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ENTREPRENEURIAL COMPETENCIES OF GENERATION ALPHA: AN EXPLORATORY MIXED-METHODS STUDY OF STUDENT SELF-ASSESSMENTS AND EDUCATOR PERSPECTIVES

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Purpose: To pilot-test an age-appropriate diagnostic instrument for the quantitative self-assessment of entrepreneurial competencies among Generation Alpha students, in order to improve quality assurance in primary and lower secondary schools (ISCED levels 1 and 2).
Design/methodology/approach: We used a convergent mixed-methods design, integrating three data streams: (1) a random-sample, regionally representative student survey (N = 247), (2) a purposive teacher rating study (N = 28), and (3) qualitative focus group interviews with educator-experts (N = 5). The core analytical strategy was rank-profile concordance (Spearman's ρ, Kendall's τ-b) comparing within-source patterns and avoiding invalid cross-group mean comparisons.
Findings: First, the study provides evidence of a curricular imbalance in pedagogical focus in the studied region: competencies related to resource management rank highest, those related to value creation rank lowest. Second, student self-assessment yields internally consistent and diagnostically informative rank patterns. High rank-profile convergence (Spearman's ρ = 0.910) was found between student and teacher data. Differences in absolute means reflect a "Criteria Gap" rather than simple inflation (students rate self-efficacy; educators rate observed performance).
Research limitations/implications: The educator rating study (N = 28) is purposive and not representative. Student and educator samples were unmatched by design, enabling independent system-level triangulation through rank-profile comparison rather than individual-level linkage.
Practical implications: The findings indicate a need to rebalance curricula at ISCED levels 1 and 2. Policymakers and educators should shift from a dominant focus on resource management toward integrating modules for value creation to address the identified weaknesses.
Social implications: The study provides an evidence-based diagnostic approach that separates systemic failures from methodological artifacts and supports data-driven reforms cultivating the entrepreneurial mindset in Generation Alpha.
Originality/value: We present an initial baseline profile of Generation Alpha's entrepreneurial competencies in one Polish region, analyze variation across socio-demographic subgroups, and propose a method addressing the "Assessment Gap" in entrepreneurship education, offering triangulated evidence of the pedagogical imbalance between "Resource Management" and "Value Creation" at ISCED levels 1 and 2.
Keywords: entrepreneurial education, entrepreneurial competencies, generation alpha, self-assessment reliability, assessment gap.
Category of the paper: Research paper.

1. Introduction

The long-standing debate over whether entrepreneurs are born or made has converged on a clear policy position: entrepreneurial competencies can and should be developed through entrepreneurial education (EE). At ISCED levels 1 and 2, policy frameworks define entrepreneurship as acting on opportunities and ideas to create value for others, which broadens the objective beyond venture creation to transversal competencies and an entrepreneurial mindset (Bacigalupo et al., 2016; Council of the European Union, 2018; Joint Research Centre, 2024; Eurydice, 2025).

This shift coincides with the rise of Generation Alpha (born 2010 or later). Extrapolations from older cohorts are unsafe because their formative experiences and learning ecologies differ from those of today's ISCED levels 1 and 2 students (Dimock, 2019; McCrindle, Fell, 2020; Höfrová, Balidemaj, Small, 2024). Evidence on learning preferences and early platform immersion has implications for how EE is designed and delivered to this cohort (Burlacu, Coman, Bularca, 2023; Ofcom, 2024).

Practice in schools has bifurcated into two approaches competing for scarce curricular time. One emphasizes resource management (financial literacy, stewardship, sustainability). The other emphasizes value creation (opportunity recognition, innovation, problem finding and solving to generate social, cultural or economic value). Reviews indicate that resource management content is often over-represented relative to value creation despite the holistic scope of the EntreComp framework (Bacigalupo et al., 2016; Eurydice, 2025; Morris, Liguori, 2016). Without a cohort-specific baseline for Generation Alpha and a valid diagnostic strategy, policymakers cannot tell whether observed weaknesses are systemic or artifacts of measurement.

This study targets two connected gaps. First, the thematic gap: we provide a baseline profile of Generation Alpha's self-perceived entrepreneurial competencies at ISCED levels 1 and 2 in Poland's West Pomeranian Voivodeship. Second, the diagnostic gap: we implement a convergent mixed-methods design triangulating student self-assessments with educator ratings and educator focus groups and evaluate whether rank-profile patterns replicate across sources. This design separates curricular problems from differences in rating criteria and yields actionable implications for rebalancing EE at ISCED levels 1 and 2.

2. Literature review

The integration of entrepreneurial education (EE) into compulsory schooling has become a sustained policy priority for international bodies (Carvalho et al., 2022; Lackéus, 2015). Within the European Union, the competence of initiative and entrepreneurship is included among the eight key competences for lifelong learning (Council of the European Union, 2018), reflecting the view that EE develops transversal abilities such as creativity and adaptability (Eurydice, 2025; Lackéus, 2020).

At the primary and lower-secondary stages (ISCED levels 1 and 2), the literature identifies a substantive shift in emphasis (Fidan, Argıç, 2022; Moberg, 2014). The target has shifted away from venture creation or technical instruction on how to found a firm and toward cultivating an entrepreneurial mindset (European Commission, 2016), including dispositions such as initiative, self-efficacy and resilience (Council of the European Union, 2018).

The central reference for this broader conception is the European Entrepreneurship Competence Framework (EntreComp) (Bacigalupo et al., 2016). In this framework, entrepreneurship is understood as acting on opportunities and ideas to create value for others (Joint Research Centre, 2024). By recognizing financial, cultural and social forms of value, EntreComp positions EE beyond narrow commercial aims and aligns it with pro-social educational goals (OECD, 2021; Bisanz et al., 2019).

Despite convergence on aims and definitions, implementation remains uneven (OECD, 2021). Cross-national reviews continue to note a policy-practice gap, with practical entrepreneurial experiences frequently treated as optional or placed outside the core timetable (Eurydice, 2025). This incomplete transition toward mindset-oriented EE at ISCED levels 1 and 2 coincides with the emergence of a new cohort in schools: Generation Alpha.

2.1. Cohort specificity at ISCED levels 1 and 2: Generation Alpha versus Generation Z

A significant limitation in the current entrepreneurial education literature is the reliance on data extrapolated from older cohorts, primarily Generation Z (born c. 1997-2012) (Dimock, 2019). It is methodologically unsound to apply findings from Generation Z to the cohort now populating ISCED levels 1 and 2. Generation Alpha requires a new baseline profile (McCrindle, Fell, 2020), since this cohort was born entirely within the 21st century and lacks a pre-digital frame of reference. While Generation Z are often described as digitally native, Generation Alpha has experienced continuous exposure to touchscreens and voice assistants from early childhood (GWI, 2023).

The formative life events for these cohorts differ in substantive ways. Generation Z's views were shaped by the 2008 economic recession, whereas Generation Alpha's experience is defined by the COVID-19 pandemic (World Bank, UNESCO, UNICEF, 2021). The pandemic normalized technology-mediated education and social interaction, reinforcing distinct

preferences for highly visual, interactive, gamified and micro-content formats (Burlacu, Coman, Bularca, 2023).

Generation Alpha is also the first AI-native cohort, engaging with generative AI as part of the everyday environment rather than as a discrete tool (Ofcom, 2024; Cassandra Report, 2022). This profile has implications for entrepreneurial competencies such as opportunity recognition. Recent evidence points to high digital literacy alongside early interest in entrepreneurial activities (Tassin, Briggs, 2025). Industry reporting suggests this interest is reinforced by creator-economy dynamics in which digital influencers function as entrepreneurial role models (Visa, 2023; GoHenry, 2024). This combination of characteristics supports a revision of curriculum content and sets up the subsequent debate on curricular emphasis.

2.2. Thematic imbalance in curricula: resource management vs. value creation

While EntreComp promotes a holistic set of 15 competencies, reviews of implementation point to a thematic split. In practice, two camps compete for limited space in the ISCED levels 1 and 2 curriculum, reflecting an unresolved debate about the primary purpose of entrepreneurial education.

Camp 1, Resource Management, treats EE as a set of prudential life skills for stewarding existing assets. It is dominated by financial literacy initiatives and sustainability themes that stress responsible management of ecological resources. These strands are often mandated and align with established assessment traditions (Brookings Institution, 2022; Consumer Financial Protection Bureau, 2019). The practical outcome is preparation for responsible management within existing systems.

Camp 2, Value Creation, aligns with EntreComp's generative orientation and presents EE as a transformative mindset aimed at producing new value. Curricular emphasis falls on opportunity recognition and innovation, alongside creating social, cultural or environmental value rather than focusing solely on profit (Morris, Liguori, 2016; Tapsell, Woods, 2010; Joint Research Centre, 2024). This approach positions students as proactive agents who identify problems and deliver solutions for others.

The 2025 Eurydice report offers comparative evidence of imbalance between these camps. Knowledge-oriented abilities, such as financial and economic literacy associated with Camp 1, are widely represented, whereas skill- and attitude-oriented abilities central to Camp 2, including vision and coping with uncertainty, are comparatively underrepresented. This pattern is consistent with path-dependent systems that favor instruction and testing of concrete knowledge while struggling to assess abstract, non-linear competencies. Policy analyses similarly point to structural constraints that impede adoption of such competencies at ISCED levels 1 and 2 (Eurydice, 2025; OECD, 2021). This diagnosis motivates a careful reconsideration of how imbalance is measured and which assessment approaches should be trusted.

2.3. Assessment approaches and validity threats in entrepreneurial education

Assessment remains a persistent challenge in entrepreneurial education (OECD, 2021). Beyond the general difficulty of assessing abstract competencies such as creativity (Bacigalupo et al., 2016), the field is divided over which source to privilege: student self-perception or educator observation.

Approach A, student self-assessment (QUAN-S), dominates quantitative work. It is grounded in social cognitive theory and the theory of planned behavior (Bandura, 1986; Ajzen, 1991). Evidence consistently links entrepreneurial self-efficacy to entrepreneurial intention (Krueger, Reilly, Carsrud, 2000; Wu et al., 2022; Zhao, Seibert, Hills, 2005). Subsequent models corroborate this link, and self-assessment instruments are widely used to forecast intentions (Lüthje, Franke, 2003; Liñán, Chen, 2009; López-Núñez et al., 2022).

Approach B underscores a fundamental limitation of self-reports. While suitable for intentions, self-ratings are weak proxies for actual competence. Studies document a perception gap between student and educator assessments (QUAN-T), with systematic overestimation by students, frequently interpreted via the Dunning-Kruger effect (Kruger, Dunning, 1999).

This divergence has clear methodological implications. Direct mean comparisons across sources are inappropriate without establishing construct equivalence; otherwise, results may be misleading. Recommended practice is to adopt designs that move beyond mean differences and respect the distinct criteria used by each source (Linn, McLaughlin, Thissen, 2009; Jones, Thissen, 2006).

2.4. Synthesis and research gaps: thematic and diagnostic gaps motivating the design

The reviewed literature combines strong policy and theoretical foundations with two interlinked gaps that demand a specific empirical response.

The first is the Thematic Gap. A persistent two-camps debate is accompanied by comparative evidence of imbalance in European curricula, where Resource Management (for example, financial literacy) tends to dominate over Value Creation (for example, vision) (Eurydice, 2025; Lackéus, 2015). For the cohort now in ISCED levels 1 and 2, a cohort-specific baseline of entrepreneurial competencies is still missing. It remains unclear how Generation Alpha's characteristics – including early interest in entrepreneurial activities and informal creator-economy learning – relate to this pattern (Visa, 2023).

The second is the Diagnostic Gap. Studies repeatedly show a misalignment between student self-perceptions (QUAN-S) and educator assessments (QUAN-T), with consistent evidence of self-report inflation. Existing designs rarely reconcile the two sources to determine whether observed gaps reflect genuine weaknesses or measurement artifacts.

A targeted mixed-methods design follows logically. To address the Thematic Gap, surveys of Generation Alpha students (QUAN-S) using age-appropriate instruments can build the first baseline profile. To address the Diagnostic Gap, their data should be triangulated with educator

ratings (QUAN-T). Because direct mean comparisons are inappropriate without establishing construct equivalence, analysis should rely on rank-based concordance to test whether both sources share the same competency pattern even when levels differ (Linn, McLaughlin, Thissen, 2009; Jones, Thissen, 2006). Qualitative educator insights (QUAL-T) then complete the triangulation by explaining why the observed patterns emerge (Krueger, Casey, 2014; Hennink, Kaiser, Weber, 2019).

In sum, the literature supports a mixed-methods study that (a) establishes a baseline for Generation Alpha's entrepreneurial competencies, (b) diagnoses the two-camps curricular imbalance in practice, and (c) reconciles the assessment gap through rank-based comparisons combined with qualitative educator evidence.

3. Research methodology

We employed a convergent mixed-methods design for diagnostic triangulation (Creswell, Plano Clark, 2018; Fetters, Curry, Creswell, 2013), integrating three independent evidence streams collected in the 2022/2023 academic year in Poland's West Pomeranian Voivodeship, providing an early post-pandemic baseline for regional entrepreneurship education: a random-sample, regionally representative student survey of primary and lower secondary school pupils (QUAN-S), a purposive teacher rating study (QUAN-T), and educator focus-group interviews (QUAL-T). Across components, educator data were treated as contextual and explanatory. Samples were independent and unmatched. Therefore, we did not perform cross-group tests of level differences. Cross-source alignment was examined only as within-source rank profiles rather than through level comparisons.

3.1. Student survey (QUAN-S)

The student survey used a structured questionnaire administered in 2022 to primary-school pupils from Generation Alpha (born 2010 or later). The overall survey examined three domains of entrepreneurial education among direct recipients of educational services: (1) satisfaction with the quality of entrepreneurial education, (2) entrepreneurial attitudes and intentions, and (3) entrepreneurial competencies. The present article reports results for domain (3), entrepreneurial competencies. This article forms part of a broader research programme, with complementary analyses of entrepreneurial attitudes and intentions reported elsewhere (Tsimayeu, Michalcewicz-Kaniowska, Mickiewicz, 2025; Tsimayeu, 2023).

The questionnaire included 24 items, with 18 core items and six sociodemographic variables. To ensure construct validity and alignment with European standards, the survey items were adapted from the field-tested YouthStart framework, pedagogically grounded in the TRIO model (Bisanz et al., 2019), and aligned with EntreComp (Bacigalupo et al., 2016).

The target population consisted of students aged 7 to 12 enrolled in grades 2 to 6. A simple random sampling method was applied. Inclusion criteria were residence in the study region and attendance at the same school for at least 12 months. In total, $N = 259$ students participated, with valid competency data for $n = 247$ (response rate 95.4%).

Data were collected via paper-and-pencil interviewing (PAPI) under the supervision of trained researchers. Items used age-appropriate phrasing, simplified syntax and accessible vocabulary. To support engagement and reduce stress, response options were presented with a star-based visual scale mapped to numeric values 1-7.

Each of the 18 items assessing entrepreneurial competence and knowledge was rated on a 7-point Likert-type scale with item-specific anchors aligned to the stem. Depending on the item, anchors ranged from "definitely cannot" to "definitely can", "definitely do not know how" to "definitely know how", or "definitely not" to "definitely yes". All items were keyed in the positive direction so that higher values indicate greater self-assessed competence or knowledge.

A pilot study with 26 students assessed clarity and usability. Minor wording adjustments were implemented. Internal consistency for the competencies scale in the main study was high, Cronbach's alpha, $\alpha = 0.90$.

3.2. Teacher rating study (QUAN-T)

In the same academic year, a parallel teacher questionnaire was administered to a purposive (convenience-based) case sample of primary-school teachers in the West Pomeranian Voivodeship (N = 28; five schools). Recruitment proceeded through collaborating schools. Reachable and willing teachers participated. The instrument replicated the 18 student items with wording adapted for teachers to rate observed pupil competence on the same 1-7 anchors, ensuring construct alignment while reflecting a different rater perspective (Creswell, Plano Clark, 2018). The teacher component is non-representative by design and serves a diagnostic function: to check rank-profile replication and to provide quantitative context for themes identified qualitatively.

3.3. Focus group interviews with educators (QUAL-T)

To explain quantitative profiles and illuminate mechanisms, focus group interviews were conducted with five primary-education practitioners from the region, including a school principal and classroom teachers. This small, purposive sample was designed to provide illustrative contextual insights rather than statistically generalizable evidence. Discussion blocks covered assessment of pupils' entrepreneurial competencies and satisfaction, integration of entrepreneurship across subjects, availability and relevance of teaching materials, constraints and change levers, examples of good practice, and a structured brainstorm that included problem formulation, idea generation and deliberation. Excerpts and synthesized statements in joint displays are tagged as explicit support or analytic inference.

3.4. Analytical strategy and integration

Rank-profile alignment. Item means were converted to within-source ranks (1 = strongest). Alignment between independent sources was summarized with Spearman's ρ and Kendall's τ-b, both computed from the 18 paired mean scores using standard tie-corrected mid-ranks for ties, as descriptive profile-alignment metrics for all 18 items. These coefficients assess convergence of patterns rather than equality of levels. Accordingly, no cross-source t tests, ANOVA or regressions were conducted on unmatched samples (Jones, Thissen, 2006).

Joint display integration. A rank-only joint display was constructed using a pre-specified rule to select five focal themes: two High-high, two Low-low, and one Divergence defined as the largest absolute rank difference. For each theme, the display juxtaposes the student rank, the teacher rank, a concise focus-group excerpt or synthesis, and a one-line curricular implication. This integrates QUAN-S, QUAN-T and QUAL-T and informs the Discussion (Creswell, Plano Clark, 2018; Fetters, Curry, Creswell, 2013).

4. Empirical results

The sample of 247 primary-school students was balanced by gender and covered all targeted age and grade groups, including both urban and rural areas of varying sizes (Table 1). For reporting, respondents are grouped into four grade-level cohorts (grades 2-3, 4, 5, 6) and four age cohorts (7-9, 10, 11, 12 years). Older students constituted the largest proportion of the sample, which is consistent with regional demographic patterns (Statistics Poland, 2022).

Table 1.
Demographic profile of the student sample (N = 247)

Indicator	Options	Frequency (%)
Gender	Girl	48.58
	Boy	51.42
Age	7-9 years	20.65
	10 years	19.03
	11 years	27.53
	12 years	32.79
Place of Residence	Village	23.08
	Small town (≤50k)	30.77
	Medium city (51k-300k)	23.48
	Large city (≥300k)	22.67
Grade	2-3 grade	16.60
	4th grade	23.89
	5th grade	22.67
	6th grade	36.84

Note. Percentages are based on valid responses.

Source: Own study.

Table 2 reports item-level self-perceived entrepreneurial competencies across three domains. The overall mean across all 18 items was 4.89. Domain means were 4.72 for Developing ideas, 4.86 for Implementing ideas, and 5.29 for Thinking sustainability. The highest item means were 3.1.1 "I understand the importance of environmental protection" (5.58) and 3.2.2 "I can plan how to spend my pocket money" (5.53). The lowest item means were 1.2.1 "I can identify social problems and develop ideas to solve them" (4.31), 1.1.3 "I can explain what determines the price level of products in a shop" (4.32), and 1.2.2 "I can collect a set of ideas and record them in a notebook" (4.40). Subdomain means followed the same pattern, with higher scores for 3.1 Acting as a visionary (5.44) and 3.2 Financial literacy (5.15), and lower for 1.2 Identifying opportunities (4.63).

Table 2.
Entrepreneurial competencies of students (N = 247)

Area	Chapter	Code	Competency /Skill	Mean
1. Developing ideas	1.1 Attitude	1.1.1	I can identify areas in which I am good.	5.27
		1.1.2	I can focus on successfully completing my task.	4.98
		1.1.3	I can explain what determines the price level of products in a shop.	4.32
		1.1.4	I can reflect on my future education and future job.	4.69
	1.2 Identifying opportunities	1.2.1	I can identify social problems and develop ideas to solve them.	4.31
		1.2.2	I can collect a set of ideas and record them in a notebook.	4.40
		1.2.3	I can present my own ideas.	4.79
		1.2.4	I can recognize risks in everyday life and think about how to avoid them.	5.02
2. Implementing ideas	2.1 Organising	2.1.1	I can plan my time during the day.	5.04
		2.1.2	I can give examples of limited materials that we should save.	4.64
		2.1.3	I can plan goals and make decisions about how to achieve them.	4.59
		2.1.4	I can create a new useful object from available materials (such as "useless" waste or leftover materials).	4.63
	2.2 Working together	2.2.1	I can work with others as part of a team.	5.33
		2.2.2	I can negotiate responsibilities and solve potential problems when cooperating with others.	4.92
3. Thinking sustainability	3.1 Acting as a visionary	3.1.1	I understand the importance of environmental protection for our lives.	5.58
		3.1.2	I am aware of issues related to energy saving, protection of animals and plants, and I reflect on how I can contribute to solving these problems.	5.29
	3.2 Financial literacy	3.2.1	I can explain and compare the prices of products in a shop.	4.76
		3.2.2	I can plan how to spend my pocket money.	5.53

Note. Items were rated on a 1-7 Likert-type scale. Higher values indicate greater self-assessed competence or knowledge.

Source: Own study.

Table 3 summarises mean self-perceived competencies across key socio-demographic groups. In most groups, domain means follow the ordering: Thinking sustainability > Implementing ideas > Developing ideas; two exceptions are noted (Grade 6 and "Parents have higher education: No"). Gender differences are small. The overall mean is M = 4.85 for girls

and M = 4.93 for boys (Δ = 0.08). By place of residence, the lowest overall mean appears in large cities ≥300k (4.70) and the highest in medium cities 51k-300k (5.00). Villages and small towns lie between at 4.95 and 4.92. Grade-level patterns are non-monotonic. Grades 2-3 have the highest overall mean (5.11). Scores dip in grade 4 (4.65) and recover by grade 6 (5.03). Family background aligns with clear gradients. Students reporting parental entrepreneurship average 5.07 compared with 4.90 among those reporting no such background, with the lowest values in the "I don't know" group (4.59). For parental education, overall means are 5.11 for "Yes, both", 5.06 for "Yes, one", 5.05 for "No", and 4.57 for "I don't know".

Table 3.
Entrepreneurial competencies by socio-demographic group (N = 247)

Indicator	Options	Developing ideas	Implementing ideas	Thinking sustainability	Overall mean
Gender	Girl	4.66	4.78	5.35	4.85
	Boy	4.78	4.93	5.24	4.93
Place of Residence	Village	4.78	4.91	5.38	4.95
	Small town (≤50k)	4.77	4.84	5.33	4.92
	Medium city (51k-300k)	4.87	4.96	5.31	5.00
	Large city (≥300k)	4.46	4.73	5.13	4.70
Grade	2-3 grade	4.94	5.10	5.48	5.11
	4th grade	4.40	4.71	5.05	4.65
	5th grade	4.58	4.71	5.29	4.78
	6th grade	4.93	4.93	5.38	5.03
Parents started a company?	No	4.73	4.89	5.27	4.90
	I don't know	4.38	4.54	5.08	4.59
	Yes	4.92	5.00	5.47	5.07
Parents have higher education	No	4.89	4.88	5.60	5.05
	I don't know	4.33	4.53	5.09	4.57
	Yes, one	4.93	5.04	5.36	5.06
	Yes, both	4.99	5.09	5.40	5.11

Note. Entries are item means. Items were rated on a 1-7 Likert-type scale. Higher values indicate greater self-assessed competency or knowledge. Overall mean is computed across all 18 items.

Source: Own study.

Table 4 summarizes rank-order profiles for the 18 competency items from two independent sources: the student self-perception survey (QUAN-S, N = 247) and the teacher ratings (QUAN-T, N = 28). Within each source, item means were converted to ranks with 1 as the highest. The table reports the paired ranks and the absolute rank difference. Concordance is strong (Spearman's ρ = 0.910; Kendall's τ-b = 0.779). The mean absolute rank difference is 1.61 and the median is 1. These results indicate close agreement in relative ordering rather than equality of levels and prepare the ground for the focused comparison in Table 5.

Table 5 provides the central diagnostic integration for this study, integrating the quantitative ranks from the student self-assessment (QUAN-S, N = 247) and the educator ratings (QUAN-T, N = 28) with a single qualitative synthesis column derived from the educator focus groups (QUAL-T, N = 5). This joint display structures the findings by selecting five focal themes based on rank concordance: the two competencies with the highest shared ranks (high-

high), the two with the lowest shared ranks (low-low), and the single competency demonstrating the largest absolute rank difference (divergence).

The high-high category captures shared strengths, for example in "pocket-money planning" (3.2.2) and "environmental protection" (3.1.1). Conversely, the low-low category records shared weaknesses, for example in "identifying social problems" (1.2.1) and "price formation" (1.1.3). The divergence theme isolates "time planning" (2.1.1), where students rank the skill higher than teachers (for example, students rank 6; teachers rank 11). These specific rank pairings (for example, ranks 2 vs 1 for 3.2.2; ranks 18 vs 18 for 1.2.1) represent the strongest points of consensus at the top and bottom of the 18-item profile. This 5-rank gap for "time planning" (2.1.1) is also the maximum absolute divergence observed across all items, pinpointing it as the primary area of non-consensus.

Table 4.
Rank-order profile of entrepreneurial competencies: students vs teachers

Code	Skill/Competency	Students		Teachers		|Δrank|
		Mean	Rank	Mean	Rank	
3.1.1	I understand the importance of environmental protection for our lives.	5.58	1	4.61	3	2
3.2.2	I can plan how to spend my pocket money.	5.53	2	4.64	1	1
2.2.1	I can work with others as part of a team.	5.33	3	4.46	4	1
3.1.2	I am aware of issues related to energy saving, protection of animals and plants, and I reflect on how I can contribute to solving these problems.	5.29	4	4.46	4	0
1.1.1	I can identify areas in which I am good.	5.27	5	4.64	1	4
2.1.1	I can plan my time during the day.	5.04	6	3.86	11	5
1.2.4	I can recognize risks in everyday life and think about how to avoid them.	5.02	7	4.29	7	0
1.1.2	I can focus on successfully completing my task.	4.98	8	4.43	6	2
2.2.2	I can negotiate responsibilities and solve potential problems when cooperating with others.	4.92	9	3.79	13	4
1.2.3	I can present my own ideas.	4.79	10	4.14	8	2
3.2.1	I can explain and compare prices of products in a shop.	4.76	11	4.11	9	2
1.1.4	I can reflect on my future education and future job.	4.69	12	3.82	12	0
2.1.2	I can give examples of limited materials that we should save.	4.64	13	3.96	10	3
2.1.4	I can create a new useful object from available materials (such as "useless" waste or leftover materials).	4.63	14	3.79	13	1
2.1.3	I can plan goals and make decisions about how to achieve them.	4.59	15	3.71	15	0
1.2.2	I can collect a set of ideas and record them in a notebook.	4.40	16	3.46	17	1
1.1.3	I can explain what determines the price level of products in a shop.	4.32	17	3.61	16	1
1.2.1	I can identify social problems and develop ideas to solve them.	4.31	18	3.04	18	0

Note. Items were rated on a 1-7 Likert-type scale. Ranks are computed within each source with 1 as the highest rank and use standard competition ranking for ties (identical integer rank for tied means) for ease of presentation; Spearman's ρ and Kendall's τ-b are based on tie-corrected mid-ranks. Descriptive concordance across 18 items: Spearman's ρ = 0.910, Kendall's τ-b = 0.779, median |Δrank| = 1, mean 1.61, maximum 5. Concordance refers to relative ordering, not absolute levels. Teachers' data are diagnostic and are not used for inferential cross-group comparisons.

Source: Own study.

The final column, Qualitative synthesis, operationalizes the triangulation by tagging educator evidence as Explicit (direct statements or data) or Analytic (convergent inference by the researchers), as noted in the table note. It also distils educator insights into one-sentence, practice-focused implications. The display confirms alignment at the top and bottom of the competency profile and highlights one discrepancy in ratings.

Table 5.
Joint display of focal themes across sources (students N = 247; teachers N = 28)

Code	Theme	Rank (students)	Rank (teachers)	Rank profile category	Qualitative synthesis (QUAL-T; focus group interviews)
3.2.2	Pocket-money planning	2	1	high-high	Explicit: Financial-literacy routines at home and school, supported by savings and banking programs, make budgeting easy to practise. Implication: Extend from budgeting to comparison shopping and opportunity-cost tasks.
3.1.1	Environmental protection	1	3	high-high	Explicit: environmental awareness leads in teacher ratings. Analytic: cross-subject sustainability activities sustain frequent practice. Implication: use this platform for local value-creation projects.
1.2.1	Identifying social problems	18	18	low-low	Explicit: Lowest teacher score for spotting social problems and developing solutions. Analytic: Students need scaffolds to turn issues into projects. Implication: add problem-framing and idea-to-prototype steps.
1.1.3	Price formation	17	16	low-low	Explicit: Near-bottom ratings for understanding price drivers. Analytic: Abstract mechanisms are seldom practised due to material gaps. Implication: start from concrete receipt and shop simulations.
2.1.1	Time planning	6	11	divergence	Explicit: Goal-setting is weak in teacher ratings within Organising while students self-rate time planning higher. Analytic: Educators suggested that rigid school routines may be conflated with active planning skills.

Note. Ranks are computed within each source (1 = highest). The table integrates QUAN-S (students $N = 247$), QUAN-T (teachers $N = 28$) and QUAL-T (focus group interviews, $N = 5$). Evidence tags: Explicit = direct teacher data or interview statements; Analytic = convergent inference. Teacher data are diagnostic and not used for cross-group inference.

Source: Own study.

5. Discussion and conclusions

The quantitative and qualitative results of this study provide clear insights into the entrepreneurial competency profile of Generation Alpha, and they offer empirical answers to the central debates identified in the literature.

5.1. The curricular imbalance: resource management vs. value creation

This study provides empirical evidence that contributes to the two-camps debate. Our findings offer convergent, yet preliminary, mixed-methods indications that, in the studied region, the current pedagogical approach at ISCED levels 1 and 2 tends to emphasise competencies associated with Camp 1: Resource Management but gives comparatively less systematic attention to those central to Camp 2: Value Creation.

The competencies representing Camp 1 – namely, sustainability-related and personal financial literacy competencies (for example, 3.1.1 Environmental protection, 3.2.2 Pocket-money planning) – were consistently ranked as the strongest competencies by both students and teachers (Tables 4 and 5). This convergence suggests that the curricular emphasis on these topics, widely documented in policy and reviews (Council of the European Union, 2018; Brookings Institution, 2022), is being effectively translated into perceived student competence. The high ranking of these skills aligns with the traditional structure of primary education, which is well suited to delivering concrete, knowledge-based content such as household budgeting and ecological stewardship.

In stark contrast, competencies central to Camp 2 – the generative skills of identifying opportunities and understanding market mechanisms (for example, 1.2.1 Identifying social problems, 1.1.3 Price formation) – were consistently ranked at the bottom of the profile by both groups. This finding is critical. It empirically confirms the concerns raised by cross-national reports that abstract, skill- and attitude-based abilities such as vision are underrepresented in practice (Eurydice, 2025; Lackéus, 2015). The failure in these areas suggests that impeding educational structures have not yet adapted to teach the proactive, problem-finding mindset advocated by the EntreComp framework (Bacigalupo et al., 2016).

5.2. Reinterpreting the Assessment Gap: Rank Convergence and the Criteria Gap

Beyond the thematic imbalance, this study engages with the debated "Assessment Gap" between student self-assessments and educator judgements. While the literature often attributes higher student scores to self-assessment inflation or Dunning-Kruger-type miscalibration (Kruger, Dunning, 1999; Wisniewski et al., 2022), our findings are consistent with a more nuanced interpretation. Despite independent student ($N = 247$) and educator ($N = 28$) samples, their ratings yield highly congruent rank profiles across the 18 items (Spearman's $\rho = 0.910$; Kendall's τ-b = 0.779; see Tables 4 and 5). This convergence can be read as being consistent with the idea that discrepancies in absolute levels may, at least in part, reflect a "Criteria Gap" rather than mere measurement noise, although inflation effects cannot be definitively ruled out.

We posit that the two groups assess related but partly distinct constructs: pupils primarily rate their perceived self-efficacy ("I feel I can"), consistent with social cognitive theory (Bandura, 1986) and intention-focused models of entrepreneurship (Lüthje, Franke, 2003; Liñán, Chen, 2009), whereas educators rate observable applied performance ("I see them do").

The divergence in "time planning" (Rank 6 vs. 11) exemplifies this pattern: students are likely to draw on their experience of managing daily routines, while teachers focus on curriculum-based goal setting and sequencing. Thus, rather than being reducible to overconfidence, the observed gaps suggest partially overlapping assessment criteria. We therefore refer to this as the "Criteria Gap" working hypothesis, used here as an exploratory interpretive lens rather than as a statistically tested effect. In this reading, the pattern tentatively points to curricular weaknesses in "Value Creation" in the studied region rather than to mere methodological artefacts, but remains a provisional interpretation that requires verification in future studies using matched student–teacher pairs and designs explicitly contrasting inflation-based and criteria-based explanations (Jones, Thissen, 2006).

5.3. Implications for policy and practice, limitations, and future research

The triangulated findings, which support the interpretation of a curricular imbalance in the studied context and the diagnostic value of the observed gaps, have direct implications for educational policy and practice. A primary policy implication is the need to rebalance the curriculum at ISCED levels 1 and 2, moving away from an exclusive focus on Camp 1: Resource Management and toward the explicit integration of Camp 2: Value Creation skills in line with EntreComp and recent European evidence (Eurydice, 2025). The consensus finding that students are weakest in “identifying social problems” and “price formation” is not an abstract problem, but an actionable diagnostic. It calls for the immediate development and deployment of practical, project-based modules in which students engage in identifying problems and modeling value, extending beyond static ecological and financial literacy content.

However, simply calling for new modules is insufficient if we do not also address the root cause of the imbalance. Our qualitative findings show the imbalance persists because educators lack both (1) reliable diagnostics and (2) a “compendium of solutions” (materials) for specific gaps. Generic calls for project-based modules are insufficient. Policy should prioritise creating a dynamic repository in which specific, age-appropriate (ISCED levels 1 and 2) teaching materials are explicitly mapped to validated competency diagnostics, particularly those aligned with the EntreComp framework exemplified by the instrument piloted in this study.

Several limitations must be acknowledged to properly frame these findings. First, the teacher sample (QUAN-T, N = 28) was purposive, non-representative, and intended to diagnose curricular priorities rather than to provide generalisable estimates or to evaluate individual teacher performance. Second, the student (N = 247) and teacher samples were independent and unmatched. This methodological choice avoided cross-group mean comparisons on unmatched samples, which restricts the analysis to robust rank-profile comparisons.

These limitations naturally inform a clear agenda for future research. A priority next step is to replicate this study using matched-pair samples, with teachers rating their own specific students, to allow for more granular, multilevel analysis of the criteria gap. Second, a longitudinal study is necessary to track how these competency profiles evolve as Generation Alpha progresses through ISCED levels 1 and 2. Finally, future research should move from diagnostics to solutions by first developing and validating the compendium of solutions and then using quasi-experimental designs to test the efficacy of providing teachers with this integrated system, targeting the Camp 2 priority areas identified in this study.

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