

EXPANDING AI INSTRUCTION IN HIGHER EDUCATION

A new survey of higher education educators and IT decision makers explores how community colleges, technical schools and universities are responding to needs for AI-related curriculum to help meet emerging workforce demands.

EXECUTIVE SUMMARY

Today's digital world has created a booming demand for new workforce skills, including the skills to develop artificial intelligence (AI) tools — and to use AI in the workplace (AI literacy).

Community colleges, vocational schools and 4-year institutions have been offering varying levels of AI instruction, certifications and degrees. But a new survey of educators and IT leaders at those schools suggest that interest in IT-related studies is shifting; and that demand for AI studies is outpacing supply.

The study polled 246 prequalified higher education administrators, educators and IT decision makers from a mix of community colleges, 4-year colleges and vocational schools. Conducted online in April/May 2021 by EdScoop and underwritten by Dell Technologies and Intel, the study found:

Shifting student and employer interest in AI

- » Among eight areas of IT instruction, educators anticipate seeing the greatest increases in student interest for AI / ML and cybersecurity studies over the next three years, compared to the past three years. They also foresee slower relative growth in demand for computer science, data science and software development studies.
- » Among schools, educators at community colleges reported lower demand for AI studies over the past three years, compared to their peers at 4-year institutions. However, they reported a significantly bigger jump in demand for AI instruction over the next three years compared to 4-year institutions.
- » Respondents clearly sense increasing employer demand for graduates with AI skills — 69% for technical skills and 73% for literacy skills.

EXECUTIVE SUMMARY

Gaps in meeting AI demand

- » Despite the rising demand for AI technical skills, only 45% of community college respondents said their college currently offered AI courses and certifications for those skills. That compared to 69% of respondents at 4-year colleges — and 98% at vocational schools — offering AI instruction / certification. Offerings for AI literacy tracked at about the same levels.
- » Half of educators said the biggest obstacles they face trying to provide AI instruction is lack of instructors with sufficient expertise.
- » Among other obstacles: 4 in 10 respondents cited a lack of IT expertise to support AI instruction or practice — and 38% said their schools lacked IT facilities/labs/ resources to practice AI.

Looking ahead

- » Asked what would help institutions most in elevating the instruction of AI technical and literacy skills, 6 in 10 respondents would welcome more support for professional development of faculty from industry.
- » Half of respondents also said colleges would benefit from increased support for acquiring or having access to hardware, software and computing capabilities to support AI labs and instruction.
- » About 2 in 3 respondents expect to return to mostly (60% - 100%) in-person instruction for the majority of their IT coursework, but 8 in 10 respondents expect their school will rely on some degree of hybrid instruction.

WHO WE SURVEYED

EdScoop conducted an online survey of 246 prequalified educators and IT decision makers from vocational, community college and 4-year colleges and universities about AI instruction needs.

The survey was conducted in April/May 2021 and underwritten by Dell Technologies.

Respondent by **institution**:



Community
College

128
respondents



Public or Private 4-year
College / University

86
respondents



Vocational /
Technical College

32
respondents

Respondent breakout by **job title**:

37% Faculty / Instructor

21% College / School Administrator

21% IT Department Head / Staff

8% Academic Department Head
Responsibilities

8% Other (administrative/support/
adjunct staff)

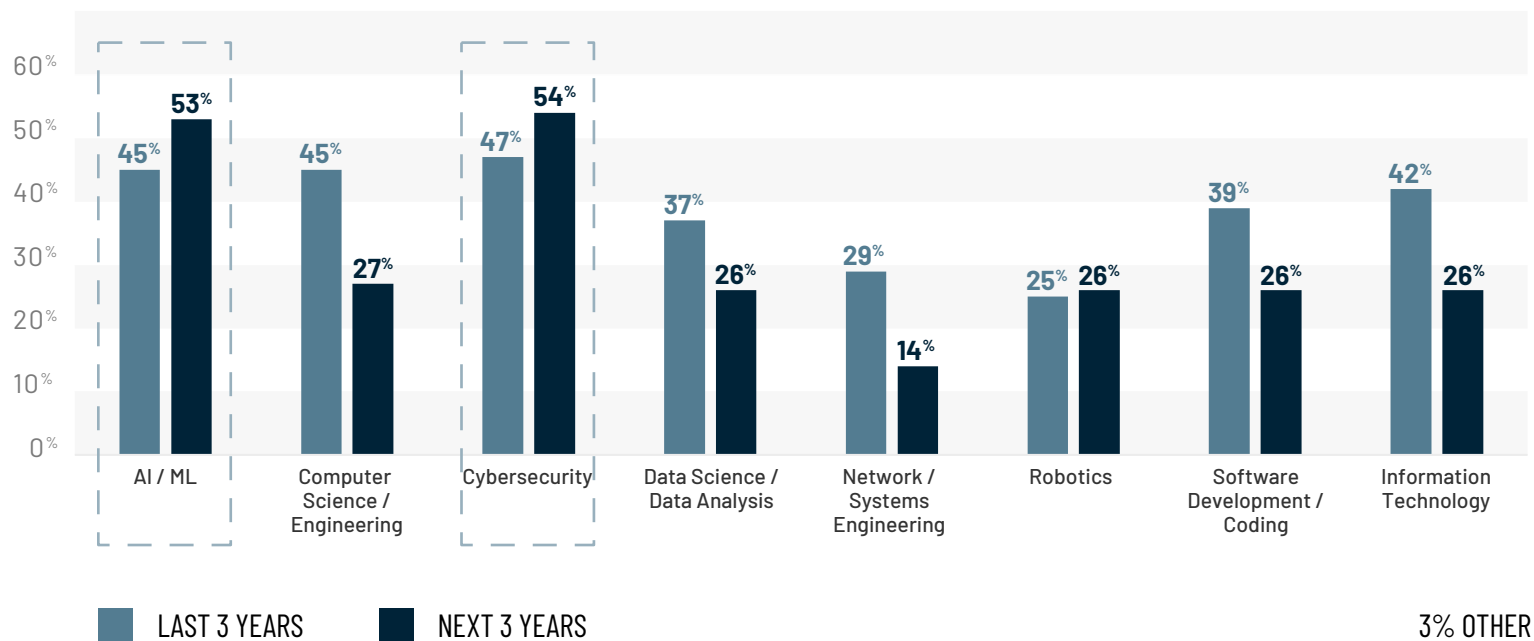
3% Career Service Director / Staff

2% Workforce Development Director /
Staff

ANTICIPATED SHIFTS IN DEMAND FOR IT STUDIES OVER NEXT 3 YEARS

Educators collectively anticipate seeing the greatest increases in demand for AI / ML and cybersecurity studies over the next three years, compared to the past three years — and a relative drop in demand for computer science, data science and software development.

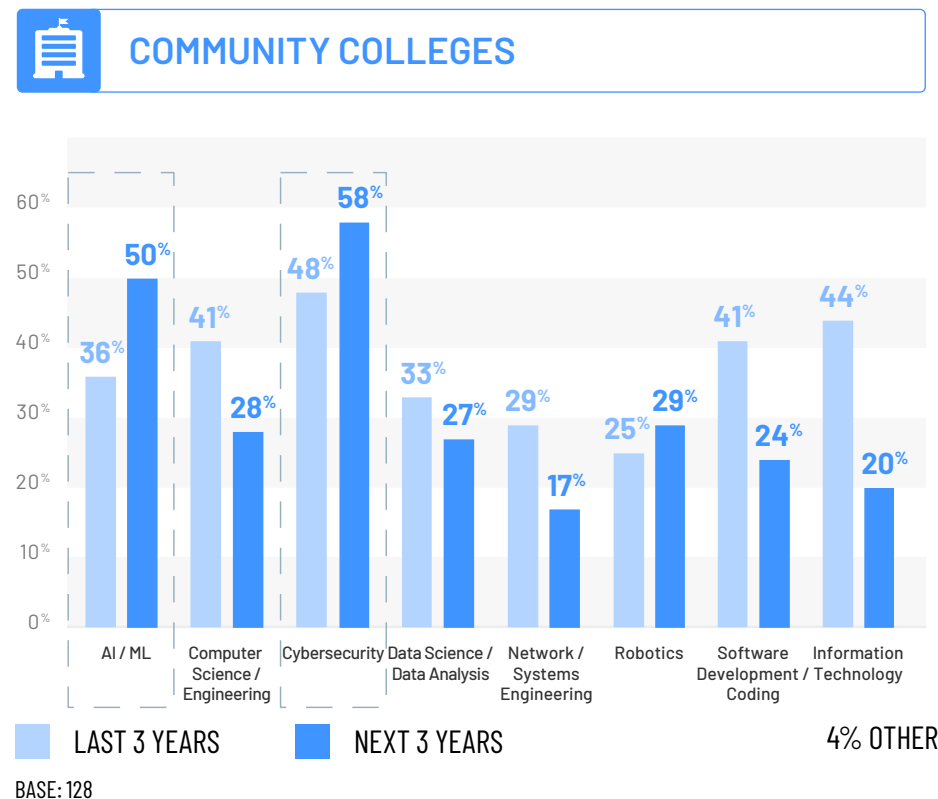
All Respondents



Q: When thinking about areas of academic study, in which areas have you seen the greatest increase in interest over the last three years? (Select up to 5)
Q: In which areas of study do you anticipate seeing the greatest increase in demand over the next three years? (Select up to 3)

ANTICIPATED SHIFTS IN DEMAND FOR IT STUDIES – COMMUNITY COLLEGES VS 4-YEAR INSTITUTIONS

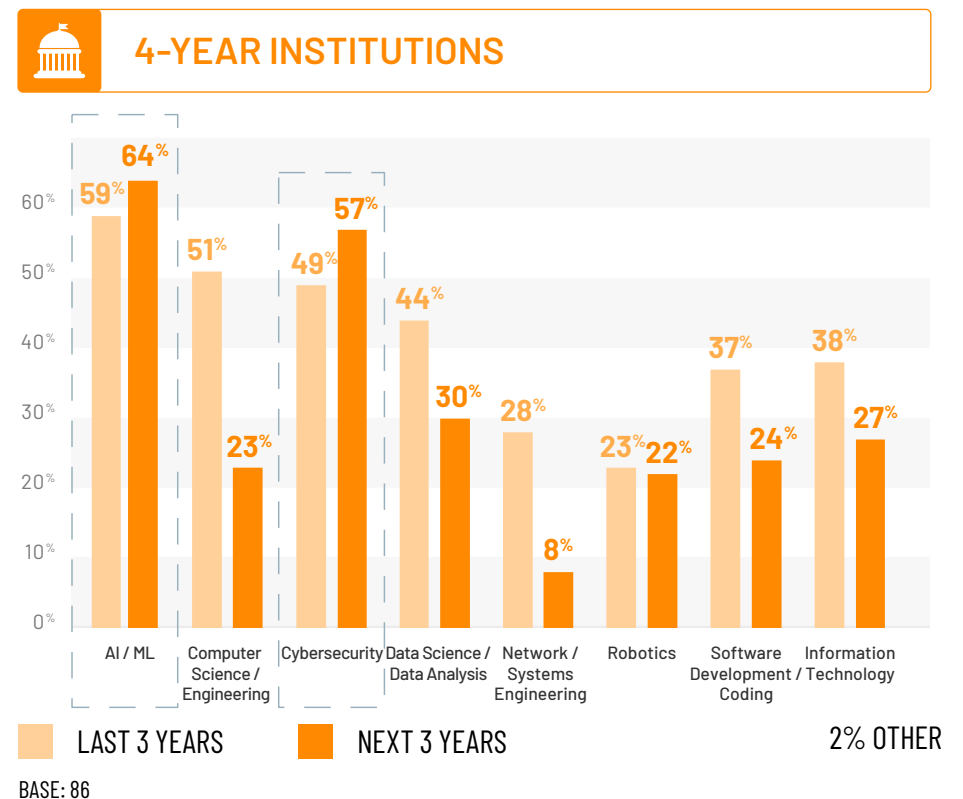
Educators at community colleges saw lower demand for AI studies over the last three years than their peers at 4-year institutions — but anticipated a more significant jump in demand over the next three years.



Q: When thinking about areas of academic study, in which areas have you seen the greatest increase in interest over the last three years? (Select up to 5)

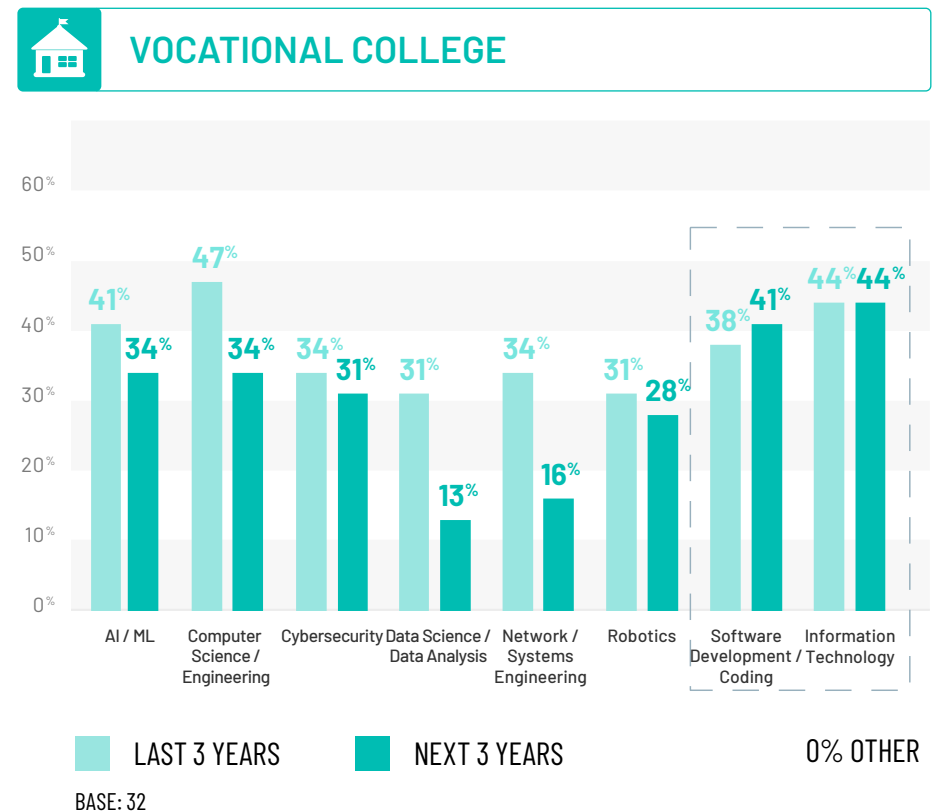
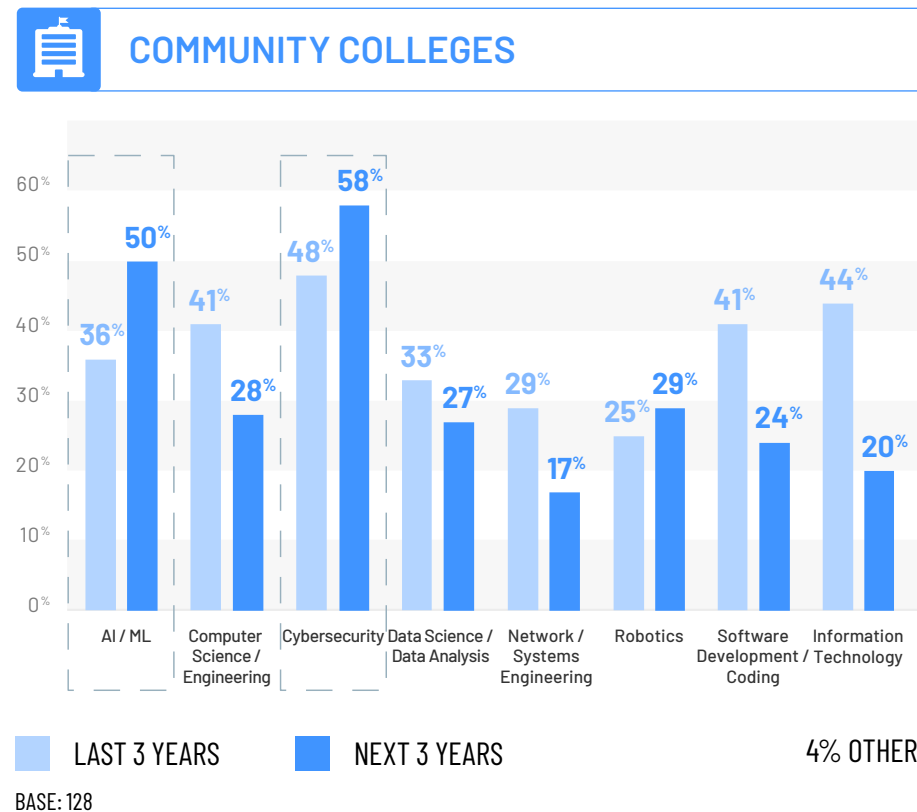
Q: In which areas of study do you anticipate seeing the greatest increase in demand over the next three years? (Select up to 3)

Educators at 4-year institutions anticipate the biggest increase in demand for AI/ML and cybersecurity studies over the next three years. Educators at both types of colleges foresee lower demand for data science, software coding, general IT and network engineering.



ANTICIPATED SHIFTS IN DEMAND FOR IT STUDIES – VOCATIONAL VS. COMMUNITY COLLEGES

Educators at vocational colleges, in contrast to community colleges, anticipate the greatest increases in demand for IT related studies over the next three years for general IT and software development studies. While vocational school respondents anticipate slower gains in demand for AI/ML and cybersecurity, they remain relatively on par with past demand.



* Note: Use caution when comparing responses from vocational colleges due to limited response rates.

Q: When thinking about areas of academic study, in which areas have you seen the greatest increase in interest over the last three years? (Select up to 5)

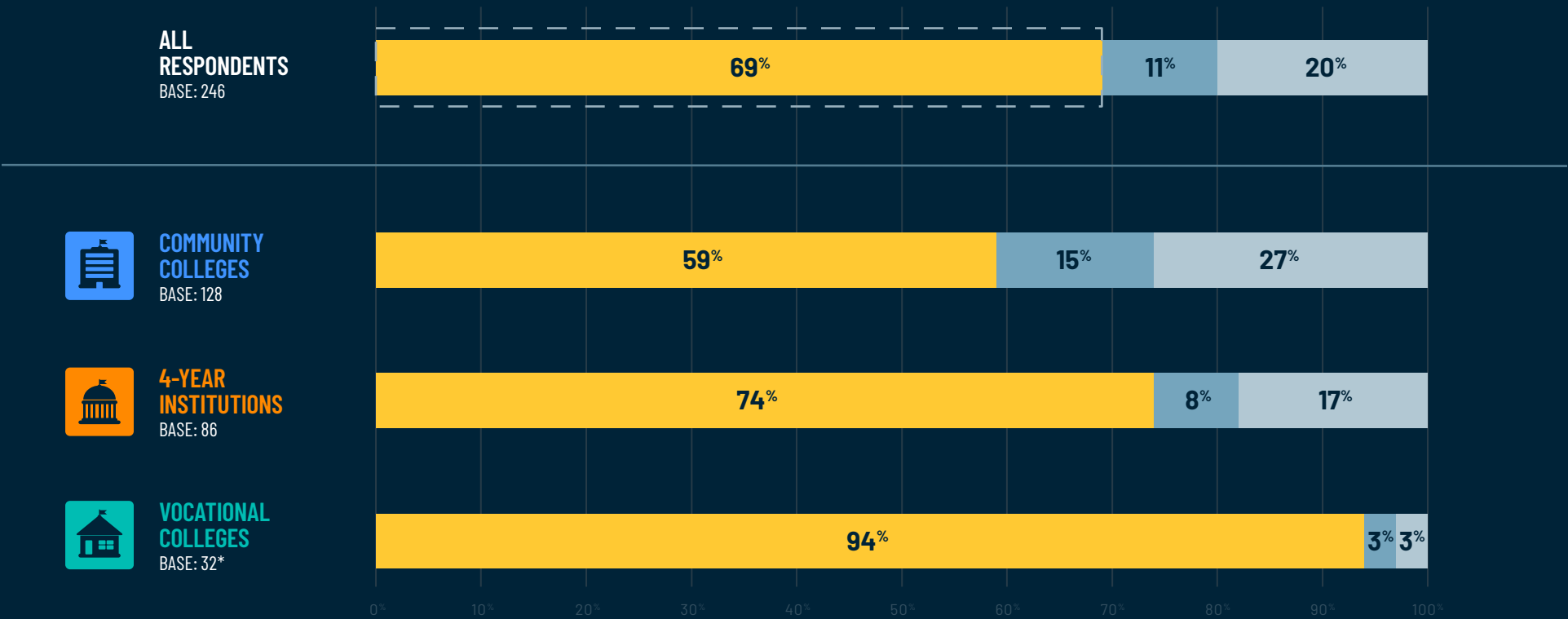
Q: In which areas of study do you anticipate seeing the greatest increase in demand over the next three years? (Select up to 3)

PERCEPTIONS OF EMPLOYER DEMAND FOR GRADUATES WITH AI TECHNICAL SKILLS

69% of all respondents sensed increasing demand from employers for graduates with AI technical skills. A higher than average proportion of respondents at community colleges did not know if employers desired AI technical skills in their graduates.

Demand for Graduates with AI Technical Skills

YES NO I DON'T KNOW



* Note: Use caution when comparing responses from vocational colleges due to limited response rates.

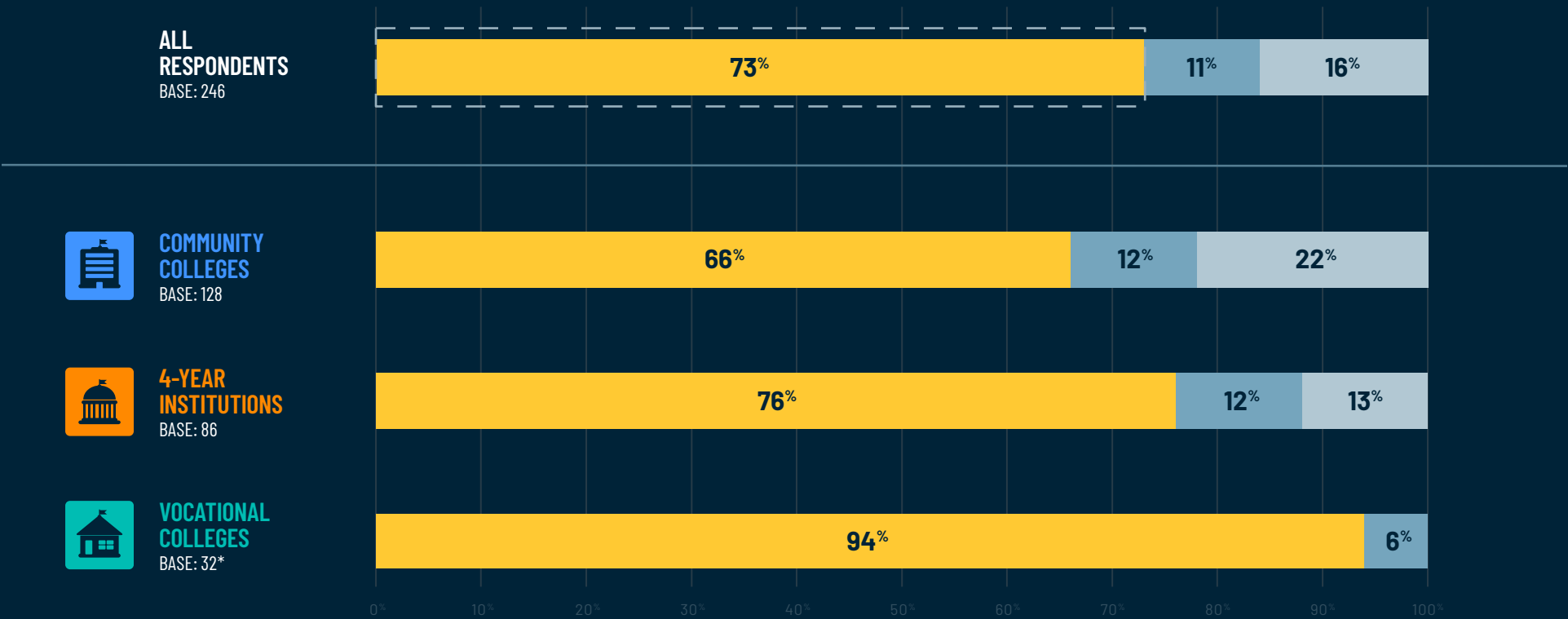
Q: Are you sensing increasing demand from employers for graduates with AI technical skills?

PERCEPTIONS OF EMPLOYER DEMAND FOR GRADUATES WITH AI LITERACY SKILLS

73% of all respondents sensed increasing demand from employers for graduates with the ability to use or apply AI skills. A higher than average proportion of respondents at community colleges did not know if employers desired AI literacy skills in their graduates.

Demand for Graduates with AI Literacy Skills

YES NO I DON'T KNOW



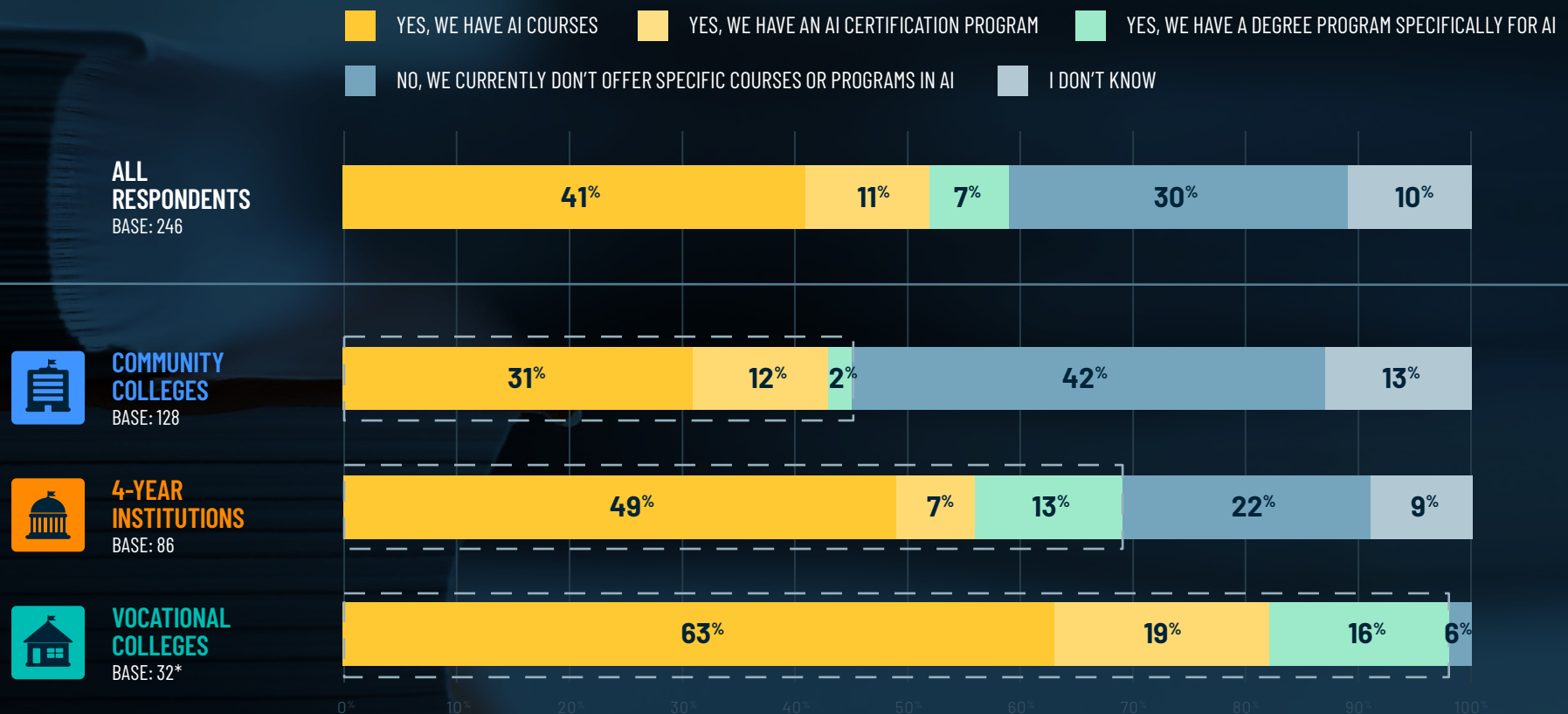
* Note: Use caution when comparing responses from vocational colleges due to limited response rates.

Q: Are you sensing increasing demand from employers for graduates with AI literacy skills (the ability to use or apply AI)?

SCHOOLS OFFERING COURSES, PROGRAMS OR DEGREES FOR AI TECHNICAL SKILLS

Despite their acknowledgment of the rising demand for AI technical skills, only 45% of community college respondents say their school offer AI courses, certifications or degrees for such skills. In contrast, 69% of respondents at 4-year colleges — and 98% at vocational colleges — offer some level of AI technical curriculum or certification program.

Courses: AI Technical or Programming Skills Programs



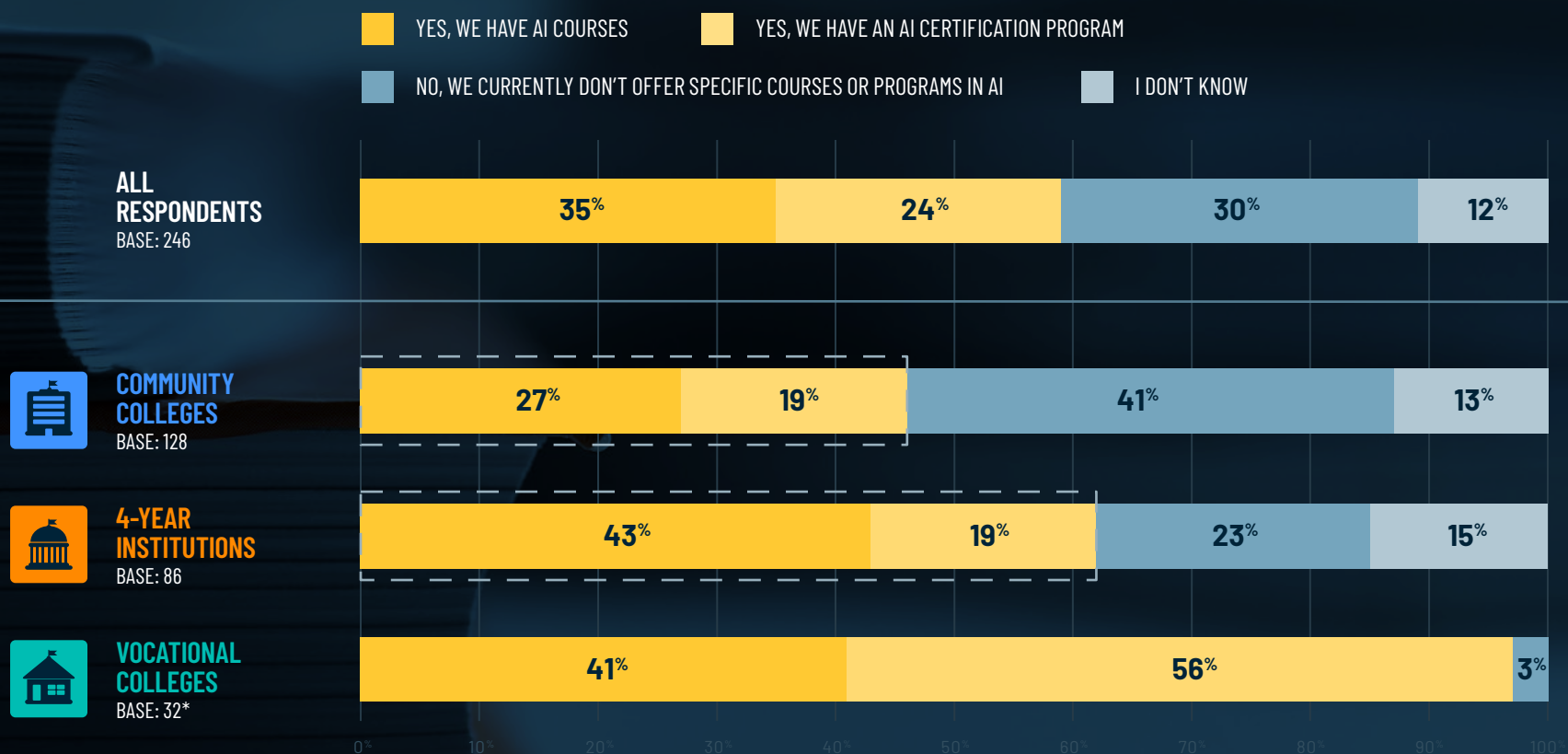
* Note: Use caution when comparing responses from vocational colleges due to limited response rates.

Q: Are you sensing increasing demand from employers for graduates with AI literacy skills (the ability to use or apply AI)?

SCHOOLS OFFERING COURSES, PROGRAMS OR DEGREES FOR AI LITERACY SKILLS

While demand for applied AI literacy programs is high and expected to increase at community colleges, only 46% of respondents at those colleges reported offering programs for AI literacy. In contrast, a 62% of 4-year college respondents — and 97% of vocational college respondents indicate their school offers some AI literacy curriculum.

Courses: Application of AI (AI Literacy) Programs



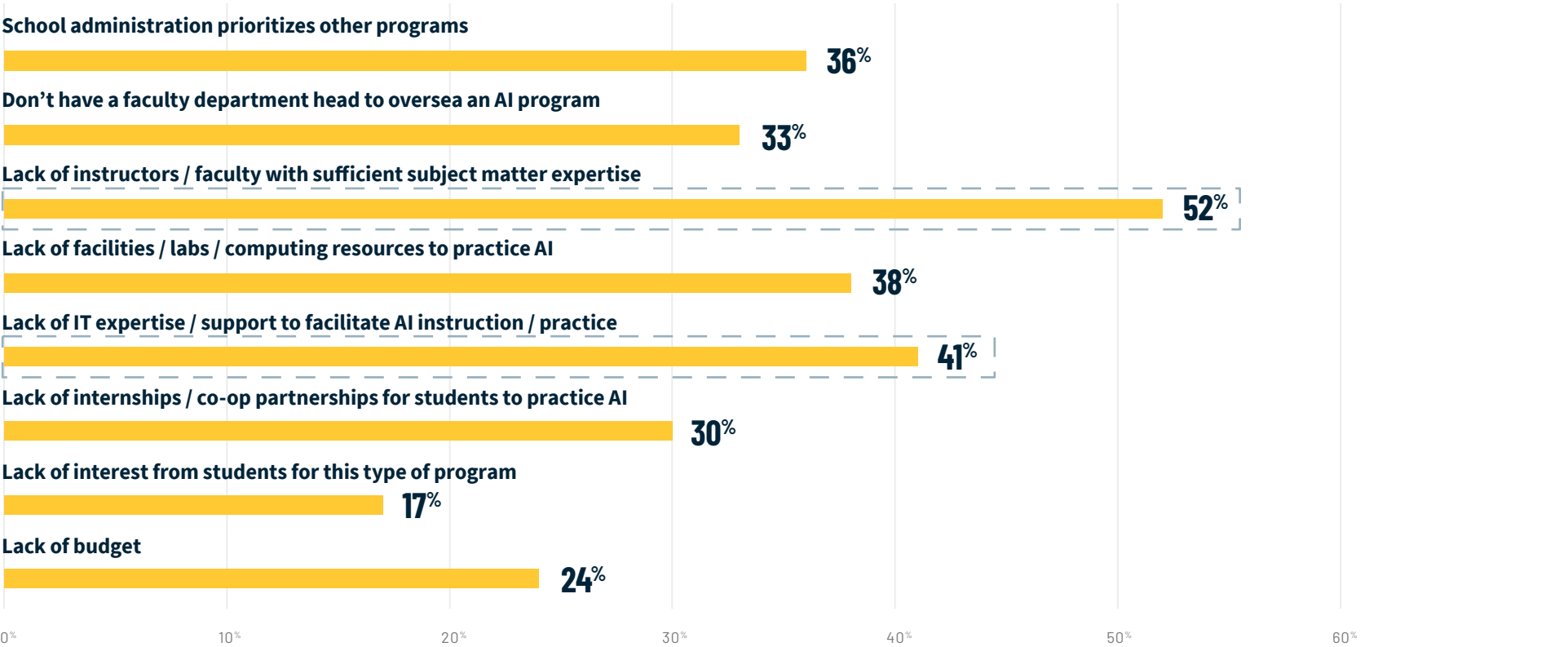
* Note: Use caution when comparing responses from vocational colleges due to limited response rates.

Q: Does your institution offer courses, certification or a degree program dedicated to learning about the use or application of AI (AI literacy) in the workplace?

OBSTACLES TO PROVIDING AI INSTRUCTION

Though interest is high from employers and students for AI skills, educators in the survey indicate that their institutions are struggling to find enough instructors with the proper expertise to lead the course (52%) or lack the IT expertise to facilitate AI instruction (41%).

All Respondents

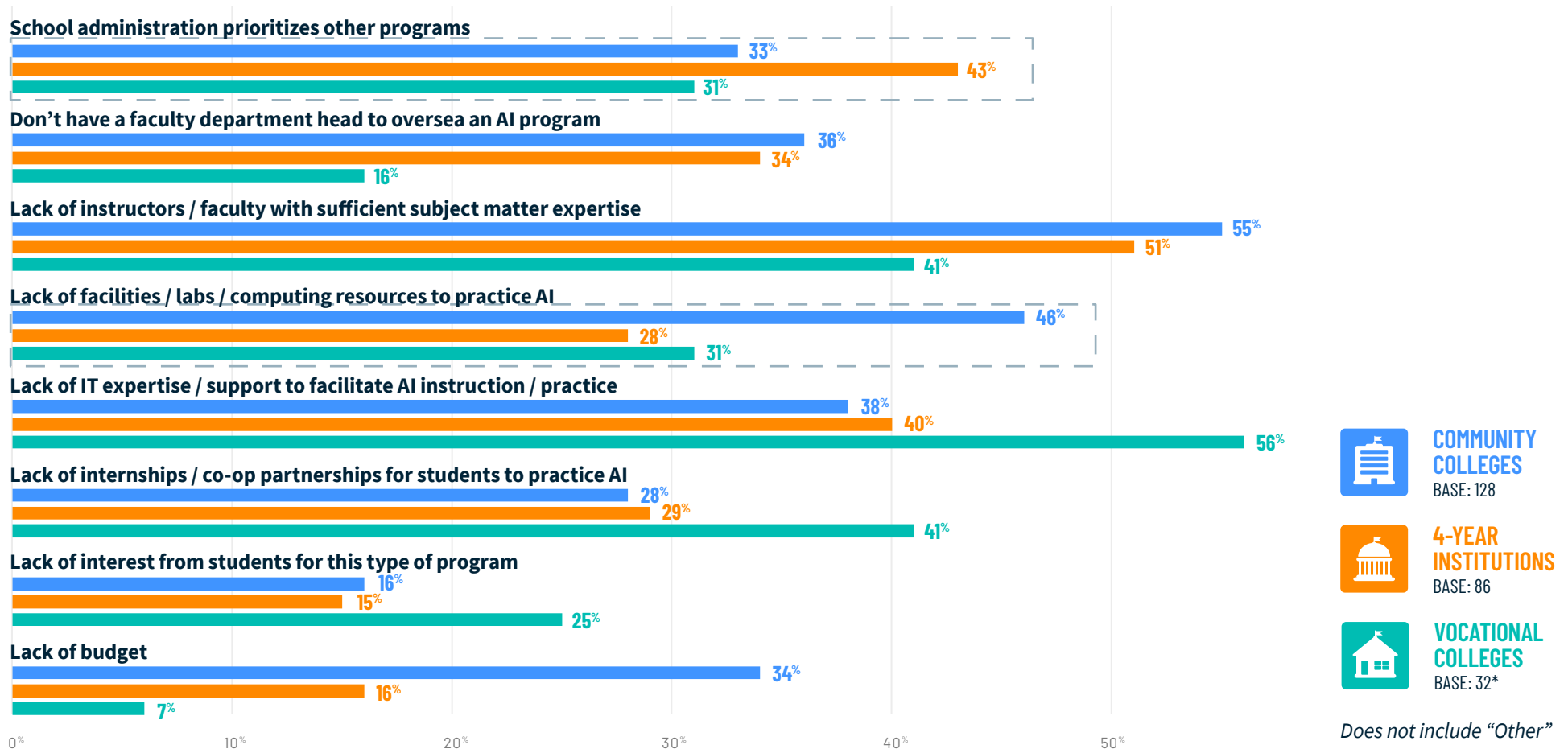


* Note: Use caution when comparing responses from vocational colleges due to limited response rates.

Q: What are the biggest obstacles to providing AI instruction in your campus / institution? (Select up to 5)

OBSTACLES TO PROVIDING AI INSTRUCTION – BY INSTITUTION

For community college respondents, the biggest obstacles to providing AI instruction are a lack of instructors with subject-matter expertise, IT expertise to support AI courses and facilities such as AI computer labs. Competing academic priorities are more distinct obstacle at 4-year colleges. At vocational schools, it was a lack of IT expertise to support AI instruction.



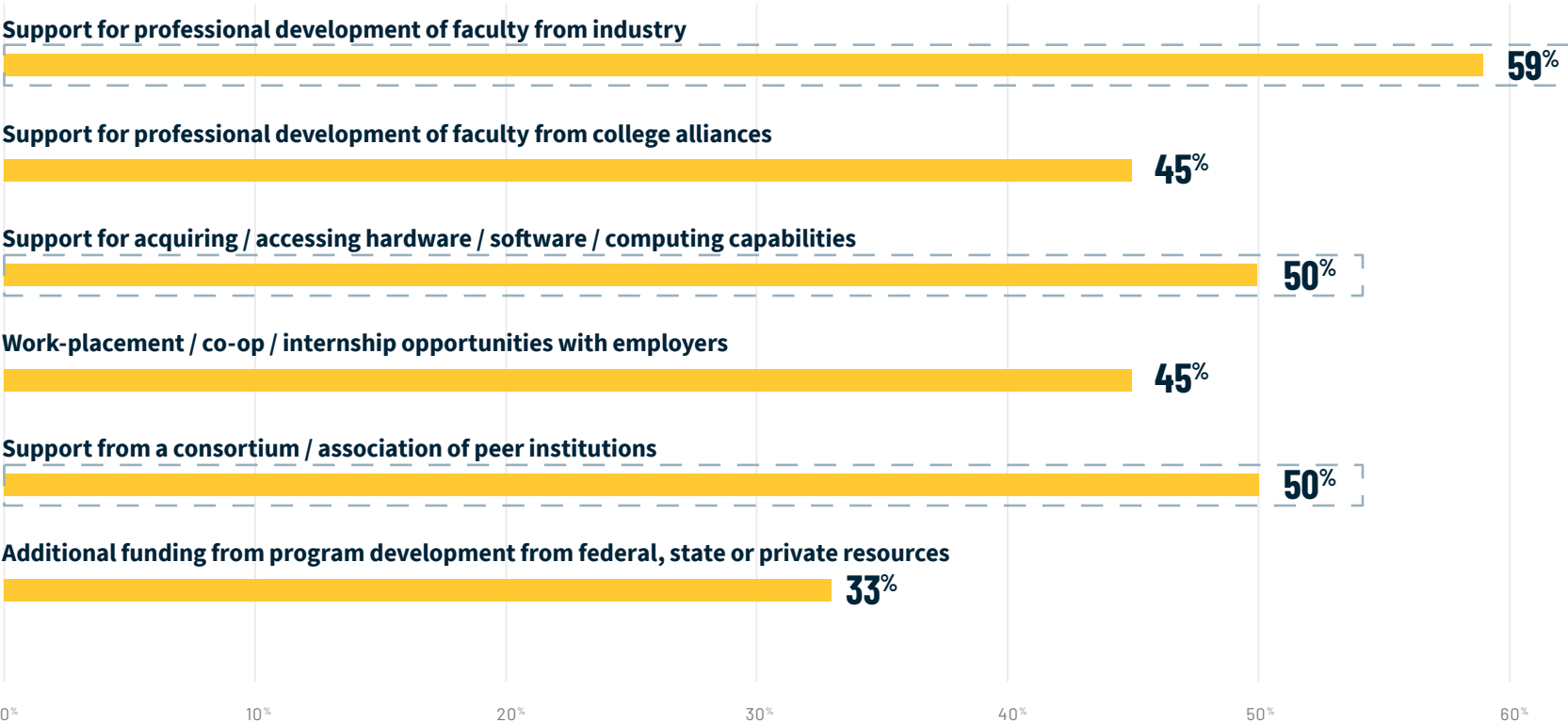
* Note: Use caution when comparing responses from vocational colleges due to limited response rates.

Q: What are the biggest obstacles to providing AI instruction in your campus / institution? (Select up to 5)

NEEDS OF HIGHER-ED TO ELEVATE THE INSTRUCTION OF AI

Respondents indicate that if their institution had more support for professional development (59%), support to acquire computing capabilities (50%) or additional funding (50%), they would be better equipped to provide AI instruction.

All Respondents

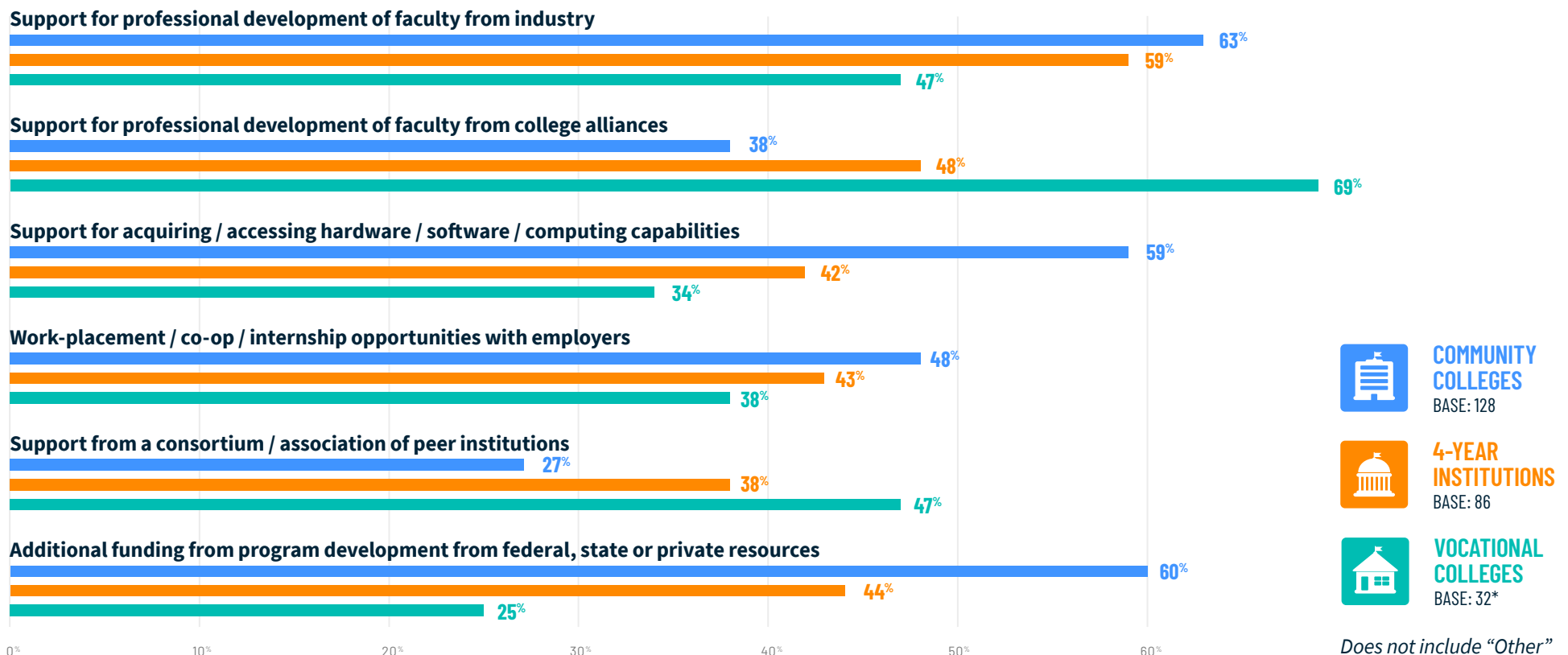


* Note: Use caution when comparing responses from vocational colleges due to limited response rates. BASE: 246* Other, 2%

Q: What would help your institution most in elevating the instruction of AI technical and AI literacy skills? (Select all that apply)

NEEDS OF HIGHER-ED TO ELEVATE THE INSTRUCTION OF AI – BY INSTITUTION

Community college respondents indicated that to elevate AI instruction, their institution would benefit most from greater industry support for professional development, additional funding and support to acquire computing capabilities. Those at 4-year institutions also said industry support for professional development would help them most while those at vocational schools said support for faculty development from college alliances would help them most.

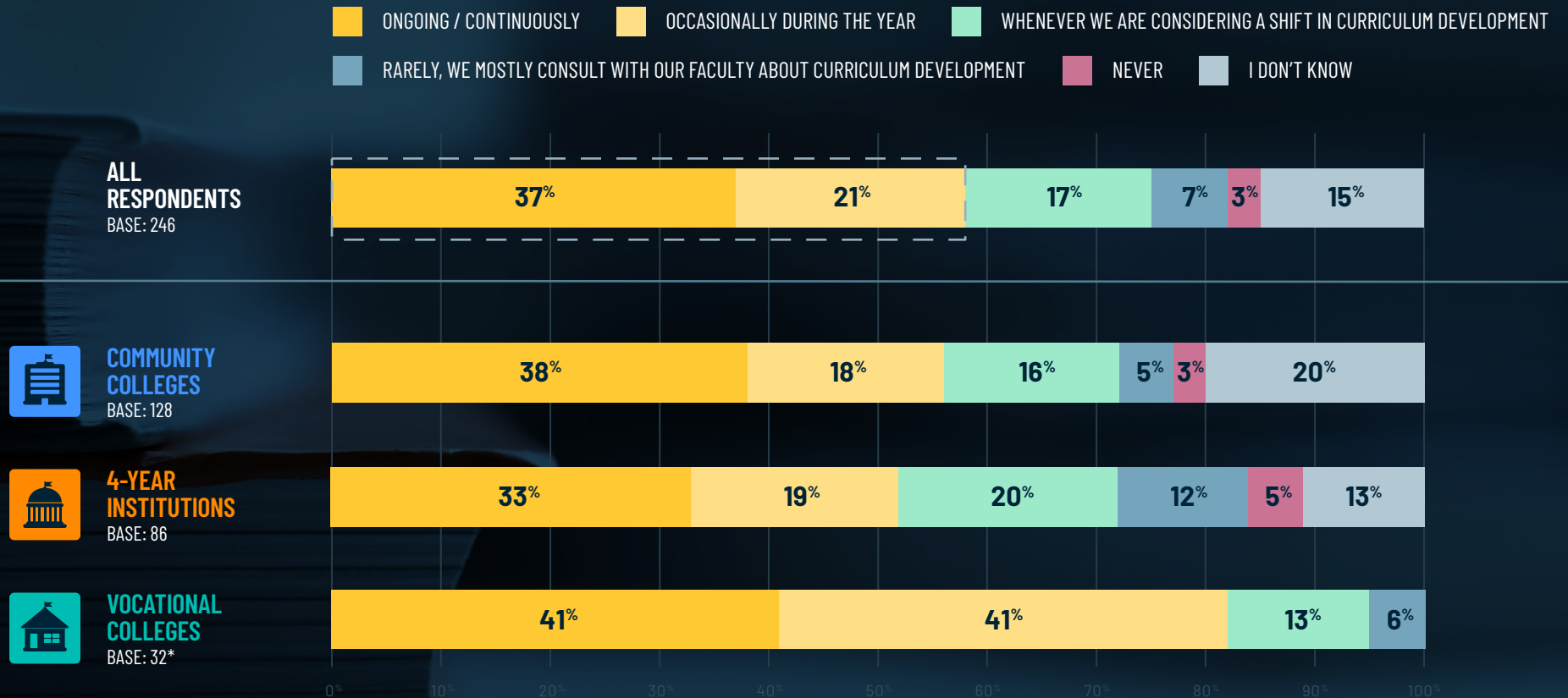


* Note: Use caution when comparing responses from vocational colleges due to limited response rates.

Q: What would help your institution most in elevating the instruction of AI technical and AI literacy skills? (Select all that apply)

COLLABORATING WITH INDUSTRY TO SHAPE THE DIRECTION OF AI COURSES

About 6 in 10 respondents indicate their institution consults continuously or occasional during the year with employers to determine which AI skills are in demand. Vocational schools were the most active.



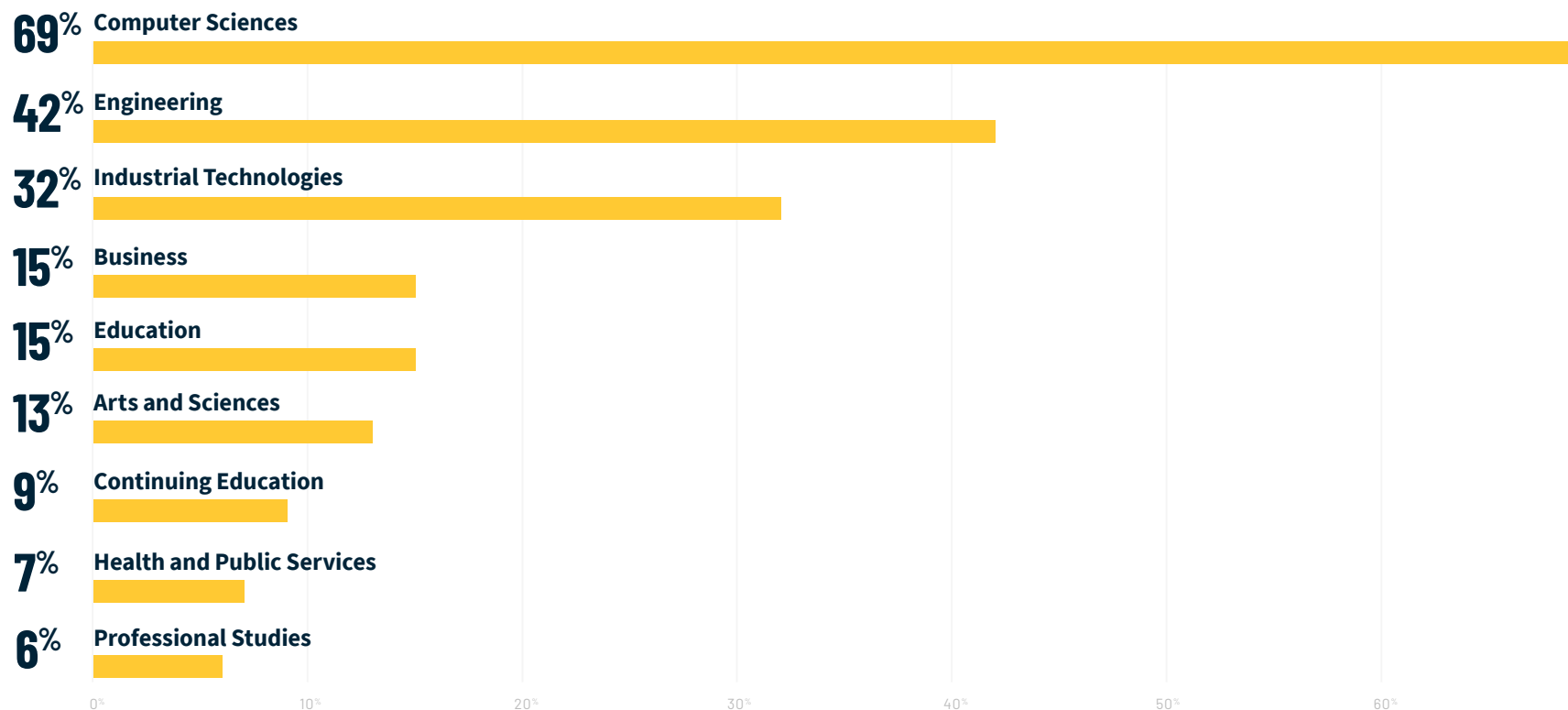
* Note: Use caution when comparing responses from vocational colleges due to limited response rates.

Q: How often does your institution or department consult with employers to determine what AI skills are, or might soon be, in demand?

DEPARTMENTS MOST RESPONSIBLE FOR SHAPING AI COURSE OFFERINGS

AI instruction is primarily the responsibility of the Computer Sciences Department (69%) and the Engineering Department (42%). Though respondents indicate a number of other school departments also direct AI curriculum.

All Respondents



* Note: Use caution when comparing responses from vocational colleges due to limited response rates.

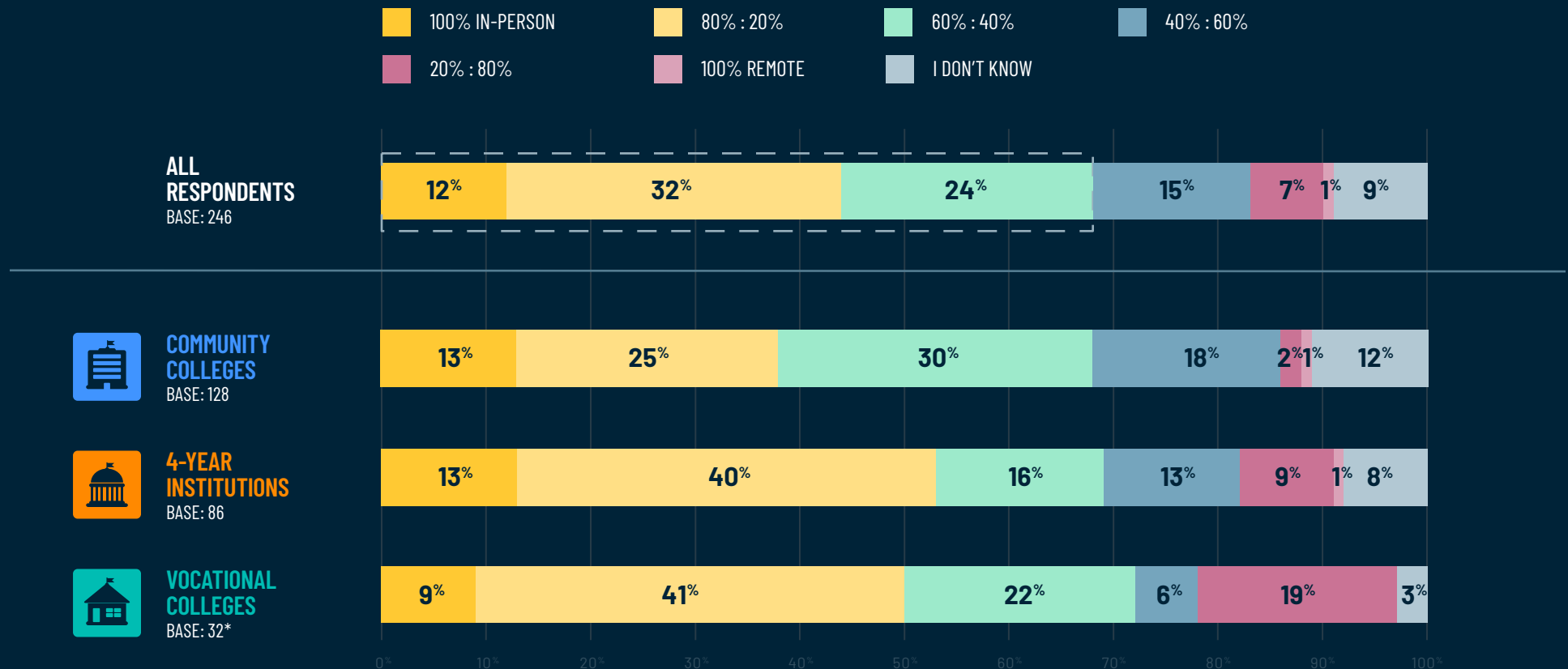
BASE: 246*

Other, 2%

Q: Which school / department within your institution is most responsible for shaping your AI course offerings? (Select all that apply)

ANTICIPATED SHIFTS IN INSTRUCTION MODELS

Nearly 8 in 10 respondents indicated their school will adopt some form of hybrid-learning model post-pandemic. About 2 in 3 respondents expect to return to mostly (60% -100%) in-person instruction for the majority of their IT coursework. Community college respondents showed the highest expectations for pursuing a hybrid instruction model.



* Note: Use caution when comparing responses from vocational colleges due to limited response rates.

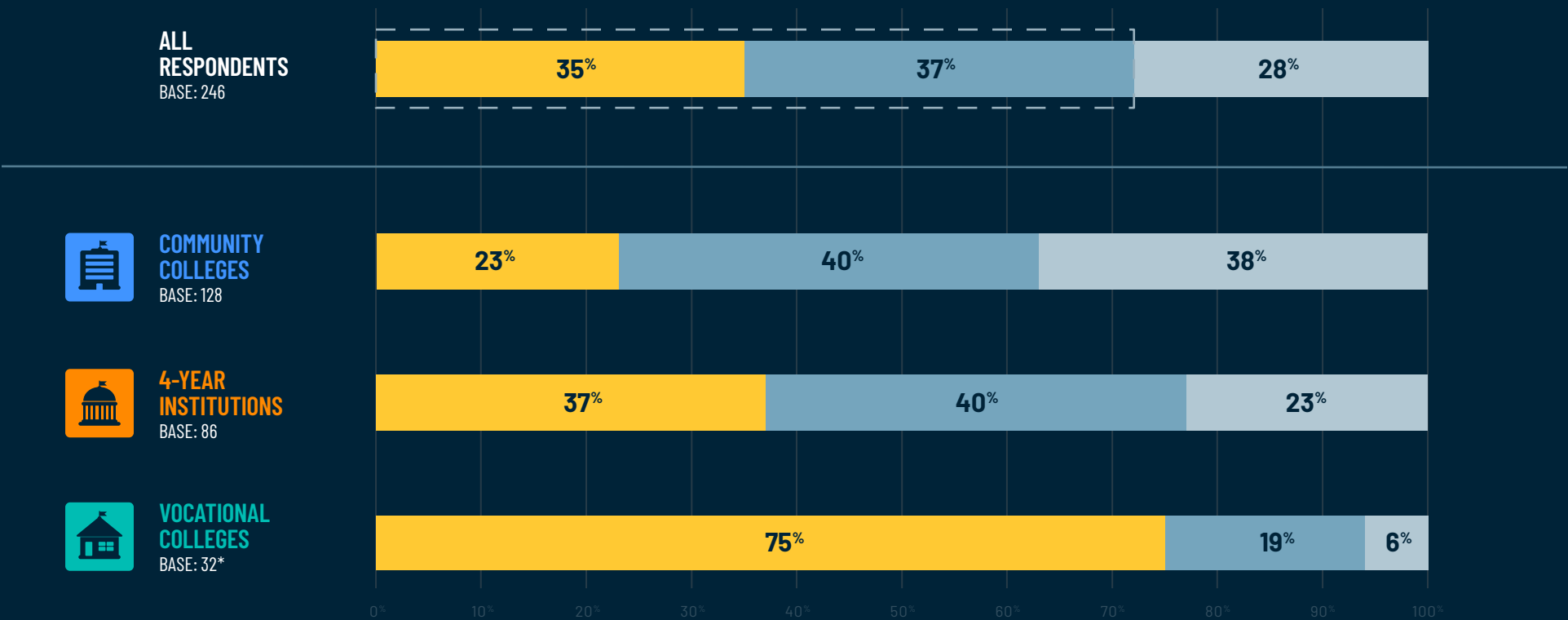
Q: Looking beyond the pandemic, which of the following instruction models do you believe will be used by your institution for teaching the majority of IT-related classes?
(Select the most applicable response)

INCENTIVES OFFERED BY SCHOOLS TO PROMOTE DIVERSITY

More than a third of 4-year and vocational college respondents — and about a quarter of community college respondents — said their institution offers incentives or programs to promote diversity in their IT enrollment. Asked to elaborate, those who answered cited programs like partnerships with industry players, professional development programs, community service programs and programs to support women in IT.

Demand for Graduates with AI Technical Skills

YES NO I DON'T KNOW



* Note: Use caution when comparing responses from vocational colleges due to limited response rates.

Q: Does your institution offer any incentives or special program(s) to promote diversity in its IT enrollment or work placement initiatives?

RECOMMENDATIONS

In addition to the study's topline findings, college administrators and industry leaders might also consider taking steps to:

- » **View AI instruction more broadly.** Market demand for AI talent goes beyond teaching technical coding skills. There's also growing need for graduates who can apply AI to business and social needs. Higher education leaders should consider planning AI curricula in multiple disciplines to address those broader needs.
- » **Seek stronger ties with industry and employers.** Student interest and employer demand for various IT training is shifting. Colleges would benefit from working more proactively and creatively with industry, employers and college alliances: 1) to better understand the evolution of IT and AI needs; and 2) to find or train faculty to prepare students for those needs.
- » **Tap IT advances to deliver AI-ready capabilities.** Colleges continue to play catch up in upgrading their IT capabilities to meet today's demands. One way to close the gaps in supporting AI training is to partner more closely with technology providers to build out AI teaching spaces, capitalize on emerging cloud-services and virtualization options for hybrid learning, and develop stronger cooperative work arrangements.
- » **Help community colleges play a larger role.** Public and community colleges continue to play a unique, and often more agile role in addressing workplace training needs. To meet the demand for AI skills, they would benefit from state and industry funding and better-coordinated job placement initiatives.

EDSCOOP

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