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The K-16 education movement: common themes across K-12 and higher education systems to inform development and evaluation

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The K-16 education movement broadly includes efforts to streamline educational pathways across K-12 and higher academic and other systems to enhance adult and career readiness and address inequitable opportunities and resources faced by many vulnerable students. The movement remains largely aspirational, however, with little consensus and few tenets available to guide K-16 program development and evaluation. This article presents a preliminary scoping review of several major student themes that crosscut K-12 and higher education systems and that could inform K-16 education initiatives. These themes include student progression and completion; student engagement; student mental health; and student demographic and generational characteristics. Each theme is explored with respect to commonalities across K-12 and higher education systems. Examples include risk/protective factors, ecological levels, barriers, sophisticated data analysis, intervention, school climate, belongingness, student-teacher interactions, academic warning signs, tiered/stepped care models, and demographic and generational changes. A key underlying thesis throughout the article is movement toward a dimensional perspective that considers student development, support needs, learning strategies, and other domains along an educational spectrum rather than as distinct K-12 and higher education categories.

KEYWORDS

K-12 education, higher education, K-16 education, student progression and completion, student engagement, student mental health, student demographic and generational changes

1 Introduction

The K-16 movement broadly refers to efforts to streamline educational pathways across K-12 and higher academic and other systems, in part to enhance adult and career readiness and in part to address inequitable opportunities and resources faced by many vulnerable students who become disconnected from formal schooling (Hondzel et al., 2019). The movement often involves linkages among school districts, higher education centers, job training facilities, employers, and other entities that serve to bridge K-12 completion with ongoing readiness development into emerging adulthood (Lee and Jaeger, 2021). These bridges

can be designed, for example, to help students finalize high school graduation requirements while simultaneously transitioning toward initial community or other college courses, technical certification, vocational training, military service, or other options (Bettencourt et al., 2022). Key mechanisms include dual enrollment, alignment of high school curricula with higher education admissions criteria, work-based and service/experiential learning, mentoring, summer programs, and reduction of financial and technological barriers (Domina and Ruzek, 2012). The K-16 movement thus aims to diversify educational pathways, particularly for students who become separated from the adult and career readiness process due to personal, economic, structural, or other variables (Kearney et al., 2022).

The K-16 movement remains in development and largely aspirational, with a strong empirical basis for any synthesized pathway yet to be established. In fact, the literature bases on K-12 and higher education continue to be quite detached from one another even though similar themes apply to both systems. This is partly a function of the fact that the systems do have fundamental differences with respect to legal and financial standing, cost, modes of instruction, grade and examination formats, role of primary caregivers, tutoring supports, class schedules, and required documentation (Deming and Figlio, 2016). Another fundamental difference is that higher education students are generally expected to demonstrate greater self-initiative and self-advocacy with respect to their academic progress than middle/high school students (Kilgore and Wagner, 2017). Trends for the two systems also differ. For example, the high school graduation rate continues to steadily increase but the college enrollment rate continues to steadily decline (EAB, 2020).

Despite these differences, certain themes do apply to both K-12 and higher education systems and have emerged in both literature bases regarding these systems. The purpose of this article is to present, in a preliminary scoping review fashion, several major themes that crosscut K-12 and higher education systems and that could form the basis for a more cohesive theoretical framework and for empirical study regarding K-16 programs. These themes include student progression and completion; student engagement; student mental health; and student demographic and generational characteristics. Note that K-16 involves more readiness avenues than higher education *per se*, but the literature base on higher education is more developed. The themes described in this article, however, may also apply to other K-16 readiness avenues (e.g., vocational training). In addition, the focus of this article is largely on student-oriented variables given the available literature, but other domains such as teacher/faculty supports are also pertinent. Each of the following sections involves a discussion of the key themes mentioned above, with a focus on K-12/higher education commonalities and potential future avenues for K-16 development and evaluation.

2 Student progression and completion

Student progression through a particular academic system as well as final completion of mandated requirements are key aspects of both K-12 and higher education systems. At the K-12 level, literature on student progression and completion generally focuses on school absenteeism (time missed from school) and school dropout (permanent departure from school prior to graduation). School absenteeism and school dropout share many risk factors, with an accumulation of risk factors likely more relevant to school dropout (Goulet et al., 2020). Gubbels et al. (2019) conducted a large-scale meta-analysis of predictors of school absenteeism and dropout, the results of which are summarized here. Key child predictors of school absenteeism included negative school attitude, low academic achievement and self-concept, substance use, psychiatric problems, sexual minority status, risky behavior, older age, history of grade retention, and learning difficulties. Key caregiver/family predictors of school absenteeism included low parental school involvement, child maltreatment, inadequate attachment, ineffective family systems, less family income, low parental education and control, parental psychiatric problems, and absence of a nuclear family. Key school-based predictors of school absenteeism included poor student-teacher relationships and negative school climate. Similar factors predicted school dropout, in addition to poor general well-being, adverse childhood experiences, racial minority status, and involvement with deviant or truant peers.

At the higher education level, much of the literature regarding student progression and completion focuses on persistence/retention (students returning for study in year two and in subsequent years) and attrition (student departure prior to degree completion). Predictors of persistence/retention often surround degree of motivation and satisfaction regarding the learning process, sense of belongingness, financial aid and accommodations, peer and family support, time management skills, frequent communication with instructors, and external commitments (Hart, 2012; Stewart et al., 2015; Tinto, 2022). Predictors of higher education student attrition often involve student variables such as older freshman student age, male gender, racial minority status, less self-awareness regarding academic ability, early academic difficulty, and number of working hours. Social network variables include families with less income and students with less peer and instructor integration and institutional commitment. Broader variables include reduced quantity and quality of institutional services and facilities, excessive class size, less selective admissions criteria, and higher tuition and less financial aid for low-income students (Aina et al., 2022). Others have investigated student attrition with specific respect to online education, finding that key risk/protective factors surrounded study and learning strategies, academic self-efficacy, educational goals and intentions, adjustment to the learning institution, outside employment, and quality of supportive networks and student-faculty interactions (Delnoij et al., 2020).

The overlap of some predictive variable themes across the K-12 and higher education systems has several ramifications for developing and evaluating K-16 initiatives. First, the study of both educational avenues has gravitated toward an ecological approach that understands the student as part of a complex system involving caregivers, families, and peers as well as characteristics of the school environment and surrounding community (Starrett et al., 2022). As such, formal evaluations of K-16 programs should, at a minimum, involve the measurement of several key common factors across microsystem (student immediate environment), mesosystem (interconnected microsystems), exosystem (social structures), and macrosystem (cultural elements) levels (Bronfenbrenner, 2005). Pertinent examples include student academic motivation and mental health, caregiver support and family income, student-teacher relationships and institutional climate and instructional methods, and educational policies and structural racism and discrimination (Skinner et al., 2022). In addition, K-16 initiatives should examine key chronosystem (variations and continuities over time) variables that impact the gradual process of adult and career readiness from young adolescence to emerging adulthood (Mulisa, 2019). Examples include changes in student self-efficacy and maturity, caregiver and family expectations, peer connections, school admissions

standards, labor and economic trends, and how each generation views education differently (Perez-Vergara, 2019).

A second ramification of overlapping themes across K-12 and higher education system literatures is an ecological focus on barriers to student progression and completion. Examples of key barriers that broach both educational systems include lack of access to school supplies and necessary technological supports, accessibility challenges, competing work-school roles, peer victimization, curriculum bottlenecks, and transportation vulnerability (Bellare et al., 2023; Kearney et al., 2023). Common broader-level barriers include persistent opportunity gaps that intersect with inequities in academic preparation, health, housing, nutrition, and safety, among other variables (Banks and Dohy, 2019). Future evaluations of K-16 programs must address key barriers and how these are to be reduced. A focus on barriers via broader ecological lenses also helps remove stubborn deficit narratives that tend to place onus, blame, and stigma on students and their families for disruptions in educational progression at multiple levels (Carales and López, 2020).

A third ramification of overlapping themes across K-12 and higher education system literatures with respect to student progression and completion involves the increased use of data mining, algorithmic modeling, machine learning, and learning analytics to decipher trends in student and related variables (Hernández-de-Menéndez et al., 2022; Kearney and Childs, 2023). Such analyses of typically very large data sets can be used to inform preventative and intervention efforts such as early warning systems for academic failure and predictive profiles for dropout/attrition (Larrabee Sønderlund et al., 2019). Information dashboards, or visualized data updated in real time for various stakeholders, can also be populated by such analyses and have been proposed in both the K-12 and higher education literatures (Du et al., 2021). Dashboards are often used to track student academic progress and attendance, provide feedback and boost student insight into learning behaviors, and guide decision-making processes for schools (Susnjak et al., 2022). Learning analytics and information dashboards can assist the development and evaluation of K-16 programs by better contextualizing student learning experiences, understanding student outcomes over time, examining early indicators of adult and career readiness, and aligning strategic objectives across various educational pathways (Lee and Jaeger, 2021). Note that substantial ethical, privacy, and data integrity and fidelity concerns apply to the use of learning analytics (Viberg et al., 2018).

A fourth ramification of overlapping themes across K-12 and higher education system literatures with respect to student progression and completion involves similarity in intervention components. K-12 intervention components to address school absenteeism and prevent school dropout commonly include teacher and peer mentoring and tutoring, life skills training, violence reduction methods, mental health interventions, parental involvement initiatives, orientation activities, and summer bridge and school readiness programs (Kearney, 2016). Higher education intervention components to boost student retention and success commonly include peer mentoring and tutoring, curriculum and course modifications, extensive first-year support via orientation and transitioning programs, involvement of first-year students in specific degree programs, motivational workshops, mental health and advising supports, and peer connection initiatives (Eather et al., 2022). Several of these components can thus be aligned and synthesized throughout a K-16 timeline to minimize separation from the educational process, with a particular focus on personalized academic, mental health, orientation, and peer-based supports and efforts. These components will also need to be linked to efforts to equalize access to educational and social capital resources, particularly for rural and vulnerable students (Jopson et al., 2020).

3 Student engagement

A construct closely related to student progression and completion is student engagement. Engagement regarding school is a multidimensional construct connecting student effort, participation, and involvement in learning activities (Ben-Eliyahu et al., 2018). Dimensions of school engagement can include academic factors such as actively participating in class; affective states such as a sense of belongingness at school; behavioral aspects such as following rules; and cognitive variables such as investment in learning (Fredricks et al., 2004; Appleton et al., 2006). Conversely, school disengagement refers generally to lack of student interest and commitment to learning activities (Baiden et al., 2020). At the K-12 level, school disengagement is often part of a longitudinal pathway with school absenteeism that is predictive of school dropout (Archambault et al., 2022; Piscitello et al., 2022). Factors implicated in this pathway surround less self-efficacy and self-esteem with respect to academic performance, alienation from teachers, less caregiver and peer social support, and school climate and safety issues (Martinot et al., 2020). At the higher education level, school disengagement, particularly in conjunction with problematic first-year academic and social experiences, often predicts attrition (Shcheglova et al., 2020). Factors implicated in this process surround disconnection from instructors, less involvement in social activities and high-impact learning activities (e.g., internships), and school policies and classroom instructional practices that are not well calibrated to student contexts or interests (see also later student characteristics section) (Moner et al., 2020).

At the K-12 level, school engagement often intersects more broadly with school climate, or the quality and character of daily school life (Thapa and Cohen, 2017). Primary domains of school climate include relationships (social relationships, school connectedness, leadership, culture); environment (school facilities, physical comfort, cleanliness); safety/discipline (school safety, fairness of rules, bullying and aggression, disciplinary harshness, drug use); and academic (academic outcomes, equality of opportunity, engagement, cohesiveness/competitiveness) (Gonzálvez et al., 2023). Negative school climate relates closely with school absenteeism, particularly with respect to problems with academic engagement, order and discipline, parental involvement, personal connectedness, school safety, school satisfaction, student access to resources, student interpersonal relations, and student–teacher relations (Hendron and Kearney, 2016; Van Eck et al., 2017; Daily et al., 2020; Hamlin, 2021). Specific factors related to this relationship include assignment to less rigorous courses, greater exposure to harassment based on protected status, prejudicial and discriminatory treatment of student groups by school officials, student-faculty ethnicity mismatch, and teacher qualification gaps (Kutsyuruba et al., 2015).

At the higher education level, the concept of school engagement often expands to include agentic engagement as students take more initiative to provide input into learning activities, express preferences for curricula choices and content, and pursue personal interests (Reeve and Jang, 2022). Other aspects of agentic engagement include student teaching of peers, active participation in school governance, and involvement in community activities (Kassab et al., 2023). Agentic engagement has been linked to more positive student development via

assessment and personalized feedback, group-based and collaborative knowledge production, real-life learning situations, and student confidence, motivation, self-reflection, and self-regulation (Stenalt and Lassesen, 2022). Conversely, agentic disengagement refers to student passivity and has been linked to student disinterest, distractedness, withdrawal, and lack of preparedness (Acosta-Gonzaga and Ramirez-Arellano, 2022). Such passivity can be especially pronounced in online courses that thus require more innovative instructional methods to boost student engagement (Creely and Henriksen, 2022).

Several student engagement themes crosscut K-12 (especially high school) and higher education and may thus be key aspects for developing and evaluating K-16 programs. Student belongingness in particular has been covered in both literature bases and refers to a student's sense of attachment to school and feeling accepted, valued, and respected in school (Slaten et al., 2016). Student belongingness in K-12 relates closely to parental involvement, peer support, positive student-teacher relationships, and sense of fairness at school (Ahmadi et al., 2020). Student belongingness in higher education relates closely to seamless student experiences with respect to policy and service on campus, mental health and well-being (next section), active and engaged learning, social engagement, and faculty mentoring and support (Street, 2021). Interventions to enhance belongingness often include focus groups and targeted reframing that utilize narratives from more senior students to increase social connectedness and cooperative learning (Harackiewicz and Priniski, 2018). Other recommendations relevant to belongingness (e.g., mental health promotion, removal of barriers, expanded student services) are presented in subsequent sections.

One clear K-12/higher education crosscutting aspect of student belongingness is positive student-instructor relationships. Qualitative studies at both levels reveal that positive student-instructor relationships are greatly influenced by teachers that notice students and display investment in a quality learning process (Yu et al., 2018; Heilporn et al., 2021). Other qualitative studies of positive student-instructor relationships have revealed key factors related to safety, collaborative learning, accessibility, supportive communication, and sense of immediacy (Xerri et al., 2018; Bond, 2020). Both levels of education have also demonstrated an increased focus on online learning in recent years, and predictors of positive student-instructor relationships in this learning format, from qualitative studies, include an active and engaging teacher, appealing course design, support for student autonomy, and sufficient equipment and resources (Farrell and Brunton, 2020; Chiu, 2023).

Positive student-instructor relationships are a key protective factor for student adjustment at school, whereas gradual disconnection from instructors is often predictive of school dropout/attrition (Hagenauer and Volet, 2014; McGrath and Van Bergen, 2015). Interventions to improve student-instructor relationships include faculty-based practices involving mentoring, active supervision of student learning, classroom circulation with praising comments (and avoidance of negative comments), dialog journals and surveys, extended projects (even past a semester point), relationship-driven behavior management techniques, and welcoming strategies (Raposa et al., 2021; Poling et al., 2022). These interventions are often geared especially toward underrepresented and first-generation students and freshmen (Dingel and Punti, 2023). A seamless focus on positive student-instructor relationships would seem to be crucial for any K-16 program.

Increasing student engagement across K-12 and higher education systems can also involve frequent review of early academic warning signs related to degree of classroom and discussion participation, completion of practice assignments and homework, and tutor appointment attendance (Akçapınar et al., 2019). Methods to boost agentic engagement in particular following such warning signs, especially early in a semester, should flow through a K-16 spectrum (Zambrano et al., 2022). Such methods include, in addition to frequent communications with students, soliciting student input regarding learning activities, providing explanatory rationales, offering choice and flexibility, acknowledging negative student affect, and displaying patience (Reeve et al., 2020). Customized and flexible alternative (non-standard/traditional) courses and second-chance programs may also be useful across a K-16 spectrum to draw students back to an educational process (MacDonald, 2018).

4 Student mental health

Student mental health (including well-being) is another key theme that crosscuts K-12 and higher education literatures. At the K-12 level, student absenteeism/dropout at school has been linked to a plethora of mental health challenges. Students at particular risk include those with emotional and disruptive behavior disorders, substance use, and developmental and traumatic disorders (John et al., 2022). Symptoms of emotional disorders such as anxiety and depression often interfere with social and academic competence, school-based performance before others, concentration, and participation in school activities (Finning et al., 2019). Symptoms of disruptive behavior disorders such as attention-deficit/hyperactivity disorder (ADHD) and conduct disorder are linked to exclusionary discipline practices (arrest, detention, expulsion, suspension), executive functioning deficits, aggression toward others, association with truant peers, and student-teacher conflict (Niemi et al., 2022). Substance use and school absenteeism are linked by risky behaviors, less parental supervision/monitoring, less self-control, and comorbid emotional and sleep disorders (Dennermalm et al., 2022). Youths with developmental disorders are a particularly vulnerable group for school absenteeism, which is in part due to increased harassment, comorbid medical problems, social isolation, less academic self-efficacy, and lack of resources in special education placements (Melin et al., 2022). Traumatic disorders and experiences also intersect with school absenteeism, including victimization, maltreatment, and neighborhood violence, among other threats (Stempel et al., 2017).

At the higher education level, mental health has also been examined as a key factor for student performance. Higher education students have elevated rates of anxiety, depression, suicide, difficulty concentrating, substance use, and sleep and eating problems in particular (Lee et al., 2021). Neurodevelopmental disorders such as ADHD and autism spectrum disorder also carry extended trajectories from childhood to adolescence to adulthood and impact many college students (Pedrelli et al., 2015). Influencing factors include degree of stress, resilience and coping skill, and social support as well as self-perceptions of academic ability and performance (Conley et al., 2015). Mental health problems among college students are particularly elevated for sexual and racial minority groups (Busby et al., 2020). Broader school-based factors also relate to poorer student mental health, including institutions that have large enrollment, that are less

competitive with lower graduation rates, and that are doctoral-granting, public, and nonresidential (Lipson et al., 2015).

A common theme regarding student mental health across the K-12/higher educational systems is the presence of school-based mental health centers (including school-based interventions). In the United States, the K-12 system is the current source of mental health and other nonacademic care for most youths (Duong et al., 2021). School-based mental health centers are often designed to address behavioral and emotional problems internally to help maintain a student's connection to school; assist caregivers with home-based student behavioral and emotional problems and develop cooperation with teachers to address such problems; develop various coping skills for students encountering traumatic or stressful life circumstances or transitions; and improve academic and life skills as well as knowledge and awareness of mental disorders (mental health literacy) (Das et al., 2016). Reduction of stigma is another key element (Ma et al., 2023). Common reasons for seeking mental health care in a K-12 educational setting include depression, problems at school or with friends, breaking rules or acting out, and difficulties at home or with a family situation (Ali et al., 2019).

At the higher education level, most college campuses house counseling and other centers to address student mental health challenges. In the United States, college mental health and counseling centers have experienced a steady increase in the number of students seeking services as well as the number of appointments scheduled and attended, and particularly in the post-pandemic era (Xiao et al., 2017; Liu et al., 2022). College campus-based counseling centers are often designed to meet multiple student needs, including not only mental health challenges but also issues with respect to academic and athletic performance, addiction, adjustment, career options, chronic medical illness, disability, grief, homesickness, identity, insurance, loneliness, motivation, relationships, self-esteem, sleep, social media, stress, trauma, and wellness (Oswalt et al., 2020). The proliferation of students and presenting problems has compelled these centers toward greater telehealth practices as well as novel methods such as personal computing technologies and app-based programs to deliver assessment and treatment services (Lattie et al., 2019).

Another common theme regarding student mental health across the educational systems is the notion of a tiered system of supports. At the K-12 level, this often involves a multi-tiered systems of support (MTSS) model, or a school-based service delivery system to provide various levels of student support based on prescribed need (Stoiber and Gettinger, 2016). MTSS models are typically arranged into three tiers that include universal intervention for preventative purposes (Tier 1); early and less complex selected interventions for emerging or acute problems (Tier 2); and later and more complex intensive interventions for chronic and severe problems (Adamson et al., 2019). MTSS models are often designed for academic, behavioral, and/or social domains of student functioning. A popular MTSS model is Positive Behavior Interventions and Supports (PBIS) that generally involves school-wide instruction regarding behavioral expectations and social–emotional skills (Tier 1); focused skills groups (e.g., social, conflict resolution), daily mentoring, and classroom behavior interventions (Tier 2); and more personalized interventions for high-risk behaviors (Tier 3) (Freeman et al., 2016).

MTSS models have also been designed for various student mental health problems. Arora et al. (2019), for example, summarized MTSS models for depression in youth. Tier 1 elements included universal screening for depressive symptoms, psychoeducation regarding the symptoms, and techniques derived from cognitive-behavioral, mindfulness, and social–emotional learning approaches to empower healthier functioning. Tier 2 elements included more comprehensive interventions, often conducted by school staff, involving cognitive-behavioral, family, grief and trauma, and interpersonal therapies. Tier 3 elements included more intensive and personalized therapies usually conducted by mental health clinicians. MTSS models have been designed for other K-12 student mental health challenges as well, such as for ADHD (Fabiano and Pyle, 2019), aggression and defiance (Waschbusch et al., 2019), anxiety (Jones et al., 2019), autism (Sansosti, 2010), suicide prevention (Singer et al., 2019), trauma (Reinbergs and Fefer, 2018), and mental health needs among homeless youth (Sulkowski and Michael, 2014). MTSS models in the K-12 system have also been crafted more multidimensionally to address complex issues related to lagging academic and social performance, inequities in access to student services and supports, and school absenteeism, climate, and violence (Kearney and Graczyk, 2020; Johnson et al., 2023).

At the higher education level, mental health support has also been sometimes presented along a tiered or stepped system, though not typically as in as formalized fashion as it often is for the K-12 system (Duffy et al., 2019). Many available on-campus and off-campus mental health options can be generally grouped into universal, selected, and intensive tiers. Common universal or Tier 1 approaches include screening for various mental health challenges; general campus supports (e.g., fitness centers, health and mentoring services, housing and residential life programs, international and intercultural student groups, ministries, student success initiatives); and psychoeducation (Venit, 2022). Common selected or Tier 2 approaches include formal therapeutic consultation and/or short-term therapy, emotional wellness and resilience workshops, life skills training, telehealth options, and daily contact to assess mood and related health variables, among other options (Cuijpers et al., 2019). Common intensive or Tier 3 options include off-campus referral for more extensive psychological testing, full diagnostic assessment, and specialized and/or long-term treatment (Pedrelli et al., 2015).

Other stepped care models in higher education are more holistic and can involve a continuum based on level of student autonomy regarding self-care (Besse et al., 2022). Tier 1 approaches in this fashion might involve a focus on health promotion practices with respect to alcohol limitation, diet and nutrition, exercise, meditation, stress management, and sleep hygiene as well as developing a more robust social support network by joining campus groups, attending student and spiritual events, and accessing mentoring opportunities (Dyrbye et al., 2019). Tier 2 approaches in this fashion might involve more proactively pursuing mental health screening, consulting with social support members about symptoms, attending online and other educational programs about mental health challenges, and accessing academic and student services advisors (Varga et al., 2021). Tier 3 approaches in this fashion might involve directly seeking help via counseling centers, accessing crisis hotlines, and applying for academic and other accommodations (Mamboleo et al., 2020).

The presence of mental health centers and stepped care models in both K-12 and higher education systems means that the groundwork potentially exists for a streamlined tier-based system of student supports in a K-16 system. This is particularly important given that many neurodevelopmental and mental disorders extend from adolescence to young adulthood, and that many of these disorders are exacerbated by stressful transitions such as entry into college (Cheung

et al., 2020). A streamlined approach would also provide uninterrupted mental health care to vulnerable groups such as first-generation students (Bruffaerts et al., 2019). In addition, removing barriers to mental health care in youth is often considered to be a wicked or socially complex problem that requires multiple agency collaboration to address, including various educational systems (Woodgate et al., 2020). A streamlined tier-based system of student supports in a K-16 system will need to be tailored, however, to student groups that have had different (including negative) experiences with an educational system (Middleton et al., 2023).

Common Tier 1 strategies in a streamlined K-16 approach could include frequent screening of mental health symptoms and crises, life skills training, and various communication portals to disseminate mental health/well-being information (Duffy et al., 2020). In addition, mental health and well-being/resilience topics could be infused into campus culture as well as course curricula across several disciplines; examples include anthropology (disability and culture), economics (health care systems), nursing (clinical skills), psychology/psychiatry (symptoms and treatment of mental disorder, mindfulness), and social work (stress management) (Upsher et al., 2022). Common Tier 2 strategies in a streamlined K-16 approach could include referrals to on-campus mental health centers, crisis and support lines, peer counseling, e-mental health treatments, and unguided interventions (Bolinski et al., 2020). Common Tier 3 strategies in a streamlined K-16 approach could include referrals to community practitioners, on-campus long-term care services, diagnostic centers, and residential and inpatient treatment/rehabilitation facilities, among other options (Andraka-Christou et al., 2020). Ancillary strategies can accompany each tier as well, including health insurance access, leaves of absence, and standardized testing and other accommodations (Gotlib et al., 2019).

5 Student demographic and generational characteristics

Current demographic changes in many developed countries are greatly impacting both K-12 and higher education enrollment in several fundamental ways. Declining birthrates in these countries, in addition to expected demographic cliffs in upcoming years, mean that enrollment rates are expected to stagnate and then sharply decline over the next 10–15 years (Copley and Douthett, 2020). In the United States, this has been more acute for students reporting as American Indian/Alaska Native, Asian, Black, White, and Multiracial, and for males (National Center for Education Statistics, 2023). Women are also completing high school and college at higher rates than men in general and African American men in particular (Reeves and Smith, 2021). Declines in African American men enrollment has been most acute at public two-year colleges (Mangan, 2022). African American and Hispanic youths as well as those from low-income neighborhoods are also disproportionately assigned to (often ineffective or detrimental) remedial or developmental education classes at the college level due to under-preparedness at the K-12 level (Ran and Lin, 2022).

Generational changes are also greatly impacting K-12 and higher education systems. Youths born since 2000 have communication preferences that are not always completely compatible with traditional educational systems. Examples include hyper-connection to digital devices, extensive social media use, expectations of personalized and customized content, self-directed learning, limited attention span, organizational convenience via apps, and images and swiping over text and typing (Benhamou, 2015). In addition, public skepticism has increased regarding the value and cost of higher education vis-à-vis long-term returns; this is especially true for millennial and Generation Z youths (Sohoni, 2023). A growing disconnect has also emerged between parents and potential college students with respect to the most valued characteristic of a higher education institution; parents primarily emphasize cost whereas students primarily emphasize academic program quality. Students also value well-being at a potential school more so than in the past (EAB, 2020).

These demographic and generational changes mean that K-16 systems will need to emphasize reducing barriers to enrollment and driving demand for an expanded audience (Koproske, 2021). Reduction of barriers must address, in particular, issues related to cost, under-preparedness, racial bias, dual roles with schooling, and accessibility (Banks and Dohy, 2019). Examples are provided next. With respect to cost, many colleges have moved toward a debt-free guarantee or no-loan approach that largely removes federal and other credits in favor of scholarships, grants, and work-study programs (Wood and Claybourn, 2022). With respect to under-preparedness, reforms in college-based remedial education are likely necessary and can include reducing or eliminating extra costs for such courses, linking remedial courses with simultaneous credit-based courses (co-requisite model), emphasizing high school grades or multiple metrics rather than only standardized test scores for remedial placement, removing stigma associated with remedial courses, and enhancing student confidence in the remedial and long-term educational process (Scott-Clayton, 2018).

With respect to racial bias, antiracism efforts in higher education often focus on incremental, low-resource commitments such as climate assessments, holiday celebrations, listening tours, public statements, service expansion, taskforces, and trainings (Koproske, 2021). A more effective approach will partly require comprehensive alignment of communication and strategy across campus units, extensive admissions/curriculum and policy/procedural reform, culturally competent and equitably accessible student services, and removal of legacy practices and deficit narratives that generally ignore systemic barriers to higher education (Casellas Connors and McCoy, 2022). Campus-based initiatives and strategies to address cultural and faculty-student mismatch, which has been found to be problematic in both K-12 and higher education systems, must account for cultural nuances and barriers, and particularly for first-generation college students (Chang et al., 2020). In addition, antiracism efforts must address racialized bias incidents, augment shared power practices, expand efforts for diverse faculty/staff recruitment and retention, and enhance racial consciousness (Ash et al., 2020). Student empowerment and enhanced safety measures vis-à-vis racial microaggressions, peer avoidance, harassment, stereotypes, and dismissals, among other harms, is necessary as well (Morales, 2021). Higher education institutions must further adapt to the changing landscape with respect to affirmative action and its bans (Baker, 2019).

With respect to dual roles with schooling, many students engage in employment, child care, and other external concurrent commitments that compete with educational progress. In many cases, these external commitments are an extension of responsibilities that students first assumed during adolescence (Chang et al., 2019). As such, important K-16 options in this regard could include evening and weekend courses, year-round start dates, accessible online courses, flexible policies, on-site child care, student support services during

nontraditional hours, and compensating students for work experiences that count toward a major but not against financial aid packages (Remenick, 2019). With respect to accessibility, students with disabilities are increasingly transitioning from K-12 to higher education (Kim and Kutscher, 2021). As such, important K-16 options in this regard could include enhancing meaningful digital and physical accessibility, developing student organizations specifically for students with disabilities, reducing stigma and mobility barriers, designing inclusive classrooms, providing assistive devices and technology, and streamlining accommodation practices across K-12 and higher education systems (Newman et al., 2021).

Driving demand for an expanded audience, particularly vis-à-vis students born in this century, also has several ramifications for a K-16 system. These include expansions of credit-based orientation and other nonacademic efforts, centralized information and support access, virtual support services and high-demand (and smaller) classes, and paid partnerships and internships with local employers for service/experiential learning (Rogers et al., 2021). In addition, communications with this group will need to rely more on very succinct content and via texting, social media outlets, messaging apps, online communication platforms, live streaming, videoconferencing, wearable devices, and novel methods such as gaming and virtual reality (Checa and Bustillo, 2020). Many contemporary students also focus more on workforce development and overall job skills than a particular major. K-16 programs may thus focus on core skills such as analytic thinking and critical reasoning, complex problem solving, creativity, data and systems analysis, leadership, noncognitive skills, oral and written communication, stress management and resilience, and myriad technological capabilities (Savitz-Romer and Rowan-Kenyon, 2020). Finally, for many K-16 students, hybrid campuses are expected to be more common as instructional methods and pathways to school completion continue to move away from brick-and-mortar settings and evolve toward greater flexibility and innovation (Wright and Park, 2022).

6 Broader educational themes

The cross-cutting themes presented here for K-12 and higher education systems also illustrate broader themes that continue to reshape these systems in real time. Students in both systems are now habituated to a modern consumer perspective whereby products are expected to be personalized (e.g., streaming services), customizable (e.g., casual restaurants), deliverable in multiple formats (e.g., shopping), accessible (e.g., information on various options), high-quality (e.g., customer service), and app-based (e.g., for travel and reduced wait time). As such, both K-12 and higher education systems will need to consider how these modern experiences link with various service domains. Key service domains within both educational systems include academic progress, admissions, administration, socialization, well-being, and career preparation/employment. These service domains could thus be associated with greater personalization (e.g., flexible academic pathways), customization (e.g., regarding admissions and onboarding practices), deliverability in multiple formats (e.g., frictionless services between administrative units), accessibility (e.g., diverse campus community events for various interpersonal interactions), high-quality (e.g., empirically-based holistic support for well-being), and app-based (e.g., streamlined linkage to internships and job opportunities).

Research regarding a coordinated modern consumer perspective with respect to a K-16 approach remains necessary. Some researchers have begun to enter this realm by examining cross-cutting factors likely to substantially affect the domains of a modern consumer perspective. Examples include use of artificial intelligence and virtual reality (Ng et al., 2023), innovative classroom design (Bhattacharya et al., 2021), multilingual perspectives (Shin et al., 2021), culturally relevant pedagogy (Keengwe, 2022), and experiential learning and workforce pipelines (Keahey, 2021). Other research efforts in this regard include a greater synthesis of K-12 and higher education data systems to more seamlessly track and address elementary, secondary, and postsecondary student trajectories and readiness needs (Lee and Jaeger, 2021).

7 Conclusion

As researchers of K-12 student issues as well as an administrator and consumers of higher education programs, we regularly encounter similar student themes (progression and completion; engagement; mental health; demographic and generational changes) across these systems. Unfortunately, the literature bases regarding these themes are often siloed as if adolescents in middle/high school and young/nontraditional adults in higher education are categorically different groups. A focus on K-16 programs necessarily means, however, that these groups should be seen more dimensionally along spectra of continued development, support needs, learning strategies, and broader domains. Researchers and other stakeholders must adopt a longer-term view of education that extends into emerging adulthood. A main advantage of this view is a greater understanding that not all students benefit from strict adherence to traditional educational pathways that are often under-resourced. Another advantage of this view is that more opportunities can be made available to address longstanding, complex problems and inequities via multiagency collaborations and shared alliances.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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