Early Signals, Future Pathways: A Systematic Review of the Middle School Indicators for College and Career Readiness and Success, 2007–2026?

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Introduction

Background

- In 2022, 2.1 million U.S. youth were out of school without a high school credential (NCES, 2024).
- Academic difficulties and disengagement associated with dropout often begin before high school.
- Middle school is a critical developmental window when achievement, engagement, and future pathways begin to diverge.

Problem Statement

- Early indicators are defined and measured inconsistently across academic, behavioral, and socio-psychological domains.
- Few studies connect middle-school indicators with long-term postsecondary and workforce outcomes.

Study Purpose: This review synthesizes research from 2007–2026 to identify promising early indicators and clarify how they connect to later college and career outcomes.

Research Questions

- **RQ 1:**
  - Which middle school indicators are associated with students' long-term college and career outcomes, and how have these indicators been defined and measured across existing research?
- **RQ 2:**
  - Which measures observed during the transition from middle school into early high school function as intermediate outcomes linking middle school experiences to long-term college and career outcomes?
- **RQ 3:**
  - What evidence links middle school college- and career-related practices to changes in middle school indicators and to intermediate and long-term outcomes?

Literature

Defining College and Career Readiness and Success

- **College readiness:** Academic preparation and behaviors needed to enter and succeed in postsecondary education.
- *Examples: high grades, high engagement level, advanced-course completion, and on-track status.*

- **College success:** Educational outcomes achieved after high school.
- *Examples: college enrollment, persistence, credit accumulation, and degree or credential completion.*

- **Career readiness:** Knowledge, skills, confidence, and experiences that prepare students to make educational and occupational choices.
- *Examples: career exploration, decision-making self-efficacy, adaptability, and technical skills.*

- **Career success:** Longer-term achievements in the workforce.
- *Examples: employment, job stability, career advancement, sustained earnings, and career satisfaction.*

Literature

The Middle Grades as a Unique Stage

- During ages 11–14, students experience major changes in identity, emotions, relationships, and independence.
- These changes increase their need for autonomy, belonging, and supportive relationships with adults and peers.
- When schools do not meet these developmental needs, students may experience lower confidence, weaker relationships, and greater disengagement.
- At the same time, students begin connecting their academic experiences with future college and career possibilities.
- The middle grades offer a critical opportunity to provide timely support and strengthen students' future pathways.

Readiness and Success Across the Developmental Spectrum

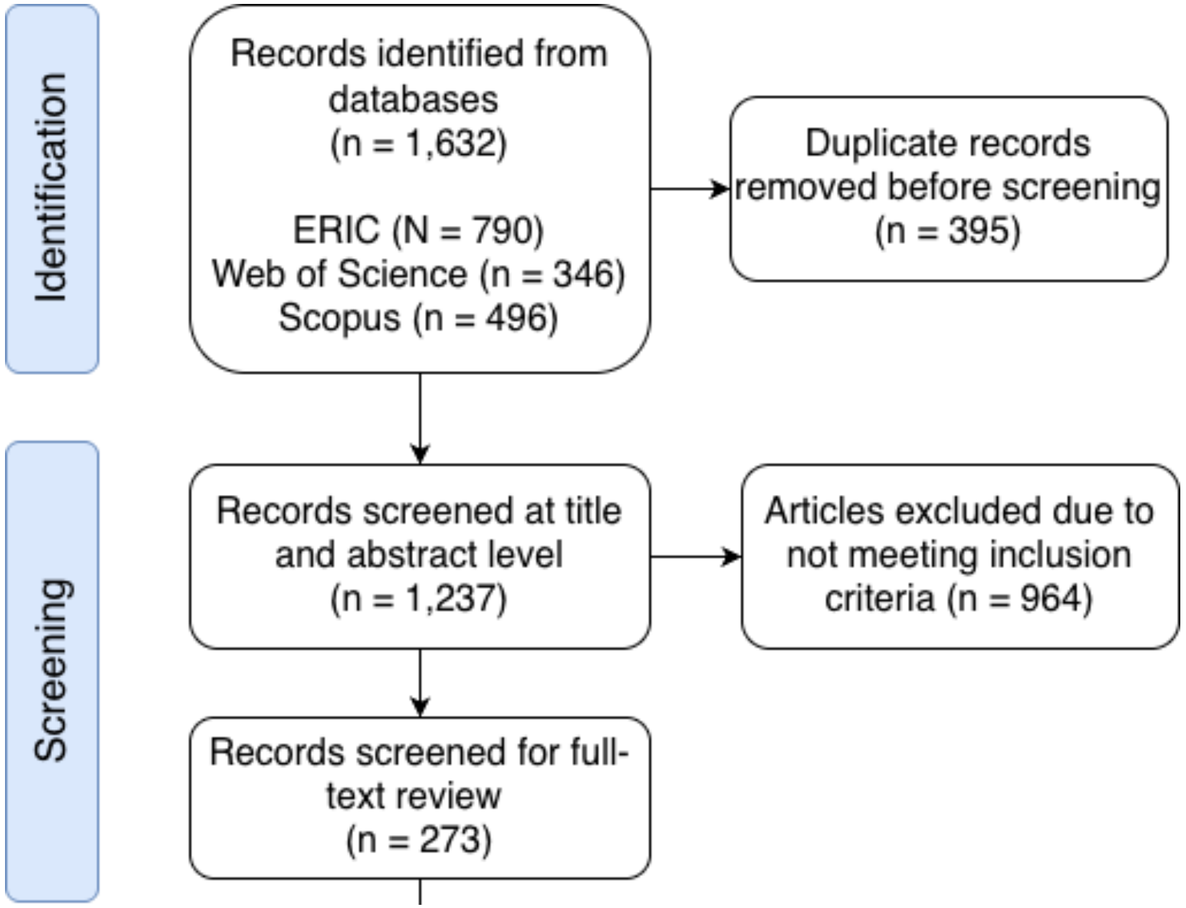
Middle School Indicators (G6-8)	Intermediate Outcomes (G9-10)	Long-term Outcomes (G11-)
Provide early signals of whether students are building the foundations for future success • Academic Progress • Behavior and School Engagement • Motivation and identity • Details presented below	Show whether middle school preparation is translating into high school momentum. • Core-course credits, and GPA • Graduation on-track status • Advanced course completion • College-going and career aspirations	Ultimate goals of college and career pathway • High school graduation • Postsecondary enrollment • Certificate or degree completion • Career identity, and purpose • Employment in a chosen field • Job retention, advancement, and earnings

Data

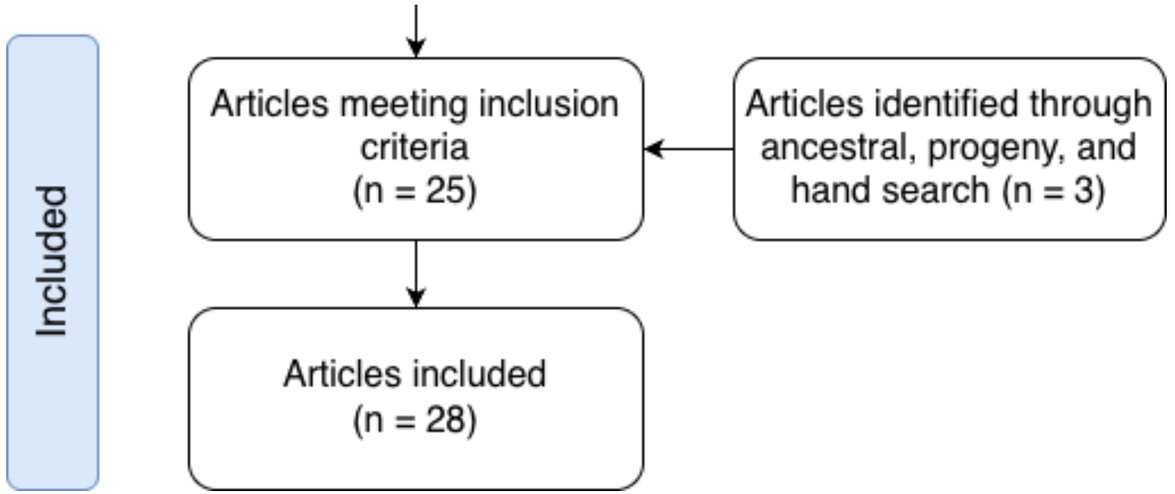
- **Dataset**
  - ERIC, Web of Science, and Scopus
  - Studies published from 2007–2026
  - Identified 1,632 records, remove duplicates, 1,237 records
  - Citation tracking and journal hand-searching supplemented
  - The final dataset included 28 publications: 26 empirical studies, one systematic review, and one conceptual commentary.
- **Study Sample**
  - Studies focused on students in Grades 6–9, including the transition from middle school to high school.
  - Individual study samples ranged from 76 to 683,471 students.
  - Data sources included administrative records, transcripts, standardized assessments, student surveys, and digital learning records.

(1) middle school OR middle grades OR junior high OR grade 7 OR grade 8 OR grade 9 OR early adolescents;
(2) career exploration OR career development OR career readiness OR career awareness OR career aspirations OR work-based learning OR career and technical education OR vocational education OR college readiness OR college and career readiness OR postsecondary enrollment OR educational aspirations.

Method

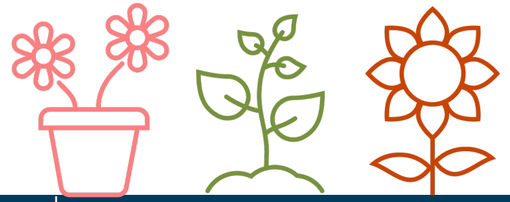


- Focused on students in Grades 6–9 or the middle-school-to-high-school transition.
- Examined at least one middle-school indicator, intermediate outcome, or long-term college/career outcome.
- Provided peer-reviewed quantitative or empirically grounded evidence.



Limitations

- **Incomplete coverage:** Database indexing, inconsistent terminology, English-only criteria, and the exclusion of gray literature may have omitted relevant studies.
- **Limited comparability:** Studies used different definitions, measures, data sources, follow-up periods, and research designs, preventing a formal meta-analysis.
- **Overlapping evidence:** Some publications analyzed the same samples or interventions, so 28 publications do not represent 28 independent studies.
- **Limited inference:** Because most studies were observational and U.S.-based, the findings cannot establish causality and may not generalize to other contexts.



Findings

Middle School Indicators for College and Career Readiness and Success

College Success Track

Academic achievement is the strongest early signals of college readiness, enrollment, and persistence (Dougherty et al., 2017; Hester et al., 2021; Johnson et al., 2022).

Indicators: ELA, math, and science achievement; course grades and completion; on-track status.

Academic Progress

Career Success Track

Strong academic preparation helps students enter and progress through career-oriented courses and pathways (Adamuti-Trache et al., 2020; Lindsay et al., 2021).

Indicators: Career-connected academic skills; preparation for CTE; career-related course completion

Attendance, participation, homework completion, and school belonging indicate whether students are connected to learning. (Gaertner & McClarty, 2015; Hester et al., 2021, 2022).

Indicators: Attendance; classroom participation; homework completion; attention; belonging; use of academic supports.

Behavior & Engagement

Career-track engagement is reflected in sustained participation in career exploration, career-focused coursework, CTE sequences, and age-appropriate work-based learning (Orthner et al., 2013; Perry et al., 2018; Woolley et al., 2013).

Indicators: Career-exploration participation; participation in career-connected and work-based experiences.

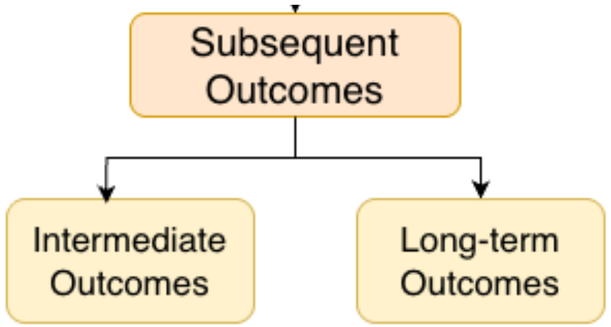
Educational expectations, academic self-efficacy, and college aspirations help students see postsecondary education as attainable (Gaertner & McClarty, 2015; Glessner et al., 2017; Hill & Wang, 2015).

Indicators: Educational expectations; college knowledge; academic confidence; college-going identity; sense of purpose.

Motivation & Identity

Career interests, aspirations, self-efficacy, and identity help students explore options and make informed pathway decisions (Glessner et al., 2017; Perry et al., 2018; Wang & Wang, 2025).

Indicators: Career awareness; aspirations; exploration; planning; decision-making confidence; career identity and purpose.



- Core-course completion in mathematics, English language arts, and science
- Credit accumulation
- Completion of Algebra I or advanced mathematics courses
- CTE or career pathway enrollment
- Work-based learning participation
- On-track status for high school graduation
- College-readiness measures, such as GPA and ACT scores
- Continued engagement in STEM or career pathways

- High school graduation
- Postsecondary enrollment
- Postsecondary persistence
- Certificate or degree completion
- Employment
- Earnings
- Entry into a career-related field

Intermediate and Long-Term College and Career Outcomes

- College-focused measures included GPA, credits, on-track status, readiness assessments, and advanced coursework.
- Career-focused measures included CTE pathway entry, STEM course-taking, career plans, and vocational identity.
- Grade 9 on-track status predicted graduation, but few studies connected intermediate outcomes to long-term college or career success.

Experimental and Quasi-Experimental Evidence

- **Career-focused instruction:** CareerStart improved school valuing and mathematics achievement.
- **Mathematics acceleration:** Objective placement expanded equitable access and improved advanced course-taking, assessment performance, and college intentions.
- **ELA remediation:** Double-dose instruction increased college-credit coursework, college enrollment, persistence, and degree completion.
- **Technical education:** Technical high school improved graduation, employment, and earnings for male students with disabilities, but effects were not significant for females.

Discussion

- Middle-school readiness develops across three stages: early indicators, high-school intermediate outcomes, and long-term attainment.
- Readiness is multidimensional, involving academic progress, behavior and engagement, and motivation and identity.
- College-focused studies more often examined postsecondary outcomes; career-focused studies typically stopped at interests, aspirations, and pathway choices.
- Few studies connected middle-school preparation with degree completion, employment, or earnings.
- Predominantly observational evidence limits conclusions about which practices cause long-term improvement.

Discussion

Recommendations for Future Research

- Follow students from middle school through high school, postsecondary education, and employment.
- Link academic, behavioral, motivational, postsecondary, and workforce measures across developmental stages.
- Expand career-focused research to examine credentials, employment, earnings, job stability, and career satisfaction.
- Use stronger longitudinal, experimental, and quasi-experimental designs to examine timing and causal effects.

Suggestions for Policy and Practice

- Use multidimensional indicators as developmental signals—not fixed predictions of students' futures.
- Connect early identification with timely academic support and whole-student advising.
- Monitor progress in core subjects, course sequences, attendance, engagement, aspirations, and self-efficacy.
- Integrate career-relevant examples into academic instruction.
- Provide sustained college and career exploration, counseling, and transition support.

Q & A

- **Thanks for listening!**
- **Welcome questions and constructive feedback.**