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TEACHING ARGUMENTATION AND INQUIRY THROUGH CULINARY CLAIMS

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Handbook of Molecular Gastronomy
Launch event 12 May 2021

CHALLENGES IN EDUCATION



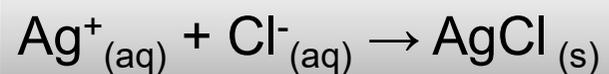
- Perceived relevance of education, knowledge transferability
 - Learning that makes a difference to the learner
- Authentic inquiry and experimentation
 - Not only ready-made, known-answer activities
- Education that includes argumentation, reasoning, discourse and ways of thinking



SCIENCE EDUCATION IN SOCIETY



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Experiment &
inquiry



Reasons &
argumentation



Socioscientific
issues



Adapted from Roberts & Gott (2010). Questioning the evidence for a claim in a socio-scientific issue: an aspect of scientific literacy. *Re. Sci. Tech. Educ.*, 28(3), 203-226.

THE “KITCHEN STORIES” CONCEPT

IN SCIENCE & HOME ECONOMICS EDUCATION



1. Students collect culinary claims (culinary precisions)
 - “You can’t make jelly with fresh kiwi because it will not set”
 - “Using a beer glass for milk will ruin the utility of the glass for beer”
 - “Apples go brown more slowly if cut with a ceramic knife”
2. Analyse the kitchen stories
 - Which reasoning could lie behind this claim?
 - Can it be tested?
3. Collect 1st hand and 2nd hand evidence
 - Research literature
 - Test the claim experimentally (and publish)

FOOD & COOKING CONTEXT

ARGUMENTATION

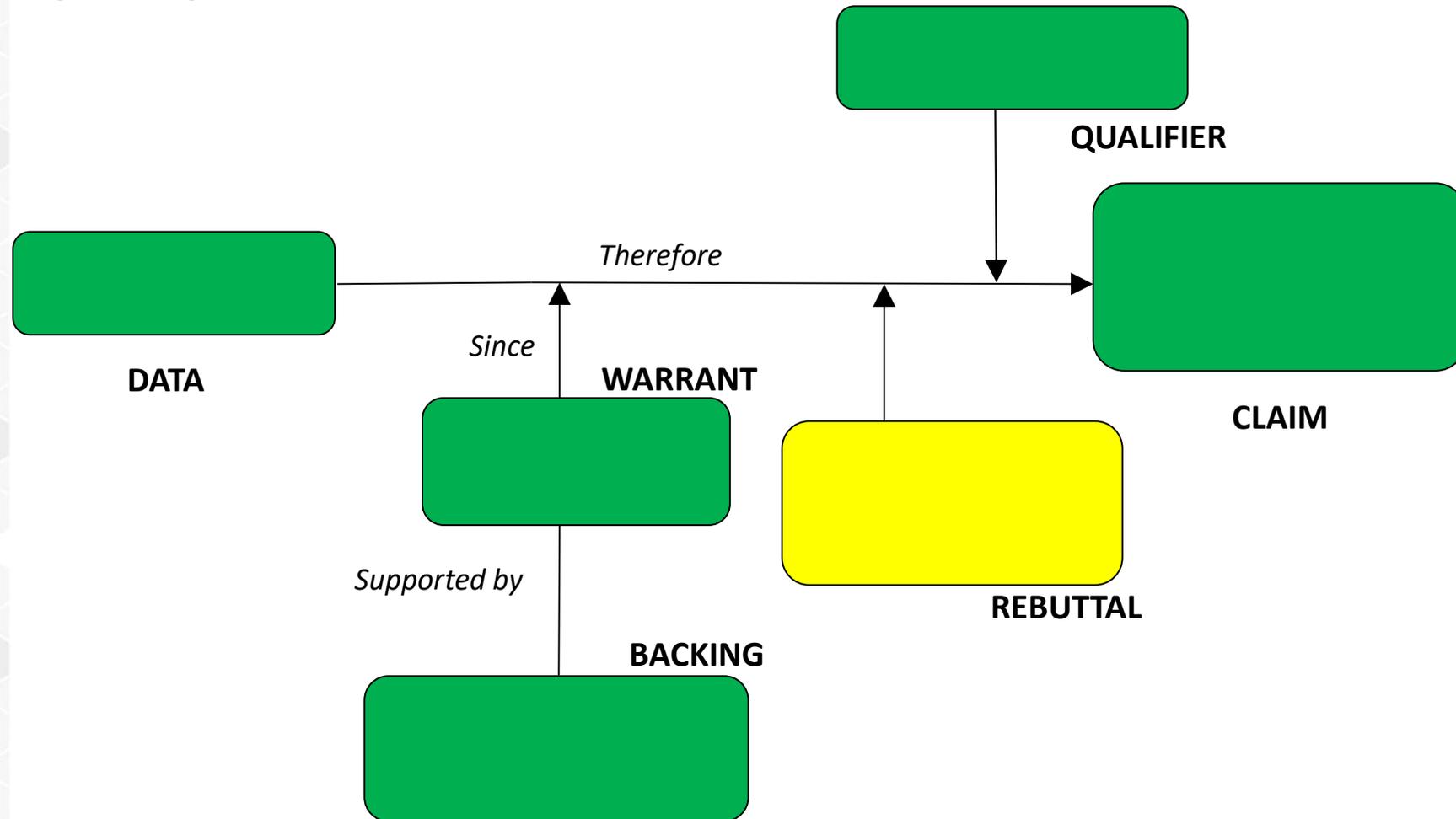
**ARGUMENTATION
SOURCE CREDIBILITY
INQUIRY**

E.g., This (2005). Modelling dishes and exploring culinary precisions: The two issues of molecular gastronomy. *Brit. J. Nutr.*, 93, S139–S146

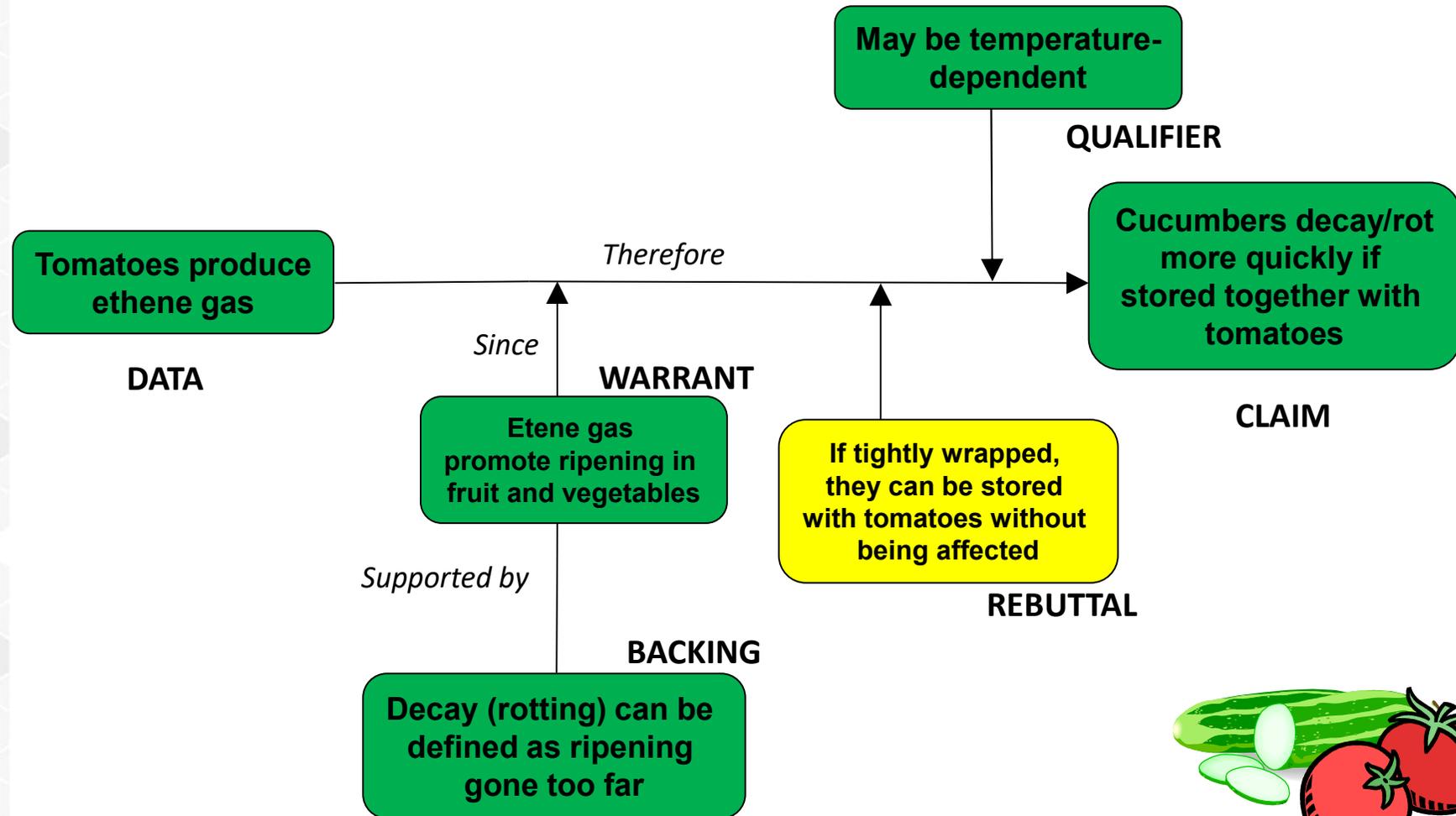
TOULMIN'S ARGUMENTATION PATTERN (TAP)



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TAP APPLIED ON A CULINARY CLAIM

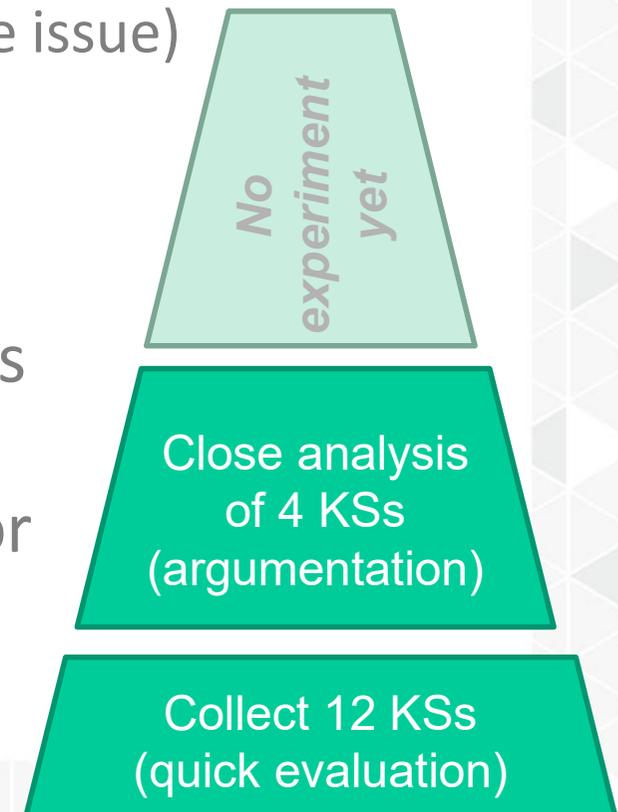




PHASE 1

CLAIM ANALYSIS & ARGUMENTATION

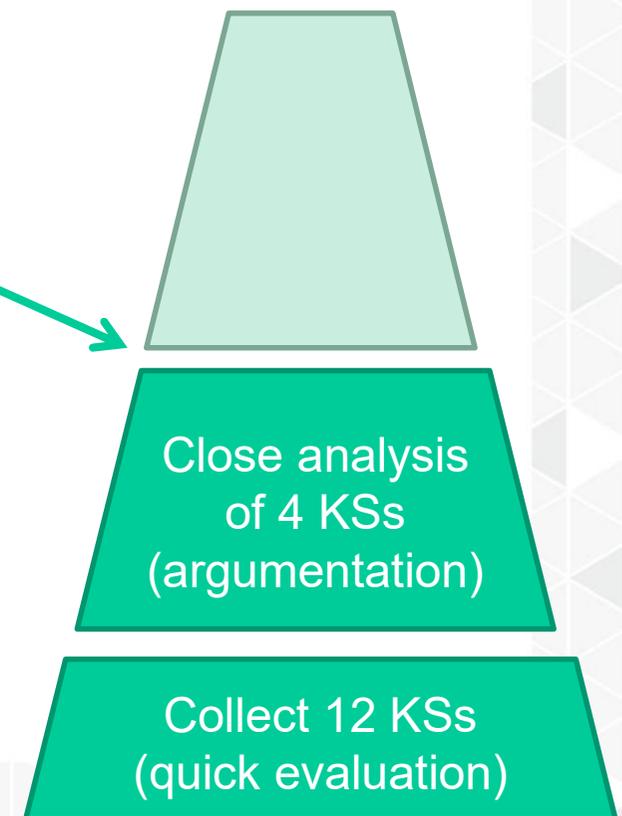
1. Groups collect kitchen stories (KS)
 - Select suitable candidates (researchable issue)
2. Analyse according to TAP
3. Group-to-group peer review process
4. Revision and submission to educator
 - Supervision along the way important, still many issues being open-ended



PHASE 2

SOURCE EVALUATION & EXPERIMENT

1. Source awareness
 - Judgement of credibility & trustworthiness of information sources



SOURCE AWARENESS / CREDIBILITY JUDGEMENT

TY

Rating Scale for scientific level

The following scale is proposed for the assessment of academic/scientific level

Dimension 1: Scientific level/credibility					
1	2	3	4	5	6
Internet with no other references Old wives' tales 'Friends and relatives'	Experienced person	School book (primary/secondary school) Experienced person Professional Cookbook	School book (primary/secondary school) University college book Specialist literature Professional Cookbook	University/university college book Specialist literature Professional	Scientific literature on international level (books or articles)

Rating scale for evaluating scientific credibility

Rating Scale for craftsmanship credibility

Not all information may have scientific evidence, and some disciplines (including cooking) carry much valuable experience-based (tacit, action-borne) knowledge. Occasionally such knowledge is essential for someone to be able to conduct an experiment or cook a dish in a consistent manner. This is the reason for having a separate scale for craftsmanship credibility

Dimension 2: Credibility in terms of experience (craftsmanship)					
A	B	C	D	E	F
A is the lowest level (novice) whereas F is the highest. Examples may be persons having long experience in craftsmanship, cooks/chefs, various types of cookbooks (may well span more than one level) etc.					

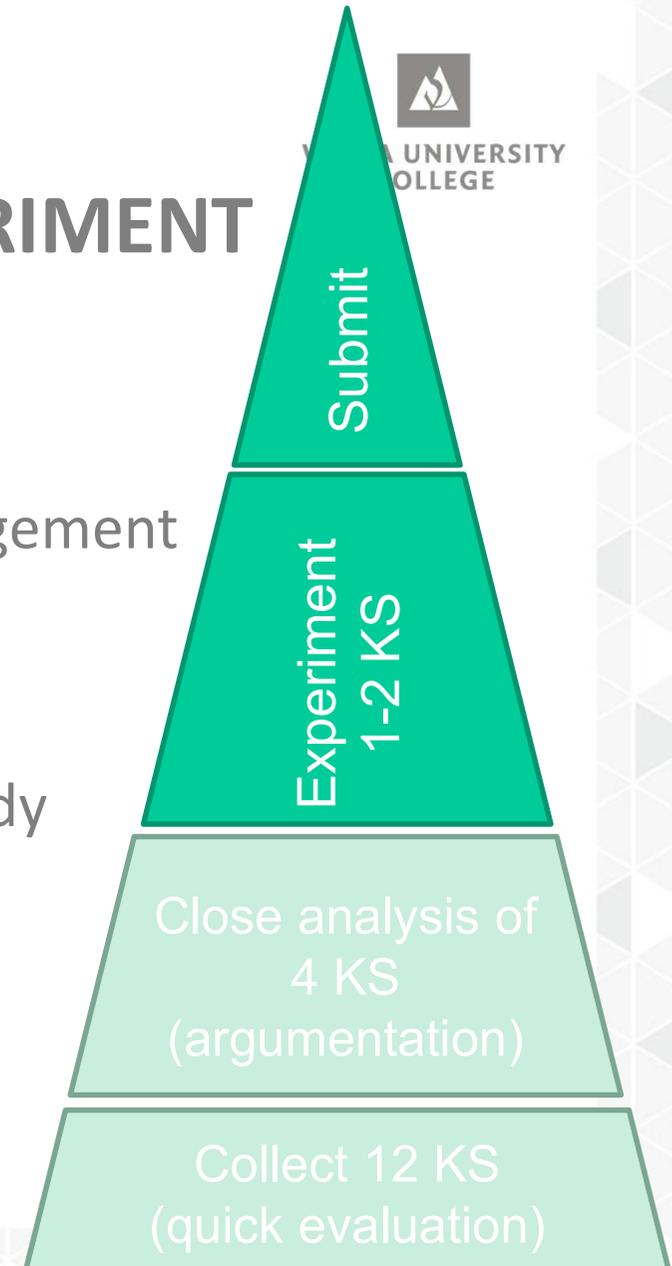
Rating Scale for craftsmanship credibility

An experienced cook/chef may have relatively low credibility along the scientific dimension (e.g. level 2) but high credibility along the craftsmanship dimension (e.g. level 4 or 5). The same may apply to an artisan that produces dried fish, cheese or some other product and has extensive practical experience with the food (action-borne or tacit knowledge).

PHASE 2

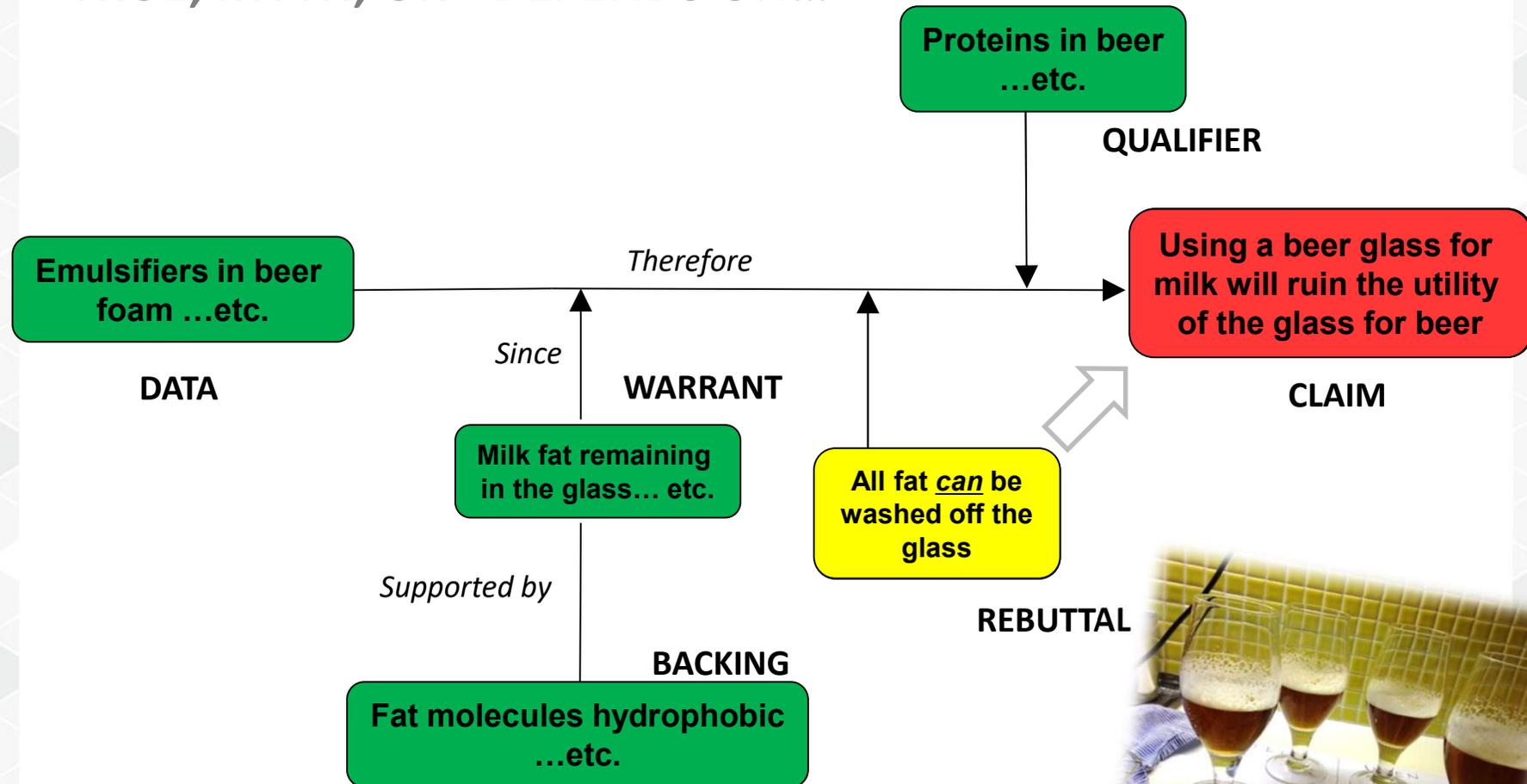
SOURCE EVALUATION & EXPERIMENT

1. Source awareness
 - Credibility & trustworthiness judgement
2. Experiment planning & design
 - Credibility judgement of own study
3. Revision and submission



TAP APPLIED ON A CULINARY CLAIM

TRUE, MYTH, OR «DEPENDS ON...»



OPEN INQUIRY & AUTHENTIC ARGUMENTATION



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Inquiry Argumentation
Declarative/fact knowledge
Culinary practices & heritage
Nature of science

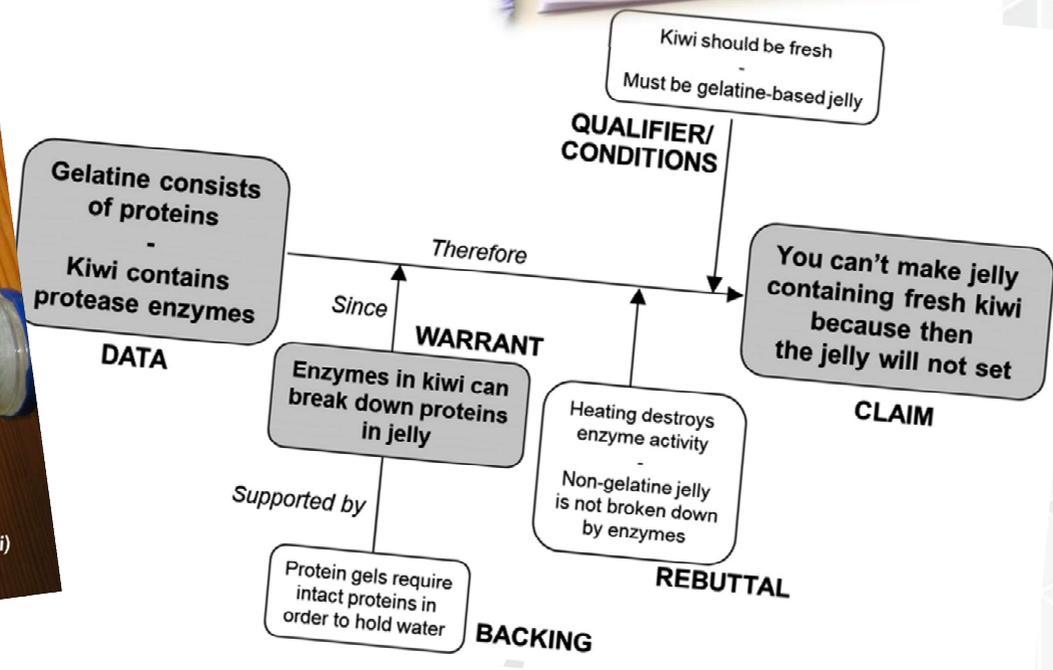




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THANK YOU



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