Information Sheet

Mini Case Study on choice of transport modes

The Mini Case Study "A Quick Choice of Transport Modes" on the topic "Choosing a suitable mode of transport" fills **a one-hour class.** In terms of content, the concept refers to the characteristics of individual modes of transport, to decision-making using qualitative techniques (here the scoring method) and to the interpretation of stock levels. The Mini-Case-Study helps revise warehousing (2nd year of secondary commercial college and secondary technical college) and consolidate already taught contents (including interdisciplinary e.g. in business administration). Ideally, the topic of sustainability has already been briefly discussed in a previous unit.

Reference to school curricula

The concept builds on the curricula of Secondary Commercial Colleges from 2014 (BGBl. II 2014/209) and Secondary Technical Colleges from 2015 (BGBl. II 2015/262). More details for each school type see below:

Secondary Commercial Colleges:
The Mini-Case-Study is intended for the 3rd year (6th semester - competence module 6) with a focus on "Logistics Management". It refers to the following passages of the curriculum:

- Educational and teaching objective: "Pupils can identify and evaluate suitable modes of transport and transport infrastructure in the field of transport logistics". (BGBl. II 2014/209 p. 119)
- Subject matter: "Transport logistics": "Means of transport and transport aids, transport and route planning" (BGBl. II 2014/209 p. 119)

Secondary Technical Colleges:
The Mini-Case-Study is intended as a refresher for the 5th year (9th semester - competence module 9) in the field of "Industrial Engineering" with a focus on "Logistics". It refers to the following passages of the curriculum of higher-level technical schools:

- Educational and teaching task: "Pupils can analyse the advantages and disadvantages of individual means of transport for different areas of use [...]. "(BGBl. II 2015/262 p. 22)
- Subject matter: "Processes and technology of logistics": "Transport logistics" (BGBl. II 2015/262, p. 23)

Requirements[1]

The pupils can already

- explain the characteristics of the modes of transport on road, rail, air and water (B)
- name individual loading and transport units of the modes of transport on road, rail, air and water (A),
- explain the systematics of the scoring method in their own words (B) and
- define the concept of sustainability (A).

[1] **Note:** This classification of requirements is based on the Bloom taxonomy levels.

Teaching objectives[2]

After completing this learning unit pupils can

- make an informed choice on transport modes by means of the scoring method (C),
- identify individual factors for making transport mode choices (A) and
- discuss the sustainability aspect of a transport choice decision in a concrete case (C).

Procedure

No.	Activity	Type of activity	Materials	Time
1	**Teacher introduces the topic** (activation of learners)	T/C	T/WB	5 min.
2	**Teacher hands out** case study plus general **discussion**	T/C	WS1 & sample solution	5 min.
3	Students **form groups** and **work** on the case study	PW	WS1 & sample solution	37 min.
4	Discussion of **homework** and **collection of** pupils' notes from stage 3	T/C	WS2, evaluation tip	3 min.

Tip no. 1:
If you are short of time or if you would like to spend more time on individual areas, the group work can also be extended to 40 minutes (possibly also completed as a homework exercise) and the questions of the reflection (No. 4, see WS 2) can be discussed together in the plenum as a warm-up for approx. 10 minutes.

Tip no. 2:
If students are not yet familiar with the scoring method, you can provide an information sheet (see IB1) as an alternative to the Mini-Case-Study.

Procedure details

No.	Details
1	**Introduction:** First, the teacher presents the topic ("The choice of transport mode - a practical application") and elicits pupils' prior knowledge with specific questions like: ▪ What do you associate with the term "mode of transport"? ***Modes of transport are all means of transport that use the same type of infrastructure.***[3] ▪ Which modes of transport are distinguished in the literature? ***Road, rail, air, water, pipeline, aerospace, news***[4] ▪ What are the specific characteristics of the transport modes you know? ***e. g: road (high flexibility, door-to-door traffic, limited loading capacity, high risk of accidents), rail (high mass capacity, high security, low flexibility), air (terminal-to-terminal traffic, high security, high costs), water (high mass capacity, terminal-to-terminal traffic, long transit times)***[5] Free discussion and brainstorming – notetaking not necessary.

[2] **Note:** This classification of requirements is based on the Bloom taxonomy levels.
[3] Cf. Kummer (2010) p. 40.
[4] Cf. Kummer (2010) p. 40.
[5] Cf. Kummer (2010) p. 40 ff.

2	**Transition to case study:** "This revision of transport modes shows us that each mode has specific characteristics, making transport planning decisions a major challenge in practice. Now you can make decisions from a transport planner's perspective in the following mini case study." The teacher hands out and introduces the worksheet (**WS1**), e.g. You are an intern at "Schnitten AG". The company is an imaginary manufacturing company - based on the real Manner AG known to its customers for its wafers and, more recently, for its cookies. On your first day at work an acute problem comes up where you should support your superior. **Instructions:** Work out the mini case study together with your partner in **35 minutes**. Hand in your solutions on a piece of paper with your names on it at the end of the class.
3	Pair work: Pupils can exchange and discuss their thoughts freely. During this phase, the teacher monitors students' interaction by moving around, draws attention to the remaining time and intervenes only when necessary.  **Tip no. 3:** If necessary, time can be adapted to specific conditions.
4	The teacher hands out **WS 2** and briefly discusses the task. As a follow-up exercise, pupils individually write a short reflective text on the mini case study until next time. The teacher collects and finally assesses the group work.  **Tip no. 4:** The pair work can be used in addition to the reflective text as an additional assessment criterion.

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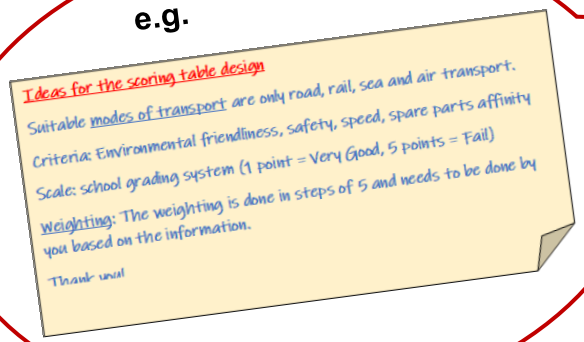
The scoring method

How does an analysis with the SCORING METHOD work?

1 Criteria	Weighting	Points option A	Result option A	Points option B	Result option B
Speed	10% 4	2 3	20 5	1 3	10 5
…					
Result	**100%**		**Point score** 6		**Point score** 6

e.g.



1. **Define assessment criteria**
2. **Consider requirements**
3. **Develop and apply scale**
4. **Define weighting per criterion**
5. **Calculation: points times weighting**
6. **Calculate final point score**

Schneider et.al. (2013) p. 31 ff.