u jirrelataw il-kunċetti tal-Kejl bħala użu tajjeb ta' spazju, tul u kapaċita' relatata man-numru tal-udjenza kif ukoll l-użu tal-flus.

Waqt dan it-taħriġ l-istudenti jiffamiljarizzaw ruħhom mal-vokabularju tal-Kejl, bħal:-

It-Tul u l-Area	it-tul eżatt, l-istess tul, l-itwal, l-iqsar, l-ikbar, spazju, distanza, daqs, inkejjel.
Il-Kapaċità u l-Ispazju	jiflaħ, sħiħa, mimlija, nofs, żgħar, kbar.
Il-Flus	tħallas, niġbor b'kollox, total, tiswa' iktar / inqas, jifdalli bqija, biżżejjed flus biex tixtri.
Il-Ħin	siegħat, x'ħin jispiċċa, tħallsu bħala total.

Nota Importanti

Tajjeb illi l-edukatur iżomm f'moħħha illi teżisti l-possibiltà li jkun hemm xi studenti li qatt ma jkunu esperjenzaw l-atmosfera ta' ċinema. Ħabba din iċ-ċirkustanza, ikun għaqli illi l-edukatur iddaħħal fil-pjan tagħha l-wiri ta' vidjow fejn jintwerew dawk l-affarijiet u attivitajiet kollha illi wieħed isib ġewwa ċ-ċinema, bħal:-

- Ix-xiri tal-biljett
- L-udjenza fil-kju bil-biljett f'idhom
- Ħaddiema nkarigati sabiex jgħinu lill-udjenza jsibu posthom
- L-udjenza tiekol il-popcorn jew xi ħelu ieħor
- L-iskrin kbir
- Id-dlam ġewwa s-sala
- Is-sinjali jindikaw li huwa obbligatorju li jinżamm is-silenzju / l-kwiet

Inter-Kurrikulari **STORJA TA' MALTA – RIĊERKA U PREŻENTAZZJONI DWAR:-**

- ☐ Persunaġġi Maltin
- ☐ L-ambjent tal-madwar
- ☐ Postijiet pubbliċi
- ☐ Aspetti ħfief ta' bidla u kontinwità fl-istorja, fejn jidħlu ġugarelli, logħob tradizzjonali Malti, ilbies
- ☐ Identita' Maltija: festi, għanja, ikel, logħob

Inter-Kurrikulari **PSCD / NURTURE GROUP / ETIKA**

- ☐ Bullying
- ☐ Cyberbullying
- ☐ Kif nieħdu ħsieb xulxin
- ☐ Xi tfisser inklużjoni
- ☐ X'jagħmilna ilkoll differenti
- ☐ Is-sinjali li jindikaw li qegħdin fil-periklu
- ☐ Kif nagħrfu min huma dawk in-nies li għandna nafdaw
- ☐ Fejn għandna nfittxu l-għajnuna

Inter-Kurrikulari RELIĠJON – RIĊERKA U PREŻENTAZZJONI DWAR:-

- ☐ Avvenimenti reliġjużi
- ☐ Id-differenzi u s-similaritajiet bejn reliġjonijiet differenti
- ☐ Tradizzjonijiet, ilbies, ikel u festi reliġjużi
- ☐ Persunaġġi differenti minn reliġjonijiet differenti

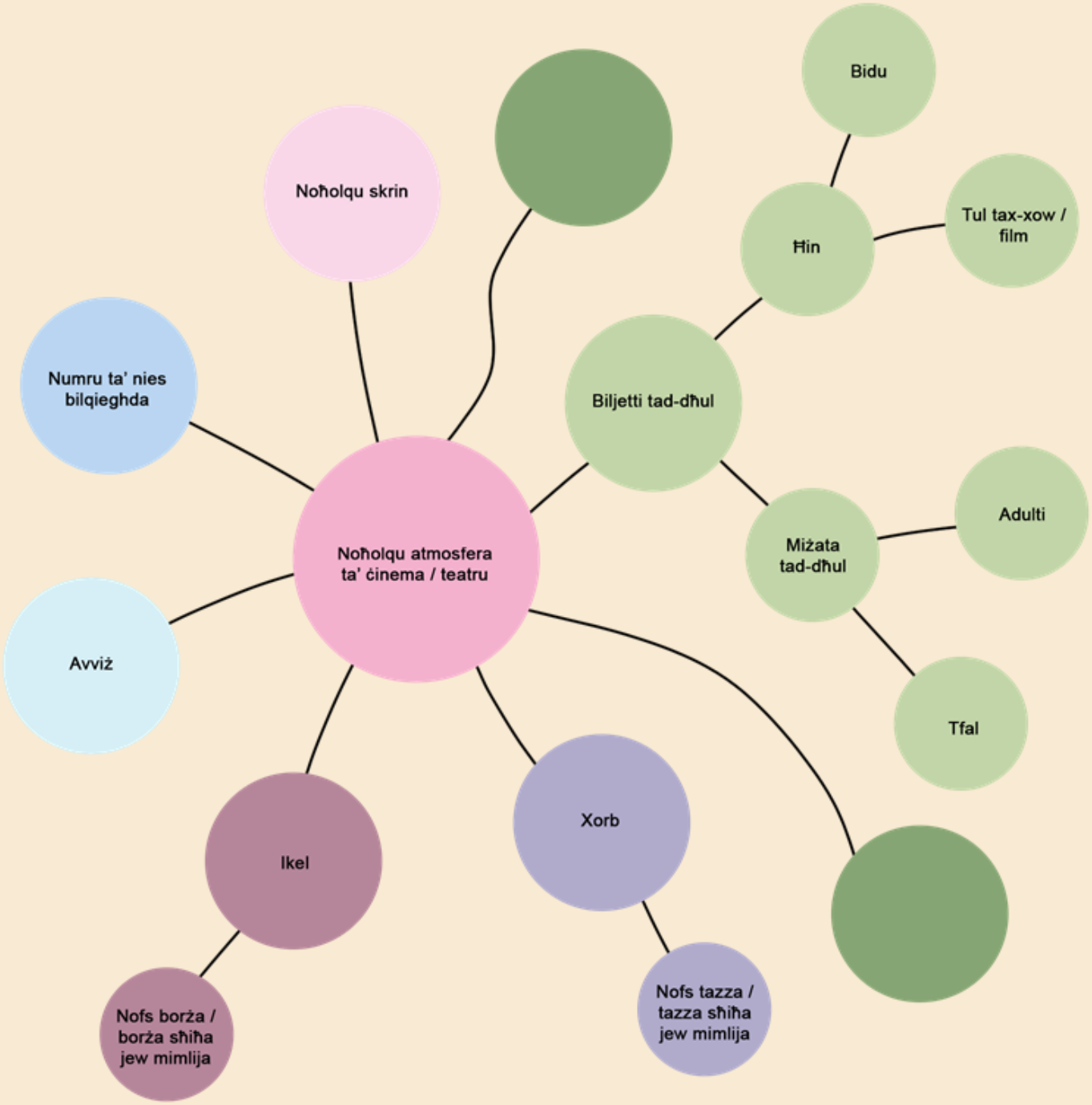
Inter-Kurrikulari LINGWI

- ☐ Uri u Tkellem (Show and Tell)
- ☐ Kitba Kreattiva – Rakkont ta' avveniment

Inter-Kurrikulari ARTI U DIŻINN

- ☐ Żvilupp ta' Litteriżmu Viżwali – użu ta' linji, forom u spazju

Il-Brimba tal-Ħsieb



Noħolqu l-Iskrin

RIŻORSI

- ☐ Kartonċin
- ☐ Siġġijiet
- ☐ Riga twila
- ☐ Riga tal-metru
- ☐ Rutella
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....

L-edukatur tintroduċi l-attività billi tgħid lill-istudenti li ser jaħdmu sabiex jibdlu l-klassi tagħhom f'sala taċ-ċinema. Hawnhekk l-istudenti jiġu mistiedna jaħsbu fid-drabi li marru jaraw film u jsemmu dawk l-affarijiet li normalment jinstabu fis-sala taċ-ċinema. Il-lista tal-affarijiet li jissemmew mit-tfal, tiġi mniżżla fuq il-bord tal-klassi, sabiex jirreferu għaliha waqt l-andament tal-attività.

1. Fejn taħsbu li hawn l-aħjar spazju sabiex noħolqu l-iskrin? Għaliex?
2. Kemm-il karta tal-kartonċina taħsbu li għandna bżonn?
3. X'tistgħu tużaw biex tkejlu t-tul eżatt? Għalfejn taħsbu hekk?
4. Kull naħa nsibu l-istess tul?
5. Tistgħu tagħrfu / tindikaw liema parti hija t-twila u liema hija l-qasira?

Niddeterminaw in-numru ta' nies skont l-ispazju.

Jekk iċ-ċinema / teatru jiflaħ 20 persuna, kemm-il siġġu għandna bżonn?

Hawnhekk l-edukatur turi siġġu sabiex l-istudenti jkunu jistgħu jirrelataw.

Il-postijiet fiċ-ċinema jkunu mqassmin b'mod li jkun hemm l-istess spazju bejniethom.

1. X'tistgħu tagħmlu biex bejn siġġu u ieħor ikun hemm l-istess spazju / distanza?
2. X'tistgħu tużaw biex jgħinkom tikkalkulaw id-distanza?
3. Hemm mod ieħor? Liema?
4. Fl-ispazju li hawn f'din il-kamra, taħsbu li jiflaħ is-siġġijiet kollha li għandna bżonn?
5. Liema ordni / mod taħsbu li hu l-aħjar sabiex nużaw l-ispazju kollu biex is-siġġijiet jitqasmu sew?
6. Taħsbu li fl-ispazju li għandna nifilħu ndaħħlu aktar siġġijiet? Għala taħsbu hekk?

Il-Brimba tal-Ħsieb

Jum iċ-Ċinema

RIŻORSI

- ☐ Siġġijiet
- ☐ Arloġġ
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....

Għal din l-attività l-istudenti ser ikunu jistgħu jipprattikaw dak li jkunu tħarġu dwaru fl-attivitajiet ta' qabel. L-istudenti jitpoġġew fi gruppi sabiex ikunu jistgħu jqassmu x-xogħol bejniethom. Importanti li l-edukatur jqassam il-gruppi b'tali mod li kull grupp ikun jikkonsisti f'abbilitajiet differenti. Permezz ta' hekk l-istudenti jkunu jistgħu jgħinu lil xulxin kif ukoll josservaw u jitgħallmu minn xulxin.

Għal din l-attività l-istudenti jridu:

a. jagħżlu film / vidjow jew saħansitra jippreparaw reċta qasira
b. joħolqu atmosfera ta' ċinema ġewwa l-klassi tagħhom
c. jikkreaw l-avviżi li ser jiddendlu madwar il-kurituri tal-iskola
d. jiddiżinjaw il-biljetti taċ-ċinema

Għall-parti ta' barra tal-klassi, l-istudenti jippreparaw l-imwejjed sabiex ikunu jistgħu jbiegħu 'l-ikel u x-xorb', kif ukoll jiġbru l-miżata tad-dħul għaċ-ċinema. Il-qliegħ li jinġabar minn din l-attività tingħata bħala donazzjoni għal tfal fil-bżonn, b'hekk inkunu qed inrawmu s-sens ta' karità fl-istudenti tagħna. Tista' tittieħed l-opportunità li jiġu mistiedna l-ġenituri tat-tfal sabiex japprezzaw il-ħidma ta' uliedhom.

Tistgħu taħsbu dwar l-għamara / affarijiet li għandna bżonn għaċ-ċinema tagħna?

1. Kemm taħsbu li għandna bżonn spazju?
2. Issa kif tistgħu tikkalkulaw bl-eżatt sabiex tiddeterminaw jekk hemmx biżżejjed spazju jew le?
3. Hemm mod ieħor kif tistgħu tieħdu l-kejl bl-eżatt?

Kull persuna fl-udjenza għandha bżonn spazju ta' 2 madumiet biex tkun komda waqt il-film / vidjow/ reċta.

1. Tistgħu tiċċekjaw kemm ser joqogħdu persuni f'dan l-ispazju li għandna?

Iċ-ċinema tagħna tiftaħ fid-disgħa ta' filgħodu. Fl-ispazju li għandna joqogħdu 10 persuni. Il-film / vidjow / reċta huwa / hija twil/a nofs siegħa.

1. Jekk ikun hawn ammont ta' tlettin student li jixtieq jiġi ġewwa ċ-ċinema tagħna, kemm-il darba ser turu l-film / vidjow / reċta?
2. Kull student ser iħallas 1 ewro (€1) biex jidħol fiċ-ċinema tagħna, mela kemm ser tiġbru b'kollox kull darba li jintwera l-film / vidjow / reċta?

3. X’ser ikun it-total tal-flus fl-aħħar tal-ġurnata?
4. Jekk l-ewwel film jibda fid-disgħa u nofs, fi x’ħin jibdew it-tieni u t-tielet film?
5. Il-brejk it-twil jibda fil-ħdax u nofs. Jilħqu jispiċċaw il-films?
6. Jekk le, x’jista’ jsir sabiex ikun hemm biżżejjed ħin biex jintwerew il-films?

Noħolqu Avviż / Biljetti għaċ-Ċinema / Teatru

RIŻORSI

- ☐ Karti A4
- ☐ Imqass
- ☐ Arloġġ
- ☐ Muniti / Karti - 1c, 2c, 5c, 10c, 20c, 50c, €1, €2, €5
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....

Qabel ma ssir din l-attività, l-istudenti jkunu diġà ħasbu u ddeterminaw il-kontenut li ser ikunu miktub kemm fuq il-biljetti u anke fuq l-avviż. L-attività tibda bil-kreazzjoni tal-biljetti. L-edukatur tpoġġi lill-istudenti fi gruppi. Kull grupp jingħata karta u l-istudenti jkunu mħeġġa jiddeterminaw id-daqs tal-biljett. Hekk kif kull grupp jasal għall-konklużjoni tiegħu, l-edukatur tibda billi tistaqsi mistoqsija sabiex tħeġġiġhom jevalwaw xogħolhom.

1. Taħsbu li hemm spazju biżżejjed fuq il-biljett tagħkom sabiex tiktbu l-informazzjoni kollha?

Hawnhekk importanti li l-edukatur tfakkar lill-istudenti biex iżommu quddiemhom kopja tal-kliem li huwa intenzjonat għal fuq il-biljett. Dan jgħinhom għax ikunu f'pożizzjoni aħjar biex jistabilixxu d-daqs meħtieġ.

2. Issa li sibtu d-daqs it-tajjeb għall-biljett, liema hu l-aħjar mod kif nikkreaw biljetti tal-istess qies?
3. Kemm-il biljett taħsbu li nistgħu noħorġu minn dil-karta?

Hawnhekk l-edukatur iżomm f'idejha karta ta' daqs A4 sabiex tgħin lill-istudenti jiddeterminaw l-istima tagħhom.

4. Taħsbu li l-avviż u l-biljetti taċ-ċinema / teatru għandhom ikunu tal-istess daqs?
5. Jekk iva, għala taħsbu hekk?
6. Jekk le, liema għandu jkun ikbar fid-daqs?
7. Għala_____għandu jkun akbar u mhux _____?
8. Kemm taħsbu li għandu jkun kbir l-avviż?
9. Liema taħsbu li huwa l-aħjar mod biex tkejlu t-tul bl-eżatt?

Il-film / xow idum 3 siegħat.

1. Jekk il-film / xow jibda fl-10:30 ta' filgħodu, tistgħu tikkalkulaw fi x'ħin jispiċċa?

Hawnhekk jingħata s-suġġeriment sabiex it-tfal jingħataw arloġġ. Dan iservihom ta' għajnuna waqt li jkunu qed jikkalkolaw il-ħin.

2. Agħtu t-tweġiba tagħkom billi turu l-ħin fuq l-arloġġ.
3. Biljett tat-tfal jiswa 1 ewro (€ 1). Biljett tal-adulti jiswa 2 ewro (€ 2).
4. Jekk intom sejrin taraw l-film / xow ma' ġenitur tagħkom, tistgħu tikkalkulaw kemm tridu tħallsu b'kollox?

5. Jekk tħallsu b’karta ta’ € 5, kemm ser jifdlilkom bqija?
6. Kif wasaltu għal dan l-ammont?
7. F’liema muniti taħsbu li tista’ tingħata l-bqija?
8. Hemm modi oħra?

Għal din il-parti tal-attività, tkun idea tajba jekk kull grupp jingħata ammont ta’ muniti sabiex l-istudenti jkunu jistgħu jutilizzawhom biex isibu modi differenti ta’ kif il-bqija tista’ tingħata. Bħala konklużjoni tal-attività, tista’ tinħoloq logħba. L-istudenti jingħataw ammont speċifiku ta’ ħin fejn huma jridu jsibu modi differenti ta’ kif il-bqija tista’ tingħata. Il-grupp rebbieħ ikun dak li jirnexxielu jidentifika l-aktar ammont ta’ modi differenti.

Bejgħ ta’ Ikel u Xorb

RIŻORSI

- ☐ Muniti / Karti - 50c, €1, €2, €5
- ☐ Żewġ imwejjed tal-istess qies
- ☐ Biċċtejn drapp
- ☐ Boroż tal-karti
- ☐ Tazzi - ta’ daqs żgħir u oħrajn ta’ daqs ikbar
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....

Din il-parti tal-attività tiġi introdotta billi l-edukatur tirrakkonta li waqt li tkun qed tara xi film, dejjem jaqbadha aptit li tnaqqar xi ħaġa. Hawnhekk tisaqsi lill-istudenti jekk jiġrilhomx l-istess. Tkompli billi tagħti ftit ħin sabiex l-istudenti jsemmu xi jħobbu jixtru qabel jidħlu ġewwa ċ-ċinema. L-attività tingħata bidu billi l-edukatur tispjega li ser jorganizzaw imwejjed sabiex ikunu jistgħu jbiegħu popcorn u ilma għall-udjenza tagħhom.

Għandna bżonn mejda għal bejgħ tal-ikel u mejda oħra għal bejgħ tal-popcorn. It-tnejn huma ta' l-istess daqs, jigifieri t-tnejn għandhom l-istess tul. Għandna bżonn ngħattuhom b'biċċa drapp sabiex ikunu sbieħ.

1. Kif għandkom tpoġġu l-imwejjed biex tieħdu l-kejl? Għala taħsbu hekk?

Iż-żewġ imwejjed għandhom l-istess qisien. Dan ifisser li l-mejda li ser tużaw biex tbiegħu l-popcorn għandha l-istess tul tal-mejda li ser tużaw biex tbiegħu l-ilma. Iż-żewġ imwejjed iridu jitgħattew bid-drapp.

2. Kemm-il biċċa drapp hemm bżonn li taqtgħu?
3. Mela allura jekk tieħdu l-kejl ta' mejda waħda, hemm għalfejn tkejlu l-mejda l-oħra ukoll? Għalfejn taħsbu hekk?

Il-popcorn ser jinbiegħ f'żewġ qisien; nofs borża u borża sħiħa / mimlija.

Hawnhekk l-edukatur turi l-boroż biex tgħin lill-istudenti jibnu stampa ta' dak li jkunu qed jitkellmu dwaru.

1. X'tifhmu meta ngħidu 'borża mimlija'?
2. Meta ngħidu 'nofs borża', sa fejn trid tkun mimlija bil-popcorn?

L-edukatur tista' ssejjaħ lil xi student jew studenti sabiex permess ta' pinna jimmarkaw il-kejl fuq il-borża, li tkun qed iżżomm f'idha, sabiex jindikaw l-kwantità ta' 'nofs'.

Għal din il-parti tal-attività huwa issuġġerit illi l-edukatur turi borża li fuqha jkun hemm linja mmarkata san-nofs tagħha, b'tabella tal-prezz imwaħħla fuqha. Din tgħin lill-istudenti jirrelataw il-prezz mal-ammont ta' ikel li jkun qed jiġi provdut.

Nofs borża popcorn tiswa 1 ewro (€1).

1. Kemm taħsbu li għandha tiswa borża sħiħa?
2. Għala taħsbu hekk?

(L-attività titkompla billi l-edukatur tagħmel referenza għax-xorb li ser ikun qed jinbiegħ. Hawnhekk joħroġ żewġ qisien ta' tazzi, waħda żgħira u oħra kbira. L-għan ewlieni jkun sabiex l-istudenti jkunu jistgħu jirrelataw il-kunċett tal-kejl b'mod aktar faċli.)

Ix-xorb ukoll ser jinbiegħ ġo tazzi żgħar u oħrajn kbar.

1. Liema taħsbu minn dawn iż-żewġ tazzi tesa' aktar ilma?

Allura jekk tazza ilma żgħira ser tinbiegħ 50 ċenteżmu, it-tazza l-ikbar tiswa iktar jew inqas? Għala taħsbu hekk?

(Hawnhekk ukoll huwa issuġġerit illi l-edukatur turi tazza żgħira b'tabella tal-prezz imwaħħla fuqha. Din titpoġġa qrib tazza kbira biex b'hekk tagħmilha aktar faċli għall-istudenti jikkomparaw il-qies u jirrelataw id-differenzi fil-prezzijiet.)

1. Kemm taħsbu li għandha tiswa tazza ilma kbira?
2. Jekk persuna tixtri borża popcorn sħiħa li tiswa 2 ewro (€2) u tazza ilma kbira li tiswa 1 ewro (€1), kemm trid tħallas b'kollox?
3. Jekk din il-persuna tħallas b' karta ta' 5 ewro (€5), jkollha biżżejjed flus?
4. Kemm jifdlilha bħala bqija?
5. Kif wasaltu għal dan l-ammont?
6. Taħsbu li jkollha biżżejjed biex tixtri xi ħaġa oħra?
7. Jekk iva, x'tista' tixtri?

Noti

3

Il -Komunità

L-Għan tal-Attività

L-istudenti jingħataw l-opportunita' li jesploraw ix-xogħol siewi ta' diversi nies li nsibu fil-komunita', filwaqt li jiskopru ukoll kif dawn in-nies jutilizzaw il-kunċetti tal-Kejl waqt il-qadi ta' dmirijiethom.

L-edukatur tistaqsi bosta mistoqsijiet, immirati biex iqanqlu l-ħsieb relatat ma' esperjenzi li huma stess ikunu għexu meta nqdew mingħand dawn il-professjonisti, bħal per eżempju t-tabiba. B'dan il-mod l-istudenti jirriflettu fuq kif il-Kejl jiġi utilizzat fil-ħajja ta' kuljum, anke mill-professjonisti.

Din l-attività tista' tkun marbuta b'mod Inter-kurrikulari mas-suġġett tal-Istudju Soċjali. Hawnhekk l-istudenti jkollhom l-ispazju japprezzaw kemm kulħadd għandu rwol importanti fil-komunità. Jitgħallmu ukoll japprezzaw il-fatt ta' kemm l-edukazzjoni tgħinna sabiex nikbru u nsiru membri attivi fil-komunità u nkunu kapaċi napplikaw dak li tgħallimna sabiex inservu ta' għajnuna għal ħaddieħor.

Waqt dan it-taħriġ l-istudenti jiffamiljarizzaw ruħhom mal-vokabularju tal-Kejl, bħal:-

Il-Tul u l-Area	tul ta', tul bl-eżatt, itwal, iqsar, bejn wieħed u ieħor, differenza bejn żewġ qisien, tul approssimattiv.
Il-Massa	niżen, itqal, eħfef, indaqs, iktar, inqas, piż approssimattiv.
Il-Ħin	kull minuta.

Inter-Kurrikulari STUDJU SOĊJALI

- ☐ Il-Komunità tagħna

Inter-Kurrikulari XJENZA

- ☐ L-ikel tajjeb għalsaħħitna (healthy eating)

Inter-Kurrikulari ARTI U DIŻINN

- ☐ Żvilupp ta’ Litteriżmu Viżwali – l-użju tal-linji, forom, u spazju
- ☐ Diżinn tal-ispazju

Inter-Kurrikulari DRAMA

- ☐ Role play

Il-Brimba tal-Ħsieb

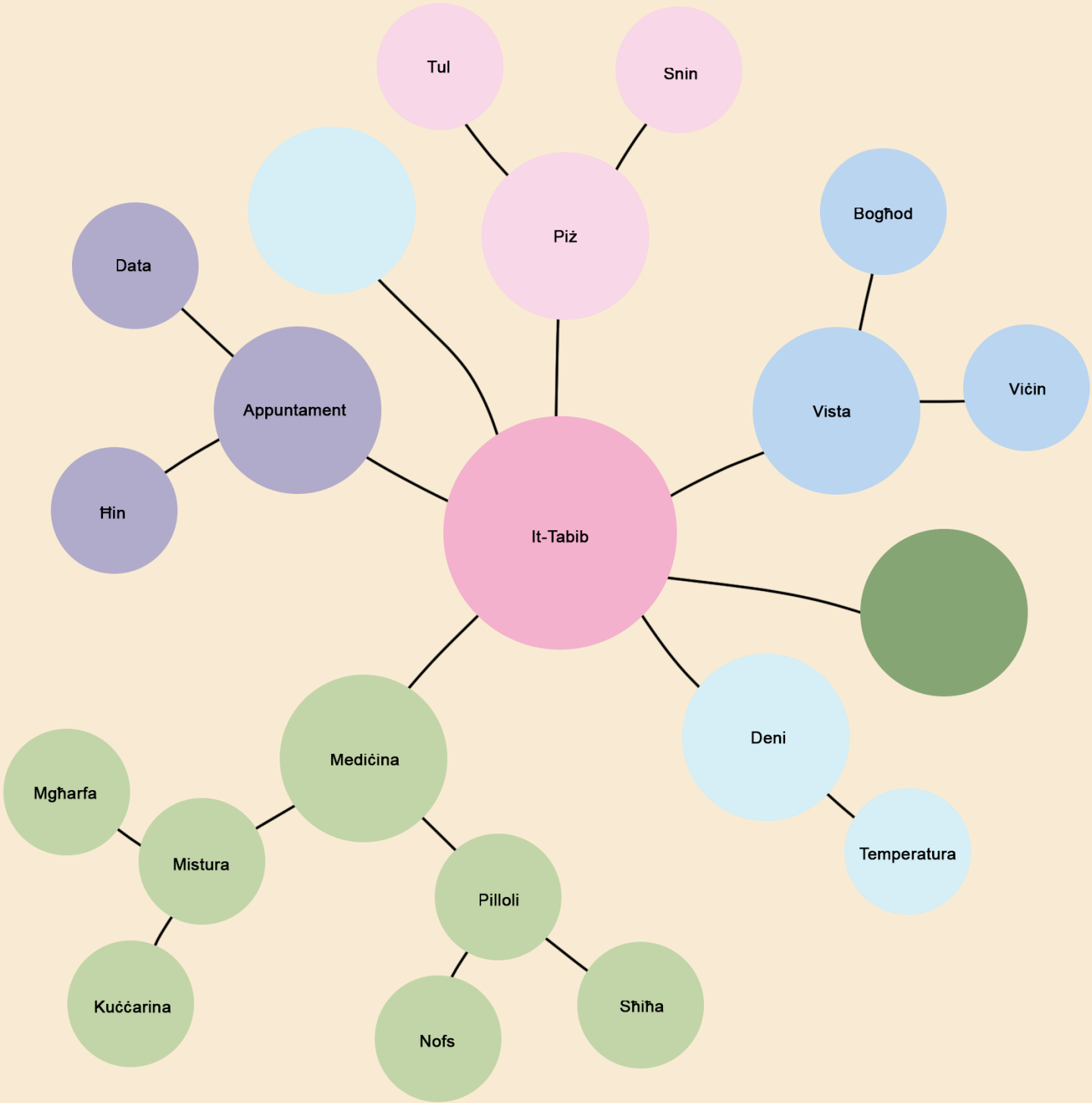
It-Tabiba
L-Għan tal-Attività

Din l-attività tista' tittella' f'forma ta' 'role play'. L-istudenti jitqassmu f'pari, fejn wieħed ikun il-pazjent u l-ieħor it-tabib.

Ir-rwol tal-edukatur tkun li toħloq xenarju ta' sitwazzjoni, fejn permezz ta' numru ta' mistoqsijiet, l-istudenti jitqanqlilhom il-ħsieb sabiex jaslu jirrealizzaw x'jagħmel it-tabib f'dik is-sitwazzjoni / pożizzjoni partikolari. Is-sitwazzjonijiet ikunu irrelatati mal-kunċetti tal-Kejl u kif dawn jiġu utilizzati mit-tabib.

Din l-attività tista' sservi ta' opportunità biex tiġi relatata b'mod Inter-Kurrikulari mas-suġġett tax-Xjenza. L-edukatur tista' tutilizza din l-attività sabiex jintroduċi t-topik dwar l-għażla tajba tal-ikel li nieklu jew inkella sservi bħala konklużjoni tat-topik. Dan huwa eżerċizzju tajjeb li jwassal lill-istudenti jagħmlu evalwazzjoni tal-ikel li jieklu, kif ukoll jirriflettu dwar l-impatt li tħalli l-għażla tal-ikel fuq ħajjet il-bniedem.

Il-Brimba tal-Ħsieb



Żjara għand it-Tabiba

RIŻORSI

- ☐ Termometru
- ☐ Arloġġ
- ☐ Miżien
- ☐ Riga twila (ta’ metru)
- ☐ Djarju
- ☐ Kalendarju
- ☐ Tabella li turi l-piż ideali skond l-età u t-tul
- ☐
- ☐
- ☐

L-edukatur tintroduċi l-attività billi ssemmi kif it-tabiba tieħu ħsiebna minn meta nitwieldu u tibqa' tieħu ħsiebna anke issa li qed nikbru. L-edukatur tenfasizza l-fatt li t-tabiba tgħinna billi taċċerta ruħha li aħna qed nikbru b'mod tajjeb u b'saħħitna. L-edukatur titlob lill-istudenti sabiex jimmaġinaw illi ġie pazjent u tispjega li din il-persuna ma tantx tkun qed tħossha tajjeb.

Din il-persuna għandha rasha tuġgħaha u qed tħoss ħafna sħana. It-tabiba tinnota li din il-persuna għandha wiċċha aħmar ħafna u meta poġġiet idha fuq moħħha indunat li dan jaħraq ħafna. Bdiet taħseb li għandha d-deni.

Hawnhekk l-edukatur tistieden lill-istudenti jingħaqdu f'pari u jiddeċiedu min ħa jkun il-pazjent u min ħa jkun it-tabiba. L-edukatur tista' tiddeċiedi sabiex għal kull sitwazzjoni, l-istudenti jibdlu r-rwoli. Tkompli billi tistaqsi 'lit-tobba':-

1. Kif taħsbu li tiċċekja jekk għandhiex deni? Xi trid tuża?

Hekk kif l-istudenti jaslu għar-risposta t-tajba, l-edukatur turihom termometru.

2. Allura jekk in-numru li jimmarka fuq it-termometru jkun għoli / kbir x'taħsbu li jfisser? Għala taħsbu hekk?

F'dan il-punt, l-edukatur tkun imħeġġa sabiex tieħu l-opportunità u titkellem dwar in-numri. Tista' isservi ukoll ta' opportunità sabiex tkabbar it-tagħrif ġenerali tat-tfal hekk kif jitgħallmu dwar kemm it-temperatura għandha tkun biex aħna nħossuna tajbin – dik li nirreferu għaliha bħala temperatura 'normali'. Hawnhekk tieħu spunt sabiex issemmi li temperatura 'normal'i għandha tkun dik ta' 37 grad celius.

Mar pazjent ieħor naqra anzjan. Beda jħoss qalbu tgħaġġel ħafna. It-tabib jaf kemm il-qalb suppost tħabbat kull minuta.

1. X'taħsbu li uża biex iżomm il-ħin?

Daħlet omm b'tifla żgħira magħha. Xtaqet isserraħ rasha li bintha qed tikber b'mod tajjeb u b'saħħitha. Biex tagħmel dan, it-tabiba trid l-ewwel tibda billi tistaqsieha kemm għandha żmien. Wara tkompli billi tiċċekja t-tul u l-piż.

L-edukatur tenfasizza li dawn id-dettalji huma tant importanti li jinżammu fuq ktieb li jkun inħareġ mill-isptar meta titwieled tarbija. L-edukatur itella', fuq il-bord interattiv, tabella

bl-informazzjoni meħtieġa. Tkompli bili tgħid li 't t-tobba' jridu jaħsbu kif jistgħu jieħdu l-Kejl. Din l-informazzjoni titniżżel fuq il-bords ż-żgħar tagħhom. Fuq quddiem tal-klassi għandhom jitpoġġew ir-riżorsi kollha għad-dispożizzjoni tal-istudenti u jitħallew jiddiskutu u jiddeċiedu bejniethom dwar liema għodda għandhom jużaw sabiex jiksbu l-informazzjoni neċessarja.

Isem	Eta'	Tul Approssimattiv	Tul bl-eżatt	Piż approssimattiv	Piż eżatt

1. Kif taħsbu li hu l-aħjar mod biex tikkalkulaw tul ta' persuna?
2. Jien twila___cm. Taħsbu li l-pazjent/a li għandkom quddiemkom itwal jew iqsar minni?
3. Kemm taħsbu li hija twila l-pazjenta tagħkom?
4. Kif tistgħu tikkalkulaw, bejn wieħed u ieħor / tistimaw, kemm hi twila?
5. Ejjew issa sibu t-tul bl-eżatt. Innotajtu xi differenza bejn iż-żewġ qisien?
6. Jiena niżen _____kg. Taħsbu li l-pazjent/a tagħkom tiżen iktar jew inqas minni? Għalfejn taħsbu hekk?
7. Jekk jien niżen___kg, kemm taħsbu li jiżen / tiżen il-pazjent/a?
8. X'tistgħu tużaw biex tiddeterminaw eżattament kemm jiżen / tiżen? Iżnu lill-pazjent.
9. X'innotajtu bejn il-piż li stmajtu intom u dak li rajtu fuq il-miżien?

Eta'	
Tul ideali	
Piż Ideali	

L-edukatur issemmi illi jeżistu kalkoli li jgħinuna nifhmu dwar dak li għandu jkun il-piż ideali u tispjega li dan jkun jiddependi skond l-età u t-tul tal-persuna. Fuq il-bord interattiv turi tabella b'din l-informazzjoni. Din il-parti tal-attività tgħin lill-istudenti jibdew jiffamiljarizzaw mal-kunċett matematiku tal-immaniġjar tad-data.

Issa ejja nqabblu l-kalkoli li sibtu ma' din it-tabella.

10. Taħsbu li l-pazjent/a qed jikber / tikber tajjeb? Għalfejn taħsbu hekk?
11. Taqblu miegħi jekk ngħidilkom li aktar ma nikbru, aktar nibdew nitwalu?
12. Mela allura x'jiġrilna fil-piż? Għalfejn taħsbu li jiġri hekk?
13. Jekk jien niddeċiedi li ma nikolx, x'taħseb li ser jiġrilu l-piż tiegħi?
14. Inkun qed nagħmel sew? Għalfejn?

Ikun hemm drabi li biex niltaqgħu mat-tabib ikollna nċemplu qabel u nagħmlu appuntament.

1. Min jaf isemmi liema tip ta' informazzjoni jtuna sabiex nagħmlu appuntament mat-tabib?
2. Liema taħsbu li huwa l-aħjar mod sabiex inżommu d-dettalji tal-appuntament, ħalli żgur ma ninsewhx? (L-edukatur tibqa' tistimula l-ħsieb tal-istudenti sakemm jaslu għal kelma djarju, kemm għal dak fil-forma ta' ktieb jew inkella wieħed interattiv.)
3. Għalfejn jaqbel li tinżamm id-data tal-appuntumanet fuq _____ u mhux fuq biċċa karta vojta? Għalfejn taħsbu hekk?

Meta nkunu ma nifilħux it-tabib jagħtina l-mediċina. Hemm mediċina li tkun solida, dawk li nirreferu għalihom bħala pilloli u hemm mediċina oħra li tkun likwida, il-mistura. Ikun hemm drabi fejn jgħidilna nieħdu mgħarfa mistura jew nkella kuċċarina.

1. X'inhi d-differenza bejn mgħarfa u kuċċarina?

(L-edukatur juri kemm mgħarfa u kuċċarina)

2. Liema taħsbu li tesa' l-iktar?
3. Liema minnhom hija l-aħjar għodda sabiex nieħdu l-mistura?
4. Kemm taħsbu li hemm bżonn ammont ta' kuċċarini biex ikollna l-istess ammont ta' mgħarfa? Ejja niskopru.

(Hawnhekk l-edukatur toħroġ kontenitur bl-ilma ġo fih u tħeġġeġ lill-istudenti sabiex b'mod prattiku, jesploraw kemm ammont ta' kuċċarini huma meħtieġa biex ikunu ekwivalenti għal mgħarfa.)

It-tabib dejjem jgħidilna dwar l-importanza li nieklu ikel frisk u bnin.

1. Tistgħu tispjegaw xi nkunu qed ngħidu bil-fraża ‘frisk u bnin’?
2. Jista’ xi ħadd jispjegalna d-differenza bejn laħam frisk u laħam friżat?
3. L-annimali li aħna nieklu, fejn jitrabbew?
4. Min jaf jgħidilna x’tissejjaħ dik il-persuna li tieħu ħsieb ir-razzett?

(Din il-parti sservi ta’ introduzzjoni dwar ix-xogħol tar-raħħal, liema attività tinstab aktar ‘il quddiem f’dan il-ktejjeb.)

Il-Perit
L-Għan tal-Attività

F’din l-attività, l-istudenti jiltaqgħu mal-professjoni tal-perit u jieħdu idea dwar dak li jinvolvi xogħlu. L-edukatur tista’ tieħu opportunità sabiex tirrelata kif ix-xogħol tal-perit jista’ jgħin professjonisti oħra, bħal per eżempju, kif perit jista’ jgħin lit-tabib fl-ippjanar tal-klinika tiegħu. Waqt din l-attività l-istudenti ser ikunu qed jaħdmu fuq il-kunċetti li għandhom x’jaqsmu mad-daqs u t-tqassim tajjeb tal-ispazju.

Permezz ta’ attività bħal din, l-istudenti jagħtu sens aktar tal-fatt kif xogħol il-bniedem jiddependi minn dak ta’ xulxin.

Il-Brimba tal-Ħsieb

Niftħu Klinika Ġdida

RIŻORSI

- ☐ Karti A4
- ☐ Biċċiet tal-karti maqtugħin rettangolari
- ☐ Riga tal-metru
- ☐ Rutella
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....

Din l-attività tista’ sservi kemm ta' introduzzjoni, kif ukoll ta’ kontinwita’ mal-attività taż- żjara għand it-tabiba.

Fil-każ li din l-attivita’ tkun qed isservi bħala kontinwita’, l-istudenti jistgħu jaħdmu f’pari, fejn waħda tkun it-tabiba filwaqt li l-istudent l-ieħor jieħu r-rwol tal-perit. L-edukatur tispjega li t-tabiba tiddeċiedi li tiftaħ klinika ġdida u tirrikorri għand perit sabiex jgħinha tiżviluppa klinika effiċenti.

Tabiba iddeċidiet li għandha bżonn tiftaħ klinika ġdida. Tħoss li għandha bżonn klinika ikbar u aktar moderna u sabiħa. Biex tagħmel dan għandha bżonn l-għajnuna u b’hekk iddeċidiet li tmur għand ħabib tagħha li jaħdem bħala perit.

1. X’daqs taħsbu li għandha bżonn tkun klinika?
2. Kif taħsbu li l-perit għandu jkejjel id-daqs ta’ kamra?
3. Kemm taħsbu li fiha passi kull naħa tal-klassi tagħna? Ejja nimxu u nikkalkulaw.
4. Kull naħa hija ndaqs?
5. Kieku kelli ngħidilkom tiddiskrivu l-klassi bħala daqs, kif tagħmluh dan? (F’każ li l-istudenti jsibu din il-mistoqsija diffiċli, l-edukatur tgħid li qed tirreferi partikolarment għat-tul u tibqa’ tistimula l-ħsieb tal-istudenti sakemm joħorġu d-differenzi bejn tul u ieħor tal-klassi.)
6. Milli innutajtu fuq it-tul tal-klassi, tistgħu tgħidu x’forma għandha l-klassi? (Hawnhekk l-edukatur tkun qed tintegra l-kunċett tal-forom.)

Il-perit għandu bżonn li jkollu il-qisien preċiżi / eżatti.

1. Kif taħsbu li hu l-aħjar mod biex jagħmel dan? X’jista’ juża?

Ejja nikkalkulaw il-qisien tal-klassi tagħna.

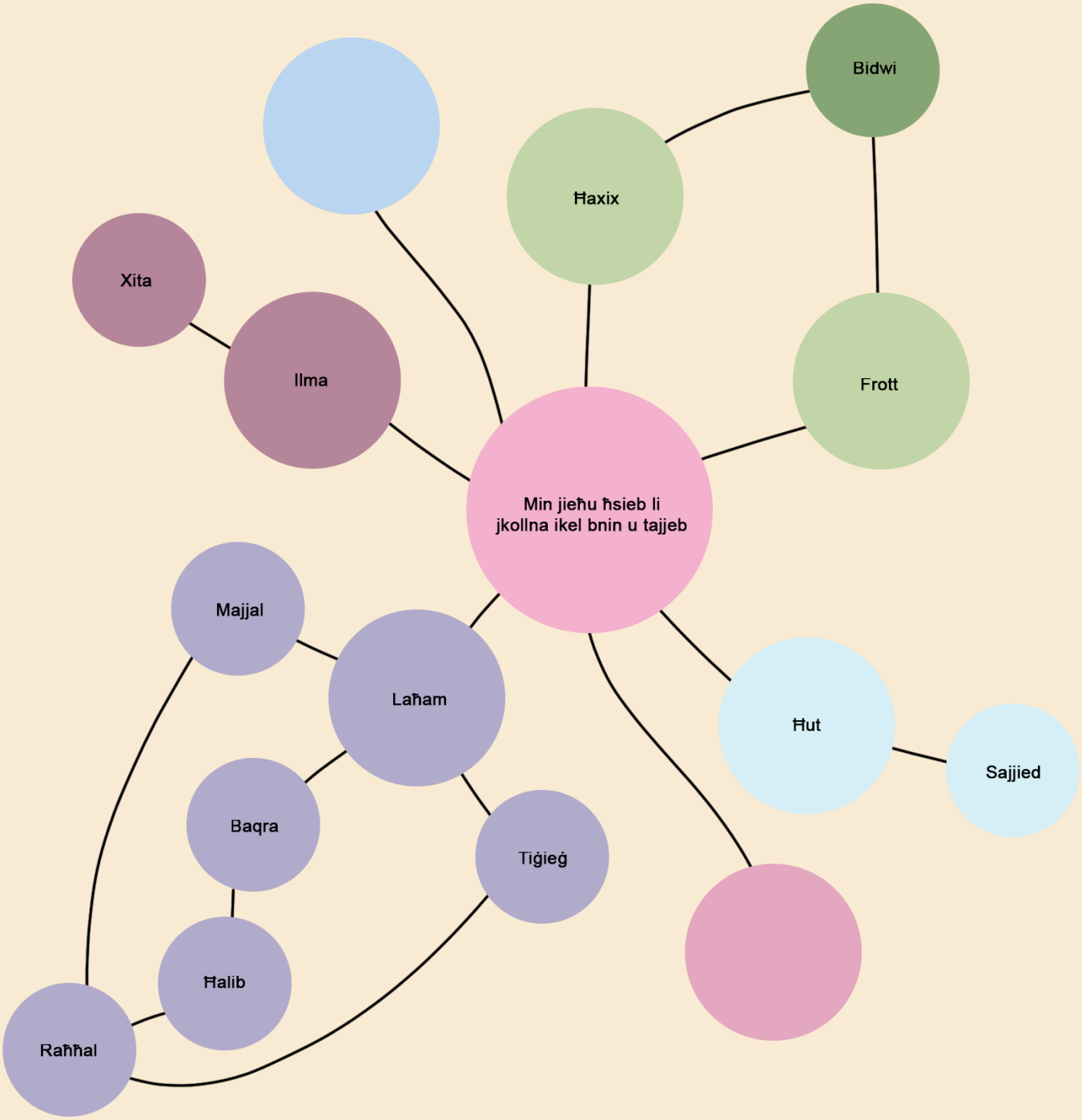
It-tabiba tixtieq li fil-klinika jkollha post għal mejda, siġġijiet u sodda sabiex tkun tista’ tinvista l-pazjenti tagħha.

F'dan il-punt, l-edukatur turi biċċiet tal-karti maqtugħa f'forom rettangolari, ta’ daqs differenti, b'kull karta tirrapreżenta biċċa għamara. Turi ukoll karta A4 bil-pjan tal-kamra, fejn tindika l-entratura u l-pożizzjonijiet tat-twieqi li hemm fl-istess kamra. L-

edukatur tenfasizza li l-perit ħa jkollu bżonn dawn il-karti sabiex jkun jista' jgħin lit-tabiba tiddeċiedi l-aħjar mod ta’ kif titqassam l-għamara.

1. Liema għamara taħsbu li hi l-itwal u liema hi l-iqsar? Kif wasaltu għal din il-konklużjoni?
2. Liema għamara taħsbu li tieħu l-aktar spazju? Għalfejn taħsbu hekk?
3. F'liema parti tal-kamra taħsbu li għandha titpoġġa / jitpoġġa .....?
4. Għalfejn f’din in-naħa u mhux din in-naħa? (Hawnhekk l-edukatur tieħu spunt biex toħloq diskussjoni fil-klassi.)

Il-Brimba tal-Ħsieb



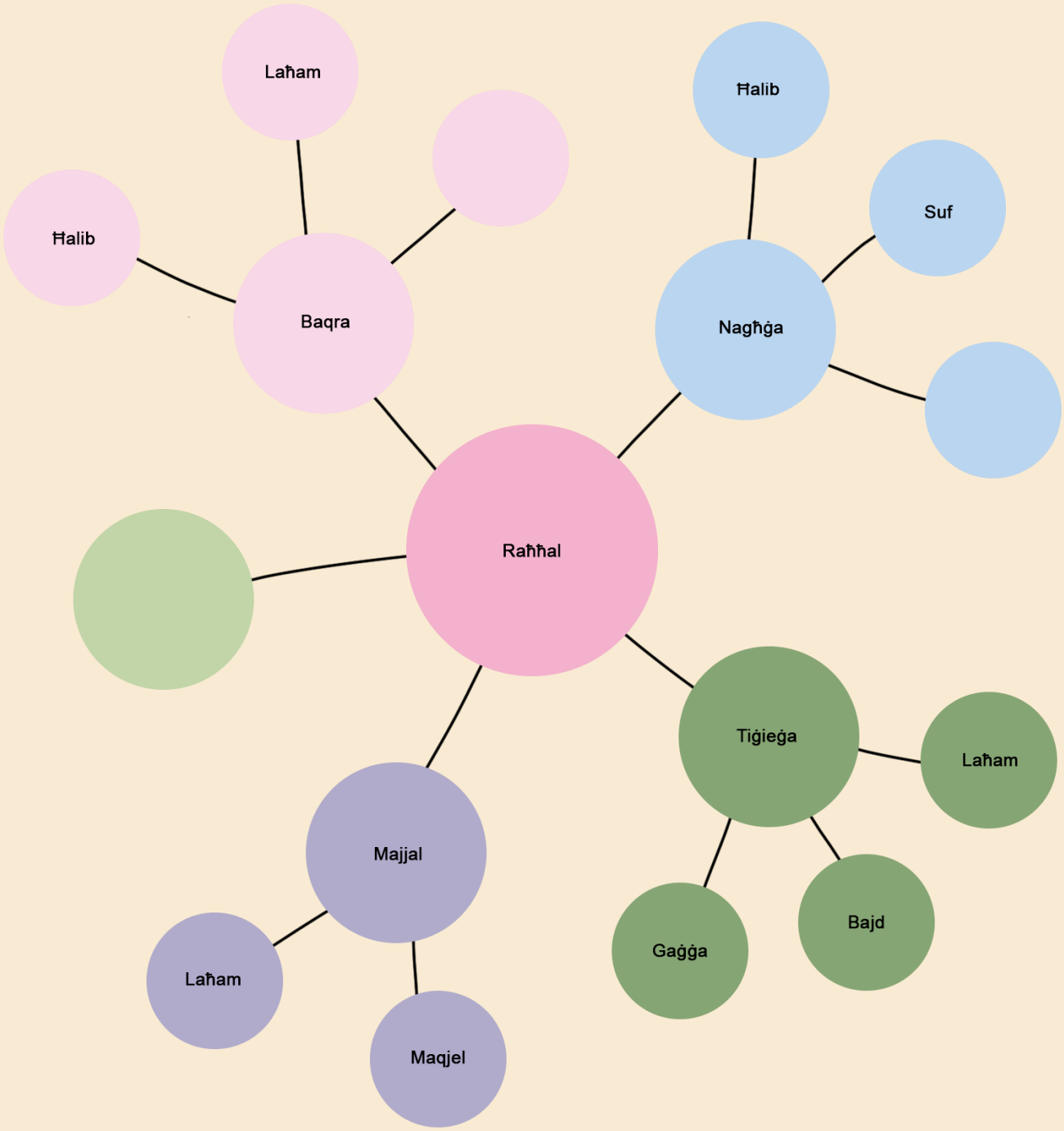
Ir-Raħħal
L-Għan tal-Attività

L-edukatur tieħu spunt mit-tema tat-tabib sabiex jintroduċi s-suġġett dwar l-importanza tal-ikel li nieklu. Waqt din l-attività, l-istudenti jibdew billi jużaw vokabularju li jkunu tgħallmu waqt il-lezzjoni tal-lingwa Maltija, relatat mal-annimali u ż-żgħar tagħhom. L-edukatur jieħu spunt sabiex jitlob lill-istudenti jikkomparaw l-annimali bejniethom, kemm f'terminu ta' daqs u anke piż.

L-istudenti jkollhom ukoll l-opportunita' sabiex jesploraw il-kunċett tal-kapaċità. L-ewwel jibdew billi jagħtu stima dwar kemm jaħsbu kemm kontenitur kbir jiflaħ ammonti ta' ilma minn ġewwa l-kontenitur ż-żgħir. Fl-aħħar l-istudenti jiċċekjaw l-istima tagħhom b'mod prattiku.

Din l-attività tista' sservi ta' opportunità biex tiġi relatata b'mod Inter-Kurrikulari mas-suġġett tax-Xjenza. L-edukatur tista' tutilzza din l-attività sabiex tintroduċi t-topik dwar l-għażla tajba tal-ikel li nieklu jew saħansitra isservi bħala konklużjoni tat-topik. Dan huwa eżerċizzju tajjeb li jwassal lill-istudenti jevalwaw l-istil ta' ħajja tagħhom fejn tidħol in-nutrizzjoni kif ukoll jirriflettu dwar l-impatt li tħalli l-għażla tal-ikel fuq ħajjet il-bniedem.

Il-Brimba tal-Ħsieb



Ir-Raħħal

RIŻORSI

- ☐ Flixkun
- ☐ Barmil
- ☐ Ilma
- ☐ Stampa tal-makkinarju li jintuża biex jinħelbu l-baqar
- ☐ Stampa ta’ raħħal jaħleb baqra
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....

Semmejna li r-raħħal jieħu ħsieb l-annimali ġewwa r-razzett.

1. X'annimali nsibu ġewwa razzett? (Hawnhekk l-edukatur jagħti spazju lill-istudenti jagħtu lista ta' annimali li jitrabbew fl-irziezet. Dan huwa rinforzament ta' vokabularju li jkunu ltaqgħu miegħu waqt il-lezzjoni tal-Malti.)
2. Agħżlu żewġ annimali milli semmejna u għidu x'taħsbu dwar il-piż tagħhom. Għalfejn taħsbu hekk?
3. X'tafu tgħidu dwar it-tul tagħhom?
4. Għandhom bżonn l-istess spazju fejn jgħixu? Għalfejn iva / le? X'differenza tagħmel?
5. Kieku kellhom jagħmlu tellieqa, min minnhom taħsbu li jasal l-ewwel? Għalfejn taħsbu hekk?

Għal dawn il-mistoqsijiet, l-istudenti jistgħu jaħdmu kemm b'mod individwali jew anke fi gruppi. Jistgħu jagħmlu użu minn bords żgħar sabiex jiktbu r-risposti tagħhom. B'dan il-mod, ikun iktar faċli għal edukatur sabiex iddur u tagħmel assessjar tar-risposti tal-istudenti. Dawk l-istudenti li għandhom diffikultà fil-kitba, jistgħu jingħataw l-għażla li jesprimu l-għażliet tagħhom permezz tat-tpinġija filwaqt li dawk l-istudenti li għandhom problemi komunikattivi jistgħu jipparteċipaw f'din l-attività bl-assistenza tat-teknoloġija.

Diversi annimali jagħtuna l-ħalib.

1. Tafu ssemmgħuhom?
2. X'differenzi tinnutaw bejniethom? (L-intenzjoni prinċipali ta' dawn it-tip ta' mistoqsijiet tkun sabiex tħeġġeġ lill-istudenti jutilizzaw il-vokabularju matematiku li jkunu tgħallmu dwar il-Kejl, bħal ikbar, itwal, itqal, eċċ)

Illum il-ġurnata jeżisti makkinarju apposta sabiex jgħin lir-raħħal jaħleb il-baqar ħalli jkollna biżżejjed ħalib frisk kuljum. (L-edukatur turi stampi tal-makkinarju, kif ukoll ta' raħħal, jeħleb l-baqar. B'hekk l-istudenti jkunu kapaċi jagħmlu kuntrast bejn iż-żewġ realtajiet b'għajnuna viżiva.) **L-edukatur tkompli tistimola d-diskussjoni fil-klassi b'aktar mistoqsijiet miftuħa.**

Taħsbu li bil-makkinarju:

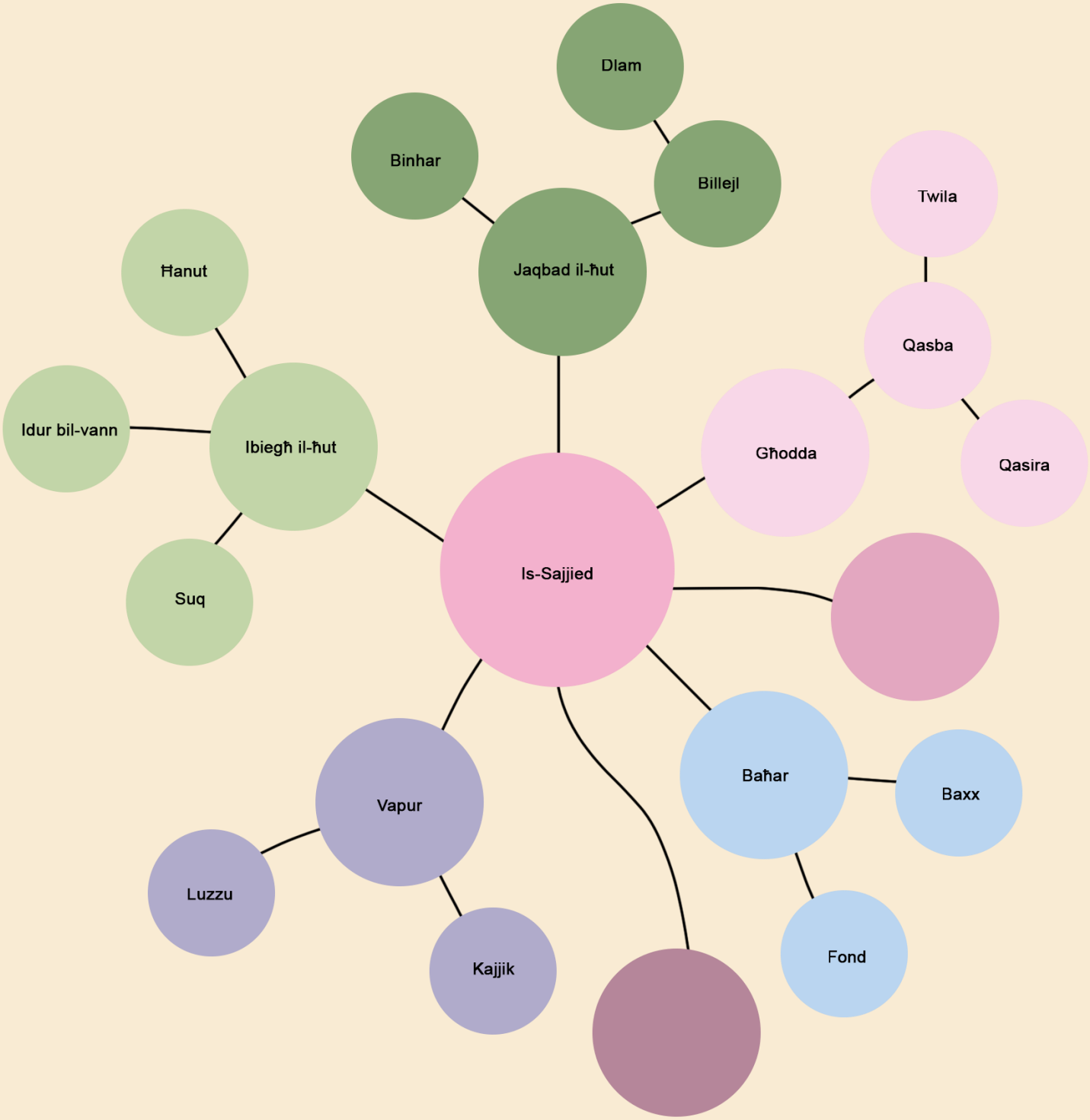
1. jinġabar iktar ħalib milli meta r-raħħal jaħleb il-baqar b'idejh? Għaliex?
2. iddum aktar biex jinġabar ħalib jew inqas? Għalfejn?
3. X'tip ta' kontenitur taħsbu li għandu jintuża biex jinġabar il-ħalib? X'tistgħu tgħid dwar id-daqs?

Is-Sajjied
L-Għan tal-Attività

Waqt din l-attività l-istudenti jkomplu jesploraw il-kunċetti tal-Kejl relatat mad-daqs u t-tul, kif ukoll jkomplu jwessgħu l-vokabularju tagħhom bi kliem bħal fond u baxx. L-istudenti jingħataw ukoll l-ispazju sabiex jispjegaw, fi kliemhom, id-differenza bejn distanza 'l bogħod u oħra viċin.

L-edukatur tispjega li sajjieda nsibu kemm nisa kif ukoll irġiel u li dawn jaħdmu kemm bil-lejl u anke bin-nhar. Hawnhekk jittieħed l-ispunt biex jiġi evalwat jekk l-istudenti jagħrfux id-differenza bejn il-frazzjonijiet tal-ġurnata.

Il-Brimba tal-Ħsieb



Is-Sajjied

RIŻORSI

- ☐ Stampa ta’ Marsaxlokk
- ☐ Stampa ta’ luzzu u kajjik
- ☐ Stampa ta’ sajjied jistad minn fuq il-blat
- ☐ Stampa ta’qasba
- ☐ Stampa ta’ barmil
- ☐ Stampa ta’ tank
- ☐ Stampi ta’ ħut żgħir u ħut kbir
- ☐ Muniti / Karti - 1c, 2c, 5c, 10c, 20c, 50c, €1, €2, €5, € 10
- ☐ Kalendarju.....
- ☐ Kartonċin.....

L-attività tibda billi l-edukatur juri stampa ta' Marsaxokk. Jistaqsi lill-istudenti biex jidentifikaw il-lokalità u jespandi l-argument billi jistaqsi x'jafu dwar il-post. L-edukatur ikompli jistimula l-ħsieb tal-istudenti sakemm jiġi msemmi s-sajd, biex b'hekk ikun jista' jagħti bidu għal din l-attività.

Is-sajjieda jistadu kemm minn fuq il-blat kif ukoll joħorġu b'xi luzzu jew kajjik fuq il-baħar. Huma jużaw għodda differenti sabiex jistadu; daqqa jużaw ix-xbieki, drabi oħra jużaw makkinarju u hemm drabi fejn jużaw il-qasab ta' diversi tul.

Tkun idea tajba jekk jintwerew stampi tal-affarijiet li jkunu qed jissemmew, biex b'hekk tgħin lill-istudenti jirrelataw magħhom aktar faċilment.

1. Aħsbu ftit f'liema sitwazzjonijiet jew ċirkustanzi jużaw dawn l-għodda li semmejna. Tistgħu tagħtu eżempji?
2. Min jaf jispjegalna d-differenza bejn baħar fond u baħar baxx?
3. Fejn taħsbu li nsibuh il-ħut kbir?
4. Għalfejn insibuh fil-baħar ……. u mhux fil-baħar .....?

Semmejna li s-sajjieda joħorġu 'l barra fil-baħar sabiex jaqbdu l-ħut.

1. Meta ngħidu 'l barra, x'inkunu qed infissru bl-eżatt?
2. X'daqs jarawha l-art meta jkunu 'l barra?
3. Jekk is-sajjieda joħorġu 'l barra ħafna, jaslu malajr jew jieħdu l-ħin biex jaslu?

Is-sajjieda jaħdmu kemm bin-nhar u anke matul il-lejl.

1. X'tifhmu biha din il-fraża?
2. Allura dan ifisser li s-sajjieda ma jorqdux?
3. Kif jirnexxielhom jaħdmu fid-dlam?

Meta s-sajjieda joħorġu jistadu fuq il-baħar, jagħmlu diversi ġranet jaħdmu qabel ma jerġgħu lura d-dar. Hemm grupp ta' sajjieda li pjanaw li jaħdmu għal 5 t'ijiem sħaħ fuq il-baħar. Huma telqu t-Tnejn filgħodu.

1. Tistgħu tikkalkulaw meta tkun dik il-ġurnata li jaslu lura d-dar?

L-istudenti jkunu mħeġġa jagħmlu użu minn kalendarju.

Dan il-grupp ta’ sajjieda għamel qabda ħut kbira.

2. X'tip ta' kontenitur taħsbu li jaqbillhom jużaw?

L-edukatur itella’ fuq il-bord interattiv stampi ta’ bramel u tankijiet ta' daqsijiet differenti. Hekk kif l-istudenti jaslu li jagħżlu t-tankijiet minflok il-bramel, l-edukatur tkompli billi tistaqsi,

3. Jekk jagħżlu bramel żgħar bħal dawn (hawnhekk l-edukatur tipponta lejn bramel żgħar) xorta jkollhom fejn ipoġġu l-ħut! Mela għalfejn jaqbillhom jużaw tankijiet flok il-bramel li urejtkom?

Is-sajjieda jaqilgħu l-flus billi jbiegħu l-ħut li jkunu qabdu. Dan jagħmluh billi jew ikollhom ħanut tagħhom jew imorru jbiegħuh ġewwa xi suq jew inkella jduru l-irħula tagħna b’xi vann. Hemm diversi daqsijiet ta’ ħut. Hemm ħut kbir u hemm ieħor żgħir.

1. Immaġinaw li hemm sajjied li għandu għaxar ħutiet għal bejgħ. Għandu ħamsa kbar ħafna u l-ħamsa l-oħra ta’ daqs żgħir. Il-ħut huwa kollu tal-istess tip / speċi (Hawnhekk l-edukatur tista’ turi l-istampi tal-ħut jew inkella tipprovdi lill-istudenti b’kartonċina sabiex ipinġu x’fehmu bil-kliem ħut kbir u ħut ta’ daqs żgħir u bil-fraži, tal-istess tip.). Is-sajjied jixtieq li jbiegħ il-ħut kollu u jiġbor somma ta’ flus mhux inqas minn €50. Tistgħu taħsbu dwar
   - xi prezzijiet għandu jagħti l-ħut?
   - il-ħut għandu jinbiegħ kollu l-istess prezz? Għala?
2. Kif wasaltu għal dawk il-prezzijiet?

(Hawnhekk l-edukatur tipprova tgħin l-istudenti sabiex jirrealizzaw li jistgħu jużaw il-kunċett tal-irduppjar jew tat-tnaqqis bin-nofs. B’hekk inkomplu nintegraw u nsaħħu aktar kunċetti matematiċi fl-attivitajiet tagħna.)

Noti

4

Mezzi ta’ Trasport

L-Għan tal-Attività

L-istudenti jkomplu jesploraw il-kunċetti tal-Kejl rigward daqs u kapaċità. L-edukatur jippreżentalhom sitwazzjonijiet differenti, fejn l-istudenti jridu jaħsbu u jiddiskutu dwar liema tip ta' trasport huwa adattat għas-sitwazzjoni li tkun ingħatat.

Din il-attività tinvolvi ukoll kunċetti relatati mal-ħin u flus, u kif dawn jintużaw fil- ħajja ta' kuljum. Hawnhekk jitħaddmu ukoll kunċetti oħra tal-Matematika, fejn l-istudenti jridu jikkalkulaw il-bqija li jifdal wara li jsir il-ħlas dovut.

Waqt dan it-taħriġ l-istudenti jiffamiljarizzaw ruħhom mal-vokabularju tal-Kejl, bħal:-

It-Tul u l-Area	l-akbar.
Il-Ħin	siegħa, fil-ħin, nofs siegħa, fil-ħin.
Il-Kapaċitàu l-Ispazju	tesa' l-aktar

Inter-Kurrikulari STUDJU SOĊJALI / L-ISTORJA

- ☐ Mezzi differenti ta’ trasport
- ☐ Bidla u kontinwità

Inter-Kurrikulari XJENZA

- ☐ It-tniġġiż tal-arja

Inter-Kurrikulari LINGWI

- ☐ Kitba kreattiva
- ☐ Preżentazzjoni ta’ riċerka fuq mezz ta’ trasport (Taħdit)
- ☐ Diskussjoni dwar il-vantaġġi u l-iżvantaġġi meta nużaw it-trasport pubbliku

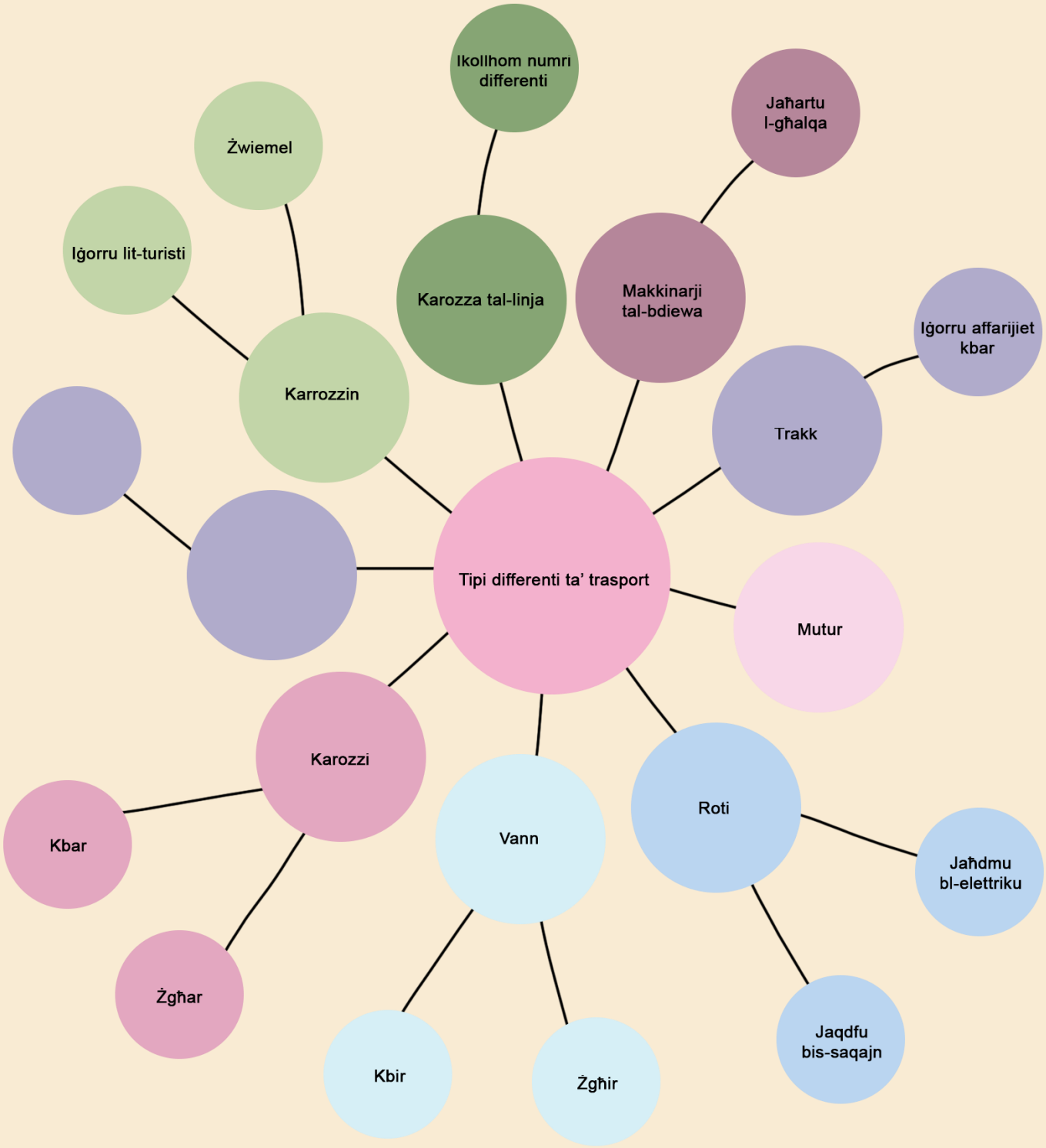
Inter-Kurrikulari EDUKAZZJONI FIŻIKA

- ☐ Inżommu ruħna attivi bl-użu tar-roti

Inter-Kurrikulari PSCD / NURTURE GROUP

- ☐ Ħiliet ta’ indipendenza – l-użu tat-trasport pubbliku

Il-Brimba tal-Ħsieb



Nagħżlu l-Mezz tat-Trasport għalina

RIŻORSI

- ☐ Stampa ta’ karozza żgħira
- ☐ Stampa ta’ vann
- ☐ Stampa ta’ trakk
- ☐ Mutur
- ☐ Muniti - 1c, 2c, 5c, 10c, 20c, 50c, € 1, €2 , €5 , €10
- ☐ Arloġġ
- ☐ .....
- ☐ .....
- ☐ .....

L-edukatur jintroduċi l-attività billi jistaqsi lill-istudenti jifhmu bil-kelma trasport. Wara li jiddedika ħin biżżejjed sabiex lill-istudenti jagħtu d-definizzjoni tal-kelma trasport, l-edukatur jistiedinhom jagħtu t-tifsira fi kliemhom tal-fraża 'Mezzi ta' trasport'.

Semmejna tipi differenti ta' mezzi ta' trasport.

1. Liema minn dawk li semmejna taħsbu li huwa l-ikbar?
2. Għaliex jintuża l-aktar? Għalfejn?

Il-mamà u l-papà ddeċidew li tbidlu d-dar u għandkom bżonn iġġorru l-għamara mid-dar il-qadima għad-dar il-ġdida.

1. X'tip ta' mezz ta' trasport taħsbu li jkollkom bżonn? Għalfejn?

L-edukatur jista' jiddeċiedi li juri stampi tal-mezzi tat-trasport sabiex jgħin lill-istudenti jirrelataw magħhom.

Iz-ziju ġab il-liċenzja tas-sewqan. Ma jixtieqx imur ix–xogħol aktar b'tal-linja. Għaldaqstant għadu mhux ċert jekk għandux jixtri karozza jew inkella mutur. Fejn l-uffiċju tiegħu hemm problema kbira għax ftit hemm spazju fejn tista' tipparkja. Apparti minn hekk l-ispazji li hemm huma vera żgħar.

1. X'taħsbu li jaqbillu jixtri? Għalfejn taħsbu hekk?

Immaġinaw li bħalissa il-karozza tal-papà bil-ħsara u lħaqtu ftehmtu ma' ħabib tagħkom li sejrin il-librerija tal-Belt Valletta. Ftehmtu li ser tiltaqgħu fl-għaxra ta' filgħodu. Tal-linja ddum siegħa biex tasal minn fejn toqogħdu intom sal-Belt.

Hawnhekk l-istudenti jingħataw arloġġ sabiex jużawh waqt il-proċess tar-raġunar.

1. Fi x'ħin taħsbu li tridu taqbdu tal-linja biex taslu fil-ħin għall-appuntament tagħkom?
2. Jekk biex timxu mid-dar sal-venda għandkom bżonn nofs siegħa, fi x'ħin tridu titilqu mid-dar sabiex taqbdu tal-linja fil-ħin? Tistgħu turu l-ħin fuq l-arloġġ.

Il-biljett għal fuq tal-linja jiswa 50 ċenteżmu.

1. Tistgħu taħsbu fi 3 settijiet differenti ta' muniti kif tistgħu tħallsu l-biljett?

Għal din il-parti tal-attività, tkun idea tajba jekk kull grupp jingħata ammont ta’ muniti differenti sabiex l-istudenti jkunu jistgħu jutilizzawhom biex isibu modi differenti ta’ kif jista’ jinxtara l-biljett. Bħala konklużjoni tal-attività, tista’ tinħoloq logħba. L-istudenti jingħataw ammont speċifiku ta’ ħin fejn huma jridu jsibu modi differenti ta’ kif iħallsu l-biljett. Il-grupp rebbieħ ikun dak li jirnexxielu jiddentifika l-aktar ammont ta’ modi differenti.

Noti

5

Id-Djarju

L-Għan tal-Attività

Din l-attività hija immirata sabiex l-istudenti jibnu stampa aktar ċara dwar il-kunċett tal-ħinijiet differenti matul il-ġurnata. L-attività tista' tieħu diversi forom u tista' tiġi faċilment adattata skont il-livell tal-abbilità tal-istudenti, kif ukoll marbuta ma' attivitajiet oħra bħal 'Jum iċ-Ċinema'. L-edukatur jista' jippreżenta din l-attività f'diversi forom, bħal:-

➔ Karattru fittizju / Karattru minn film - L-edukatur jista' joħloq storja fuq karattru fittizju jew inkella fuq karattru li l-istudenti juru interess fih. Hawnhekk l-edukatur jista' jelenka diversi avventuri jew drawwiet ta' dan il-karattru. L-istudenti jkunu meħtieġa jikkreaw djarju ibbażat fuq il-fatti skont ir-rakkont tal-istorja b'mod kronoloġiku.

➔ Karattru storiku / sportiv – L-edukatur jista' jitlob lill-istudenti sabiex jagħmlu riċerka dwar xi avveniment storiku jew żmien partikolari (eż persunaġġ mill-Bibbja, atleta famuż). It-tfal jridu jiktbu dwar ġurnata minn dak l-avveniment jew iż-żmien, minn perspettiva tal-karattru storiku / sportiv. Ir-riċerka tista' tirrigwardja ukoll xi skoperta xjentifika. F'dan il-każ, l-istudenti jkunu mitluba li jiktbu djajru minn perspettiva ta' xjenzat, fejn ikunu mħeġġa jiktbu dwar osservazzjonijiet, sfidi u anke skoperti li jkun għamel.

➔ Personalizzata - L-attività tista' tingħata xejra aktar personalizzata fejn l-istudenti jiġu mħeġġa, sabiex flimkien, jaqsmu kif huma jqattgħu l-ġranet jew il-ġimgħat tagħhom. Wara li jkun sar dan, l-istudenti jikkreaw djarju personali billi jiktbu dwar ġurnata minn ħajjithom. Meta attività tieħu aktar sfont personalizzat, tgħin lill-istudenti jirrelataw magħha u b'hekk tkun aktar faċli li jintleħaq l-għan mixtieq. Attività bħal din hija ideali għal dawk l-istudenti li jeħtieġu struttura li tigwidhom biex ikunu jistgħu jaħdmu b'mod aktar effiċjenti, kif ukoll għal studenti li jsibuha diffiċli biex jesprimu ruħhom jew inkella għandhom diffikultà sabiex jikkontrollaw l-emozzjonijiet tagħhom.

➔ 'Kieku jiena kont....' - L-attività tista' tiġi adattata b'tali mod li tgħin l-istudenti jirriflettu billi 'jidħlu fiż-żarbun ta' ħaddieħor'. L-istudenti jiġu esposti għad-diversità li teżisti fis-soċjetà li qed jgħixu fiha. Matul din l-attività, l-istudenti jibdew jirriflettu dwar kif iħossuhom nies vulnerabbli, proċess li jgħinhom jesperjenzaw l-empatija lejn ħaddieħor.

Waqt din l-attività l-istudenti jiffamiljarizzaw ruħhom ma' vokabularju relatat mal-kunċetti differenti tal-Kejl, bħal per eżempju:

Il-Ħin	Filgħodu, filgħaxija, u nofs, siegħat, idum, nofsinhar, matul il-lejl.

Inter-Kurrikulari LINGWI

- ☐ Kitba Kreattiva

Inter-Kurrikulari PSCD / NURTURE GROUP / ETIKA

- ☐ L-emozzjonijiet
- ☐ Diversità
- ☐ Empatija
- ☐ Bullying

Inter-Kurrikulari RELIĠJON

- ☐ Il-Milied
- ☐ Il-Passjoni ta' Ġesù

Inter-Kurrikulari XJENZA

- ☐ Is-Sistema Solari

Inter-Kurrikulari EDUKAZZJONI FIŻIKA

- ☐ It-Tazza tad-Dinja / Logħob Olimpiku / Logħob ParaOlimpiku

Il-Brimba tal-Ħsieb

Il-Ġurnata Tiegħi

RIŻORSI

- ☐ Biċċiet żgħar tal-karti (flexkards)
- ☐ Arloġġ
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....

L-edukatur jintroduċi l-lezzjoni billi jsemmi avveniment storiku jew reliġjuż, jew ġrajja li jkunu ta' interess partikulari għat-tfal. L-attività tiżvolġi billi jitniżżlu l-ideat kollha li jinġabru dwar il-ħajja ta' karattru minn xi avveniment jew ġrajja u jitniżlu fuq biċċiet żgħar ta' karti (flexkards). L-attività tieħu xejra ta' logħba bħal tombla. L-istudenti jitqassmu fi gruppi u jingħataw borża li fiha jkun hemm il-flexkards. Kull student itella' flexkard waħda u flimkien jirranġawhom fis-sekwenza t-tajba, skont il-ħin jew żmien indikat. L-għan prinċipali jkun, mhux biss li s-sekwenza tal-istorja tagħmel sens, imma speċjalment biex l-istudenti jagħmlu distinzjoni bejn il-frazzjonijiet tal-ġurnata, mill-ħinijiet ta' filgħodu għal dawk ta' filgħaxija. Wara li titlesta din il-parti tal-attività, l-edukatur ikompli jibni fuqha permezz ta' mistoqsijiet miftuħa, bl-għan li jqanqal aktar diskussjoni fil-klassi u jissaħħaħ aktar il-kunċett tal-ħin, kif ukoll il-vokabularju relatat mal-istess kunċett.

Għal din il-parti tal-attività, ikun ta' beneficċju jekk l-istudenti jkun mħeġġa jużaw arloġġ sabiex jgħinhom fil-proċess tar-raġunar tagħhom. Wara, l-edukatur joħloq sitwazzjoni reali li tgħin lill-istudenti jirrelataw aktar magħha.

Meta kont żgħir il-mamà kienet tqajjimni fis-sitta ta' filgħodu pero' kont indum naqra biex inqum. Fis-sitta u nofs kont ninżel isfel niekol l-kolazzjon.

1. Kemm taħsbu li kienet iddum tgħajjatli l-mamà sakemm inqum mis-sodda u mmur nieħdu l-kolazzjon?

Il-vann tal-iskola kien jgħaddi għalija fis-sebgħa ta' filgħodu. Għal ħabta tas-sebgħa u nofs kont nasal l-iskola u kont nitlaq dritt nilgħab fil-bitħa ma' sħabi. Fit-tmienja u nofs kienet iddoqq il-qanpiena sabiex ninġabru għal-laqgħa mas-surmast.

2. Tistgħu tikkalkulaw kemm kont indum nilgħab mal-ħbieb qabel nibdew il-lezzjonijiet?

Aħna jkollna żewġ brejks matul il-ġurnata. Wieħed jibda fl-għaxra u l-ieħor f'nofsinhar. Il-brejk tal-għaxra jkun qasir għax idum nofs siegħa biss.

3. Tistgħu turuni fuq l-arloġġ, x'ħin ikun meta jispiċċa l-ewwel brejk?
4. Jekk il-brejk ta' nofsinhar idum siegħa, fi x'ħin nidħlu lura mill-bitħa għal-lezzjonijiet?

L-iskola tispiċċa fis-sagħtejn u nofs u intom taslu d-dar fit-tlieta.

5. Kemm tieħdu ħin biex taslu d-dar?

Meta kont tifel ċkejken bħalkom, il-mamà dejjem kienet tgħidli biex mat-tmienja u nofs ta' filgħaxija, nitfi d-dawl u norqod.

6. Allura jekk mat-tmienja u nofs ta' filgħaxija kont norqod u nqum fis-sitta ta' filgħodu, min jaf jgħidli kemm kont norqod siegħat matul il-lejl?

L-edukatur jitlob lill-istudenti sabiex joħorġu l-bords żgħir tagħhom u jiktbu storja dwar attività li jagħmlu matul il-ġimgħa. Huma jkunu mħeġġa jiktbu l-ħin, tal-bidu u tat-tmiem ta' l-istess attività. Hekk kif ilestu, jpartu l-bord ma' student viċin tagħhom. Huma jkunu mħeġġa jaqraw l-istorja miktuba fuq il-bord u jikkalkulaw it-tul ta' ħin tal-attività. Dan jista' jitqies bħala mod ta' assessjar tal-istudenti dwar il-kunċett tal-ħin.

Noti

6

Sports

L-Għan tal-Attività

L-attivitajiet imsemmija f'din il-parti tal-ktejjeb jippromwovu l-ħidma kollettiva tal-istudenti. Għaldaqstant huwa importanti li tingħata attenzjoni partikolari għal mod tat-tqassim tal-gruppi sabiex dawn ikunu komposti minn abbiltajiet differenti.

Waqt dawn l-attivitajiet l-istudenti jiffamiljarizzaw ruħhom ma' vokabularju relatat mal-kunċetti differenti tal-Kejl, bħal per eżempju:

It-Tul u l-Area	l-istess/ l-itwal / l-iqsar distanza, minn tarf sa tarf, distanza bejn, l-akbar, madwar id-dawra.
Il-Ħin	Il-ħin bl-eżatt, ħa l-anqas ħin.

Inter-Kurrikulari **EDUKAZZJONI FIŻIKA**

- ☐ Avvenimenti sportivi lokali jew internazzjonali (Logħob Olimpiku)
- ☐ Fun day, Family day

Inter-Kurrikulari **ARTI U DIŻINN**

- ☐ Nesploraw l-użu tal-linji
- ☐ Nikkrejaw logos għal tim sportiv

Inter-Kurrikulari **LINGWI**

- ☐ Kitba dwar atleta famuż

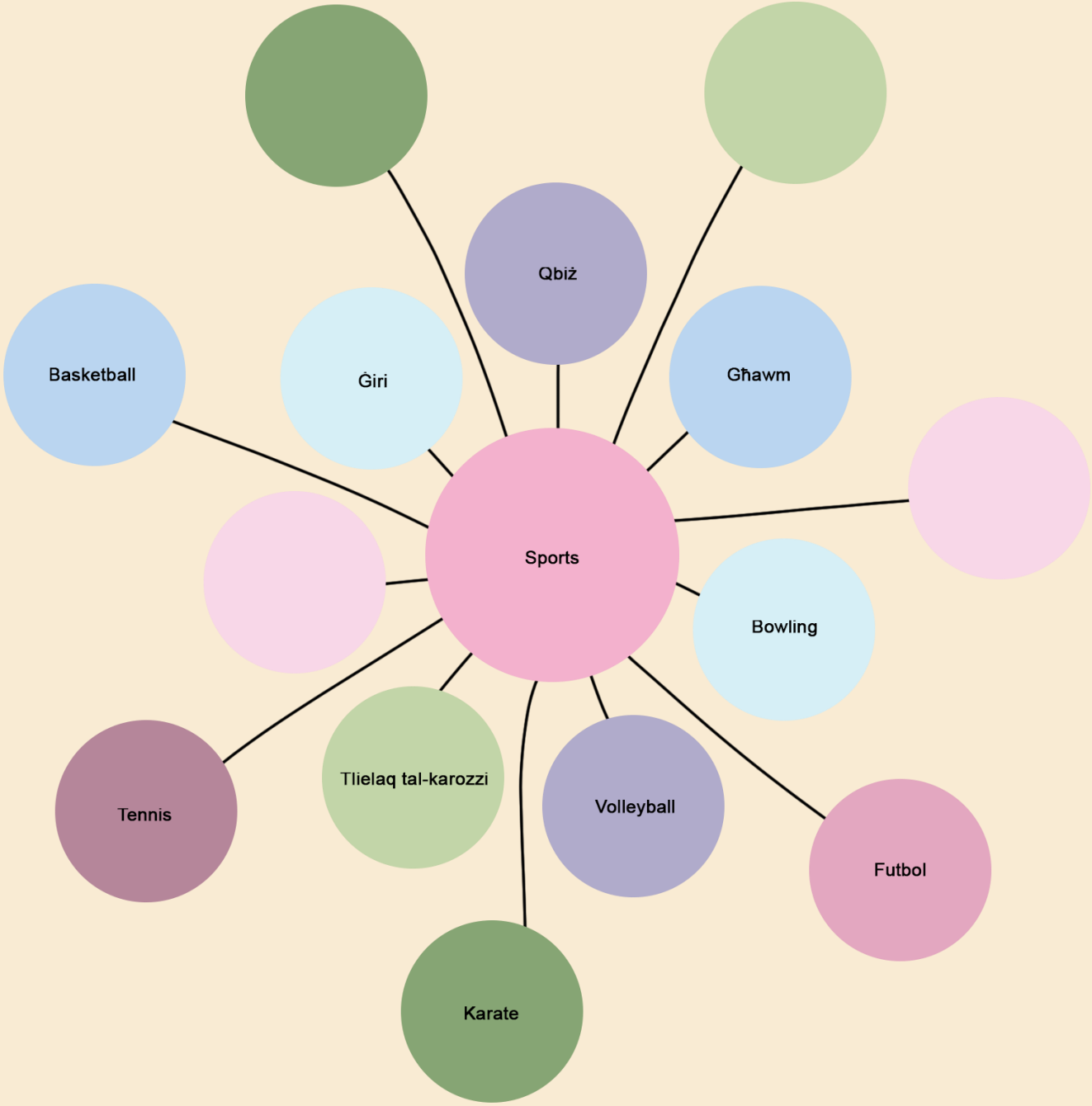
Inter-Kurrikulari **XJENZA**

- ☐ L-importanza li nżommu ruħna attivi (Healthy Lifestyle)

Inter-Kurrikulari **TEKNOLOĠIJA**

- ☐ Preżentazzjoni interattiva dwar atleta famuż jew dixxiplina sportiva

Il-Brimba tal-Ħsieb



Niddiżinjaw Pixxina

RIŻORSI

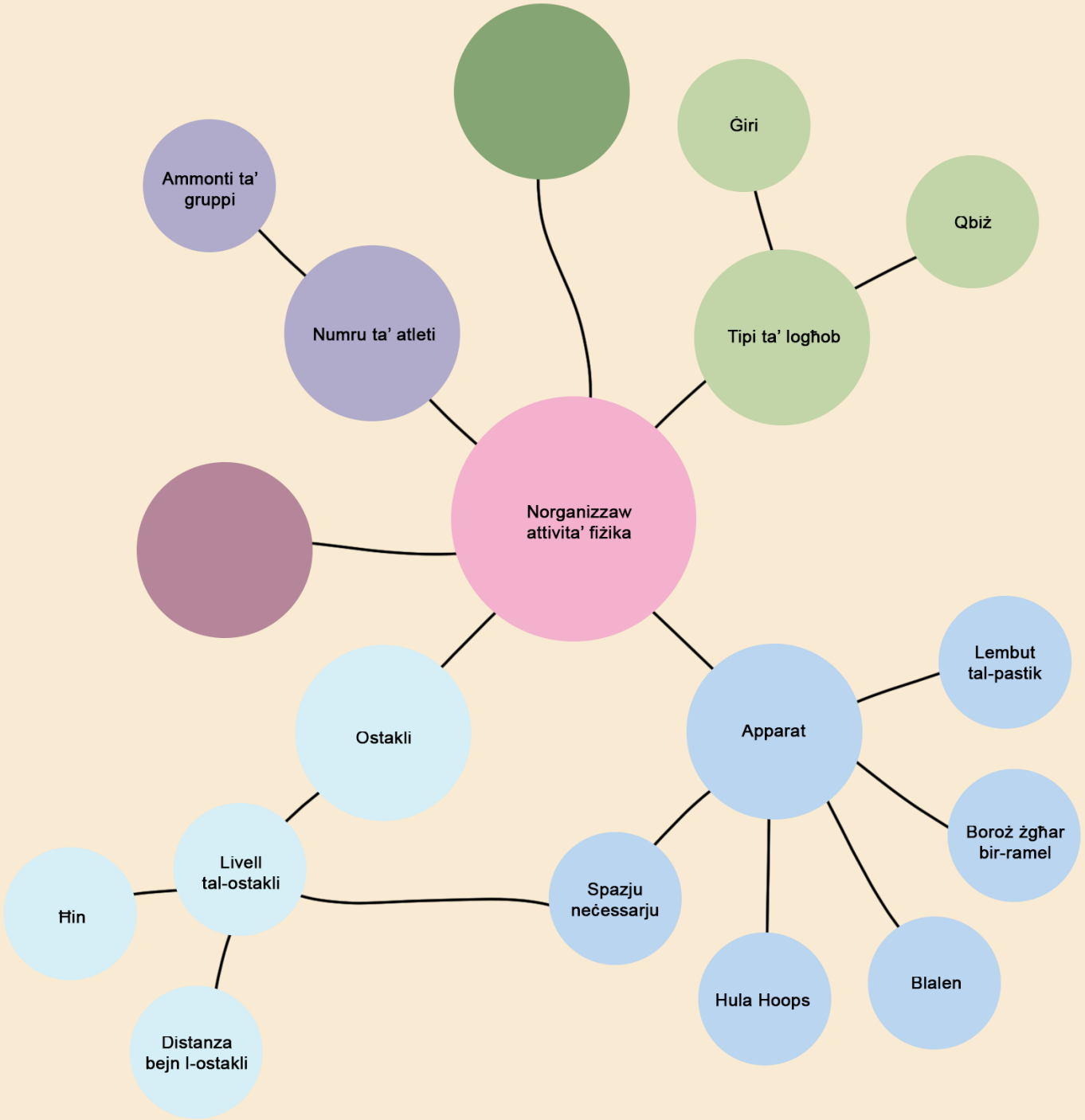
- ☐ Karti bil-kaxxi fuqhom
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....

Din l-attività tista' tiġi relatata mal-attività dwar il-professjoni tal-perit, fejn l-istudenti jkunu mħeġġa jiftakru fix-xogħol li jkun sar waqt dik l-attività. L-istudenti jitqassmu fi gruppi ta' erbgħa, b'kull grupp jingħata karta kollha kaxxi. L-istudenti jintalbu jimmaġinaw li dik il-karta hija biċċa art fejn fuqha ser tiġi mibnija pixxina sabiex tintuża għall-kompetizzjonijiet tal-għawn. L-istudenti jridu jiddiskutu u janalizzaw kif ser jużaw l-ispazju tal-karta bl-aħjar mod sabiex jikkrejaw l-akbar pixxina possibli. L-edukatur jagħti dawn l-istruzzjonijiet biex iservu ta' bażi għall-attività.

1. Il-pixxina jrid ikollha naħa itwal minn oħra.
2. Madwar il-pixxina jrid ikun hemm passaġġ minn fejn ikunu jistgħu jimxu n-nies.
3. L-istudenti jridu jikkalkolaw l-ammont totali ta' kaxxi mad-dawra kollha tal-pixxina.
4. Kull kaxxa ta' ġewwa l-pixxina hija ekwivalenti għal barmil ilma. Għal daqstant, il-gruppi jridu jikkalkolaw l-ammont totali ta' bramel neċessarji biex jimlew il-pixxina tagħhom.
5. It-tim rebbieħ ikun dak il-grupp li jirnexxielu joħloq l-ikbar pixxina. (L-għan ikun sabiex l-istudenti jagħmlu użu tajjeb mill-ispazju provdut mill-karta.)

Għal din l-attività, l-edukatur talloka ħin ta' nofs siegħa u titfa' arloġġ ('timer') fuq il-bord interattiv sabiex l-istudenti jkunu jistgħu jiċċekjaw ta' kemm ikun fadlilhom ħin biex ilestu xogħolhom. Għall-aħħar parti tal-attività, huwa importanti li jkun hemm ħin biżżejjed allokat sabiex kull grupp jippreżenta xogħlu, kif ukoll jispjega kif irnexxielu jiddisinja l-pixxina ibbażat fuq l-istruzzjonijiet tal-edukatur. Il-grupp li jirnexxielu jikkreja l-akbar pixxina, ikun ir-rebbieħ.

Il-Brimba tal-Ħsieb



Norganizzaw Attività Fiżika

RIŻORSI

- ☐ Apparat li jintuża waqt l-lezzjoni tal-Edukazzjoni fiżika bħal hula hoops, blalen, eċċ.
- ☐ Stopwatch
- ☐ Riga żgħira.....
- ☐ Riga tal-metru.....
- ☐ Rutella.....
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....

□ .....

L-istudenti jingħataw l-opportunita' li jorganizzaw / jippjanaw attività għal-lezzjoni tal-Edukazzjoni fiżika jew inkella attività sportiva (sports / fun day), fejn anke jistgħu jkunu mistiedna / involuti l-ġenituri. L-edukatur jipprovdilhom l-apparat neċessarju sabiex tinħoloq l-attività, bl-istudenti jiddeċiedu dwar it-tqassim ta' dan l-apparat fl-ispazju provdut. L-istudenti jkollhom ukoll ir-responsabbilta' li jitqassmu fi gruppi, dan sabiex dejjem inħeġġu u nistimulaw il-ħidma kollettiva bejniethom.

1. Jekk fil-klassi aħna qegħdin _____ student, kif taħsbu li jkun l-aħjar mod biex nitqassmu fi gruppi?

Intom ser tippjanaw attività fiżika bl-ostakli,

Kif taħsbu li għandha tkun id-distanza bejn ostaklu u ieħor? Għala?

1. X'tistgħu tagħmlu biex tkunu ċerti li jkollkom l-istess distanza bejn, per eżempju, bejn hula hoop u ieħor?
2. X'tistgħu tużaw biex jgħinkom tikkalkulaw sew id-distanza bejn l-ostakli?
3. Għalfejn taħsbu li jekk tużaw ____ aħjar milli tużaw __?

Meta grupp ta' atleti jikkompetu fil-ġiri, jinżamm il-ħin li jkunu ħadu biex ġrew minn tarf sa tarf. Intom ser torganizzaw tiġrija bejn il-ġenituri.

1. Kif ser tagħmlu biex iżżommu l-ħin bl-eżatt?
2. X'ser tużaw biex issibu l-ħin?
3. F'liema mument tgħafsuh biex jibda jimmarka? U f'liema waqt twaqqfuh?
4. Jekk tagħfsu l-arloġġ wara li l-parteċipanti jkunu diġa' telqu jiġru, taħsbu li l-ħin li tkunu qed tieħdu xorta jkun tajjeb? Għalfejn?
5. Kif jgħin il-ħin sabiex tkunu tafu min rebaħ?

Parti mill-kompetizzjoni tinvolvi lill-parteċipanti jiġru distanza żgħira u wara jaqbżu fir-ramel.

1. Kif ser tagħmlu biex tkunu tafu d-distanza li kull parteċipant ikun qabeż?
2. Għalfejn iddeċidejtu li tużaw _____ milli _____?

3. X’taħsbu li jiġri jekk tużaw _____? Xorta l-istess distanza ser issibu? Għalfejn?
4. Kif ser tiddeċiedu min rebaħ?

Għandkom l-għażla li tużaw kemm ir-riga kif ukoll il-passi tas-saqajn biex titkejjel id-distanza. Għal parteċipant A ser tkejlu d-distanza permezz ta’ riga twila u għal parteċipant B ser tkejlu d-distanza bil-passi ta’ saqajkom.

1. Taħsbu li xorta tkunu tistgħu tikkalkulaw min qabeż l-itwal distanza? Għalfejn taħsbu hekk?
2. X’tistgħu tagħmlu biex tikkumparaw iż-żewġ qisien?
3. Liema minn dawn il-metodi ta’ Kejl taħseb li hu l-aktar effiċjenti? Għalfejn taħseb hekk? (Hawnhekk jaf tkun meħtieġa aktar għajnuna. L-edukatur jista’ jgħin lill-istudenti billi jifrex aktar id-definizzjoni ta’ effiċjenti- jieħu anqas ħin u jagħti informazzjoni aktar preċiża.)
4. Meta jkollkom it-tul tal-qabża tal-parteċipanti kollha, kif ħa tiddeċiedu min hu r-rebbieħ?

Noti

7

Ċelebrazzjonijiet Reliġjużi

L-Għan tal-Attività

Dawn l-attivitajiet huma maħsuba sabiex ikunu jistgħu jinkludu studenti li jħaddnu reliġjonijiet differenti, biex b'hekk l-istudenti japprezzaw id-diversità reliġjuża ta' bejniethom kif ukoll jirrealizzaw li kull reliġjon tiċċelebra l-festi tagħha. L-istudenti jingħataw l-opportunità sabiex jaqsmu bejniethom tagħrif dwar ir-reliġjon tagħhom u jitgħallmu kif il-festi reliġjużi jaħbtu f'sekwenza skont ix-xhur. Din l-attività toffri l-opportunità lill-istudenti sabiex jistaqsu u jiskopru aktar dwar tradizzjonijiet li jħaddnu reliġjonijijet u kulturi differenti.

Attività bħal din tolqot aspetti importanti fejn mhux biss tgħin biex l-istudenti isiru jafu aktar dwar xulxin, imma eventwalment twassal sabiex tkompli titkattar u tissaħħaħ l-armonija fil-klassi.

Waqt din l-attività l-istudenti jiffamiljarizzaw ruħhom ma' vokabularju relatat mal-kunċetti differenti tal-Kejl, bħal per eżempju:

It-Tul u l-Area	iktar, twil, bogħod, qasir, tkejlu, iqsar, l-istess tul, l-istess distanza, żgħar, kbar, qies.
Il-Kapaċità u l-Ispazju	daqs

Inter-Kurrikulari **RELIĠJON**

- ☐ Reliġjonijiet differenti

Inter-Kurrikulari **PSCD / NURTURE GROUP / ETIKA**

- ☐ Inklużjoni u diversità

Inter-Kurrikulari **STORJA TA' MALTA**

- ☐ Kultura u Tradizzjonijiet Maltin

Inter-Kurrikulari **LINGWI**

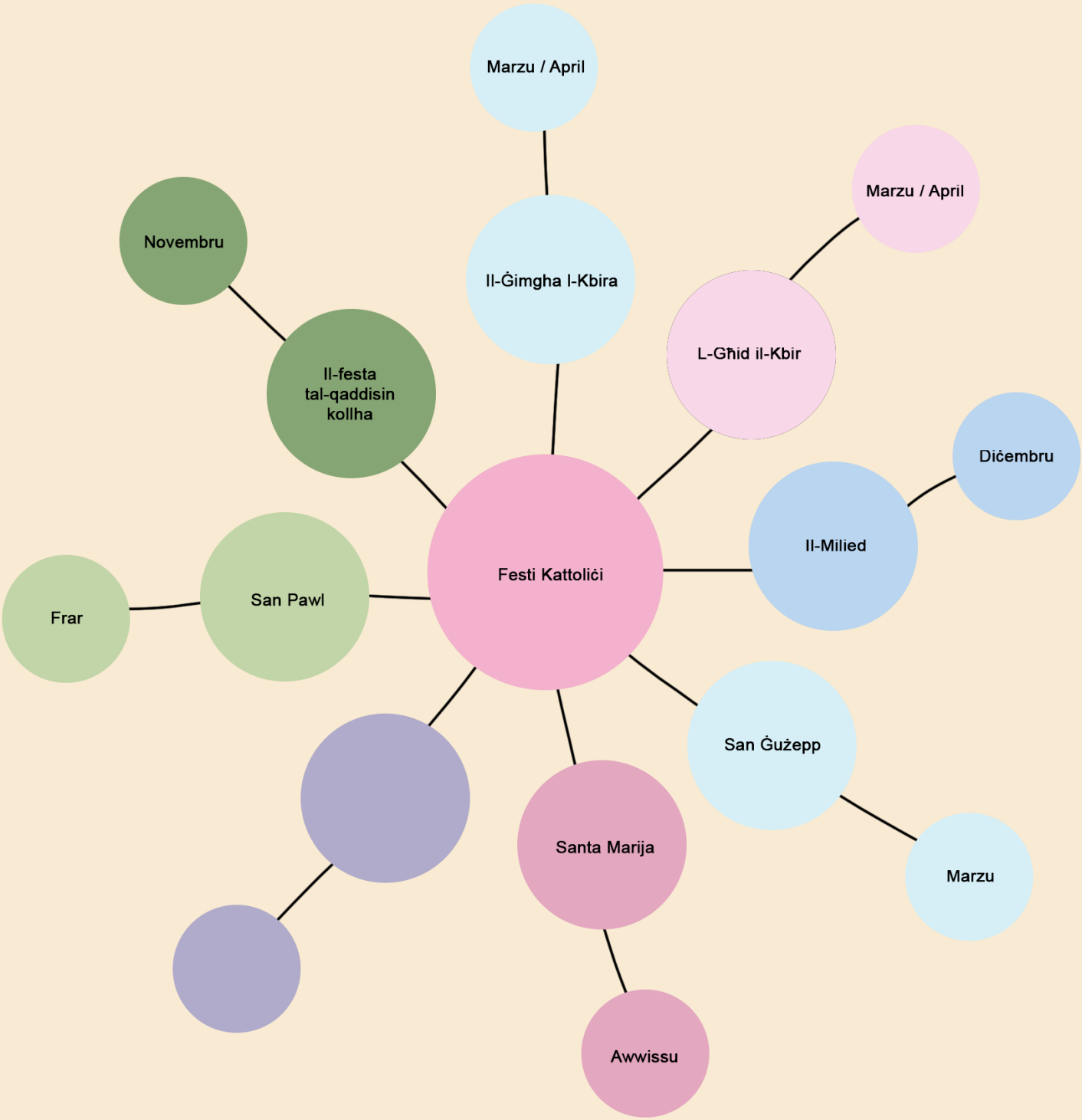
- ☐ Kitba Kreattiva – nikkrejaw avviż promozzjonali għall-festival / festa

Inter-Kurrikulari **TEKNOLOĠIJA**

- ☐ Preżentazzjoni interattiva dwar festival / festa reliġjuża

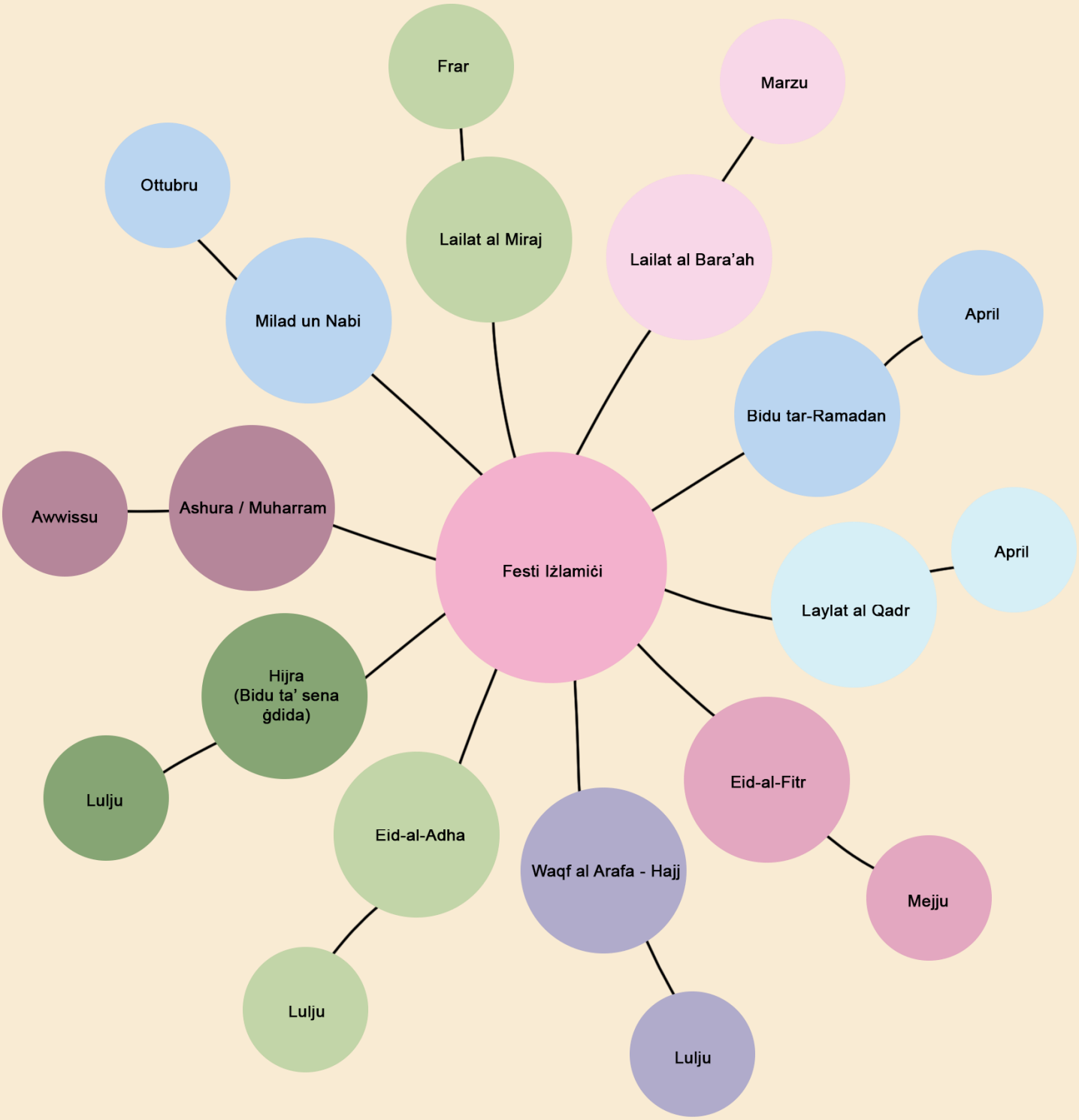
Il-Brimba tal-Ħsieb

Festi Kattoliċi

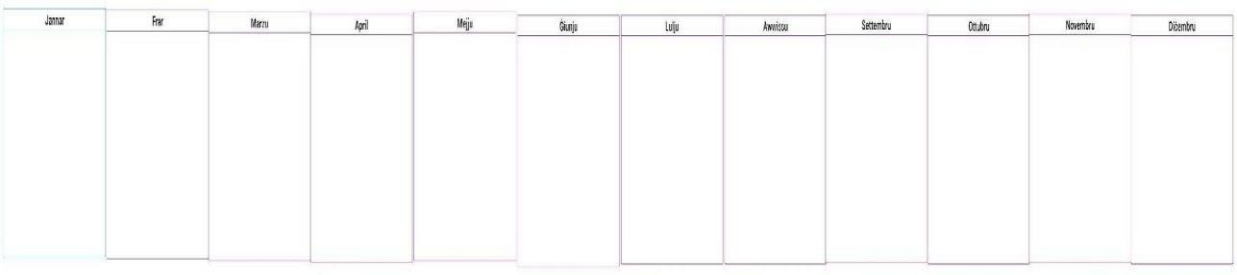


Il-Brimba tal-Ħsieb

Festivals Iżamiċi



Niċċelebraw skont il-linja taż-żmien (*timeline*)



RIŻORSI

- ☐ Linja taż-żmien (*timeline*)
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....
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- ☐ .....
- ☐ .....
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- ☐ .....

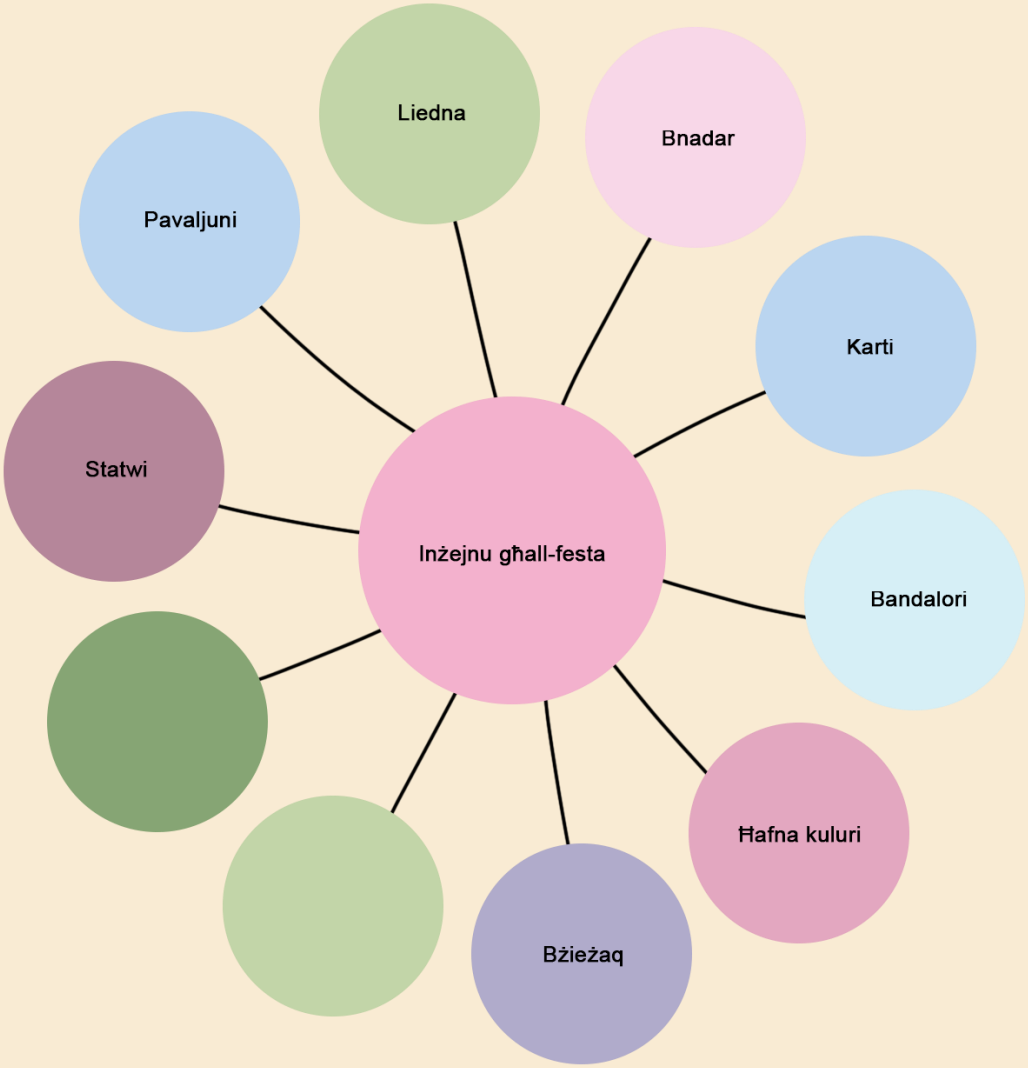
It-topik dwar iċ-ċelebrazzjonijiet reliġjużi jiġi indirizzat billi l-edukatur tistaqsi lill-istudenti jsemmu l-festi / festivals li jiġu iċċelebrati matul is-sena. Dawn jinkitbu kollha (mingħajr ebda ordni partikolari) fuq il-bord interattiv. Wara, l-istudenti jkunu mħeġġa sabiex jindikaw ix-xahar li fih taħbat kull festa li ssemmiet. L-edukatur tipprovdi linja taż-żmien (timeline) lill-istudenti sabiex iniżżlu l-festi / festivals skont ix-xahar li jiġu iċċelebrati. F'każ illi jkun hemm studenti minn reliġjonijiet differenti, l-edukatur tista' tagħżel li taqsam il-klassi fi gruppi, skont ir-reliġjon mħaddan, biex b'hekk ikunu jistgħu jgħinu u jaħdmu flimkien.)

L-istudenti jkunu mħeġġa sabiex iniżżlu kemm l-isem tal-festa / festival kif ukoll, jiktbu jew ipenġu, xi ħaġa li simbolikament tirrelata magħhom.

Meta l-istudenti jkunu lestew mil-lista li tkun inbniet fl-introduzzjoni tal-attività, huma jkunu mħeġġa li jsemmu xi festi / festivals oħra, bħal per eżempju l-festa tar-raħal tagħhom, u jżiduha fuq il-linja taż-żmien.

Fl-aħħar tal-attività, l-istudenti jingħataw l-opportunita' sabiex jesibixxu xogħolhom u jitkellmu dwar il-festi li jkunu żiedu mal-lista oriġinali. Hawnhekk l-edukatur tistieden lill-istudenti sabiex isaqsu lil sħabhom (partikolarment dawk li ġejjin minn reliġjonijiet u kulturi differenti), dwar dawk iċ-ċelebrazzjonijiet li ftit jew xejn jafu dwarhom. Bħala rinforzament ta' din l-attività, tkun idea tajba kieku l-edukatur jirnexxielha tħajjar xi qraba ta' dawn l-istudenti, jiġu fil-klassi u jagħtu preżentazzjoni sempliċi dwar ir-reliġjon, kultura u tradizzjonijiet tagħhom.

Il-Brimba tal-Ħsieb



Inżejnu għall-Festa / Festival

RIŻORSI

- ☐ Stampi relatati mal-festi / festivals
- ☐ Ħabel
- ☐ Boroż
- ☐ Stampa ta’ fustun
- ☐ Stampa ta’ pavaljun
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....

Din l-attività tista' tkun integrata kemm mat-topik relatat maċ-ċelebrazzjonijiet reliġjużi kif ukoll mat-tradizzjonijiet tal-pajjiżi. Hawnhekk l-istudenti jiġu ippreżentati b'sitwazzjonijiet fejn huma jridu jimmaġinaw u jiddiskutu bir-reqqa.

Tajjeb illi fl-introduzzjoni jintwerew vidjow jew stampi ta' tiżjin li tradizzjonalment huwa relatat mal-festi Maltin jew skont l-oriġini tal-istudenti barranin. Dan ikun ta' benefiċċju kbir għall-istudenti kollha sabiex jgħinhom u jistimulalhom, kemm l-immaġinazzjoni, kif ukoll r-raġunar għas-sitwazzjoni li jkollhom quddiemhom. Waqt din l-attività, kemm il-ħsieb kritiku kif ukoll dak kreattiv, ser ikunu qed jilagħbu parti importanti sabiex l-istudenti jaslu janalizzaw sew is-sitwazzjoni u jirrispondu bl-aħjar mod.

Waslet il-festa tar-raħal tagħkom / festival u tixtiequ iżżejnu d-dar tagħkom għall-okkażżjoni.

1. Tistgħu ssemmu xi affarijiet li tistgħu tagħmlu intom jew tixtru sabiex tkunu tistgħu żżejnu d-dar?

Il-kuluri huma sbieħ ħafna. Il-bżieżaq ikkuluriti jsebbħu l-ambjent. Hawn bżiezaq kbar u oħrajn żgħar.

1. Għal liema tip ta' bżieżaq taħsbu li tridu tħallsu iktar flus?
2. Il-kamra fejn biħsiebkom li tarmaw ma tantx hija kbira, pero' xorta tixtiequ li jkollkom ħafna bżieżaq. Liema daqs ta' bżiezaq taħsbu li jaqblilkom tixtru? Għalfejn taħsbu li aħjar tixtru …….milli…….?
3. Liema daqs ta' bżieżaq taħsbu li joħdilkom iktar ħin biex tonfħuhom? Għalfejn taħsbu hekk?

Hawn Malta nsibu ħafna bjut li fuqhom ikun hemm xi arblu twil b'xi bandiera kbira tperper. In-nies ikunu jixtiequ li l-arbli tagħhom jidhru minn ħafna bogħod.

1. Tagħmel differenza jekk l-arblu jkunx qasir jew twil? Għalfejn taħsbu hekk?
2. Allura l-arblu, x'tul l-aħjar li jkun?

Immaġinaw li għandkom bżonn tkejlu l-arblu.

1. Kif l-aħjar li jkun l-arblu sabiex tkunu tistgħu tkejluh sew, wieqaf jew mindud? Għalfejn?
2. Taħsbu li tagħmel differenza fit-tul, jekk ikunx wieqaf jew mindud? Għalfejn?

Ħafna nies iħobbu jdendlu ħabel bil-bozoz mal-arblu, dak li nsejħulu fustun.

1. Jekk l-arblu ikun twil ħafna, it-tul tal-ħabel kif irid ikun? (F'każ li l-istudenti jsibuha diffiċli biex jirraġunawha, l-edukatur tista' tgħin billi tkompli ssaqsi:- Itwal, iqsar jew l-istess tul tal-arblu?) Għalfejn itwal / iqsar / l-istess tul?)
2. X'jiġri jekk l-arblu jkun twil, imma l-ħabel ikun ħafna iqsar?
3. Jekk tixtiequ twaħħlu ħafna bozoz mal-fustun, imma l-ħabel ma tantx hu twil? X'tistgħu tagħmlu? (Hawnhekk tkun idea tajba li l-edukatur turi l-ħabel u l-bozoz lill-istudenti sabiex tgħinhom fit-tqanqil tal-ħsieb kritiku tagħhom.)
4. Tistgħu ssemmgħu mod ta' kif tistgħu twaħħlu l-bozoz b'tali mod li jkun hemm l-istess distanza bejn bozza u oħra? Għala?

(Ir-raba' mistoqsija tista' sservi bħala spunt biex tinħoloq diskussjoni fil-klassi. L-edukatur tistaqsi lill-istudenti jagħtu ġustifikazzjoni għala l-mod li ħasbu fih huma huwa l-iktar wieħed effiċjenti minn dawk kollha li ssemmew fil-klassi.)

Bnadar insibu f'daqsijiet differenti: żgħar u kbar.

(L-edukatur hawn tispjega li bnadar jaf ikunu kbar ħafna. Hawnhekk tgħinhom billi tikkumpara d-daqs ta' bandiera mad-daqs ta' kamra. Hawnhekk tħeġġiġhom iħarsu madwarhom sabiex tgħinhom jirrealizzaw dwar il-kobor li qed jitkellmu dwaru.)

1. Intom liema taħsbu li jkun l-aħjar daqs ta' bandiera biex din tittella' fuq il-bejt? (Jekk l-istudenti jsibuha diffiċli biex jirrispondu, l-edukatur tgħin billi iżżid din il-mistoqsija:- Bandiera żgħira jew waħda kbira daqs din il-kamra?)
2. Għalfejn qed tgħidu li aħjar ..... milli .....? Mhux xorta bandiera?

Insibu ukoll tiżjin ieħor bħal pavaljuni li jiddendlu mal-faċċati tad-djar. Ħafna minn dawn il-pavaljuni nsibuhom mdendlin mal-gallariji.

1. Liema qies taħsbu li hemm bżonn li tkunu tafu qabel ma jinxtara d-drapp?
2. Kif tistgħu ssibuh dan il-qies?

3. X’għodda taħsbu li għandkom tużaw?
4. Tistgħu tużaw ir-riga li għandkom fuq il-mejda? Għala iva / le?
5. Kemm aħsbu li jkollna bżonn drapp? Għala taħsbu hekk?

Noti

8

L-Istaġuni

L-Għan tal-Attività

L-istudenti jingħataw l-opportunità sabiex, b'mod viżiv, jirrealizzaw kif l-istaġuni huma mqassmin matul is-sena. Il-proċess jitkompla billi jiġu maħluqa attivitajiet bħal 'Norganizzaw Barbikju'. Attività bħal din toffri eżempju ta' kif staġun jista' jittieħed bħala spunt fejn jistgħu jiġu integrati kunċetti matematiċi, b'tali mod li l-istudenti faċilment jirrelataw magħhom.

Matul dawn l-attivitajiet, l-istudenti ser ikunu qed jiltaqgħu mal-kunċetti tal-Kejl bħal:-

Il-Ħin	Ġurnata, siegħat, perjodi, staġuni, dati, sena, kalendarju, linja ta' żmien.
Il-Kapaċità u l-Ispazju	Ta' daqs żgħir / kbir / differenti, jesa', litri, fondi.
Il-Massa	Tqal, l-itqal, kilo, nofs kilo.
It-Tul u l-Area	Itwal / tawwalija, qasira / qosra.

Inter-Kurrikulari ĠEOGRAFIJA

- ☐ L-istaġuni

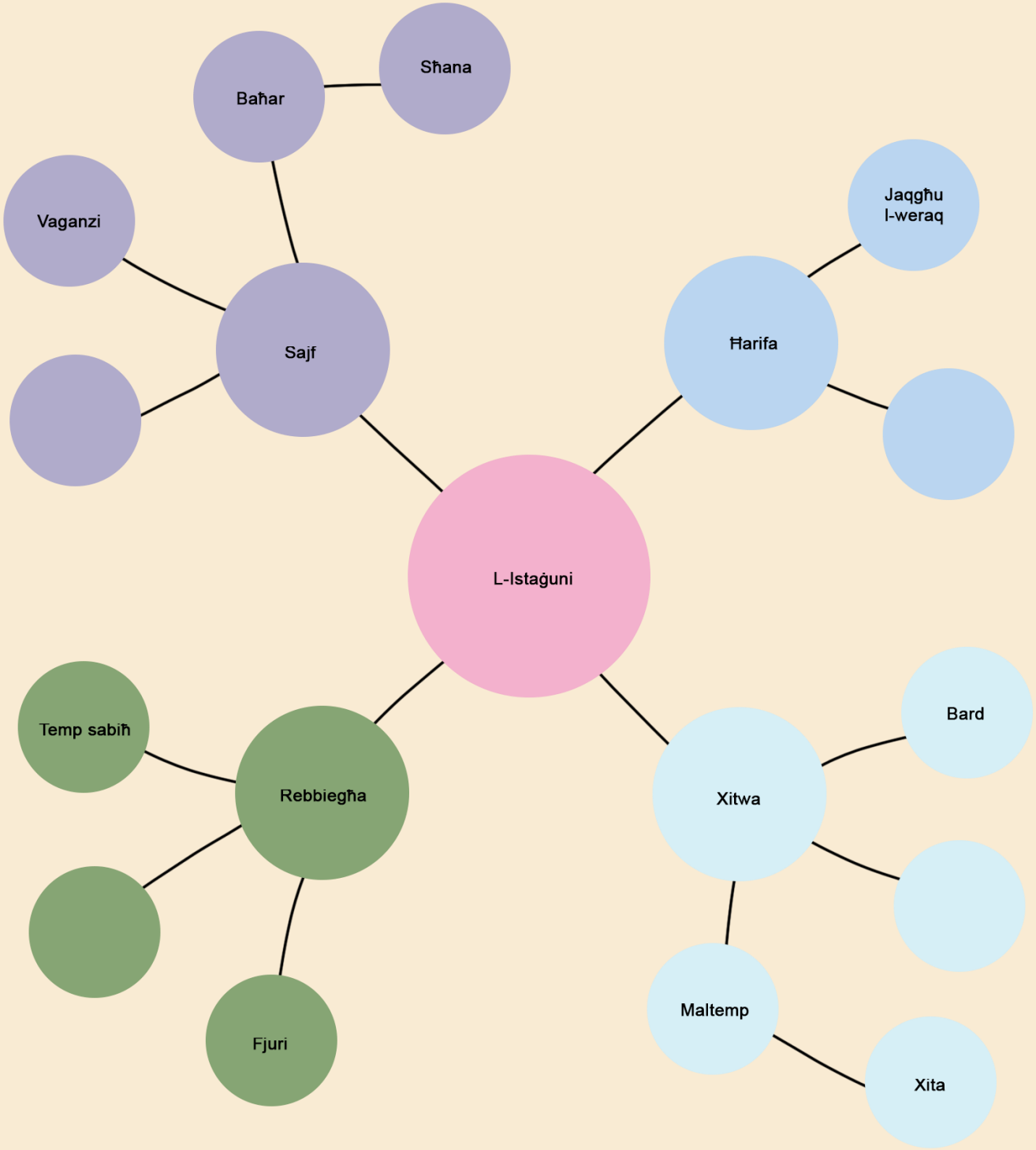
Inter-Kurrikulari LINGWI

- ☐ Kitba Kreattiva – It-temp
- ☐ Kitba Kreattiva – niktbu dwar ordni ta’ proċess

Inter-Kurrikulari XJENZA

- ☐ Tibdil fit-temp
- ☐ L-ikel tajjeb għal saħħitna
- ☐ Is-Sistema Solari

Il-Brimba tal-Ħsieb



L-Istaġuni tul is-Sena

RIŻORSI

- ☐ Kalendarju fil-format ta’ linja taż-żmien (timeline)
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....

(L-edukatur tippreżenta kalendarju f'format ta' linja taż-żmien (timeline) lill-istudenti.)

Semmejna li hemm 4 staġuni, li huma ... (Hawnhekk l-edukatur timmotiva lill-istudenti sabiex isemmu l-istaġuni huma. Fl-istess waqt isservi bħala reviżjoni ta' topik dwar l-istaġuni li jkunu ltaqgħu miegħu waqt il-lezzjonijiet tal-Ġeografija.)

(L-edukatur, bl-għajnuna tal-istudenti, tikteb fuq il-bord interattiv id-dati tal-bidu u t-tmiem tal-istaġuni. Tkompli billi tagħti dettalji tal-attività.)

1. Fuq il-linja taż-żmien, użaw kulur differenti sabiex turu l-bidu u t-tmiem ta' kull staġun. (Dan il-mod jgħin lill-istudenti joħolqu stampa aktar ċara ta' kif is-sena hija mqassma fl-istaġuni.)
2. Milli qed tosservaw, x'tistgħu tgħidu dwar il-perjodi tal-istaġuni?
3. Kieku kelli ngħidilkom issemmu l-istaġuni billi tibdew mill-aktar wieħed sħun u tispiċċaw fl-aktar wieħed kiesaħ, kif tkun il-lista? (Il-lista tinkieteb fuq il-bord.)
4. Jekk issa nistaqsikom, tagħmlu lista tal-istaġuni billi tibdew minn dak l-istaġun fejn tagħmel l-inqas xita u tispiċċaw b' dak l-istaġun li tagħmel l-aktar xita. Kif tkun? (Il-lista tinkieteb fuq il-bord.)
5. Ħarsu lejn iż-żewġ listi. X'qed tinnotaw?

Fix-xitwa malajr jidlam. Inħossu l-bard u nieħdu gost nidħlu kmieni fis-sodda għas-sħana tal-kutri. Min-naħa l-oħra, fis-sajf indumu ma norqdu, hux vera?

1. Għalfejn taħsbu jiġri dan?
2. Fakkruni daqsxejn, kemm hemm siegħat f'ġurnata?

Qegħdin tgħidu li f' ____il-ġurnata hija itwal milli f' _____.

1. X'taħsbu li jkun ġara? (Din il-mistoqsija hija intenzjonata sabiex tkompli tkabbar it-tagħlim tat-tfal billi jiġi integrat tagħrif xjentifiku dwar is-Sistema Solari.)

Il-Brimba tal-Ħsieb

Norganizzaw Barbikju

RIŻORSI

- ☐ Kalendarju
- ☐ Djarju
- ☐ Kontenitur kbir u ieħor żgħir
- ☐ Pakkett stikek bil-laħam (kebabs)
- ☐ Patata
- ☐ Tazzi żgħar, tazzi qosra u oħrajn twal
- ☐ Flixkun ilma ta’ 2 litri
- ☐ Stampi ta’ 3 ċilindri ta’ daqs differenti
- ☐ 2 Pakketti tal-għaġin:- wieħed ta’ nofs kilo u ieħor ta’ kilo
- ☐ Platt tond u fond u ieħor ċatt u tawwali
- ☐ Imgħarfa
- ☐ Kuċċarun
- ☐ Stikek tal-injam: twal u oħrajn qosra

L-edukatur tibda din l-attività billi tistaqsi lit-tfal kif iqattgħu s-sajf. Hekk kif jissemma' l-Barkiju, l-edukatur tieħu l-ispun li ssemmi kemm il-Maltin iħobbu jorganizzaw barbikjus, fejn il-familji u l-ħbieb jiltaqgħu, jsajru, jieklu u jieħdu gost flimkien.

1. Tistgħu ssemmu f'liema parti tal-ġurnata normalment jiġi organizzat barbikju?
2. Fil-ħin li semmejtu intom, kif tkun is-sema?

Tkompli billi tgħid li issa ser jimmaġanaw li huma bħala familja ddeċidew li jorganizzaw barbikju.

1. Biex taħsbu li tridu tibdew il-pjan tagħkom?
2. Liema hi dik l-informazzjoni li għandkom bżonn tkunu tafu biex tibnu l-lista tal-affarijiet li tridu tixtru?
3. X'taħsbu li huma dawk id-dettalji importanti li l-mistiedna għandhom bżonn ikunu jafu sabiex jiċċekjaw jekk għandhomx xi ħaġa oħra ppjanata għal dik il-ġurnata?
4. Fejn taħsbu li jistgħu jiċċekjaw? (Hawnhekk l-edukatur tkompli tistimula l-ħsieb tal-istudenti sakemm jaslu għall-kelma 'kalendarju')
5. X'informazzjoni nsibu fuq il-kalendarju?
6. Dan kull sena jibqa' l-istess? Għalfejn iva / le?

Jekk ħa tkunu 20 persuna;

1. X'tip ta' post l-aħjar ikun sabiex toqogħdu kollha?
2. Għalfejn taħsbu li_____huwa l-post ideali għall-barbekju tagħkom?
3. X'jiġri jekk tagħżlu post fil-magħluq li jkun pjuttost ta' daqs żgħir?
4. Għalfejn taħsbu li tajjeb / mhux tajjeb għall-barbekju li qed torganizzaw?

Iddeċidejtu li tagħmluh _____. Ser tieħdu l-imwejjed magħkom imma peress li huma ftit tqal u goffi, hemm bżonn tiddeċiedu n-numru ta' mwejjed li tridu tieħdu, ħalli kulħadd ikun komdu. Xi ħadd mill-familja issuġġerixxa li madwar kull mejda joqogħdu 4 persuni.

1. Kemm taħsbu li hemm bżonn mwejjed biex joqogħdu 20 persuna madwarhom?

(Hawnhekk l-edukatur tista' tħeġġeġ lill-istudenti sabiex joħorġu l-bords iż-żgħar u jpenġu l-imwejjed bin-nies madwarhom.)

1. Kif qassamtuhom in-nies fuq l-imwejjed?

2. Kull mejda ser ikollha l-istess ammont ta’ nies?
3. Kif irnexxilkom taslu għal din id-deċiżjoni?

L-ikel ser toħduh ġewwa kontenituri differenti sabiex hekk jibqa’ frisk. (L-edukatur tesibixxi kontenitur żgħir u ieħor ta’ daqs ikbar.)

1. Liema kontenitur minn dawn taħsbu li jesa' l-iktar ammont ta' ikel? Għalfejn taħsbu hekk?

Għandkom dan il-pakkett bi stikek tal-laħam (kebabs).

Hawnhekk l-edukatur tieħu spunt sabiex titkellem ftit dwar kemm hu importanti li nfittxu ikel tajjeb għal saħħitna. Tħeġġeġ lill-istudenti sabiex jagħżlu ikel frisk milli dak ipproċessat. L-attività titkompla bl-edukatur turi l-pakkett tal-istikek bil-laħam sabiex l-istudenti jkunu jistgħu jirrelataw mal-mistoqsijiet.

1. Kemm taħsbu li jesa’ stikek tal-laħam il-kontenitur iż-żgħir?
2. U x’taħsbu dwar kemm jesa’ l-kontenitur il-kbir?
3. Ejja niċċekjaw l-istimi tagħkom billi npoġġu l-istikek fil-kontenituri. (L-istudenti jingħataw l-opportunità li jiftħu l-pakkett u jikkalkulaw bl-eżatt kemm joqogħdu stikek tal-laħam f’kull kontenitur.)
4. Issa li sibna kemm joqpgħdu stikek tal-laħam bl-eżatt f’kull kontenitur, tistgħu tqabbluh mal-istima tagħkom?
5. Ikkumparaw il-figuri. X’tafu tgħidu dwar id-differenza fin-numri? (Jekk l-istudenti jsibuha diffiċli biex jiddeskrivu d-differenza, l-edukatur tista’ tgħin billi żżid:- Kontu viċin li kważi qtajtu l-ammont eżatt jew kontu ‘l bogħod?)
6. X’irridu nagħmlu biex nikkalkolaw id-differenza bejn il-figuri?

Tħobbu tieklu tajjeb u b’hekk tagħmlu ħafna insalata; kemm tal-ħaxix u anke tal-għaġin. Il-mamà talbitkom sabiex tieħdu ħsieb tagħmlu l-insalata tal-patata. Fil-kontenitur iż-żgħir joqogħdu 4 patatiet. Fil-kontenitur il-kbir joqogħdu 10 patatiet. Aħna għandna bżonn 20 patata. Il-mamà avżatkom biex kemm jista’ jkun ma taqilgħux ħafna affarijiet għax inkella jkollkom iġġorru ħafna affarijiet. (Għal darboħra, jkun issuġġerit sabiex l-edukatur juri l-oġġetti u l-ikel imsemmi sabiex jservi ta’ għajnuna lill-istudenti.)

1. Liema taħsbu minn dawn il-kontenituri huwa l-aħjar li tużaw?

2. Għala jaqblilkom tużaw _____ milli _____?
3. Taħsbu li kontenitur wieħed huwa biżżejjed biex joqogħdu l-patata kollha li għandna bżonn?
4. Ejja niskopru flimkien.
5. Issa li skoprejna l-ammont eżatt, x'tafu tgħidu dwar l-istimi tagħkom?
6. Għalfejn taħsbu li ġrat din id-differenza kbira / żgħira?

L-għaġin kulħadd iħobbu u b'hekk iddeċidejtu li tagħmlu ammont mhux ħażin għax żgur jittiekel kollu. Hawnhekk għandkom żewġ pakketti differenti. (F'dan il-punt l-edukatur juri pakkett tal-għaġin tan-nofs kilo u ieħor tal-kilo)

1. Liema jaqblilkom tużaw?
2. Għalfejn? Mhux xorta għaġin?

Fis-sajf inħossu ħafna sħana u jaqbadna ħafna għatx. Magħkom ser tieħdu l-ilma u b'hekk tridu tieħdu t-tazzi . Ser ikollkom żewġ tipi ta' tazzi, kemm qosra u oħrajn itwal. (Għal darboħra jkun issuġġerit illi l-edukatur turi t-tazzi lill-istudenti.)

1. Taħsbu li hemm differenza bejn tixrob f'tazza żgħira u qasira milli f'oħra aktar tawwalija? Għala?

Magħkom iddeċidejtu li tieħdu fliexken kbar tal-ilma.

(L-edukatur toħroġ flixkun tal-ilma.)

Dan il-flixkun fih 2 litri ilma.

1. Kemm-il tazza taħsbu li tistgħu timlew mit-tazzi ż-żgħar u kemm mit-tazzi l-kbar? (Hawnhekk l-edukatur tagħti struzzjoni sabiex l-ewwel jitniżżlu l-istimi fuq il-bord iż-żgħir u wara jiskopru flimkien.)
2. Issa li nafu l-ammonti, hemm differenza kbira jew żgħira l-istimi tagħkom, u dawk li skoprejna?
3. X'taħsbu li wassal biex ikun hemm din id-differenza kbira / żgħira?

Intom għandkom barbikju ta' daqs żgħir imma z-zija għandha barbikju vera kbir.

1. Liema jaqblilkom li tużaw, tagħkom jew taz-zija?
2. Mhux xorta jsir l-ikel fil-kbir / żgħir! Għalfejn jaqbillek tuża _____?

Peress li l-barbikju ser isir filgħaxija ma xtaqtux tieklu tard ħafna.

1. Għalfejn taħsbu li huwa ħażin li tiekol tard ħafna filgħaxija?
2. F'liema barbikju taħsbu li jieħu anqas ħin biex isir l-ikel? Għalfejn taħsbu hekk?

Il-barbikju jaħdem bil-gass.

1. Liema minn dawn iċ-ċilindri taħsbu li huwa l-itqal? Għala?

(Hawnhekk l-edukatur ser juri stampi ta' tliet ċilindri ta' daqs differenti.)

Kull membru tal-familja ser ikollu patata, għaġin, biċċa laħam u ftit ħaxix fil-platt tiegħu/a.

1. X'taħsbu li jkun l-aħjar tip ta' platti li nużaw? Dawk tondi u fondi jew inkella ċatti u tawwalin? (L-edukatur juri eżempji tanġibli tal-platti sabiex jgħin lill-istudenti waqt id-diskussjoni ta' bejniethom. Hawnhekk l-edukatur tkun qegħda twessa l-vokabularju tat-tfal, billi tagħmel emfasi fuq l-aġġettivi li qed tuża biex tiddeskrivi l-platti.)
2. Fi tnejn li huma joqgħod l-ikel li semmejna, mela għalfejn taħsbu li aħjar il-platt ..... milli l-platt .....?

Għalkemm il-ħaxix huwa tajjeb għas-saħħa, mhux kulħadd iħobbu ħafna. Hemm min jieħu ħafna u hemm min jieħu ftit. Għandi din l-imgħarfa u dan il-kuċċarun.

(Għal darboħra, l-edukatur juri dawn l-għodda lill-istudenti.)

1. Liema minn dawn it-tnejn għandkom tużaw, għal min irid ftit ħaxix?
2. Mhux xorta jekk tużaw____flok___? Għalfejn?

Bħala deżerta ser tagħmlu stikek tal-frott. Tgħidx kemm jiġu tajbin u sbieħ! Ser tagħmlu stikek żgħar għat-tfal u stikek kbar għall-adulti.

(L-edukatur juri eżempji tal-istikek lill-istudenti.)

1. Liema minn dawn iż-żewġ tipi ta' stikek tiflaħ iktar ammont ta' frott?
2. Liema taħsbu li għandna nużaw għat-tfal? Għalfejn?

Noti

9

L-Annimali

L-Għan tal-Attività

Attività bħal din tista' tkun faċilment assoċjata ma' interess tat-tfal hekk kif ħafna films jinkludu karattri ta' annimali kif ukoll ma' kampanji ta' għarfien dwar il-kura u l-protezzjoni tal-annimali. Illum il-ġurnata ħafna skejjel saru jorganizzaw 'Pets Awareness Day' kif ukoll jiċċelebraw 'Jum San Franġisk' protettur tal-annimali.

L-istudenti għal darboħra jkunu qed jiġu esposti għal tagħlim fejn jgħinhom jagħrfu xi tfisser li tkun responsabbli għal ħaddieħor, filwaqt li jkomplu jsaħħu l-kunċetti tal-Kejl.

Matul dawn l-attivitajiet, l-istudenti ser ikunu qed jiltaqgħu mal-kunċetti tal-Kejl bħal;

Il-Ħin	kalendarju, xahrejn, xahar, Frar, Ġunju, kuljum, filgħodu, filgħaxija, sitta ta' wara nofsinhar, siegħa u nofs.
It-Tul u l-Area	tal-istess daqs, baxx, għoli, ta' daqs żgħir / kbir.

Inter-Kurrikulari ARTI

- ☐ Diorama – il-post fejn jgħixu l-annimali
- ☐ Mudell bit-tafal tal-annimal favorit
- ☐ Tpinġija ta' diversi annimali biex noħolqu kuntrast bejn annimal ta' daqs żgħir u ta' daqs kbir

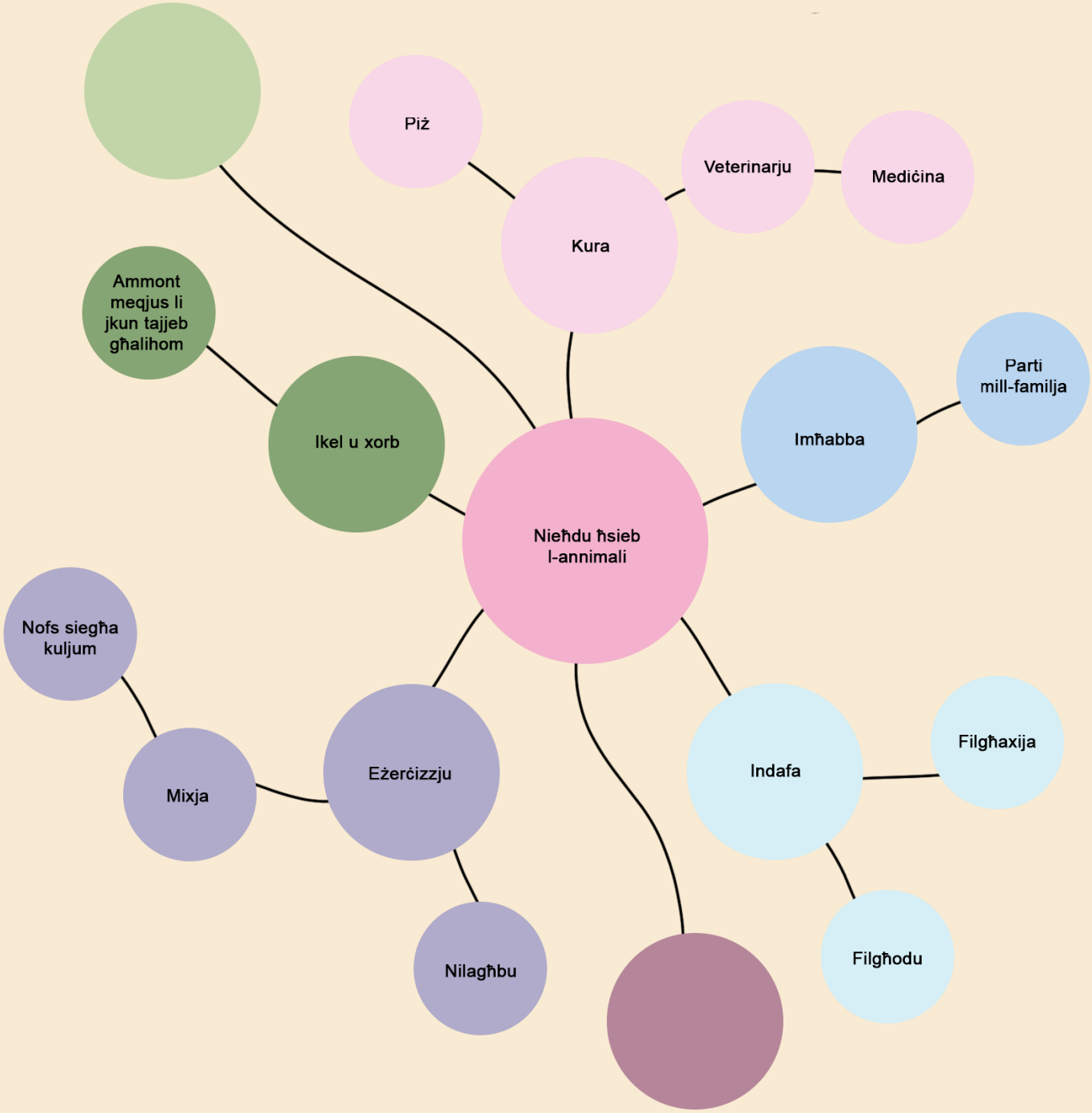
Inter-Kurrikulari LINGWI

- ☐ Riċerka – Niddeskrivu l-annimal favorit (tul, piż, tul ta' ħajja)
- ☐ Fatti nteressanti dwar l-annimali

Inter-Kurrikulari NURTURE GROUP / ETIKA / XJENZA

- ☐ Slowgan dwar il-protezzjoni tal-annimali, kura tal-annimali (il-bżonnijiet bażiċi)

Il-Brimba tal-Ħsieb



Nieħdu ħsieb l-annimali

RIŻORSI

- ☐ Ritratt ta’ kelb żgħir
- ☐ Ritratt ta’ kelb kbir
- ☐ Kalendarju
- ☐ 2 Platti tal-istess daqs
- ☐ 2 fliexken, wisq imdendel fil-baxx u ieħor imdendel aktar fl-għoli
- ☐ Arloġġ
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....

L-edukatur tintroduċi l-attività billi tispjega li meta jkollna l-annimali d-dar ma jfissirx biss li għandna xi ħadd ma' min nilagħbu, imma rridu nieħdu ħsiebhom ukoll. L-annimali, bħalna, iridu jieklu tajjeb u għandhom bżonn lil xi ħadd sabiex jieħu ħsiebhom u jkunu ċerti li qed jikbru b'saħħithom. L-annimali ukoll għandhom bżonn lit-tabib tagħhom, dak li nirreferu għalih/a bħala veterinarju. Emfasi tingħata fuq ir-rwol tal-veterinarju, billi l-edukatur tispjega li l-veterinarju jassigurana li l-annimal tagħna qed jikber tajjeb u jagħtih il-kura li jkollu bżonn meta jkun ma jiflaħx.

Jien inħobb ħafna l-klieb u għandi tnejn, wieħed ta' daqs żgħir li jismu Żepp u ieħor ftit kbir, li semmejtu Ċisju.

(L-edukatur juri r-ritratti tal-klieb.)

1. Taħsbu li hemm xi differenza bejn trabbi kelb kbir u ieħor żgħir?
2. X'inhuma?
3. Imma taħsbu li hemm affarijiet li huma simili / l-istess? (L-intenzjoni ta' din il-mistoqsija hija li t-tfal jirrealizzaw li d-daqs jew it-tip ta' annimal huwa irrelevanti għax kull ħlejqa għandha l-istess bżonnijiet bażiċi.)

Meta kienu għadhom ġriewi, kont noħodhom spiss għand il-veterinarju biex itihom l-inġekxins sabiex ma jimirdux. L-ewwel inġekxin tingħata xahrejn wara li jitwieldu.

1. Jekk Żepp twieled fi Frar u Ċisju twieled f'Ġunju, tistgħu ssemmu f'liema xahar ħadu l-ewwel inġekxin tagħhom?

(L-istudenti jkunu mħeġġa jużaw kalendarju sabiex jgħinhom jaslu għar-risposti.)

Kemm Żepp kif ukoll Ċisju iħobbu jieklu ħafna. Xtrajtilhom żewġ platti bħal ta' xulxin, ħalli żgur ma jiġġildux.

(Hawnhekk l-edukatur juri kontenituri simili tanġibli)

1. Taħsbu li Żepp jiekol iktar jew inqas minn Bruce? Għala taħsbu hekk?
2. Jekk Ċisju jiekol platt sħiħ imma Żepp jiekol nofs l-ammont li jiekol Ċisju, sa fejn irrid nimlih il-platt ta' Żepp?

(L-edukatur isejjaħ xi studenti sabiex juru sa fejn jaħsbu li l-kontenitur għandu jimtela.)

Ċisju ukoll jixrob ħafna iktar ilma minn Żepp. Biex ma jtajrux ilma u jħammġu l-art, xtrajt dawn iż-żewġt ifliexken.

(Hawnhekk l-edukatur turi fliexken tanġibli, wieħed li jiddendel daqsxejn fil-baxx u l-ieħor aktar fl-għoli)

1. Liema taħsbu minn dawn iż-żewgt ifliexken huwa dak ta' Ċisju u liema huwa ta' Żepp?
2. Għala taħsbu hekk?

L-indafa hija importanti kemm għalina l-bnedmin iżda wisq ukoll importanti għall-annimali. B'hekk irridu nżommu l-post tal-annimali tagħna kemm jista' jkun nadif. Jien innadfilhom darbtejn kuljum.

1. Kif taħsbu li huwa l-aħjar mod li nnaddaf:

a. Darbtejn filgħodu?
b. Darbtejn filgħaxija?
c. Darba filgħodu u oħra filgħaxija?

    1. Għalfejn taħsbu li _____ huwa l-aħjar mod?
    2. Jekk innadfilhom _____jew_____mhux xorta inkun naddaft darbtejn?
    3. Kieku tkunu intom minfloki, tagħmlu xi ħaġa differenti? Kif? Għalfejn?

L-annimali għandhom ħafna enerġija u jkollhom bżonn li noħorġuhom għal xi mixja. Żepp u Ċisju tgħidx kemm jieħdu gost kif nurihom iċ-ċinga. Mill-ewwel jindunaw li ser noħorġu nimxu. Għal ħabta tal-erbgħa ta' wara nofsinhar immorru mixja ta' siegħa u nofs.

1. Fi x'ħin taħsbu li naslu lura d-dar?

(Hawnhekk jista' jingħata arloġġ sabiex jgħin lill-istudenti jikkalkulaw il-ħin.)

2. Taħsbu li nieħu ħsiebhom biżżejjed il-klieb tiegħi?
3. X'nista' nagħmel aħjar?

(Il-lezzjoni tista' tieħu żvolta f'diskussjoni miftuħa fejn l-istudenti jaqsmu bejniethom il-ħsibijiet dwar il-kura u l-protezzjoni lejn l-annimali.)

Noti

Lista ta’ Referenzi

Barwell, R. (2020). Learning mathematics in a second language: Language positive and language neutral classrooms. *Journal for Research in Mathematics Education*, *51*(2), 150-178. https://doi.org/10.5951/jresematheduc-2020-0018

Kotsopoulos, D., Floyd, L., Khan, S., Namukasa, I. K., Somanath, S., Weber, J., & Yiu, C. (2017). https://doi.org/10.1007/s40751-017-0031-2

A pedagogical framework for computational thinking. Digital Experiences in Mathematics Education, 3(2), 154-171. https://doi.org/10.1007/s40751-017-0031-2