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Barriers to the Study of Scientific Subjects and Level of Knowledge of Basic Chemistry

## ADULT LEARNERS' CASE STUDY

### Adult Learner's Case Study N.: 2

Subject Studied, Place: *languages, Aosta (Italy)*

#### Description of the Case Study

The person we interviewed didn't continue scientific studies because she was more interested in the literary area (languages) and she didn't feel gifted for scientific subjects. On the other hand she had no difficulties in studying chemistry at school, thank to good supports at home, overcoming any possible teachers' lack of knowledge.

Her self evaluation of knowledge of chemistry is "poor". About the scientific information provided by the media she thinks that the information given is not reliable, because media are manipulated and their main aim is conditioning people more than informing them.

The word "Chemical" is associated with non natural products or substances.

She answers correctly to the basic chemistry test, except for the item about the materiality of scent.

N.B. The text of the interview carried out is available below.



### Interview: adult n.2 (English)

1. Why have you decided not to continue your studies in the scientific field after upper secondary school? (Please justify your answer.)

*I was more interested in the literary area, I wasn't gifted for scientific subjects. I was more interested in languages.*

2. What are the major difficulties have you found in studying chemistry at school? (lack of basic requisites, cognitive problems linked to some contents, other). (Please justify your answer.)

*No difficulties, I had good supports at home to overcome to any possible teachers' lack of knowledge, which were often relevant as I was attending a "liceo classico" (classical studies).*

3. How would you assess your knowledge of chemistry? (poor, fair, good, very good).

*Poor.*

4. Should you have any scientific curiosity, would you try to satisfy it? If so, how would you do it?

*No, I don't try to satisfy it as I seldom have curiosities in scientific fields.*

5. Do you think mass media provide access to suitable scientific information (particularly on chemistry) that you can understand? (Please justify your answer.)

*No, mass media don't give reliable information as they are manipulated. Their main aim is conditioning people more than informing them.*

6. What do you associate with the adjective "chemical"?

*Non natural products, substances.*

7. If you melt 5 grams of salt in 100 grams of water, the solution obtained will weigh:

105 grams

between 100 and 105 grams

100 grams

(Please justify your answer.)

*105, because even if we are considering a solution, it doesn't mean getting a loss in weight.*

8. We sometimes perceive the presence of some substances through the sense of smell, as they give off a characteristic scent. Do you think it is made of material or immaterial particles? (Please justify your answer)

*Yes, microorganism.*

9. Can you think of an example of a pure substance in solid state?

*Ice.*

10. Can you think of an example of a pure substance in liquid state?

*Distilled water.*

11. Can you think of an example of a pure substance in gaseous state?

*Steam.*



### Interview: adult n.2 (Italian)

1. Per quale ragione ha deciso di non proseguire gli studi scientifici dopo la scuola secondaria? (Argomenti la risposta).

*Mi interessava di più l'area letteraria, non ero portata per materie scientifiche. Ero più interessata alle lingue.*

2. Quali sono le principali difficoltà che ha trovato nello studio della chimica a scuola? (mancanza dei requisiti di base per comprenderla, ostacoli cognitivi in alcuni contenuti, altro). (Argomenti la risposta).

*Nessuna difficoltà, avevo validi supporti a casa che supplivano ad eventuali lacune dei docenti, spesso rilevanti, trattandosi di un liceo classico.*

3. Come reputa le sue conoscenze chimiche? (povere, discrete, buone, molto buone)

*Povere.*

4. Se ha una curiosità in ambito scientifico, cerca di soddisfarla? In caso affermativo, come procede?

*No, non cerco di soddisfarla, anche perché raramente ho curiosità in ambito scientifico.*

5. Ritiene che i mass media consentano al pubblico di accedere ad adeguate informazioni scientifiche (in particolare sulla chimica) comprensibili? (Argomenti la risposta).

*No, i mass media non forniscono informazioni attendibili, perché sono strumentalizzati. Hanno più lo scopo di indirizzare le persone che di informarle.*

6. Che cosa associa all'aggettivo "chimico"? (Argomenti la risposta).

*Prodotti non naturali, sostanze.*

7. Sciogliendo 5 grammi di sale in 100 grammi d'acqua, la soluzione ottenuta peserà:

105 grammi

tra 100 e 105 grammi

100 grammi

(Argomenti la risposta).

*105, perché anche se si ottiene una soluzione non significa che avvenga una perdita di peso.*

8. A volte ci accorgiamo della presenza di certe sostanze attraverso l'olfatto. Emettono, infatti, un odore caratteristico. Secondo lei, questo odore è costituito da particelle materiali oppure no? (Argomenti la risposta).

*Sì, microorganismi.*

9. Quale potrebbe essere un esempio di sostanza pura allo stato solido?

*Ghiaccio.*

10. Quale potrebbe essere un esempio di sostanza pura allo stato liquido?

*Acqua distillata.*

11. Quale potrebbe essere un esempio di sostanza pura allo stato gassoso?

*Vapore acqueo.*