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Preparing Generation Alpha for Higher Education through Disciplinary Knowledge Skills and Academic Coaching

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Abstract - As Generation Alpha transitions to higher education, universities are grappling with a curriculum dilemma regarding the transfer of a diverse set of digital technology experiences into lasting knowledge and skills that they can transfer on their own. The theoretical article that follows is a synthesis of a variety of 30 research papers addressing Generation Alpha education, digital and AI literacy, pedagogy in higher education, academic coaching, self-regulation, and transfer of learning. Eight additional workforce and foresight research sources reveal expectations with regard to AI-enabled work, green skills and career mobility. The article suggests that three educational processes are in operation. Disciplinary instruction provides students with ideas and criteria for evaluating evidence. These concepts are then applied in authentic tasks and feedback opportunities to make adjustments. Academic coaching assists students in planning and making purposeful use of feedback, in interpreting setbacks, and in planning their work. The framework acknowledges access and a student's preparation before the class as factors that affect the opportunities that a student can benefit from. It separates the short-term skill from the transfer of knowledge and skill to new tasks. Five propositions serve as a foundation for further evaluation including assessment of the first year coursework, delayed transfer, and students' ability to audit claims generated by AI.

Keywords Generation Alpha, higher education, academic coaching, disciplinary knowledge, skills transfer, AI literacy, self-regulated learning

1 INTRODUCTION

When students can get answers quickly from digital tools, what can they explain, do and evaluate? Ziatdinov and Cilliers (2021) expected this group to pose questions to universities on how they set up learning and how they support the use of knowledge. Their analysis is about the future population of students in a university. Nagy and Kölcsey (2017) doubted the scientific validity of the term Generation Alpha and Höfrová et al. (2024) showed that only a small number of the studies they found had identified real generational differences. These tools can provide a historical context for the students and provide them with knowledge, but it cannot be used to give institutions responsibility for evaluating individual students' preparation. The importance of this distinction is that being able to use one device or platform does not provide much information about the student's ability to assess a research claim, build an argument, or handle a long assignment. Beyond age, factors accounted for differences in the use of the Internet at high levels, found by Helsper and Eynon (2010). The concepts of digital natives and multitasking were also challenged by Kirschner and De Bruyckere (2017). The key issue is to incorporate the disciplines, applied skills and academic coaching in a way that allows students to make independent judgments in new contexts.

2 APPROACH AND SCOPE

This article employs a purposeful approach to the narrative synthesis of 30 unique scholarly papers, of which 12 were provided and 18 were supplementary papers chosen for their relevance to the conceptual question. The corpus consists of empirical studies, research reviews, theoretical articles and conference papers. The themes that were targeted in the selection were: educational conditions of Generation Alpha, development and assessment of the knowledge and skills in universities, academic coaching and self-regulation, and digital or AI literacy. The analysis focused on the setting and claims of each paper, and added compatible mechanisms to a framework. Issues with transition are identified through school based findings. The studies that occur in universities

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offer evidence of teaching and coaching practices in students' particular populations. Future-skill expectations were identified from eight additional sources: five related to workforce, sector or policy publications and three related to practitioner commentaries. They use their projections, scenarios and policy priorities to create educational responses. Claims are interpreted based on the geographic scope, sector, time horizon and purpose of each source. The suggested linkages are speculative and are subject to testing.

3 GENERATION ALPHA AND THE TRANSITION TO UNIVERSITY

Relationships and institutional context of relevance in school evidence. Erbenzer et al. (2026) conducted interviews with 46 teachers in Türkiye to capture the ways in which teachers mediate their classroom authorities, communication, and participation, including through experiential learning and empathy-based communication. In Kazakhstan, Abildina et al. (2025) explored interactive learning, teacher facilitation and family involvement in digital platforms, by interviewing teachers, parents and primary-school students. In one early childhood setting in Indonesia, Hasanah et al. (2026) noted a transition towards play, collaboration and proportional use of technology. These studies pinpoint practices and concerns in each setting, and ask universities the following questions: How do students experience academic authority, feedback, and collaboration during transition?

The learning environment is also influenced by institutional capacity. Interviews with the primary school teachers showed that pedagogical and technological practices vary in relation to project experience, and that there was not much focus on digital citizenship (Kayınova & Adıgüzel, 2026). Rahmawati et al. (2026) found that the teacher plays a part in the design, facilitation, assessment and professional learning process in the field of technology integration. Salun and Savytska (2026) conducted a survey of 64 students at a private lyceum, and based on this data they created an adaptive model that took into account the students' workload, wellbeing, autonomy and career orientation, along with their digital practices. All these studies indicated that induction in the first year could be useful in identifying students' prior opportunities for independent study and offer targeted support.

Technological enhanced teaching can have various educational purposes. Fernando and Premadasa (2024) identified the primary level game-based and gamified approaches and recommended longer examination studies involving more diverse learners. Bandara et al. (2024) talked about the concept of experiential teaching and social-emotional learning, along with experiences with immersive technologies and access issues. Murdianto et al. (2025) mentioned the local values-based hybrid approach in implementing character education in an Islamic boarding-school context. According to Mai and Giang (2026), the understanding of AI-mediated education should not be limited to education nor to learning and instead include an examination of social participation and the development of independent agency. For universities, they help them in designing activities to elicit the reasoning, collaboration or ethical judgement expected from students.

4 DISCIPLINARY KNOWLEDGE AND TRANSFERABLE SKILLS

Disciplinary knowledge is the concepts, methods, and standards that enable students to account for phenomena, make decisions about evidence, etc. Calculating a liquidity ratio is just one of the skills areas of competence in a commerce classroom. A student should also consider if the ratio is misleading due to seasonality, inventory quality, or financing. Critical thinking is made evident in decisions regarding the selection of evidence, testing of assumptions, and ways in which uncertainty is communicated. Constructive alignment provides a means for designing for such performance by linking intended learning outcomes, learning activities and assessment (Biggs, 1996). An outcome like “defend a financial recommendation using appropriate evidence” will ask students to practice interpreting evidence, a skill they will need to demonstrate in assessment. Studies on active learning and its impact on undergraduate performance within the STEM disciplines have found benefits, as stated by Freeman et al. (2014). An undergraduate physics experiment by Deslauriers et al. (2019) yielded increased learning in an active learning class with a corresponding decrease in the students' feelings of learning. Therefore, universities have the opportunity to evaluate student work together with engagement and satisfaction indicators in evaluating instructional design.

Transfer involves identifying, when appropriate, which principles are transferable across different contexts. Barnett and Ceci (2002) identified three types of dimensions of transfer: knowledge domain, physical setting, and timing. Perkins and Salomon (1988) described instructional routes that involve deliberate practice and abstraction and then application. An assessment can then be a second case with different assumptions, different data or a different audience that asks students to discuss what they have carried over from the previous task. A comparison will be made to see if students can find the general principle and apply it to their approach. Another environment for transfer is in career development. Bridgstock (2009) has suggested that employability involves one's ability to manage one's career and to communicate. Jackson (2015) noted the challenges of developing skills in WIL (Work - Integrated -

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Learning) and shared insights on how programme design can help. A placement or industry project may require students to record a decision, explain the disciplinary reasons for making the decision and reflect on what they would change about this if they were working in another organisation. These artefacts bring the applied learning to the life of students, academics and supervisors in the workplace.

5 ACADEMIC COACHING AND THE USE OF FEEDBACK

Academic coaching, as used here, is an intentional dialogue process in which students clarify a desired outcome, consider obstacles, make an action plan, and check in on follow-up. Disciplinary concepts taught and work assessed by course instructors. Students can benefit from coaches' assistance in the creation of a study plan, the development of questions to an instructor, or determining appropriate action as a result of a coach's feedback. In a randomised college coaching study, Bettinger and Baker (2014) found persistence increases. Campbell and Mogashana (2025) examined academic coaching practices in higher education and summarized differences in academic coaching design and results. The impacts of coaching are thus deserving of study with regard to participants, coaches, and results. Self-regulated learning offers an explanation for how coaching can help. Pintrich (2004) explained the regulation of college students' cognition, motivation, behaviors, and learning context. Zimmerman (2002) identified a cycle of forethought, performance and self-reflection. If a student is getting poor marks on a case analysis he or she may set a specific goal to select better evidence, then practice writing a case analysis using a new case, and then check to see if the new case analysis uses stronger evidence. The coaching conversation enables the student to select and track a strategy they can apply later without the coach's assistance. Feedback is important if students understand it and have a chance to utilize it. Nicol and Macfarlane-Dick (2006) linked formative assessment with SRL. Carless & Boud (2018) defined feedback literacy as four components: appreciating feedback, making judgements, managing affect and taking action. For instance, a teacher might notice that there is a gap between the evidence and the conclusion. The coach can assist the student to develop a revision plan, and another assignment can be conducted to determine if the student addressed the gap. The sequence makes feedback uptake visible and keeps the responsibility for the work with the students.

6 DIGITAL AND AI LITERACY AS ACADEMIC JUDGEMENT

Long and Magerko (2020) proposed that AI literacy consists of a series of skills and abilities, such as understanding AI technologies and critically analyzing them. Zawacki-Richter et al. (2019) found that the AI literature in higher education is rather scarce in pedagogical perspectives. Curriculum purpose is therefore a good foundation to begin integrating AI. For students creating an argument using a generative tool, assessment can include examining the sources, evidence of unsupported claims, reasons for keeping or changing claims, and the disclosure of the tool used. A module of commerce as part of the first year course might be set as a recommendation for inventory financing. Students would examine a draft created by an AI, review the draft with a source, explain the financial model, and calculate the impact of change in demand. Independent judgement is demonstrated with a short oral defence and a subsequent case under controlled conditions. Institutions can foster equitable participation by providing access to resources that allow for more equal opportunities, clarifying the process of source verification in the curriculum, and using alternative ways to demonstrate attainment of the same learning outcomes.

7 DISCUSSION

7.1 AI and automation increase the value of disciplinary judgement

Ramírez et al. (2026) explore how automation and structural change might re-replace declining jobs in the United States with those that are growing. They differentiate between broadly useful skills (problem-solving, interpersonal communication) and skills that will enhance access to higher value work and skills related to new tasks. They are also able to identify credentials and retraining as impediments to occupational mobility. As work becomes more technologically mediated, analytical and interpersonal skills are emphasized, according to Van der Knaap (2026) who focuses on the workplace. The US modelling is limited to the US labour market and the article in the workplace is from a practitioner's point of view. To prepare for Generation Alpha, individuals should become familiar with breaking down a task, determining where an AI system can help, and remaining accountable for assuming and communicating decisions. This necessitates a certain level of expertise and intentional practice in assessing the outputs of AI (Long & Magerko, 2020). In a commerce module, students might use AI to write a supplier comparison, compare the prices/terms of contracts to source documents, and make a recommendation if a price change occurs with the delivery costs. When the case is repeated under new conditions, it is possible to determine whether students can transfer their reasoning from the case in the first

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Vol. 15 Issue 11 , November - 2026

context to a different one within the same context, or to a different context altogether (Barnett & Ceci, 2002). Academic coaching may involve getting the student to recognize that they have a tendency to believe an output without verifying it and work with them to develop a verification strategy for the next assignment (Zimmerman, 2002).

7.2 The green transition connects technical knowledge to business and social decisions

The European foresight report outlines four scenarios on what the future of green skills and jobs will look like in 2050 and its implications for labour shortages, skills mismatch and access to training (Knudsen et al., 2024). The expectations outlined in the cement-sector report have a realistic context. It examines the implications for qualifications and training requirements that could arise in six EU countries with the use of carbon capture, utilisation and storage, hydrogen and low-carbon cements. It also highlights some of the "cross-cutting needs" like analytics, collaboration and "hands-on learning" (VDZ, 2025). The United Nations Industrial Development Organization (2025) places Green and Digital skills in an industrial development agenda and urges the enhancement of connections between education, vocational training and industry. Green competence for Generation Alpha can be built through projects which link technical changes to financial, operational and work consequences. Commerce students could work with engineering students and a local manufacturer to compare two ways of being energy effective. Students might approximate the amount of investment required and the time period needed to recoup this investment, define the range of estimates and the assumptions that go into them, and describe how the proposed change would impact worker training requirements. Students can receive feedback on the practicality of their recommendations through a work-integrated project (WIP) (Jackson, 2015). If a second case occurs in a sector different from the first, they can test if they are able to transfer the arguments and adjust their hypotheses.

7.3 Career adaptability depends on pathways and opportunities to practise

This is a study of education-employment gaps in India by Kapoor et al., (2025) using labour-market and skilling data sources, such as Sector Skill Councils and apprenticeship. Their report provides a foundation for Indian institutions to think about ways in which courses, apprenticeships and partnerships with industry can relate to real work. As for the portfolio career and the concept of jobless growth, see Jobgether (2025), and for the need to start to build transferable interpersonal skills early, see Lighthouse Learning (n.d.). These practitioner commentaries address issues related to career continuity and preparation early in a career. No one knows how many of these jobs will be occupied by portfolio workers, nor how they will be distributed. Collaborative problems and reflection on what students enjoy and do well can help students begin exploring careers at school. In a higher education institution, they can use that to create a portfolio of assessed work, placements and industry projects. They will be expected to demonstrate what contribution they gave in the portfolio, how they took feedback on that contribution and how they modified a skill in another context. A coach can assist them to trace that evidence to an adjacent role, to determine that they have an authentic ability or credential gap, and to select a learning step (Bridgstock, 2009; Campbell & Mogashana, 2025). The following factors are relevant to clear placement routes, equipment and digital tools available to students, and about advising on credentials: Students do not have the same opportunities to acquire and demonstrate the same skills. The three strands converge in one outcome: Make a defensible decision under new conditions using disciplinary knowledge. A student that can substantiate an AI-generated claim, assess an environmental trade-off, and explain to a combined team illustrates a number of abilities in one task. The ability of Generation Alpha to acquire these skills will rely on opportunities that will be provided for students to practise skills and rehearse, receive feedback, apply the skills to new settings, and access additional training as jobs evolve.

8 PROPOSED FRAMEWORK AND RESEARCH PROPOSITIONS

The framework starts with disciplinary knowledge, centreing skills development in guided application and feedback, and supports self-regulation with academic coaching in between. The desired result is to transfer. Digital and AI literacy is used in these processes, opportunities to practise are influenced by access, and by the availability of coaching, and digital and AI are also applied in these processes. Students can apply and demonstrate those capabilities in three contexts: AI verification, Sustainability analysis, and Career planning. The framework separates the level of quality of the submission, the students' ability to explain the reasons for their work, and their performance on a new task after a time lapse.

P1. Alignment among disciplinary outcomes, guided practice, and assessment will be positively associated with students' ability to explain and defend decisions in unfamiliar cases.

P2. Practice across cases that vary in context and assumptions will improve delayed transfer compared with equivalent practice using a single case context.

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Vol. 15 Issue 11 , November - 2026

P3. Academic coaching will improve feedback uptake through gains in goal setting, progress monitoring, and reflection. Feedback uptake can be measured through documented revisions and subsequent performance.

P4. Explicit instruction and practice in auditing AI-generated claims will improve source verification and error detection compared with access to AI tools without verification instruction.

P5. Reliable access to course resources and accessible coaching will strengthen the relationship between participation in guided practice and demonstrated transfer. Baseline differences in prior knowledge and digital access should be measured when testing this relationship.

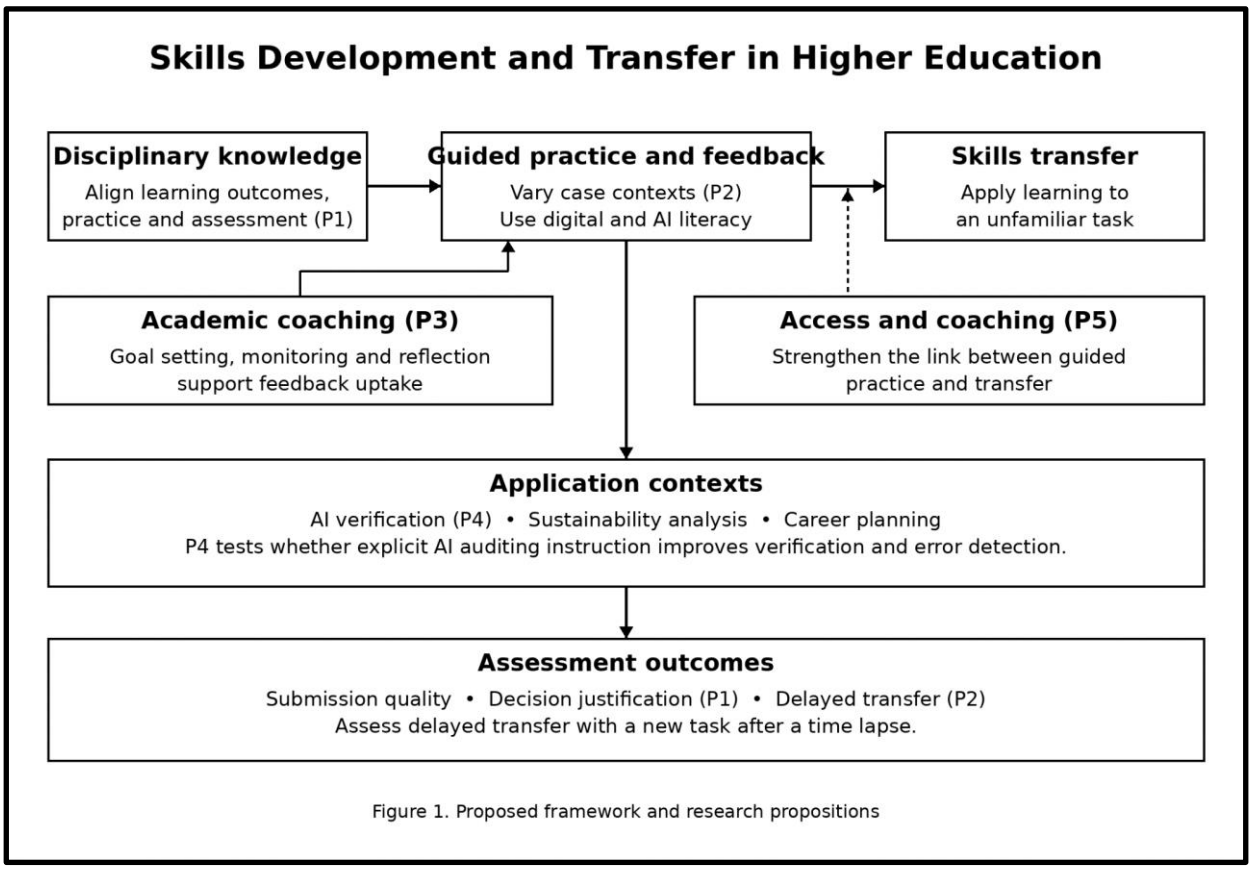


Figure 1. Proposed framework and research propositions

9 IMPLICATIONS AND RESEARCH AGENDA

A first year programme might use the framework via a low-stakes diagnostic case, followed by an assessed case with feedback, and then a case in a different context/assumptions later in the year. Coaching can take place around points while the student has the opportunity to make changes. Rubrics have the potential to score conceptual accuracy, consideration of evidence, justification of a decision and adaptation to the new case separately. These can be seen as outcomes of a course and can be complemented by course completion and persistence as wider outcomes. It might be possible to perform a multi-institutional study, using the framework with sections using usual instruction, with a randomisation at section level, if possible. Baseline measures should include the students' previous experiences with feedback or coaching, as well as access to technology and disciplinary preparation. Researchers would be able to measure immediate performance and re-assess that performance after a predetermined period with a novel task. Interviews and/or revision records may provide insight to how students utilized feedback, whether coaching facilitated independent strategies, and what implementation conditions influenced participation. The synthesis is purposeful and cross-sectoral, and some of the Generation Alpha learnings are from the school context. The supplementary sources contribute to various geographies and sectors, and their estimates and scenarios are based on assumptions regarding technology adoption, regulation and investments. The university studies concern earlier cohorts of students and diversity in instructional contexts. This restricts the potential of making cohort-specific claims and ensures that the propositions can be tested with the entry of Generation Alpha students to higher education.

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Vol. 15 Issue 11 , November - 2026

10 CONCLUSION

Preparing Generation Alpha for the evolving landscape of higher education and future work requires an integrated pedagogical framework that moves beyond technical fluency to cultivate independent academic judgment and adaptive skill transfer. Disciplinary instruction establishes the foundational concepts and critical standards required to evaluate evidence and construct defensible arguments. Guided application, paired with structured feedback across diverse problem contexts, allows learners to refine these capabilities and demonstrate far transfer. Academic coaching reinforces this continuum by promoting self-regulated learning, effective goal setting, and meaningful feedback uptake. Furthermore, embedding AI and digital literacy as explicit practices of critical verification ensures that students develop the analytical discernment necessary for an automated world. Ultimately, institutional commitment to equitable access, scaffolded practice, and reflective inquiry will determine how successfully Generation Alpha navigates novel academic, professional, and societal challenges.

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