

Table 26. Strength-Weakness-Opportunity-Threat Analysis

	Strength	Weakness
Internal	<ul style="list-style-type: none"> • The majority of faculty, administrators, and EAC members surveyed favor creating an MAT program. [CSS] • An MAT program provides an alternative career option for biology and mathematics majors. [CSS] • Allows the institution to offer a seamless pathway / fifth-year program for undergraduate biology and mathematics students who wish to teach. [CSS] • The undergraduate biology and mathematics programs at the institution prepare students well. [CSS] • The Education Department has strong relationships with partner high schools. [CSS] • The online programs office is established and prepared to help with recruiting. [CSS] • A successful model of how a hybrid delivery mode could work exists in human services and counseling. [CSS] 	<ul style="list-style-type: none"> • Tuition may not be competitive. [CSS] • The size of the institution limits its ability to compete. [CSS] • A lack of resources (staffing, program development / delivery) [CSS] • Bias against teaching as a career choice among biology and mathematics faculty [CSS] • Ability to ensure teacher quality in an alternative route MAT program. [CSS]

	<p style="text-align: center;">Opportunity</p>	<p style="text-align: center;">Threat</p>
External	<ul style="list-style-type: none"> • A lack of qualified candidates for high school biology and mathematics teaching positions [PS] • Demand for high school teachers is expected to grow 4.5% by 2029, to 2,508 teachers. [LA Table 13] • Few or no biology (86.6%) and mathematics (89%) teachers apply for high school teaching positions. [LA Table 7] • The lack of satisfactory applicants for biology teaching positions has gotten worse for one-third of principals responding. For mathematics, the number was less (17.8%). [LA Table 8] • About one-third of biology and mathematics students and alumni who are not currently enrolled in a teacher education program would or might be interested in enrolling in an MAT program. [SAS] • Partner high schools are willing to help identify college supervisors, adjunct faculty, and host teachers. [PS] • A new MAT program helps address the teacher shortage. [CSS] • A new MAT program addresses a need in the region. [CSS] • The ability to teach while working on an MAT degree appeals to biology and mathematics students and alumni. [SAS] • A financial-aid-eligible MAT program appeals to students and alumni. [SAS] • Students and alumni are attracted to an MAT program that offers an option to become qualified to teach dual-credit high school courses. [SAS] • The number of high school positions in the partner schools is quite large—75 in 	<ul style="list-style-type: none"> • Lack of interest / low enrollment [CSS] • Competing pathways to teacher certification that are approved by the state [CSS] • School hesitancy to hire MAT students until they graduate because they lack basic teaching skills [PS] • Principals do not recommend a specific institution to new hires. [PS] • Taking in-person courses in the region is not an important factor for students and alumni. [SAS] • The number of MAT programs (N=15) already approved in Kentucky. • Program length and cost as the main differentiating factors among competing programs. [LA Table 5] • Teacher turnover in partner high schools ran below the state average in 2021-22. [LA Table 15] • The small number of vacancies (2 in biology, 5 in mathematics) posted for the high schools in partner districts during the 2022-23 school year. [LA Table 14] • About half (46%) of the Biological Sciences- or Mathematics-certified personnel in partner districts are mid-career (Rank II) [LA Table 12]

	<p>biology and 101 in mathematics. [LA Table 12]</p> <ul style="list-style-type: none"> • A high percentage (>5%) of biology and mathematics teachers in the region are provisionally certified, indicating a shortage of certified teachers exists. [LA Table 9] • The percentage of provisional certificates (all subjects combined) issued to teachers in partner high schools exceeded the state average in nearly two-thirds of partner high schools for 2021-22. [LA Table 10] • More biology and mathematics teachers are retiring than are graduating from traditional teacher education programs. [Table 11] • The possible demand for an MAT program in other majors (not explored in this assessment) [CSS] 	
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Sources:

CSS = College Stakeholder Survey

PS = Principal Survey

SAS = Student and Alumni Survey

LA = Landscape Analysis

Summary of Findings

There is interest in an MAT program across faculty, administration, Education Advisory Committee members, students, and alumni. This interest is tempered by concerns for quality, financial and personnel resources, and biases against teaching within the disciplines of biology and mathematics. Respondents to the survey of students and alumni indicated an interest in an MAT program and willingness to come to Lindsey Wilson College for such a degree. Many felt the program would offer an alternative career option for alumni and current biology and mathematics students, or potentially a pathway as a fifth-year program leading to a graduate degree. Cost and program duration were deciding factors. The low priority students and alumni placed on enrolling in a program in the region, the large number of MAT programs approved in the state, and the focus potential students placed on cost and program length, could indicate stiff competition for such an MAT program at Lindsey Wilson College.

Lindsey Wilson College has a strong relationship with its partner high schools. It also has an existing online programs office that is well positioned to help with recruiting. Together, these provide a good foundation for recruiting new students. Concerns were expressed about the lack of resources for staffing and program development, and Lindsey Wilson College's ability to offer the MAT program at a

competitive cost. Philosophically, concern was also expressed about Lindsey Wilson College participating in supplying schools with teachers that, at least initially, lack the pedagogical content knowledge to teach well. Students and alumni showed little interest in a traditional mode of course delivery, but if Lindsey Wilson College chose to offer an MAT program in-person or using a hybrid model, it has a successful program in human services and counseling to follow as an example.

There is a shortage of qualified biology and mathematics teachers throughout Kentucky. A review of available data on teacher shortage areas, provisionally certified teachers, and teachers reaching retirement, combined with employment forecasts, hiring, and turnover rates indicate that there is a need for more certified high school biology and mathematics teachers. Mathematics is a designated shortage area and principals anticipate biology will become one. The majority of school hiring officials express difficulty finding enough satisfactory applicants for biology and mathematics teaching positions and indicate that the shortage has gotten worse in recent years. Furthermore, the number of biology and mathematics teachers retiring is outpacing the supply of biology and mathematics teachers graduating from education programs in Kentucky. Additionally, forecasts indicate a slight growth in the number of biology and mathematics teaching positions that will be needed between now and 2029. The low number of new biology and mathematics teachers in partner high schools (Table 12), combined with the small number of job postings for the 2022-23 school year (Table 14), stands in contrast to the large number of districts indicating there are few or no qualified applicants for similar vacant positions (Table 7).

These sources would seem to indicate that turnover in partner high schools is relatively low, but when there is a vacancy, it is harder to fill. We must acknowledge, however, that our assessment of potential teaching shortage information has been somewhat hampered by the lack of longitudinal data specific to biology and mathematics about the number of teachers in each school, their years of experience, rank, and type of teaching certificate, as well as a low response rate to the principal survey. Low response rates are typical of other principal surveys conducted in Kentucky, even surveys conducted by state agencies.

School hiring officials are willing to hire biology and mathematics teachers on a provisional teaching certificate and work with them while they are enrolled in an MAT program. Their willingness to refer potential students to Lindsey Wilson College when they are interested in hiring them is less certain and could depend on the strength of personal relationships and the quality of previous new hires.

The timeline should be considered in any decision to start a new MAT program. It takes time to hire faculty, design new courses, and recruit students. Offering a new graduate degree program requires approval of the Kentucky Council on Postsecondary Education and may require Southern Association of Colleges and Schools Commission on Colleges approval. Furthermore, and perhaps most lengthy of all, once developed, the program must be reviewed and approved by the Kentucky Department of Education before the institution can recommend a graduate for teacher certification. Approval can take from several months to over a year.

This report provides an assessment of stakeholder interest, institutional capacity, regional supply and need, and a comparison of competing programs. In doing so, this assessment provides decisionmakers and stakeholders at Lindsey Wilson College with the information they need to determine a course of action on a new Master of Arts in Teaching (MAT) program in biology and/or mathematics.