LEARNING FINANCE THROUGH AN EXAMPLE

Module III

Course Entrepreneurial Finance

Topic 7 Cash and Working Capital

Lesson 2 Non - Payment Methods

Activity

- **Short Description**: A financial task that will help students to better understand how finances work through a basic example of a lemonade stand.
- **Methodology**: Project-based learning
- **Duration:** 1h
- **Difficulty (high - medium - low)**: Medium
- **Individual / Team**: Individual
- **Classroom / House**: Classroom
- **What do we need to do this activity?**
    - Papers, pens, ruler, calculator

Description

- **Text description**: Learning finance through example is the best way to learn. Imagine that you want to start your own business. And imagine that you have the perfect business idea - a lemonade stand that you could set up in the park during beautiful and sunny days. You will have to consider many factors. To develop a Business Model you will have to answer a lot of questions. And to find out if your business idea is sustainable. And you can find out that with financial knowledge using basic formulas.

Instructions

- Follow the story about Lemonade Stand and use the formulas to apply the acquired knowledge.

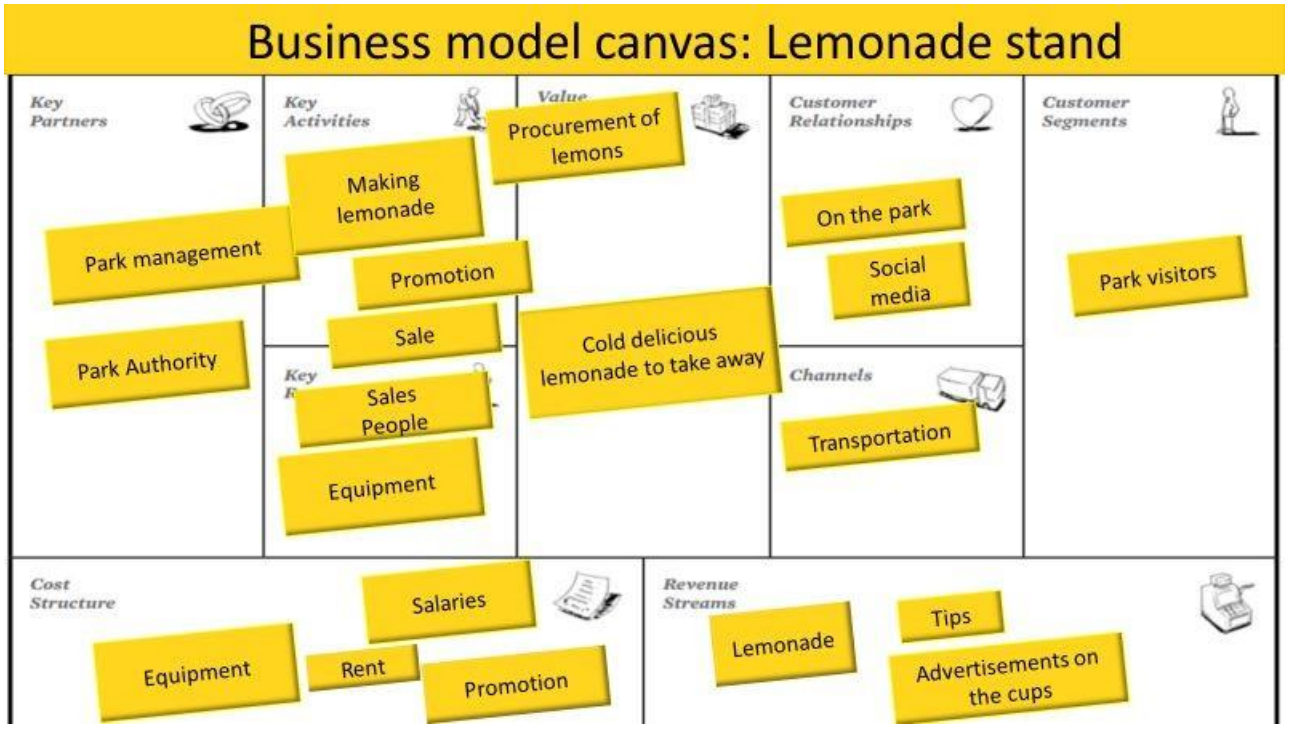
Expected outcomes

- Mastered the knowledge in Entrepreneurial Finance.

This activity can be used in other courses

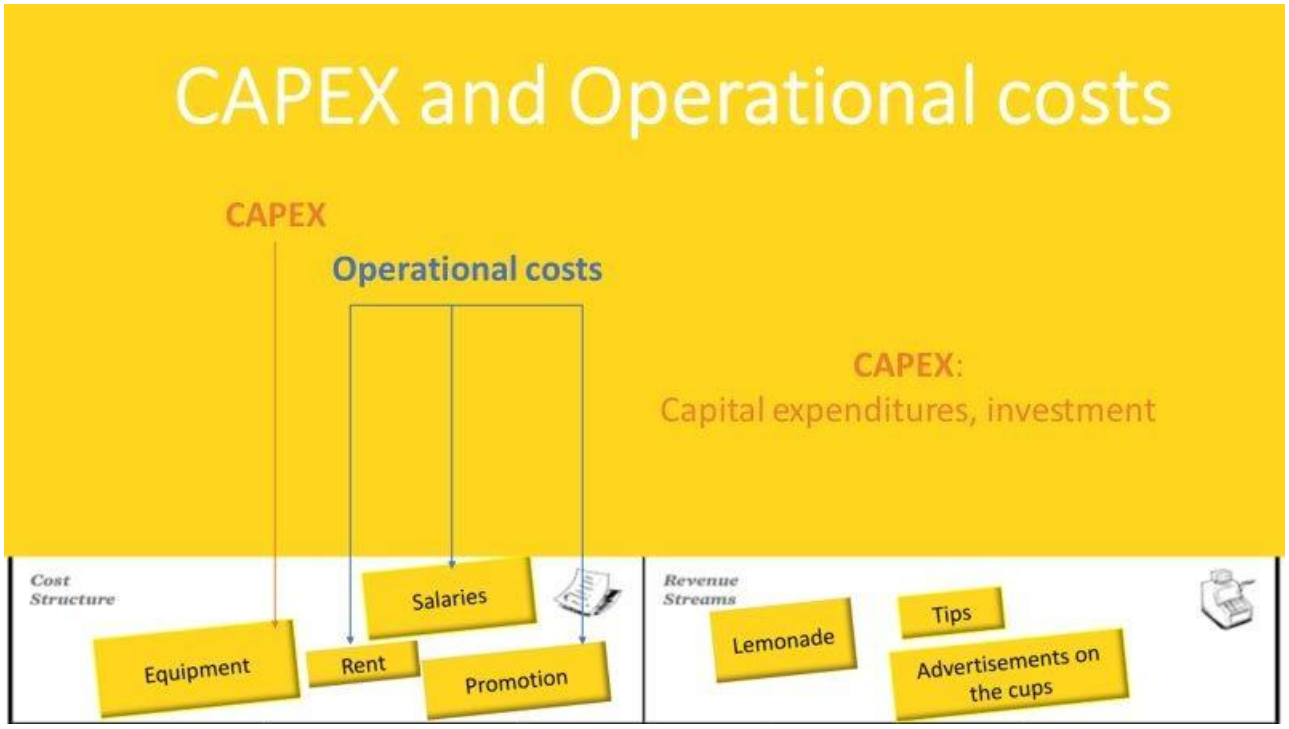
- **Testing Business Ideas**
- **Business model**

Let’s imagine that we have a business idea and that you’ve already prepared the Business Model Canvas for the Lemonade stand.



This is how your Business model canvas looks like.

The first thing that we need to mention is that Cost needs to be less than Revenue.
And here we can see the cost structure and the revenue streams for our Lemonade stand.



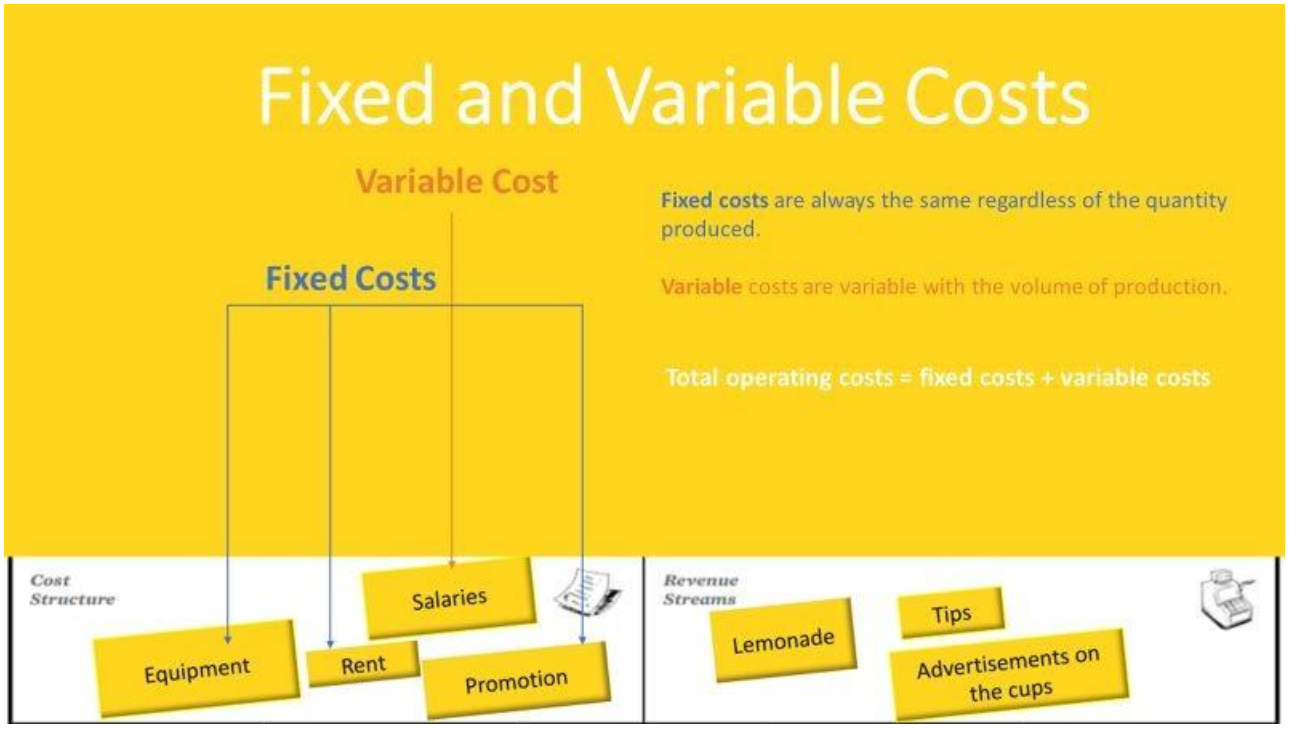
Let’s start with the cost structure:

We’ve already talked about operational costs.

In our case the operational costs are

1. Rent
2. Salaries
3. Promotion

And we have CAPEX too, which is Equipment.



Now we also need to mention fixed and variable costs.

Fixed costs are always the same regardless of the quantity produced. For example lease, insurance, promotion, tile, etc.

Variable costs are variable with the volume of production.

For example amount of lemon, water, sugar, etc.

Total operating costs = fixed costs + variable costs

But how can we calculate how much lemonade costs us?

What costs do we need to include?

The cost of 1 glass of lemonade is a variable cost.

Let’s see how much are our variable costs.
What do we need for our Lemonade?

Lemonade Cup Costs – Variable Cost (Raw materials)

Lemonade	Quantity	Costs per pitcher($)	Costs per cup($)
Lemon	4 lemons	1	0.1
Sugar	10 teaspoons	0,06	0.006
Ice	40 ice cubes	0.04	0.004
Water	3 l	0.50	0.05
Cup	10	0.30	0.03
Straw	10	0.10	0.01
Total	-	2 $	0.2 $

To make some good lemonade we will need:

Some Lemons, for example, 4
Sugar, 10 teaspoons
We will need **ice**, for example, 40 ice cubes
Cups for example 10 cups
And also **straws**, as much as we need cups we need also straws.
Next, we need to find out our **cost per pitcher**.

This price varies from country to country, but let’s imagine that these are prices for our ingredients.
Now we need to see how much our **cost per pitcher** is. So we found out that the cost per our pitcher is 2 dollars.
And from this part of the table, we can found out how much cost per cup. And now we can calculate the cost per cup. How we can calculate this?

We just need to divide the cost per pitcher with quantity.
From this table, we found out that our cup of lemonade costs 0.2 $.
And what about the CAPEX? Let’s find out.



One Time Costs	Cost ($)
Icebox	200
Spoons	5
Knives	5
Lemon Juicer	40
Lemon jug	30
Lemon stand	200
Other	20
Total	500

What else do we need for our lemonade stand?
We will need:

1. Ice box,
2. Spoons
3. Knives
4. Lemon juicer
5. Lemon Jug
6. Lemon Stand
7. And some other things

And let's say that these are the prices for our Equipment.
By adding these costs we get the total cost of the equipment
Now we know that we need 500 dollars for Equipment. Now is time to talk about Fixed Costs.

Fixed Costs

Salaries		
Employees	Cost ($)/month	Cost($)/year
Sales person 1	200	2400
Sales person 2	200	2400
Total	400	4800
Rent		
Rent	Cost ($)/month	Cost($)/year
Amount	120	1440
Marketing		
Marketing	Cost ($)/month	Cost($)/year
Flyers	20	240
Online/Social Media	100	1200
Total	120	1440
Misc		
Misc.	Cost ($)/month	Cost($)/year
Misc. Costs	50	600
Total Fixed Costs		**8280**

From this table, we can see our Fixed Costs

Let's say that we need two people for sales, so those people are our employees. And let's say that those costs are **200 dollars per person**.
And **2400 dollars per year**. How did we get to this number?
We multiplied the cost per month with the number of months in a year, which is **12**.
When we add up these numbers, we get the total amount, which is **400 for employees per month and 4800 per year**.
Then we have rent, which is 120 dollars per month and 1440 dollars per year. (**120*12(months) =1440**)
For marketing, we have cost for flyers 20 dollars per month, for social media 100 dollars per month and in total, those costs are 120 dollars per month and 1440 dollars per year. (**120*12(months) =1440**)
And we have also miscellaneous production costs that are costs that we have and that are indirectly related to the production costs of the item. That cost is 50 dollars per month and 600 dollars per year (**50*12=600**)

Now we can add up all the costs that we have to find out how much are our fixed costs in total.

Total Fixed Costs = 4800 + 1440 + 1440 + 600 = 8280

Now we will see what is included in our Sales Revenue.



Yearly Lemonade Sales and Costs

	Assume	Assume	(B*C)	D*4	E*0.2$ (Cost of one cup)	F*12	E*1$ (Price for 1 lemonade)	K*12
A	B	C	D	E	F	J	K	L
Day	Visitors	% Buying	Customers/Cups sold	Cups Sold/Month	Cost/Month	Cost/Year	Sales/Month	Sales/Year
Sunday	1000	20%	200	800	160	1920	800	9600
Monday	500	10%	50	200	40	480	200	2400
Tuesday	500	10%	50	200	40	480	200	2400
Wednesday	500	10%	50	200	40	480	200	2400
Thursday	700	10%	70	280	56	672	2800	3360
Friday	1500	10%	150	600	120	1440	600	7200
Saturday	2000	20%	400	1600	320	3840	1600	19200
Total	6800		970	3880	776	9312	3880	46560

Here we can see the Yearly Lemonade Sales and Costs. How did we get all these numbers?

We have 7 days in a week, and we assume some number of visitors every day and % of buying. Let's take a look for example Sunday.

On Sunday we had 1000 visitors, and 20 % Buying. But we want to know what is the number of customers/cups sold. We will get that number in this way.
Customers/Cups sold = 1000 * 20 % = 200
And the same thing we are doing for other days in a week.
Now we want to know how many cups we sold in one month.
Cups sold/Month =Custmer/Cups sold *4
Cups sold/Month = 200*4 = 800

Why number 4? Because one month has 4 weeks.
Then we have **Cost per Month**. That number we are getting on this way:
Cost per Month = Cups sold/Month * Cost of one cup
Cost per Month = 800*0,2 = 160
* In the beginning, we have already found out how much is the cost of one cup of lemonade (**0,2 $**)

Cost/Year = Cost per Month*12
Cost/Year = 160*12 = 1920

Sales per Month = Cups sold/Month*Price for one Lemonade
Sales per Month = 800*1 $ = 800
* In the beginning, we have already found out how much is the price for one Lemonade (**1 $**)

Sales per Year = Sales per Month*12
Sales per Year = 800*12 = 9600

We need to follow these steps for every day in a week and in that way, we will found out our yearly sales and costs.
Now we will talk about Income Statement.



Income Statement

Income Statement	
Sales Revenue	50284.8
Sales	46560
Tips (5% of sale)	2328
Ads (3% of sale)	1396.8
COGS	9312
Gross Margin	40972.8
Profit Margin	81%
Other Expenses	2040
Marketing	1440
Misc.	600
Net Income	38932.8
NI/ Sales %	77%

← Sales of lemonade cups sold in a year

← Costs of goods & services in a year

← Sales Revenue – COGS

← Gross Margin/ Sales Revenue*100%

← Non-operational Costs

← Profit at end of year

← Net Income/ Sales revenue*100%

How did we get these numbers?

It is very simple.

Sales Revenue = Sales of lemonade cups sold in a year

Sales Revenue = Sales + Tips (5% of sale) + Ads (3% of sale)

Sales Revenue = 46560 + 2328 +1396,8 = 50284,8

COGS = Costs of goods & services in a year

*This number we are taking from the previous table. (Cost/Year =**9312**)

Gross Margin = Sales Revenue – COGS

Gross Margin = 50284,8 - 9312 = 40972,4

Profit Margin = Gross Margin/ Sales Revenue*100%

Profit Margin = 40972,4 / 50284,8 * 100% = 81%

Other Expenses = Non-operational Costs

Other Expenses = Marketing + Miscellaneous cost

Other Expenses = 1440+600 = 2040

Net Income = Profit at end of year

Net Income = Gros Margin - Other Expenses

Net Income = 40972,4 - 2040 = 38932,8

NI/Sales% = Net Income/ Sales revenue*100%

NI/Sales% = 38932,8 / 50284,8 * 100% = 77%

Cash Flows

Let’s see how companies spend and receive cash.

We’ve already talked about cash flow and we mentioned:

- Operating,
- Investing,
- Financing cash flow.

For filling the table of Cash Flowe we will use the data from the previous tables.

Cash Flow ($)	YEAR 1												Y1
Time Period	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	
Cash from Operations													
Sale Revenue	3880	3880	3880	3880	3880	3880	3880	3880	3880	3880	3880	3880	46560
Cups costs	776	776	776	776	776	776	776	776	776	776	776	776	9312
Salaries	400	400	400	400	400	400	400	400	400	400	400	400	4800
Rent	120	120	120	120	120	120	120	120	120	120	120	120	1440
Marketing	120	120	120	120	120	120	120	120	120	120	120	120	1440
Insurance	-	-	-	-	-	-	-	-	-	-	-	-	-
Misc.	50	50	50	50	50	50	50	50	50	50	50	50	600
Taxes (0%)	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal Cash From Operations	**2414**	**2414**	**2414**	**2414**	**2414**	**2414**	**2414**	**2414**	**2414**	**2414**	**2414**	**2414**	**28968**
Cash from Investment													
Equipment	500	-	-	-	-	-	-	-	-	-	-	-	500
Subtotal Cash From Investment	**500**	-	-	-	-	-	-	-	-	-	-	-	**500**
Cash from Finance													
Investors	-	-	-	-	-	-	-	-	-	-	-	-	500
Founders	500	-	-	-	-	-	-	-	-	-	-	-	-
Bank Loan	-	-	-	-	-	-	-	-	-	-	-	-	-
Interest	-	-	-	-	-	-	-	-	-	-	-	-	500
Subtotal Cash From Finance	**500**	-	-	-	-	-	-	-	-	-	-	-	
Net change in cash	2914	2414	2414	2414	2414	2414	2414	2414	2414	2414	2414	2414	**29468**
Cash at the beginning of period	-	2914	5328	7742	10156	12570	14984	17398	19812	22226	24640	27054	-
Net Cash Flow	2914	5328	7742	10156	12570	14984	17398	19812	22226	24640	27054	29468	**29468**

Cash From Operations

First, we need to fill the table with data that we already have. How we can get Subtotal **Cash From Operations** for each month?
From Sale Revenue, we need to subtract Cups costs, Salaries, Rent, Marketing, and Misc. In our case:

Subtotal Cash From Operations (month) = 3880 - 776 - 400 - 120 - 120 - 50 = 2414

And we repeat this procedure for each month.

Subtotal Cash From Operations (year) = 46560 - 9312 - 1440 - 1440 - 600 = 28968

Cash From Investment

This number we took from the previous table in which we calculated the CAPEX costs.

Cash From Finance

In our case represents how much the founders invested in this business idea.

Net change in cash = Adding up previous numbers we calculated net change in cash.

Counting up **net change in cash and cash at the beginning of period** we are founding out our **Net Cash Flow.**

Break-Even Analysis

What is the Break-Even Analysis?

It is an analysis that in economics, business and cost accounting refers to the point where total costs and total revenue are equal.

This analysis is used to determine the number of units or dollars of revenue needed to cover total costs (fixed and variable costs).

PROFIT = ZERO

First, let's repeat what is fixed and what are variable costs.

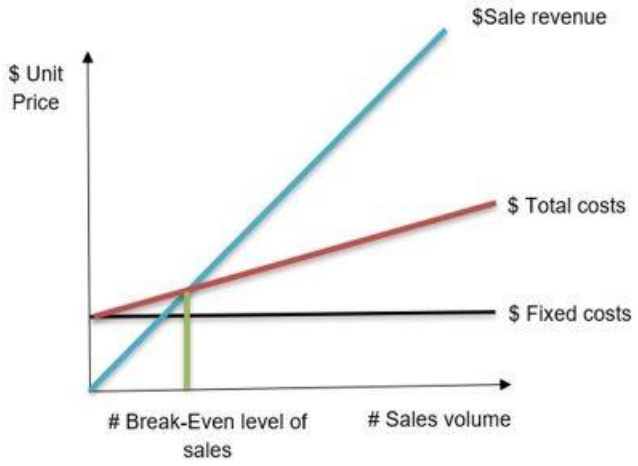
Fixed costs, is the cost that stays the same regardless of output, such as rent, insurance, marketing, etc.

And variable cost changes as the level of output changes.

And the total costs?

Total costs = Fixed costs +Variable cost

Break – Even Analysis



PROFIT = ZERO

Fixed cost, are the cost that stay the same regardless of output, such as rent, insurance, marketing etc.
Variable cost changes as level of output changes.

Total costs = Fixed costs +Variable cost

What is the formula for Break - Even Analysis?

Price of cup = 1$ Variable costs = 0.2$ Fixed costs = 8280 $

B = (Fixed Costs) / (Price – Variable)

B = (8280) / (1 - 0.2) = 10350 Lemonade Cups

What we have learned?

With this example, we learned that the Business canvas model helps us brainstorm for costs and revenue streams.

Income statements help us with finding out our profitability.

Cash flow helps us discover how much money we need and how to manage cash to stay positive.

Break-Even Analysis helps us assess risk.

DIGICOMP (Competences developed): *Evaluating data, information, and digital content, Solving technical problems*

ENTRECOMP (Competences developed): *Learning through experience, Financial and economic literacy, Motivation and perseverance, Ethical and sustainable thinking*

ANNEX:

DIGCOMP	ENTRECOMP
1. INFORMATION AND DATA LITERACY 1.1 Browsing, searching and filtering data,information and digital content 1.2 Evaluating data, information anddigital content 1.3 Managing data, information and digitalcontent	1. IDEAS AND OPPORTUNITIES 1.1 Spotting opportunities 1.2 Creativity 1.3 Vision 1.4 Valuing ideas 1.5 Ethical and sustainable thinking
2. COMMUNICATION AND COLLABORATION 2.1 Interacting through digital technologies 2.2 Sharing through digital technologies 2.3 Engaging in citizenship through digitaltechnologies 2.4 Collaborating through digitaltechnologies 2.5 Netiquette	2. RESOURCES 2.1 Self- awareness and self- efficacy 2.2 Motivation and perseverance 2.3 Mobilizing resources 2.4 Financial and economic literacy 2.5. Mobilizing others

2.6 Managing digital identity	
3. DIGITAL CONTENT CREATION 3.1 Developing digital content 3.2 Integrating and re-elaborating digitalcontent 3.3 Copyright and licences 3.4 Programming	3. INTO ACTION 3.1 Taking the initiative 3.2 Planning and management 3.3 Coping with uncertainty, ambiguityand risk 3.4 Working with others 3.5. Learning through experience
4. SAFETY 4.1 Protecting devices 4.2 Protecting personal data and privacy 4.3 Protecting health and well-being 4.4 Protecting the environment	
5. PROBLEM SOLVING 5.1 Solving technical problems 5.2 Identifying needs and technological responses 5.3 Creatively using digital technologies 5.4 Identifying digital competence gaps	