

Integrating alternative proteins into chef training: A mixed-methods exploration of definitions, barriers, and pedagogical potential

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Introduction

A scoping review shows no shared definition of “alternative proteins” (AP); labels span from plant-based, fungal/mycoprotein, insect, cultured meat, fermentation-derived, to even underutilised animal meats varying by context and geography.

Evidence about how AP are taught in culinary education and educators' perspectives of the topic (databases returned very few directly relevant studies), which justifies our educator-first empirical approach.

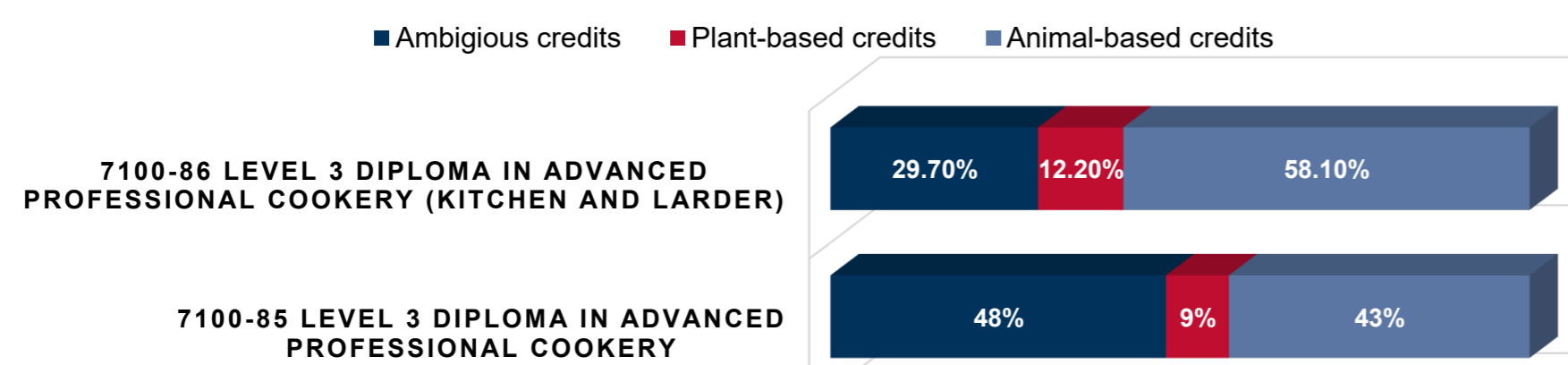


Figure 1: City and Guilds NVQ credits

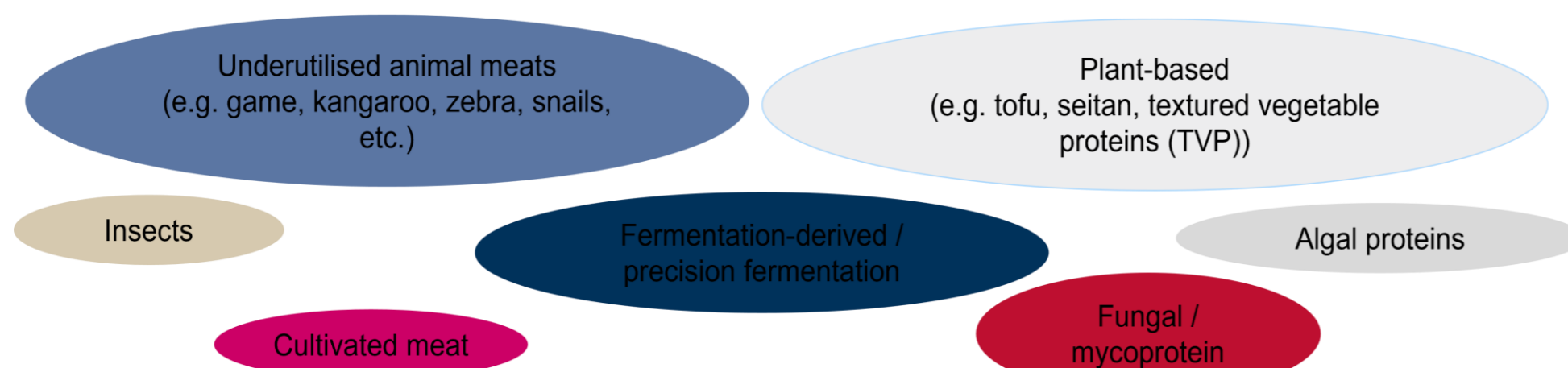
Methods

- Scoping review of AP definitions:** Scopus (150 records → 6 included), PubMed/Elsevier (~77 → 1 included), plus structured grey-literature searches; 7 papers finally included.
- Pre-workshop survey to AP in education context:** Educators (n=11) across 8 colleges/training academies; captured teaching context, inclusion of AP categories, and reasons for non-inclusion in training.
- Focus groups / Workshops:** 2 workshops, 6 educators: Exploratory sessions across mixed public/private providers to elicit barriers and opportunities from classroom → sector levels.

Results

Scoping review revealed

Definitional ambiguity map



Note: Categories reflect heterogeneous use of ‘alternative proteins’ across literature and practice, positioning is illustrative, not quantitative.

Figure 2: AP map

Pre-workshop survey revealed

- Context:** Qualifications NVQs/VRQs, City & Guilds, CTH L4, Le Cordon Bleu, BA/MA; teaching loads 6–40 hrs/week with practicals dominating.
- Inclusion:** Plant-based proteins most integrated (theory + practical); frequently mentioned: tofu, tempeh, seitan, mycoprotein, fungi, pulses/legumes. Limited links to precision fermentation, cultivated meat, insects, algal proteins, and novel aquaculture.

Table1: Pre-workshop survey summary

CATEGORY	EXAMPLES	NOTES
Plant-based	Tofu, Seitan, Textured vegetable protein (TVP)	Most widely recognised by educators
Fungal/Mycoprotein	Quorn, Fermented fungi	Moderate familiarity in curricula
Fermentation-derived	Precision-fermented proteins	Rarely included in teaching
Insects	Mealworms, Crickets	Low familiarity; high student resistance
Cultivated meat	Lab-grown chicken/beef	Discussed theoretically; not used practically
Underutilised animal meats	Rabbit, Wild Boar, Kangaroo, Zebra	Included in some cultural contexts

Workshop findings

Table 2: Curriculum inclusion of AP

PROTEIN CATEGORY	INCLUSION LEVEL	NOTES
Plant-based (general)	High	Theory + practical in all surveyed institutions
Fungal fermentation	Moderate	Often included in both theory and practical
Precision fermentation	Low	Rarely included; theoretical only
Cultivated meat	Low	Discussed theoretically in a minority of institutions
Insects	Low	Occasionally included in theory; not taught practically
Algal proteins	Low	Rarely referenced; limited awareness

Cross-workshop patterning

- W1–W2 emphasised classroom/department constraints (time, resources, assessment fit), while W3 surfaced institution/sector structures (awarding bodies, procurement, public vs private provider agendas).

Simplified curriculum opportunities flow

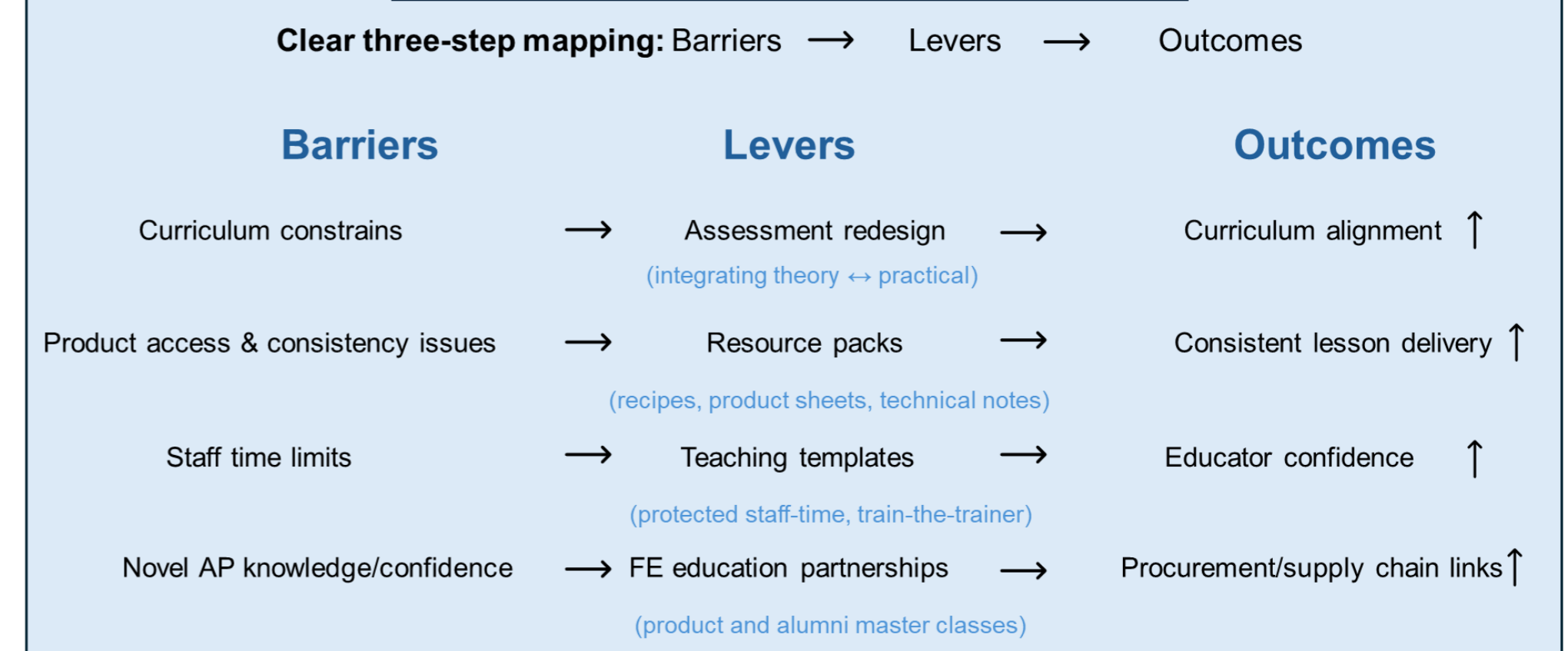


Figure 3: Curriculum opportunities

Conclusion

- Educators want to teach alternative proteins — but can't easily do so within current curriculum and resource constraints.
- No shared definition of “alternative proteins” creates confusion and inconsistent teaching.
- Quick-win solutions exist now: resource packs, train-the-trainer, and assessment tweaks.
- Wider change needs collaboration with awarding bodies and industry.
- A co-designed AP teaching module offers a timely path forward.

Limitations

- Very little existing research on chefs or educators — only ~7 relevant papers found.
- “Alternative proteins” means different things to different people — shaping how educators responded.
- Workshop sizes varied; some sessions had limited voices or dominant contributors.
- Further education providers differ widely in structure and resources, limiting generalisation.
- Educators' tight schedules may have constrained the depth of contributions.

Funding: This research was funded by the National Alternative Protein Innovation Centre: PF project number 180006642930