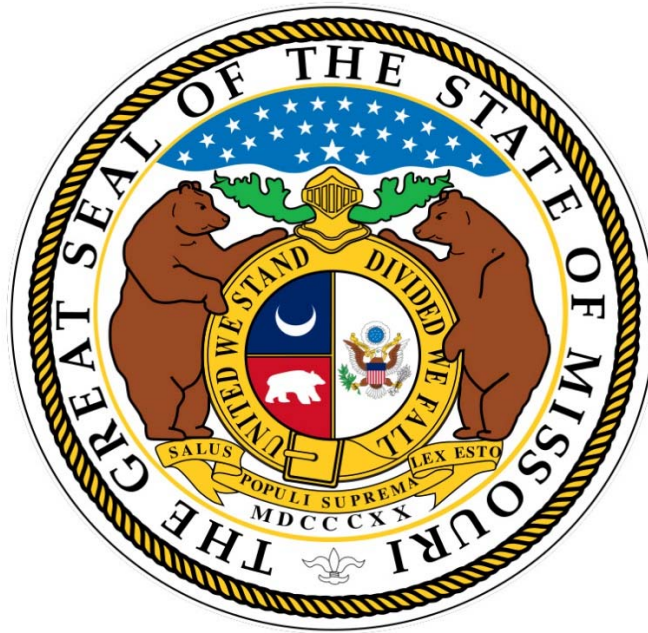


General Education Requirements: A Look at the Structure of Higher Education



Prepared for the Missouri General Assembly Joint Committee on
Education

by

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EXECUTIVE SUMMARY

The suite of courses required of all bachelor degree-seeking students, apart from coursework for the major specialization, are known as general education (GE) requirements. As the core of a “well-rounded liberal arts education,” the purpose of GE is to assure intellectual *breadth* as opposed to the *depth* of expertise created by the student’s major.

Most agree GE exists to develop the abilities to communicate clearly and effectively, use mathematics, understand multiple modes of inquiry, become aware of other cultures, gain insights by considering ethical problems, and to develop the capacity for self-understanding. General education has been described as a cerebral training center containing a wide variety of intellectual experiences designed to create the capacity for critical thinking -- although there seems to be little consensus on what critical thinking actually is or how to determine whether it is indeed an outcome of GE.

Theory posits that GE also plays a pivotal role in creating and curating the fabric of society. Hosts of theorists and philosophers have suggested that the overarching purpose of education is to instill and reinforce the institutions, traditions, and values a society considers essential for the protection and reproduction of the prevailing social order (Adler, 1982; Dewey, 1938; deMarrais & LeCompte, 1995; Counts, 1978; Noddings, 1995; Owens, 2012; Reed & Johnson, 1996). Thus, it would seem that GE, rather than coursework in the major, does the heavy lifting in this regard. If this is so then GE has the power to unite by protecting and reproducing social order. On the other hand, if GE fails to fulfill its purposes, or worse, if it is used for nefarious reasons, it may also have the potential to divide and destroy.

The overwhelming majority of GE programs in American institutions of higher education have been patterned on *General Education in a Free Society* also known as ‘The Red Book’ published by the Harvard Committee on General Education in 1945. With only two major revisions since its publication (2004 and 2013), The Red Book has provided the standard for GE models and theory since World War II (Fox, 2016, Groh, Gurunathan, Waschenko, Miller, & Silversmith, 2014). This lends credibility to those who contend that the 75-year-old model should be reexamined and/or reimaged to account for the 21st century landscape and beyond (Fox, 2016).

General education has many critics. Fox (2016) suggested that liberal arts curriculum might simply represent interesting philosophies of an outdated worldview while at the same time asking whether GE truly offers value to contemporary education and if so -- what is the best way to provide it. Derek Bok, President of

Harvard University from 1971–1991, suggested the goals of GE probably cannot be realized in a four-year curriculum by any currently utilized approach. Further, he suggested that efforts are indeed needed to ascertain what GE actually contributes to the intellectual development of undergraduates (Bok, 2005). The American Association of Colleges and Universities (1994b) suggested that GE has been based almost entirely on loose distribution systems which has led to a number of problems including: (1) fragmented, smorgasbord curricula that lacks an understandable unifying philosophy, and (2) students generally do not see the value of GE and therefore lack motivation to master the subject matter. In one of the few large-scale quantitative inquiries on the subject (n = 24,000 students), Austin (1993) concluded that general education programs “do not seem to make much difference in any aspect of the student’s cognitive or affective development.”

The implications of these kinds of attitudes/conclusions/findings are many and profound. If GE programs are not adding value to the cognitive or affective development of students, then the theoretical advantages of reducing GE requirements (e.g., increasing persistence and graduation rates, decreasing dropout and student debt statistics, hastening entry to job markets and increasing individual earning potential, alleviation of unmet workforce demands) would come at no cost. Further and more importantly, if students are not benefitting from GE then requiring them to spend the time, effort, and money necessary to complete GE programs is both ethically and morally indefensible. On the other hand, if GE programs are compressed or reduced to the extent that they no longer serve their theoretical purposes, the consequences may be severe. If theory serves, it is possible that students would become less successful in the marketplace as a result of underdeveloped critical thinking/reasoning abilities which would almost certainly negatively impact the economic and social fabric of Missouri in numerous ways.

Missouri has a history of using the legislative process to address and improve perceived GE problems. To ameliorate problems caused by what many believed were inconsistent, ambiguous, and opaque course/credit transfer policies; and to enhance student completion/graduation statistics, reduce redundancy and student confusion, and to lower the cost of higher education for students and their families, the Higher Education Core Transfer Curriculum Act (Sections 178.785-789 RSMo) required the Missouri Coordinating Board for Higher Education to develop a standard core transfer curriculum and a common course numbering system for lower-division GE courses. The intent of the law is to create the seamless transfer of academic credits among the public institutions of the state (Missouri Higher Education Core Transfer Curriculum (CORE 42), 2018). Now known more simply as CORE 42, the focus of the policy is to ensure that students obtain the basic competencies of valuing, managing information, communicating, and developing higher-order thinking skills by completing at least 42 credit hours distributed across the broad knowledge areas of communications, humanities and fine arts, natural and

mathematical sciences, and social and behavioral sciences (Missouri Higher Education Core Transfer Curriculum (CORE 42), 2018). The law *requires* the participation of all Missouri public institutions and in so doing has -- in many ways -- standardized GE programs statewide.

With many of the objectives that inspired CORE 42 as a backdrop, during its annual discussion of possible interim investigations, the Chair of the Missouri General Assembly Joint Committee on Education (JCED), Representative Dean Dohrman posed the question: Could/should core requirements for postsecondary bachelor's degrees be reduced -- especially for students in STEM majors -- to move students toward program completion faster or to allow more study in the area of specialization? Exploring the extent to which GE may actually be contributing to the intellectual development and success of 21st century students in Missouri is an especially timely, interesting, and important area of inquiry because the demand for an appropriately skilled and credentialed workforce has never been greater. Moreover, because students are increasingly coming from less traditional, less affluent, and more diverse backgrounds -- it is particularly important to understand whether programs of GE are serving intended purposes.

Apart from the copious theory suggesting that general education (GE) creates/fosters critical thinking while introducing and reinforcing the ideas, traditions, and institutions that underpin society's frameworks; this inquiry has found there is very little empirical research evidence to indicate whether GE is indeed serving those purposes. In fact, some believe that GE is not serving as intended, may be wasteful, and possibly even detrimental in certain circumstances.

The literature presented in this effort suggests that the vast majority of GE programs are patterned on a 75-year-old model that may not be serving the needs of today's more media connected, more diverse student bodies. In addition, an increasingly polarized citizenry provides some reason to believe that GE programs may not be serving societal purposes. Because the literature indicates there is no common GE curriculum, students can and do experience GE in any number of ways -- even within the same institution and major. This suggests that GE programs are not and cannot effectively instill and re-instill the ideas, traditions, and institutions that support and maintain society's prevailing frameworks.

Because some contend there is no consensus about GE curriculum, desired outcomes, best practices, nor its relationship to the rest of the curriculum (Fox, 2016), it is fair to assert that GE programs are somewhat arbitrary and substantially unaccountable for student or societal outcomes/results. For those reasons, it is reasonable to believe that GE programs may be changed. Further, because Missouri

has used the legislative process to modify GE requirements statewide (i.e., CORE 42) it would seem plausible that it might do so again to further modify/condense/simplify GE programs -- especially in light of some evidence to suggest that doing so would result in negligible consequences. However, while CORE 42 streamlined/standardized GE in Missouri, it did so in a way that is substantially compatible with GE programs in other states. Thus, Missouri students have the ability to transfer to out-of-state institutions (and to in-state private CORE 42 nonparticipants), and students from other states have the ability to transfer to Missouri institutions without excessive complications/difficulty caused by program differences. The case of interstate transfer illuminates an important point. There are limits to the unilateral actions Missouri may take without causing substantial ripple effects – both intended and otherwise.

While the vast majority of U.S. institutions of higher education have GE programs that are substantially similar in structure and in intended goals, there are institutions that have no GE requirements at all. Known as *open curriculum*, this approach to GE is featured at institutions such as Amherst College, Brown University, Grinnell College, and Hamilton College. Lately, there has been renewed interest in open curriculum because as has been mentioned – there are no core curricular requirements. Open curriculum is perceived to be both the justification for, and best example of, GE re-imagination/reduction/reform. For those reasons, open curriculum was examined to inform a response to Representative Dohrman’s central question. GE trends in the 50 states were also explored to address several sub-questions including:

- Whether states are reducing GE requirements for postsecondary bachelor’s degrees, particularly for STEM degrees.
- Should open curriculum be incorporated for STEM related majors? Should the model be fully open or modified?
- Should teacher education programs reduce GE requirements or utilize open curriculum so students can enroll in more specialty area coursework?
- Should GE reduction be incentivized in some manner, or will accelerated time to degree, cost/debt reduction, and enhanced employment opportunities be sufficient? Can a more open approach to general education save time and money while facilitating a faster track to master’s study?

The following general recommendations were formulated in response to the questions. They are:

Recommendation. The Missouri Department of Higher Education and Workforce Development is urged to convene a working group of all interested stakeholders, including representatives from interstate higher education cooperatives, to carefully examine GE programs to determine, in reasonably measurable terms, whether GE is serving intended purposes including whether the programs are instilling individual student critical thinking and serving society at large by instilling and reinforcing the institutions, traditions, and values considered essential for the protection and reproduction of Missouri's prevailing social order.

The working group is encouraged to carefully and thoroughly examine GE programs to determine whether programs of GE are impacting students' cognitive and/or affective development and in what specific ways. The group should identify metrics and develop a reporting system to allow individual institutions to justify individual GE classes/programs/requirements by explaining the relevance/value of GE classes/programs/requirements for the students who attend particular institutions.

In the event that the findings of the workgroup indicate that GE programs continue to serve critical purposes for today's students, the group is encouraged to determine how they are doing so and how GE programs can continue to serve those purposes while streamlining programs to the greatest extent possible (e.g., integrate GE curriculum into major coursework, reduce the number of classes needed in particular knowledge areas). If, as some of the literature suggests, the work group determines that GE classes/programs/requirements are failing to serve today's students or Missouri society as intended or, that GE programs or particular classes are wasteful, the working group should offer a plan for reimagining, redesigning, or possibly discontinuing GE programs as they are currently configured.

Recommendation: While it is important to note that no large scale generalizable research was uncovered to suggest that utilizing open curriculum has been or would be harmful, the bulk of the available literature suggests that the wider spread use of the open curriculum approach to GE would likely introduce degree completion path abstraction/ambiguity to such a degree that completion/graduation rates would be harmed – and especially so among student populations that can least afford it.

In light of dismal teacher attrition and retention statistics, and in a time when fewer and fewer students are choosing to become teachers, the possibility of

harming graduation rates is an obvious concern when considering the use of open curriculum for teacher preparation programs.

The literature also suggests that open curriculum approaches are expensive to administer because students require substantial one-on-one guidance from faculty and advisors to ensure they choose coursework that enhances their overall programs of study. For these reasons, the use of open curriculum is questionable for widespread use and should probably be tested on a limited and voluntary basis at open enrollment and moderately selective institutions to determine whether wider spread use is indicated.

Recommendation. In an age of increasing individualism, vocational specialization, and intensifying societal polarization set against an environment of decreasing trust in society's institutions (e.g., government, religion, and education), programs of GE -- both in the high schools and in the universities -- may be the single remaining force that can fit the population together as citizens who share a common heritage and culture. If we accept this is indeed an appropriate aim and outcome of education, and in particular GE, then the relevance and value of GE to society is truly immense, indispensable, and indisputable. Conversely, if GE fails to serve those purposes, or worse, if it is used as a vehicle to instill ideas and values that are anathema to society's prevailing culture, institutions, and traditions -- theory presented here suggests the consequences may be profound.

Activist teaching goes beyond the desirable and appropriate circumstance where students are exposed to numerous perspectives to provide them with the opportunity to enhance and develop critical thinking skills by weighing various positions (including those they disagree with). Activist teaching insists on the adoption of ideas, dispositions, and philosophies that are intended to challenge, undermine, replace and/or outright destroy long-standing institutions, traditions, and values.

While it may be difficult to precisely define when lines are crossed between advocating/teaching ideas/philosophies to enrich and inform students' critical thinking skills and inculcating/indoctrinating students in accord with agendas they regard as repugnant to dearly held views and values, it is asserted that educators/administrators should -- to paraphrase United States Supreme Court Justice Potter Stewart -- know activist teaching when they see it. In the area of moral instruction, philosophy posits that the school shares its responsibilities with numerous other institutions, of which the family is the most important (Harvard Committee on General Education, 1945). Therefore, it is recommended that public institutions of education in Missouri protect students from activist teaching practices.

Missouri public institutions of education should take seriously student complaints of activist teaching, particularly when it occurs in classes that are required under GE programs, as they may manifest themselves in practices that aim to discredit or devalue the moral, religious, or political beliefs of students and their families and supplant those beliefs with the ideologies of an individual educator who holds power over the student. Institutions are encouraged to create and implement policies that discourage activist teaching, particularly in required general education (GE) classes, and provide students with the opportunity for immediate and meaningful relief without fear of reprisal. It is further recommended that Missouri public education institutions keep detailed records of all complaints of professor/teacher abuses of power as they may manifest themselves in activist teaching practices to include the number of complaints, the nature and particulars of individual complaints, and how the institution addressed each complaint.

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OVERVIEW

Programs of study in higher education leading to undergraduate degrees are traditionally divided into two broad categories *general* and *special*. General education referring to that part of the program which addresses life as a responsible human being and citizen, and special or *specialized* education (more commonly referred to as the major or concentration) denoting that part which addresses the creation of competence/expertise in some vocation or occupation. Educational theorists and philosophers have long posited that these two purposes of education compliment and inform one another therefore, they are not entirely separable.

Because higher education costs are swelling and student debt is skyrocketing while demand for educated/qualified persons in nearly every area of the workforce is high and increasing -- there is growing interest in moving students toward graduation faster so they may lower exposure to debt, enter the labor force sooner, and earn money and pay taxes more quickly. For these reasons and others, even while higher education institutions are required by accrediting bodies to provide general education in some form, abbreviating or streamlining credentialing/degree programs by various policy processes -- including the possibility of using legislation to reduce the number of postsecondary classes/credits needed for program completion -- is of great interest.

The collection of classes all students must take – major specialization notwithstanding -- as part of an institution's postsecondary undergraduate degree programs are known as general education (GE) requirements. Conceptualized as the heart of a "well-rounded liberal arts education," GE is intended to assure intellectual *breadth* as opposed to the *depth* of expertise created by a student's major. In theory, GE courses exist to stimulate higher order thought processes, also known as critical thinking, in students who previously learned by memorization and/or recitation during their elementary and secondary education experiences. GE also serves to nurture and promote an institution of higher education's particular learning community, demonstrating the institution's mission, philosophy, values, and culture. In this way, GE is theorized to instill particular habits and dispositions that students use long after their days on campus. Leskes and Miller (2005) suggest that GE may be "the most important manifestation of an institution's educational mission" (p. 2).

General education has been characterized as a cerebral training center. Theory suggests the mind is exercised and enlarged by a wide variety of intellectual experiences designed to create the capacity for critical thinking. Although there seems to be little consensus on what critical thinking actually is -- or how to determine whether it is an outcome of GE – general education programs presumably

exist to create critical thinking by leading students through learning experiences to develop the abilities to communicate clearly and effectively, use mathematics, understand multiple modes of inquiry, become aware of other cultures, gain insights by considering ethical problems, and to develop the capacity for self-understanding.

General education (GE) programs are administered in several ways but most often they present students with course choices within particular disciplines known as *knowledge areas*. *Distribution requirements* obligate students to accumulate a predetermined number of credits in knowledge areas such as humanities, mathematics, social, physical and biological sciences.

The wide variety of GE program forms and course offerings within particular knowledge areas make presenting accurate statistics on GE nearly impossible. However, we do know that since the 1970's, GE has comprised about one-third of required degree program credits in the United States (Carnegie Foundation for the Advancement of Teaching, 1978). That fact provides anecdotal evidence of how little GE programs have changed and evolved over time. Yet, while the overall structures of GE programs have remained very much the same for 50 years, students experience GE in any number of ways. In fact, students in the same degree program, at the same postsecondary institution, can and do have very different GE experiences.

GE program requirements also vary greatly depending on the type of institution a student attends. At the low end of the continuum are certificate/credentialing programs frequently offered at community/technical colleges and trade schools. Students often complete those kinds of programs without taking any GE classes at all. Four-year institutions that feature the *open curriculum* approach do not place restrictions such as "general education" requirements on the courses students must take as part of a degree program. These institutions tend to be elite private liberal arts colleges (e.g., Brown University, Amherst College, Hampshire College, Smith College) with high percentages of students who possess exceptionally strong academic skills. These students have the requisite abilities, skills, and dispositions to be very self-directed and thus, with the guidance of skilled advisors and faculty, they are successful in choosing effective courses of study for themselves. In the middle of the continuum are the majority of GE programs. Most two-year and four-year institutions require GE credits to comprise roughly one-third or less of the degree program (e.g. Harvard's eight-course requirement). At the high end of the continuum are GE programs that can total half of the degree program (e.g., University of Chicago).

Because GE programs can and do vary widely and substantially in both structure and in class/credit requirements among great institutions that are producing outstanding graduates, it seems entirely appropriate to explore the extent to which GE may actually be contributing to the intellectual development and success of 21st century students. This is an especially timely, interesting, and important area of inquiry because the demand for an appropriately skilled and credentialed workforce has never been greater. Moreover, because students are increasingly coming from less traditional, less affluent, and more diverse backgrounds -- it is particularly important to understand whether GE is serving students, the workforce, and society.

During its annual discussion of possible interim investigations, the Chair of the Missouri General Assembly Joint Committee on Education (JCED), Representative Dean Dohrman posed the question: Could/should core requirements for postsecondary bachelor's degrees be reduced -- especially for students in STEM majors -- to move students toward program completion faster? It turns out many have been considering questions of this kind.

Fox (2016) suggested that liberal arts curriculum might simply represent interesting philosophies of an outdated worldview while at the same time asking whether GE truly offers value to contemporary education and if so -- what is the best way to provide it. Derek Bok, President of Harvard University from 1971–1991, has questioned the very basis of GE. He suggested the goals of GE probably couldn't be realized in a four-year curriculum by any of the approaches currently utilized in the nation's institutions of higher education. Further, he suggested that efforts are indeed needed to ascertain what GE actually contributes to the intellectual development of undergraduates (Bok, 2005). The American Association of Colleges and Universities (1994b) suggested that GE at most institutions has been based almost entirely on loose distribution systems which has led to a number of problems including: (1) curricula that lacks an understandable unifying philosophy, (2) fragmented, smorgasbord like curricula, and (3) students generally did not see the value of studying GE and therefore lack motivation to master the subject matter. In one of the few large-scale quantitative inquiries on the subject (n = 24,000 students), Austin (1993) concluded:

“... the varieties of general education programs currently used in American higher education do not seem to make much difference in any aspect of the student's cognitive or affective development.”

The implications of these kinds of conclusions/findings are many and profound. If GE programs are not adding value to the cognitive or affective development of students,

then the theoretical advantages of reducing GE requirements (e.g., increasing persistence and graduation rates, decreasing dropout and student debt statistics, hastening entry to job markets and increasing individual earning potential, alleviation of unmet workforce demands) would come at no cost. Further and more importantly, if students are not benefitting from GE then requiring them to spend the time, effort, and money necessary to complete GE programs is both ethically and morally indefensible.

In defense of general education (GE), Bol (2004) suggested it is pivotal and essential because it provides students with the necessary knowledge that every educated person should have. He posited that GE trains students in the crucial skills for the acquisition, communication, and generation of new knowledge (e.g., writing, speaking, quantitative and logical reasoning and argument, careful reading, etc.). Bol also posited that GE introduces the great traditions of civilization and offers students common intellectual points of reference.

Bol's views are fundamentally aligned with those of philosophers who have suggested that the overarching purpose of education to instill and reinforce the institutions, traditions, and values a society considers essential for the protection and reproduction of the prevailing social order (Adler, 1982; Dewey, 1938; deMarrais & LeCompte, 1995; Counts, 1978; Noddings, 1995; Owens, 2012; Reed & Johnson, 1996). Thus, it would seem that GE, rather than coursework in the major, does the heavy lifting in this regard. However, if this is so then it raises a concern. If GE has the power to unite by protecting and reproducing social order, then it may also have the potential to divide and destroy.

Related to the idea that GE is the vehicle by which institutions instill particular habits and dispositions used by students after their postsecondary experiences is the assertion by some that coursework required under GE programs can be used to instill ideologies that many find extremely objectionable. Students report this often occurs in required GE classes (e.g., social sciences, and arts and humanities), therefore they cannot avoid it. Parents and students complain that some professors of required GE courses undermine, devalue, and sometimes outright mock and/or ridicule the traditions and values students and their families hold dear. These students say they feel obligated to emulate ideologies they perceive to be preferred by these professors -- philosophies with which they strongly disagree -- to pass classes with acceptable grades. Students have also described classroom cultures of ideological discrimination, and worse scorn and violence, presumably created by *activist teaching practices*.

While the true extent of activist teaching practice is unknown, support for these types of student complaints may be grounded in reality as some professors embrace activist teaching philosophy. Activist teachers choose to interrogating ideas of privilege while promoting their conceptions of social justice. Activist professors may choose to make alternative perspectives available to students, however the philosophy provides that they may unilaterally decide some perspectives are out of bounds (Kerdeman, 2014). In this way, if student/parent/faculty/institutional perspectives do not promote or support an activist teacher's particular point of view – those perspectives may be deemed unacceptable by the professor. Activist teaching combined with the subordinate power position of students in relation to their professors and that activist teaching can occur in unavoidable GE coursework, causes parents (and others) to believe the practice is unethical. While this inquiry touches on the possible problems presented by activist teaching, because of education's undisputed power and potential to mold, make, and remake society, the subject is clearly worthy of extensive future examination.

If we accept that GE is of value, as theory and current practice certainly indicates it is, how much GE coursework is necessary for a majority of students to realize the benefits? Considering that the standard GE model has been in use since 1945 when Harvard University, published the first comprehensive work to elucidate GE theory, *General Education in a Free Society*, it is surprising that there seems to be no definitive answer to that question and so little consensus in the higher education community regarding the form and composition of GE. This suggests the importance and potential impact of this inquiry's central question: *Could/should core requirements for postsecondary bachelor's degrees be reduced - especially for students in STEM majors -- to allow for more major specific coursework or to facilitate faster program completion?*

The Missouri General Assembly's Joint Committee on Education committed to consider this question and to do so, examined the following areas of literature:

- Theory of Liberal Arts Education
- Theoretic Value of General Education
- General Education Knowledge Clusters
- Forms of General Education Programs
- General Education Vehicles
- The National General Education Landscape
- General Education in Missouri
- The Missouri Higher Education Core Transfer Curriculum
- Modification of General Education Requirements

GENERAL EDUCATION

It is impossible to consider the relevance and value of general education (GE) both to students and to society at large without turning to philosophy to contemplate the place of human ideals, dreams, and aspirations in relation to the condition of the world, ideals of good and the good life, or more simply -- the overall scheme of things. Philosophers have dedicated a great deal of thought to describing the various purposes for education. Aristotle, Plato, and Socrates as well as more contemporary philosophers (e.g., Dewey, Locke, Rousseau, Mo Tzu) seem to agree in principle – the overarching societal purpose of education is to instill and reinforce the institutions, traditions, and values a society considers essential for the protection and reproduction of the prevailing social order (Adler, 1982; Dewey, 1938; deMarrais & LeCompte, 1995; Counts, 1978; Noddings, 1995; Owens, 2012; Reed & Johnson, 1996). The goals of liberal arts education or ‘education to make men free,’ are closely allied with the goals of general education (GE) (Harvard Committee on General Education, 1945) hence, the terms ‘liberal arts’ and ‘general education’ are used interchangeably going forward.

Owens (2012) asserted a liberal arts education allows individuals to join the societal conversation or in his words “to read, discuss and test the great ideas proposed by the great thinkers and writers of the world.” While specialized education at the postsecondary level (i.e., major or concentration) focuses on providing the knowledge and skills students need to realize their particular career and/or unique life aspirations -- GE, in alignment with education’s overarching philosophical purpose, is theorized to provide education for informed responsible life in society. In other words, GE serves to fit people into common cultures shared with others as citizens (Harvard Committee on General Education, 1945).

If the welfare of American society (and all other stable societies) is dependent on common beliefs that are essential for the protection and reproduction of the prevailing social order, then the central task of liberal arts education as it manifests itself in postsecondary GE programs -- is to instill and reinforce them. Bol (2004) offered a comprehensive yet succinct summation:

General education centers on common standards and common purposes. It provides students with the essential knowledge that every educated person should have and trains students in those skills essential to the acquisition, communication, and generation of new knowledge such as writing, speaking, quantitative reasoning, logical augmentation, careful reading, etc. Further, it

should introduce the great traditions of civilization and offer students common intellectual points of reference.

As Bol suggests, the intellectual capacities to think independently, generate creative thoughts, consider sophisticated questions of ethical and moral importance, respect the rights of others, value art and beauty, and solve problems in numerous settings and various areas are generally believed to be the product of GE. Owens (2012) enumerated the intellectual skills cultivated by liberal arts education. They are:

- 1) Ability to speak and write effectively in more than one language
- 2) Ability to think critically, and to form one's own opinions by evaluating arguments and evidence rationally, and without prejudice;
- 3) Enhanced ability in mathematics, and in scientific reasoning;
- 4) Ability to analyze literature and art to appreciate beauty and artistic creativity, for both pleasure and intellectual enrichment;
- 4) Ability to engage questions of ethics and morality and to recognize responsibility for oneself and society;
- 5) Ability to apply acquired knowledge and analytical skills to new situations, so as to find solutions to new problems that arise in an increasingly globalized and fast-changing world.

Theory holds that the acquisition of these skills and abilities fosters a strong ordered intellect that provides the ability to explore and examine a wide range of ideas and topics and thus the ability to learn. By using a host of approaches to orient and order thinking skills to address diverse disciplines, theory suggests students develop the attention, concentration, and persistence skills needed to understand arguments, logic, and lines of reason that allow for discrimination among ideas. The cumulative experience of learning in numerous areas and settings teaches the skill of learning itself (e.g., idea organization, comprehend new material, ability to learn faster and thoroughly). Hence, the more one learns the easier it becomes to learn because the mind attaches new information to relevant preexisting ideas. In this way, learning precipitates learning. Old knowledge builds upon and clarifies new knowledge allowing the brain to create new approaches, pathways, and categories as well as new strategies and habits to increase speed and efficiency. In short, theory supports the notion that GE trains the mind to learn. On that idea, Albert Einstein said:

“The value of an education in a liberal arts college is not the learning of many facts, but the training of the mind to think something that cannot be learned from textbooks.”

The point of preceding discussion has been to illuminate the theoretic value of GE both to individuals and to society. Nonetheless, knowledge areas more associated with GE (e.g., humanities, sociology, fine arts) are often regarded as less important than courses more associated with developing skills needed for career -- even while theory suggests these distinct areas of education are inseparable. Specialized

education (i.e., the major) describes, analyzes, and explains, while GE appraises, judges, and criticizes. Specialized education provides the skills by which a statement is categorized as true or false while GE provides the knowledge to ascertain whether a result is good or bad. In contrast to the methods by which a scientific argument is made (i.e., mathematics or physics), GE allows the results to be classified as true or real or to place them along a continuum of ethical or moral value(s) (Harvard Committee on General Education, 1945).

As was suggested previously by the Einstein quotation -- no curriculum, teacher or training program can teach students all they need to know whether that knowledge is needed for occupation or otherwise. Thus, no one can become an authority in every discipline and therefore individuals must trust the opinions and advice of others who are experts in other fields (e.g., medicine, mechanics, law, construction). For that reason, liberal arts education theory holds that GE is needed to provide individuals with the broad critical education by which one may analyze and appraise competence, value, or worthiness.

General Education Knowledge Clusters

As was previously mentioned, the wide range of GE programs and vast number of particular course choices within those programs make gathering and reporting concrete statistics on the overall state of GE in the U.S. formidable. We do know however that the overwhelming majority of GE programs in American institutions of higher education can trace lineage to *General Education in a Free Society* also known as 'The Red Book' published by the Harvard Committee on General Education in 1945. With only two major revisions since 1945 (2004 and 2013), The Red Book has provided the standard for GE models and theory since World War II (Groh, Gurunathan, Waschenko, Miller, & Silversmith, 2014) lending credibility to critics who contend that the 75 year old model should be reexamined and/or reimagined to account for the 21st century landscape and beyond (Fox, 2016).

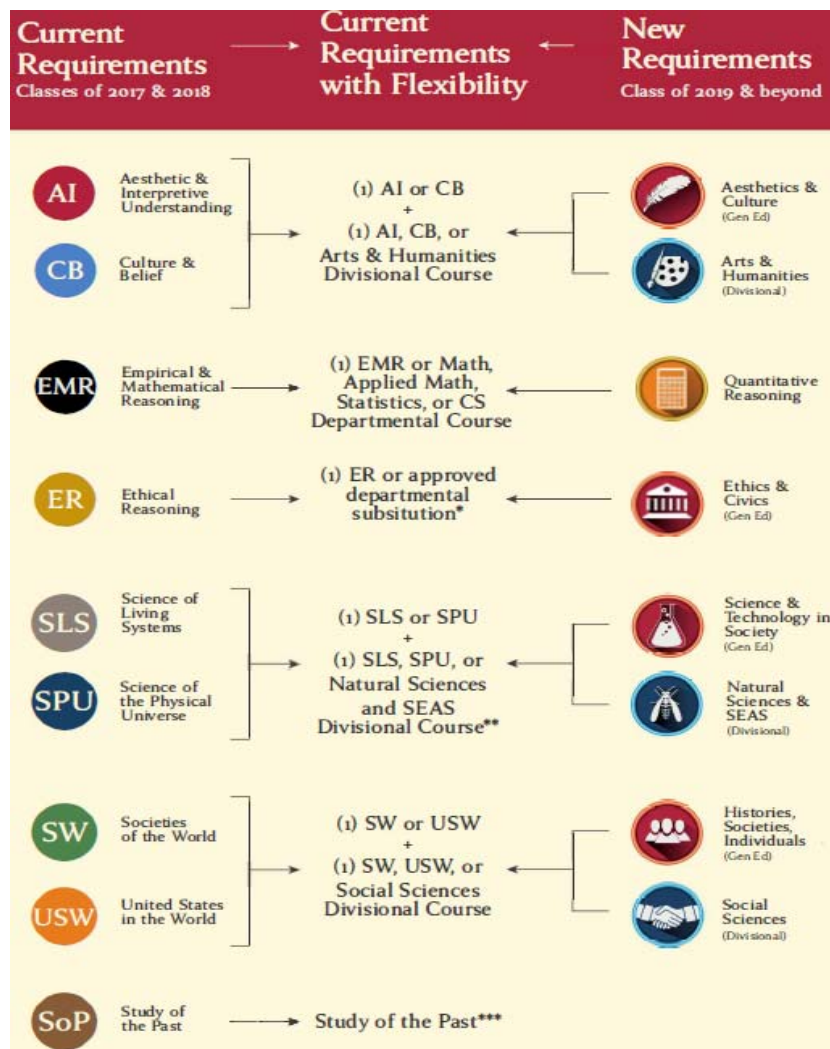
The Red Book espouses the separation of knowledge into three areas: (1) Natural Science (the physical environment), (2) Social Studies (human institutions and social environments), and (3) Humanities (understand inner aspirations and ideals or the relationship of oneself to humanity and vice versa). The Harvard Committee on General Education designed the collegiate GE curriculum as a continuation of GE programs in public secondary schools. The Committee was careful to note that GE at the postsecondary level should not repeat the coursework studied in high school rather, college level coursework should continue the work started in high school (Harvard Committee on General Education, 1945). Yet, the nearly universal presence of co-requisite and/or remedial classes designed to help college students achieve proficiency in GE knowledge areas (e.g., mathematics, English composition) that should have been mastered during high school, is enough to demonstrate that

postsecondary general education (GE) can indeed repeat coursework presented at earlier phases of the educational process.

While course names and descriptions have certainly evolved since 1945, the goals of GE at Harvard have remained largely unchanged. Very much in accord with theory presented previously, GE at Harvard in 1945 was designed to provide:

... the opportunity to counter the narrowing effects of the concentration by helping students to make intellectual connections, to look inward and outward to the world, and to understand the deep and sometimes surprising importance of scholarly work regarding some of the most central aspects of life (Harvard Committee on General Education, 1945).

Figure 1. Harvard University General Education Requirements



Source: Harvard College Program in General Education https://gened.fas.harvard.edu/browse/classes?f%5B0%5D=sm_og_vocabulary%3Ataxonomy_term%3A114901

Echoing the Harvard Committee on General Education's 1945 Red Book, Harvard now describes the 2019 general education (GE) program in nearly analogous terms:

Concentrations ensure that you know a lot about something; Gen Ed ensures that you understand how to take that knowledge with you into the world. Gen Ed, in other words, is the intellectual fuel for the personal transformation the College hopes to facilitate" (Harvard College Program in General Education, n.d.).

The current GE program at Harvard requires one course from each of four perspectives, one course from each of the three divisions within Fine Arts and Sciences (Natural Sciences/SEAS, Social Sciences, and Arts & Humanities), and one course demonstrating quantitative facility (see Figure 1). This translates to eight courses, carrying four credit hours each, for 32 credit hours.

General Education Program Forms

General education (GE) programs take three basic forms, open curriculums, core curriculums, and distribution requirements (Fox, 2016). Ideally, open curriculum programs have no specific requirements outside of the concentration or major. Compulsory classes that must be taken by all students, regardless of major, characterize core programs and, the most common framework, distribution programs, are patterned on 'The Red Book' requiring students to accrue a predetermined number of classes and credits from offerings in several different knowledge areas (e.g., Figure 1. Harvard University General Education Requirements).

Open Curriculum. Open curriculums are featured at institutions such as Amherst College, Brown University, Grinnell College, and Hamilton College. Of late, there has been renewed interest in the open curriculum approach because generally speaking – there are no core curricular requirements and therefore it is perceived to be the exemplar of GE re-imagination/reduction/reform. While notable institutions have long employed the open curriculum format, the lack of consensus regarding GE accountability and evaluation frameworks, and the fact that open curriculum institutions generally attract highly talented and well-prepared students who have the ability and motivation to be responsible for their own programs of study, confound serious efforts to determine effectiveness (Fox, 2016).

Brown's open curriculum is anchored in three principles: (1) students taking an active role by assuming responsibility for the direction of their learning, (2) rather than a slate of predetermined coursework, the undergraduate experience is thought of as a process of individual and intellectual development, and (3) curriculum should

encourage individuality, experimentation, and the integration and synthesis of different disciplines (Explore Brown University, 2019).

While there are no core curricular requirements as such at Brown -- there are indeed requirements. Brown students must complete at least 30 courses in eight semesters, complete at least one major, and demonstrate excellent skill in written English before they may graduate (Explore Brown University, 2019).

Core Curriculum. The central objective of core curriculums is to create a communal learning environment that cultivates particular habits of mind that characterize the graduates' approach to life and career long after graduation (Fox, 2016). True core curriculums are rare and according to Hart Research Associates (2016), they more often assume a 'distribution +' character with features such as cross-curricular capstone projects. In the classic/pure form, all students, regardless of concentration, take a prescribed and specific 'core' of courses. At Columbia University for example, the core curriculum is a set of common courses required of all undergraduates irrespective of major. Established in the 20th century, Columbia's core curriculum has evolved over time and as it approaches its 100th anniversary the University believes it remains effective and relevant (The Core Curriculum, 2019).

Distribution Requirements. Distribution requirement programs require a specified number of credits in particular knowledge areas (e.g., humanities, social sciences, and physical and biological sciences). While distribution frameworks require study in particular knowledge areas, students are free to choose various courses in various orders within those fields (Fox, 2016). Jones & Ratcliff (1991) found reasons to believe that the best outcomes occur when students select courses from carefully structured options – in place of a core or a loose distribution structure. In contrast, others suggest these courses are successful only with the strong advising engagement of faculty which makes these programs expensive (Fox, 2016). Unfortunately, even when faculty are involved -- as it is believed they should be -- Fox (2016) asserts the courses offered are often designed for departmental or degree programs, not for the true general education (GE) needs of students.

Scholars have suggested that distribution programs present challenges because students often lack the knowledge and/or life experiences needed to select courses to best achieve the multiple aims of GE and/or to well enhance/compliment their majors (Fox, 2016). This concern was echoed by Bok (2005) when he asserted that if students were given the option to create their own programs -- they would not do well in terms of a liberal arts education presumably due to lack of experience, knowledge, maturity and maybe most significantly -- interest. It is logical to believe that if this is true of students in distribution systems – then it may also be true of students in open curriculums. This provides reason to question the viability of

employing the open curriculum approach as a method of GE reform, especially within moderately selective and open enrollment institutions of higher education that serve less prepared and less academically talented students.

Overview of General Education Vehicles

Great Books. General education at Great Books institutions is centered on reading and discussing writings that have -- in the opinion of the that institution's faculty -- most impacted societies (e.g., Homer's Iliad and Odyssey; Plato, Collected Works; Aristotle, Collected Works; Newton, Principia Mathematica; Austen, Mansfield Park; Federalist Papers; U.S. Constitution) (Great Books College, n.d.). In use since 1920 when first formulated at Columbia University, and now featured at Boston College, Hillsdale College, and St. John's College, the curriculum focuses on universal human questions (e.g., Who is man? Who is God? What is good and the good life? How should one live life?). General education via the Great Books approach is expensive in comparison to others because it requires small seminar classes taught by faculty specialists (Fox, 2016).

Survey Courses. Emphasizing breadth over depth, survey courses are the least expensive program to implement because they are characterized by "introduction to" or "100 level" courses taught by the existing specialist faculty. The courses cover a wide spectrum of course subject topics -- but no single matter receives substantial attention or in depth consideration. Critics contend this approach can be shallow because the curriculum is often comprised of entry-level courses that they argue inadequately serve GE goals. Moreover, while it is believed that generalists would best teach survey courses -- in reality they are often taught by graduate teaching assistants or adjunct faculty (Rosenberg, 2015). Fox (2016) asserts that specialists, who often have low levels of interest in teaching students who are not majoring in the subject matter, most often teach these courses.

Modes-of-Inquiry. Modes-of-Inquiry models accentuate the commonalities and intersections of human knowledge (e.g., mutual processes, values, and the best practices of various disciplines) (Fox, 2016). Specific strategies (i.e., modes-of-inquiry) are used in combination to arrive at possible solutions and to evaluate credibility. Strategies for gathering research data in pursuit of solutions may include methodologies such as case studies, fieldwork, experiment design, surveys, and quantitative techniques. Data and findings are then examined for patterns and relationships using various methods of reasoning (e.g., deductive, inductive, analogical) to suggest final approaches/solutions and to provide justification through evidence in support and/or argumentation against, alternative answers.

A hybrid GE model with a prominent Modes-of-Inquiry component has been in use at the University of Missouri Kansas City (UMKC) since 2013. The University describes its General Education Core as an innovative approach with interdisciplinary courses team-taught by faculty (UMKC General Education Core, 2019). UMKC asserts the Core challenges students to think across formal disciplinary boundaries in ways that more closely resemble real-world situations.

Core requirements at UMKC include three types of courses: (1) Focus courses (distribution requirements) drawn from three areas: Arts and Humanities; Scientific Reasoning and Quantitative Analysis; and Human Actions, Values and Ethics. (2) Three sets of complementary courses, called Anchor and Discourse classes, provide the modes-of inquiry portion of the hybrid model. The Anchor classes are described as stressing interdisciplinary and critical thinking. The discourse classes are provided in an effort to instill strong speaking and writing skills. The third pair of classes provide a community engagement capstone experience where students are expected to apply Core learning to real-world challenges (UMKC General Education Core, 2019).

Fox (2016) stated that it is unclear how effectively the modes-of-inquiry model facilitates the broader goals of general education when compared with teaching specialized disciplinary methods. Commentary of this type again suggests a lack of consensus regarding the best models for delivering GE and more importantly -- uncertainty surrounding the true utility and effectiveness of GE.

Hybrids. Hybrid approaches to GE combine established models in various ways but most often take 'distribution +' forms (e.g., modes-of-inquiry curriculum combined with thematic courses in community diversity and distribution requirements in mathematics and science; Great Books focus on the humanities and social sciences with survey courses in science and a distribution approach in mathematics).

The National General Education Landscape

To examine the state of general education in the United States, Warner and Koeppel (2009) asked three fundamental research questions: (1) Do the general education (GE) requirements vary in relation to the U.S. News and World Report rankings of colleges and universities? (2) Do GE requirements vary in relation to the type of university? and (3) If differences exist, what are the implications of these differences? To address these questions, Warner and Koeppel conducted an online review (e.g., institution course catalogs and other online information) of GE requirements.

The researchers used 72 schools randomly selected from the 2007 U.S. News and World Report (USNWR) ranking of colleges and universities. Schools were selected

from each of the 'Tiers' used to rank institution quality (i.e., Tier 1 – institutions ranked in the top 25 percent, Tier 2 – institutions ranked in the top 50 percent but not in the top quarter, Tier 3 – institutions ranked above the 75th percentile but not in the top half, and Tier 4 – the bottom 25 percent). The selected institutions were located in thirty-five states.

U.S. News and World Report classifies institutions in three broad categories: national research universities (those that strongly emphasize research and offer a full range of undergraduate majors, as well as master's and doctoral degrees), master's comprehensive schools (those that provide a full range of undergraduate programs and some master's-level programs but do not generally have doctoral programs), and liberal arts schools (emphasize undergraduate education and award at least 50 percent of their degrees in the liberal arts).

The 24 national research universities, 24 master's comprehensive schools, and 24 liberal arts colleges that comprised the sample had mean fulltime enrollments of 13,720, 4,479, and 1,725 respectively. Warner and Koeppel created a 4x3 matrix using tier and type of school as the main categories, then six schools were randomly selected for each cell.

Table 1. Warner & Koeppel (2009) Sample Distribution by School Type

School	Type			Total
	National Research	Master's Comprehensive	Liberal Arts	
Public	16	11	4	31
Private	8	13	20	41
Total	24	24	24	72

Source: Warner & Koeppel (2009)

In terms of student outcome metrics, the data indicated that liberal arts schools had the highest first-year student retention and graduation rates -- 82.3 and 64.6 percent respectively. National research universities retained 81.8 percent of first-year students and the mean graduation rate was 53.3 percent. Master's comprehensive universities had the lowest rates (72.7 percent retention rate and a 48.3 graduation rate).

Warner and Koeppel (2009) found that students who attended higher ranked schools had more numerous choices within their GE programs as compared to students who attended lower-ranked schools. For example, they found students in Tier 1 schools had an average of 49.8 literature courses and an average of 105.7 philosophy courses to choose from to satisfy the literature and philosophy general education (GE) requirements. To contrast, students in Tier 4 institutions had an average of 5.8

literature and four philosophy courses from which to choose. The researchers observed similar differences for almost every GE content area.

Warner and Koeppel found the total number of GE courses required by schools in all four tiers were similar, ranging from 14.22 courses in Tier 1 institutions to 16.81 courses in Tier 3 schools (see Table 2). However, more variance was observed in how the totals in the tiers were reached and in terms of the actual requirements.

Table 2. Warner & Koeppel (2009) Findings: Mean Number of Required General Education Courses by Content Area and Tier

Subject	Tier 1	Tier 2	Tier 3	Tier 4
Writing/Composition	1.06	1.76	1.50	2.33
Communication/Speech	0.11	0.47	0.22	0.50
Literature	0.89	0.35	0.50	0.39
Foreign Language	1.11	1.12	1.11	0.39
History/Civilization	0.89	1.06	1.33	1.11
Religion	0.44	0.41	0.44	0.28
Philosophy	0.39	0.65	0.56	0.17
Global Studies	0.50	0.47	0.44	0.44
Math	1.28	1.06	1.33	1.11
Technology/Computers	0.11	0.18	0.11	0.50
Natural Science	1.83	1.41	1.78	1.61
Natural Science Lab	0.72	0.65	1.50	0.50
Social Science	1.28	1.71	2.00	2.17
Fine and Performing Arts	0.67	0.65	0.83	0.67
Health and Physical Education	0.44	1.06	0.83	0.50
Humanities	2.50	1.75	2.33	1.80
Total Required Courses	14.22	14.76	16.81	14.47

Source: Warner & Koeppel (2009)

As might be expected, students who attended lower tier schools were required to take more courses to enhance specific foundational skills (e.g., composition, communication, and technological competence) while students attending schools in upper tier institutions were required to take more courses that focused on ideas and world cultures. Warner and Koepfel suggested those differences may be leading to substantially different outcomes and considerably dissimilar uses of education in career pursuits. They theorized the link between SAT scores and tier rankings (average entering student SAT score ranged from 1258 in Tier 1 to 945 in Tier 4) may indicate that the observed differences in required course work are appropriate and constitute explainable, acceptable differences given the academic abilities of the respective student bodies. Alternatively, the researchers suggested this approach to GE might be rooted in stereotypical assumptions regarding student aptitudes and capabilities.

Table 2 indicates that on average, Warner & Koepfel (2009) found that 14 to 17 courses (depending on tier) were needed to complete GE programs. If each of those courses represent three credit hours, then depending on tier, somewhere between 42 and 51 credit hours would have been needed to complete a GE program at four-year institutions in the U.S. The Carnegie Foundation for the Advancement of Teaching, (1978) found that during the 1970's, GE comprised about one-third of required degree program credits in the United States. If a typical bachelor's degree requires the completion of roughly 120 credit hours --- then the research conducted by Warner and Koepfel suggests that one-third of degree credits are still dedicated to GE today.

It is fair to say that using class and credit totals are blunt measurements of the condition/evolution of U.S. GE programs. Nonetheless, it is rather remarkable that the use of these simple metrics results in finding that the number of GE classes and credits have remained mostly unchanged since the 1970's -- and moreover -- for most intents and purposes -- since 1945 when the Harvard 'Redbook' established the prevailing GE model. However, even while course and credit totals have remained relatively static -- it is a mistake to believe that students are experiencing GE programs in the same way. As has been mentioned, the array of GE programs in the U.S., and vast number of particular course choices within those programs (particularly at large institutions), ensure that students can and do have very different GE learning experiences. In fact, Fox (2016) declares there is often great conceptual disparity concerning what GE should be within the same institution. This would seem to be at odds with the central tenants of GE.

While philosophy posits the overarching purpose of education is to provide education for informed responsible life in society -- or to "fit people into common cultures shared with others as citizens" (Harvard Committee on General Education, 1945) -- the copious number of GE program permutations makes it difficult to assert

with certainty that GE is actually producing the desired results (e.g., teaching students particular abilities, imparting particular values, inculcating and re-inculcating prevailing traditions and institutions). In fact, because of the great variety of GE programs and permutations within those programs, the opposite is probably more likely to be true.

The American Association of Colleges and Universities (1994a, 1994b) found when examining GE curriculum that at most colleges and universities, GE was based almost entirely on loose distribution systems. The examination suggested that loose distribution systems led to a several concerns which included (1) the curricula lacked a unifying understandable philosophy, (2) fragmented curricula best described as a “smorgasbord,” and (3) students generally did not see the utility of GE and thus lacked motivation or interest to master the traditional liberal arts subject matter. Findings of this sort lend credibility to those who have suggested that today’s GE programs are far from being universally recognized or systematically applied (Brint, Proctor, Murphy, Turk-Bicakci, & Hanneman, 2009) which in turn suggests the legitimacy of the notion that GE should be scrutinized to determine whether it offers greater value than cost.

GENERAL EDUCATION IN MISSOURI

We have seen that variations on distribution requirement GE programs, or ‘distribution +’ models, are the most common GE frameworks in American universities thus, it is not surprising that hybrid distribution requirement models dominate the Missouri public higher education landscape as well. As is the case across the nation, options available under distribution program models offer a multitude of course combinations (especially in large institutions). Hence, individual student GE experiences can and do differ significantly - even within the same institution.

In response to the perceived need to standardize and streamline GE requirements among the state’s public institutions of higher education, Missouri law in the form of the Missouri Higher Education Core Transfer Curriculum, better known as CORE 42, is now the primary shaper of GE programs in Missouri public institutions of higher education.

The Missouri Higher Education Core Transfer Curriculum Act

To enhance student completion/graduation statistics, reduce redundancy and student confusion, and to lower the cost of higher education for students and their families, the Higher Education Core Transfer Curriculum Act (Sections 178.785-789 RSMo) established by Senate Bill 997 required the Missouri Coordinating Board for Higher Education to develop a standard core transfer curriculum and a common course numbering system for lower-division GE courses. To address problems

caused by what many thought were inconsistent, ambiguous, and opaque course/credit transfer policies, the intent of the law is to create the seamless transfer of academic credits among the public institutions of the state (Missouri Higher Education Core Transfer Curriculum (CORE 42), 2018). Now known more simply as CORE 42 (see Figure 2), the focus of the policy is to ensure that students obtain the

Figure 2. CORE 42 General Education Requirements

CORE 42 Knowledge Areas and Distribution Requirements	
Knowledge Area	Distribution Requirement
Social & Behavioral Sciences	Nine (9) credit hours minimum, from at least two (2) disciplines, including at least one Civics course.
Written Communications	Six (6) credit hours minimum.
Oral Communications	Three (3) credit hours minimum.
Natural Sciences	Seven (7) credit hours minimum, from at least two (2) disciplines, including one course with a lab component.
Mathematical Sciences	Three (3) credit hours minimum. Mathematical Sciences courses that use one of the pathways courses as a prerequisite will meet the general education credit for math. For example, Calculus meets the general education math requirement since Pre-Calculus Algebra is a prerequisite.
Humanities & Fine Arts	Nine (9) credit hours minimum, from at least two (2) disciplines. There is a limit of three (3) credit hours of Performance (PERF) courses that can be applied to the Humanities & Fine Arts Knowledge Area and to the total CORE 42.

Source: Missouri Department of Higher Education <https://dhe.mo.gov/core42.php>

basic competencies of valuing, managing information, communicating, and developing higher-order thinking skills by completing at least 42 credit hours distributed across the broad knowledge areas of communications, humanities and fine arts, natural and mathematical sciences, and social and behavioral sciences (Missouri Higher Education Core Transfer Curriculum (CORE 42), 2018). The law *requires* the participation of all Missouri public institutions and in so doing has – in some ways -- standardized GE programs statewide.

Notwithstanding differing campus cultures, expectations, or value sets, sections 178.785-789 RSMo stipulates that even when there are substantial differences between the GE program requirements at particular public higher education institutions, a receiving institution is compelled to accept a completed GE program at another Missouri public institution. Thus, the completion of CORE 42 requirements at any Missouri public institution of higher education is tantamount to completion at every other Missouri public college or university with some exceptions. Specialized programs in areas such as engineering or the allied health fields have unique goals and accreditation requirements, therefore programs such as these can have different or additional GE requirements.

Table 3. Summary Number of Credits/Classes Required by Missouri 4-Year Public Institutions by Subject Area.

Public Four-Year Institution	Harris-Stowe State University	Lincoln University	Missouri Southern State University	Missouri Western State University	Missouri State University	Northwest Missouri State University	Southeast Missouri State University
	Distribution/ Core 42	Distribution/ Core 42	Distribution/ Core 42	Distribution/ Core 42	Distribution/ Core 42	Distribution/ Core 42	Distribution/ Core 42
African American Experience		Included in Social Science					
Writing/Composition	6/2	6/2	6/2	6/2	6/2	6/2	6/2
Communication/ Speech	3/1		3/1	3/1	3/1	3/1	3/1
Literature		3/1				3/1	
First Year Experience		3/1	3 plus 3/2 institutional requirements		2/1	1/1	3/1
Foreign Language		6-8/2 or Computer Science or Foreign Language					
History/Civilization	3/1		6/2	3/1	6/2	6/2	3/1
Religion							
Philosophy							
Global Studies							
Math	3/1	3/1	3/1	3-5/1	3-5/1	3/1	3-5/1
Technology/ Computers	3/1	See Foreign Language					
Natural Science	6/2	6/2	6-7/2	6-8/2	5-7/2	6-8/2	7-8/2
Natural Science - Lab	4/2	2/1	2/1	2/1	2/1	2/1	2/1
Social Studies	6/2	9/3	6/2	6/2	6/2	6/2	6/2
Fine and Performing Arts			See Humanities		3/1	3/1	
Health and Physical Education		2/1	2/1	4/2			
Humanities	9/3	6/2	6/2 Humanities and Fine Arts	9/3	6/2	3/1	9/3
Total Required Courses	42/15	42-48/15-16	46-47/16	42-46/15-16	45-49/15-16	42-44 -15	42/15

Cell Format: Credit hours/approximate number of classes NOTE: Data sourced from institution websites and is intended to be a presentation of the most general requirements. It should be remembered that particular degree programs often have particular GE requirements including education, engineering and nursing which differ due to professional licensing and other requirements. Because institutions offer a wide range of choices within disciplines, numerous program permutations are possible at all institutions. Students may opt to take more classes or no classes within particular discipline classifications, therefore lack of information in particular cells should not be interpreted absolutely or indicative of whether or not a curricular category exists or is offered as a possibility to satisfy a requirement.

Table 3. Summary Number of Credits Required by Missouri 4-Year Public Institutions by Subject Area (cont.).

Public Four-Year Institution	Truman State University	University of Central Missouri	University of Missouri	University of Missouri–Kansas City	Missouri University of Science and Technology	University of Missouri–St. Louis
	Hybrid Distribution/ Modes of Inquiry/Core 42	Distribution Capstone/ Core 42	Distribution /Capstone/ Core 42	Hybrid Distribution/ Modes of Inquiry/Core 42	Distribution/Core 42 NOTE: Bachelor of Science degrees in engineering, business and IST, and chemistry typically do not follow Core 42 due to their accreditation requirements. All other Bachelor of Science degrees comply with Core 42	Distribution/ Core 42
African American Experience						
Writing/ Composition	6-7/2	6/2	6/2	6/2	9/3	3-4/1
Communication/ Speech	3/1	3/1	3/1	3/1	3/1	3/1
Literature	3-4/1	3/1				
First Year Experience	1-3/1			3/1		
Foreign Language	0-8/0-2	0-3/0-1				
History/Civilization	3-4/1	3/1	3/1	Civic Engagement Class 3/1	3/1	3/1
Religion						
Philosophy	3/1					
Global Studies	0-6/0-2 Writing Intensive					
Math	6-8/2	3-5/1	6/2 Includes Math Reasoning Proficiency	3/1	18/5-6 – Math and Science total of 18 credit hours College algebra or higher May include up to 3 credit hours of psychology	3-5/1
Technology/ Computers		Managing Information - 2-3/1				Information Literacy – 3/1
Natural Science	5-7/2	3-4/1	6-8/2	3/1		9/3
Natural Science - Lab	2/1	1/1	1/1			
Social Studies	3-5/1	9/3	9/3	Culture & Diversity Class, 3/1		9/3
Fine and Performing Arts	3/1	3-6/1-2				
Health and Physical Education						
Humanities	9-11/3		9/3	Critical Thinking in Arts & Humanities, 3/1	12/4 Humanities plus Social Sciences must be content approved by the department and school	Humanities and Fine Arts 9/3
Total Required Courses	31-60/10-20	42-48/15-16	42-43/15	30/10	45-48/16	42/15

Cell Format: Credit hours/approximate number of classes. NOTE: Data sourced from institution websites and is intended to be a presentation of the most general requirements. It should be remembered that particular degree programs often have particular GE requirements including education, engineering and nursing which differ due to professional licensing and other requirements. Because institutions offer a wide range of choices within disciplines, numerous program permutations are possible at all institutions. Students may opt to take more classes or no classes within particular discipline classifications, therefore lack of information in particular cells should not be interpreted absolutely or indicative of whether or not a curricular category exists or is offered as a possibility to satisfy a requirement.

Table 3 provides an overview of the general education (GE) programs in Missouri's 4-year public colleges and universities. Hybrid 'distribution +' systems are the most common GE vehicles nationally (Fox, 2016) and that is true in Missouri as well. Apart from hybrid distribution requirement models featuring modes-of inquiry aspects that differentiate the programs at the University of Missouri Kansas City and Truman State University -- distribution models are used in all of Missouri's public colleges and universities. In addition, Table 3 appears to indicate that Missouri's GE programs align with most of Warner and Koeppel's (2009) national findings.

Fourteen to 17 courses representing somewhere between 42 and 51 credit hours were needed to complete GE programs in U.S. colleges and universities (Warner & Koeppel, 2009). This is also true **in Missouri**. Table 3 suggests that on average, 15 classes totaling 42-45 hours are needed to complete GE programs. This may be due in part to the standardizing effects of the Higher Education Core Transfer Curriculum Act (CORE 42) that aims to create seamless transfer of academic credits among the public institutions of the state (Missouri Higher Education Core Transfer Curriculum (CORE 42), 2018) with exceptions for particular programs (e.g., engineering, nursing).

- Students who attended larger/higher ranked schools by U.S. News and World Report had more numerous choices within their GE programs as compared to students who attended smaller/lower-ranked schools. **In Missouri**, this is also true. Schools more highly ranked by U.S. News and World Report in Missouri are generally institutions with larger student bodies. At the extremes, the University of Missouri with a total enrollment nearly 31,000 offers hundreds of courses that can fulfill the nine credit hour (three course) behavioral and/or social science distribution requirement. At Lincoln University where about 2,700 students are enrolled, roughly eight classes are available to fulfil the nine credit hour (three course) social science requirement. This situation raises an important point. While there may be substantial similarities in distribution program structures and knowledge areas, because institutions offer a wide array of classes within particular knowledge areas from which students may choose, and because the content of these courses vary between institutions and individual classes, it is clear that a common GE curriculum does not exist. It is therefore reasonable to suspect that GE may be failing to "fit people into common cultures shared with others as citizens" (Harvard Committee on General Education, 1945). Because students are experiencing GE in any number of ways, it is fair to hypothesize that GE may not be providing the common intellectual points of reference needed to instill and reinforce prevailing cultures and traditions.

- Warner and Koepfel (2009) found that students attending schools ranked lower by U.S. News and World Report were required to take more courses to enhance specific foundational skills (e.g., composition, communication, and technological competence) while students attending schools in upper tier institutions were required to take more courses focused on ideas and world cultures. Table 3 suggests that finding isn't readily apparent in Missouri. **In Missouri**, regardless of ranking or enrollment, Table 3 indicates that across the board – 4-year public institutions appear to require roughly the same number of courses and credits in foundational skills (e.g., two classes in composition, one class in communication, one or two courses in mathematics, and two to three course in natural sciences). Missouri institutions were also substantially similar in the required number of courses focused on ideas and cultures (e.g., literature, history/civilization, religion, philosophy, global studies, social studies, fine and performing arts, humanities) with the exception of UMKC where three classes are required under these knowledge areas within a GE program that students can complete by taking a minimum of ten classes totaling 30 credit hours. This compares to other four-year public institutions in the state that require students to complete six to seven courses focused on ideas and cultures.

Finding substantially similar general education (GE) requirements in the state's four-year public institutions of higher learning should come as no surprise considering the standardizing effects of the Higher Education Core Transfer Curriculum Act. Before CORE 42 became law, institutions allowed or disallowed transfer credits from sending institutions based on what many believed were opaque, subjective, and institution specific policies. The arguments for disallowing sending institution credits were couched in mismatched course content, curricular materials, credit hours, class syllabi, instructor qualifications, institutional selectiveness, etc. Receiving institutions allegedly based denial of credit decisions on the perceived level of rigor at sending schools. Some have asserted that the relative selectiveness of particular institutions (e.g., open enrollment sending schools to more selective receiving institutions) and 'turf protection' were other, not so apparent -- or transparent -- reasons for denying transfer credit. This state of affairs created strong incentives for students to begin and complete their academic careers at the same institution because doing so carried significantly less risk of credit loss.

With the passage of CORE 42, the sorts of credit transfer problems mentioned above have been ameliorated significantly (with exceptions for particular programs as previously noted). In addition, many GE courses in Missouri institutions are now designated with a Missouri Transfer (MOTR) course number. Regardless of institutional selectivity, courses with MOTR numbers are guaranteed one-to-one

transfer among all Missouri public institutions of higher education, allowing students and their families to minimize the ambiguity associated with credit transfer.

MODIFICATION OF GENERAL EDUCATION REQUIREMENTS

There is no question that institutions wholesale change, slightly modify, or tweak GE programs for reasons as important – but at the same time as arbitrary -- as they have come to believe that the proposed changes make sense for their student bodies and missions (Fox, 2016), whether they have concrete research evidence to substantiate such claims or not.

Harvard University, the originator of the general education (GE) model that has proliferated throughout the United States, has modified (to greater or lesser extents) its GE program several times since 1945 with the latest revision occurring in 2018. As one example of GE change in Missouri, in 2016 the University of Missouri Kansas City (UMKC) convened the UMKC General Education Program 2.0 Task Force. The task force was charged with the review and re-design of UMKC's GE Program to meet the requirements of the Higher Learning Commission and those outlined Higher Education Core Curriculum Transfer Act (CORE 42) to create a program that provides:

a more efficient means of guiding a student's educational journey and to provide greater value because students can be confident that the courses they take will arm them with skills employers most value for careers after college and will constitute progress toward a degree, even if they change majors (UMKC General Education Core, 2019).

Regional accreditation requirements make no explicit statement about the make-up of GE curriculums, what materials should be required, or even which GE definition should be used (Fox, 2016). Given this lack of standardization, logic would suggest that GE programs would vary greatly among the nation's higher education institutions. Yet the literature suggests that the structure of GE programs are far more similar than dissimilar even while student GE experiences can be vastly different as a result of the number of course choices (particularly at larger institutions) within distribution programs resulting in numerous program permutations. This suggests that apart from similar structures and requirements for the total number of credits within specific knowledge areas – students experience GE programs in any number of ways.

Due to the absence of a common GE curriculum, even within the same institution, it is entirely reasonable to believe that programs in GE can be altered to support more pragmatic purposes including augmentation of coursework in the concentration/major, accelerated program completion, and cost/debt reduction. In fact, recent legislation (i.e., The Higher Education Core Transfer Curriculum Act) is already shaping GE programs across Missouri to address these types of issues.

An important distinction regarding the changes brought about by the Higher Education Core Transfer Curriculum Act is that the Missouri legislature acted as the catalyst for change – not a particular institution, accrediting body, or department of state. This has established an important precedent. In the past, legislatures have primarily influenced higher education through the budgeting process – largely ceding policy related to curricular matters to the institutions. CORE 42 is significant because a legislative initiative designed to enhance efficiency from the students’ point of view has significantly impacted GE in all of Missouri’s public institutions of higher education while at the same time providing pressure for the state’s private institutions to follow suit. General education changes as a consequence of CORE 42 are proof positive that nothing is sacrosanct about GE programs and that they may indeed be changed in a number of ways by a variety of actors. However, there are practical limits to the unilateral changes that Missouri may make.

FINDINGS: NATIONAL TRENDS IN MODIFYING GENERAL EDUCATION

To explore whether GE requirements are being condensed/reduced to provide opportunity and time for additional course work in the concentration/major and/or to hasten graduation to facilitate earlier workforce entry and reduce student debt, analysts at Education Commission of the States (ECS) were asked to respond to questions about GE policy trends in the 50 states. In particular, the analysts at ECS were asked:

- Whether states are reducing GE requirements for postsecondary bachelor’s degrees, particularly for STEM degrees.
- Should open curriculum be incorporated for STEM related majors? Should the model be fully open or modified?
- Should teacher education programs reduce GE requirements or utilize open curriculum so students can enroll in more specialty area coursework?
- Should GE reduction be incentivized in some manner, or will accelerated time to degree, cost/debt reduction, and enhanced employment opportunities be sufficient? Can a more open approach to general education save time and money while facilitating a faster track to master’s study?

On the question of **whether states are reducing GE requirements for postsecondary bachelor’s degrees, especially in STEM majors**, the ECS analysts, in accord with the research presented in this inquiry, reported that colleges and universities *are not abandoning or reducing* GE requirements. ECS staffers have not detected trends to suggest that states are instituting policies to encourage colleges to drop GE requirements nor are institutions abandoning them on their own.

Are open curriculum approaches (i.e., no restrictions on the courses students must take as part of a degree program) being utilized for STEM related majors?

ECS noted, as has this inquiry, that open curriculum approaches are most often utilized in elite private liberal arts colleges (e.g., Brown University, Amherst College, Hampshire College, Smith College) with student bodies that possess very strong academic skills. As has been suggested, many highly capable students have the ability to be effectively self-directed – a characteristic that the majority of students who attend open enrollment or moderately selective institutions may not have developed as fully -- or at all. On the other hand, because open curriculum structures are rare in less selective or open enrollment public institutions, the more general postsecondary student population has not experienced them. Therefore, hypothesizing that open curriculums would lead to adverse student impacts at these types of institutions are empirically untested (as is the overall effectiveness of GE programs in general) and seems to be rooted in stereotypical assumptions of how the students in them would likely perform.

Warner and Koeppel (2009) believe that when more course options are available to students, paths to program completion become more abstract, making it more difficult to provide students with a concrete path to program completion. A second potentially negative effect of offering many course options to meet an open curriculum GE structure relates to the cohesiveness of a student's educational experience. Warner and Koeppel (2009) state that a more prescriptive – and by definition less abstract -- GE experience allows institutions to more easily connect course content in meaningful ways across various disciplines (Warner & Koeppel, 2009).

If handling the abstraction of open curriculum would ultimately prove to be a nonissue for students of all backgrounds and ability levels, then another matter would almost certainly present a roadblock for the widespread adoption of the open curriculum approach -- the cost of administration. Under the best circumstances, open curriculums are expensive to administer because students require substantial one-on-one guidance from faculty and advisors to ensure the courses they choose actually enhance their overall programs of study. Here it is important to note some potential pitfalls.

Bok (2005) suggested that if students were given the option to design their own GE programs (as they would in a true open curriculum arrangement) – they would not do well. Because many learners possess insufficient knowledge and experience to properly evaluate and discern between the self-selected ideas and concepts examined, self-directed learning can lead to faulty or outright false outcomes. Moreover, there is no guarantee that without expert guidance and evaluation that individuals would have the innate interest and motivation to study in essential areas

of knowledge or that the material selected for study is accurate, properly interpreted, or correctly and appropriately applied. In other words, students would likely not do well in designing their own GE programs because -- they don't know what they don't know.

Fox (2016) points out that without expert guidance, the limited life experiences of adolescents, in combination with the vast number of course choices that would be available in an open curriculum structure, would likely cause students to choose courses that comport with unexamined ambitions/conceptions and underdeveloped interests. Hence, students may be likely to create narrow educational experiences in comparison to professionally curated GE experiences (e.g., distribution requirements, core curriculums supervised by faculty).

Can STEM concentrators benefit from reduced GE requirements to make space for more STEM major coursework? While logic certainly suggests that student career expertise could be enhanced if increased time and opportunity for more major specific coursework were provided – this inquiry did not uncover any large-scale empirical research to support that idea. To the contrary, Education Commission of the States (ECS) cited evidence to indicate that STEM students may need more GE coursework -- not less.

The analysts at ECS suggested that some institutions have come to believe that STEM majors' employment prospects are better, not worse, when they take more general education (GE) course work -- particularly in the classic liberal arts knowledge areas. In accord with theory presented previously that posited that education for vocation should exist in close concert with GE, ECS states that many institutions are encouraging STEM majors to enroll in courses in the humanities to ensure they develop the ability to communicate well, understand social needs, be entrepreneurial, or in short, to use their STEM skills in context. To illustrate, the analysts at ESC pointed to the well-regarded Olin College engineering program and the Georgia Institute of Technology engineering school.

The Olin College engineering program specifically requires arts and humanities and Georgia Tech's engineering school began promoting arts and humanities as a means to make graduates more relatable, and thus they believe, more employable. To strengthen that point, ECS cited recent evidence to indicate that the arts and humanities may be adding value that additional course work in the concentration likely would not.

- **Robot-Ready** an analysis of workforce data by The Strada Institute for the Future of Work and Economic Modeling Specialists International finds that a

combination of technical skills and liberal arts offers the best preparation for the workforce (Weise, Hanson, Sentz, & Saleh, 2018).

- **Branches from the Same Tree**, a National Academies of Sciences, Engineering, and Medicine report urges “the development and evaluation of approaches that integrate STEMM (Science, Technology, Engineering, Math, and Medicine) fields with arts and humanities in higher education (National Academies of Sciences, Engineering, and Medicine, 2018).
- **LinkedIn’s 2019 Global Talent Trends Report** (2019) cites soft skills such as creativity and communication as top attributes employers identify when hiring. The report suggests that employers see study in arts and humanities as a way to ensure that potential STEM employees have the skills to enhance and inform critical STEM abilities (Global Talent Trends, 2019).

While none of the inquires mentioned above feature quasi-experimental research design comparing large sample sets to allow for generalization, they do offer insights regarding the workforce needs of business and industry that may better serve the intent of the question. Education Commission of the States (ECS) did indicate that states sometimes shorten the pathway to high demand STEM jobs, thereby reducing students’ costs/debt. However, the analysts emphasize that they generally do so using strategies other than reducing general education (GE) requirements or utilizing open curriculums including:

- **Dual enrollment strategies** that allow high school students to enroll in postsecondary courses while in high school to help them shorten time to degree and lower overall costs.
- **Innovative schools** help students achieve a high school diploma and an associate’s degree in technology within 6 years. Maryland Governor Hogan introduced a proposal to expand P-Tech Schools throughout the state, and other states have already embraced P-Tech (e.g., Colorado (HB 15-1270), New York State (SB 2312)).
- **Career pathway initiatives** strengthen ties between education and employment by discontinuing programs that are obsolete and/or misaligned with market forces, ensuring educational pathways are informed by data on workforce demand, providing work-based learning opportunities (e.g., apprenticeships, internships), and allowing more flexibility in applying career and technical education (CTE) coursework toward graduation requirements. In Missouri, Section 178.550.1 RSMo created the Career and Technical Education Advisory Council (CTE- AC) to ensure most of the above career

pathway initiatives are implemented. Similar legislation in other states have comparable goals (e.g., Maryland HB 1234, Oklahoma SB 1370).

Should teacher education programs reduce GE requirements or utilize open curriculum so students can enroll in more specialty area coursework? Staffers at ECS again indicated they are not seeing trends to suggest that GE programs within teacher education programs are changing. However, the analysts mentioned that some states are encouraging STEM majors to go into teaching through programs that shorten time to graduation by combining coursework for the STEM major with training/coursework in education. They also cited the UTeach Institute that partners with 44 universities in 22 states to help colleges of education collaborate with colleges of liberal arts/sciences in an effort to interest more STEM majors to enter the teacher pipeline. ECS added that states, such as Georgia and Florida, have supported the Woodrow Wilson Teaching Fellowship Program that brings STEM graduates and professionals into master's degree programs to prepare them as teachers.

ECS reported that states tend to address the question of coursework for subject-matter instruction in policies other than the reduction of GE requirements or open curriculum. For example:

- Some states require teacher candidates to take coursework in the subjects they will be teaching that often focus on STEM fields. For example, New Mexico requires elementary teachers to have completed STEM specific coursework, including credit hours in science and Massachusetts requires elementary teachers to complete coursework in mathematics such as numbers and operations, algebra, geometry/measurement, and statistics.
- Many states, including Missouri, require teacher candidates to pass content knowledge assessments prior to obtaining a teaching license. This presumably ensures that teachers have learned what is required to teach in the subject area, thus the need for additional knowledge/coursework in the specialty becomes questionable.

Should GE reduction be incentivized in some manner, or will accelerated time to degree, cost/debt reduction, and enhanced employment opportunities be sufficient? While the ECS analysts stated it might be possible to create incentives to accelerate progress toward degree completion by limiting non-major related coursework, they indicated they are not aware of any prominent trends among the states to do so. ECS again cited the previously described work that suggests narrowing technical education programs to include only courses that directly relate to

the major may in fact diminish, rather than enhance, candidate soft skills thereby damaging employment prospects.

Can an open curriculum approach to general education encourage a faster track to master's study to save time and money? Some have suggested that students who attend moderately selective or open enrollment institutions may struggle with the aforementioned program completion path ambiguities associated with the open curriculum GE approach. This is because open curriculum might introduce completion path abstraction to such a degree that many would fail to complete a bachelor's degree in the first place, thereby precluding any master's study at all.

Another less risky approach to encourage faster entry to masters programs -- while saving students both time and money -- might be to reduce and or compress existing GE programs. However, ECS reports there is not much evidence to indicate that universities are moving away from distribution requirements for STEM majors in four-year institutions. A more straightforward approach to hasten master's degree program entry and completion would be for individual students to participate in existing dual enrollment opportunities while in high school to accelerate the completion of bachelor's degrees.

In short, ambitious, hardworking, well-organized students in partnership with high schools and postsecondary institutions can and have been able to realize the theorized benefits of GE program reform (e.g., opportunities to take additional course work the major, hasten time to graduation, reduce debt) by taking advantage of existing programs.

Of course, **postsecondary career pathways do exist that nearly eliminate general education requirements.** Career and technical education (CTE) programs at community colleges tend to be very narrowly focused on technical skills and much less so on general education (GE) requirements. This allows students to complete programs sooner and enter the workforce more quickly. Science, technology, engineering, and mathematics (STEM) CTE programs and career pathways generally strive for efficiency, focus, and relevance thereby reducing both cost and risk of dropout.

Work-based learning components with continuous attention and adjustment to workforce demands, high school dual-enrollment opportunities that allow students to satisfy postsecondary course requirements during high school, and direct links to employers are all examples of programs that reduce, streamline, or minimize GE requirements. Additionally, states/institutions offer short-term certificates in high-demand fields that can accelerate workforce entry for some students. These

certificates typically have no coursework requirements that are not directly related to the concentration.

Another existing degree program acceleration mechanism available to students are Prior Learning Assessments (PLA). PLA frameworks/testing allow students to demonstrate competencies in particular subject areas, which then translate to program course credits. Institutions sometimes allow PLA credits to be used in place of GE courses -- and while less frequent -- some also allow coursework in the major to be fulfilled using PLAs as well.

The above examples are provided for three purposes. First, if students plan well and take advantage of existing high school and college degree acceleration programs (e.g., dual enrollment classes, Prior Learning Assessments), it isn't particularly difficult for them to find ways to hasten the completion of postsecondary GE programs. Second, students can, if they wish, sidestep GE requirements by electing to enroll in CTE programs that have significantly less or no GE requirements at all. Third and most important for the purposes of this examination, we have seen that there are many types of GE programs and that students experience them in any number of ways. We have also seen that GE programs are modified by a variety of actors for a variety of purposes. Therefore, there is sufficient reason to believe that programs of GE can be modified to better serve both pragmatic and theoretical purposes.

There is no question that programs of GE are customized/modified by students when they participate in open curriculum and dual enrollment programs, prior learning assessments (PLAs), and by simply making course choices within GE distribution programs. Institutions also amend/change/modify GE programs by changing credit hour requirements, altering the roster of courses offered under distribution requirements, or by wholesale changing GE structures (e.g., core curriculum, Great Books, distribution requirements, open curriculum). States are also beginning to affect GE at colleges and universities through the legislative process. Missouri's Higher Education Core Transfer Curriculum Act (CORE 42) has undoubtedly changed GE programs in Missouri by providing a powerful standardizing effect intended to reduce student misunderstandings and debt by eliminating the need for students to repeat GE coursework when they transfer between participating institutions. In doing so, CORE 42 aims to lower the cost of higher education while increasing completion/graduation statistics.

DISCUSSION/RECOMMENDATIONS

The literature indicates that programs of GE have proliferated across the United States in accordance with the 75-year-old Harvard Core Curriculum model, even while the model's creators (i.e., the 1945 Harvard Committee on General Education)

specifically stated that the recommendations made for Harvard were not intended for all types of institutions. Today, the model remains in use primarily in accord with theory, tradition, and convenience and much less so because rigorous empirical research has substantiated value.

GE provides the liberal arts portion of a student's overall education. Theory posits this is important because the collective experience of learning in many knowledge areas teaches the skill of learning. Because it is believed that learning in the classic liberal arts knowledge areas allows the mind to attach new information to previously learned material, an ordered intellect develops which allows an individual to explore and examine a wide range of ideas and topics. There is some evidence to suggest that GE is serving those purposes and that GE may be particularly important for STEM majors.

Analysts at Education Commission of the States (ECS) indicated a growing number of institutions (e.g., Olin College engineering program, Georgia Institute of Technology engineering school) are embracing the notion that when STEM majors take additional GE course work, employment prospects improve. Some institutions are encouraging STEM majors to enroll in courses in the humanities because they believe doing so develops the ability for students to use their STEM skills in context.

Very much in line with the theoretical arguments in support of liberal arts education, and speaking directly to a question asked by this inquiry: *Can STEM concentrators benefit from reduced GE requirements to make space for more STEM major coursework* -- ECS cited recent literature to indicate that the arts and humanities may be adding value that additional coursework in the concentration likely would not. It is important to note however that no well-designed, large scale, generalizable research findings were uncovered to bolster those claims. Unfortunately, because it is extremely difficult, if not impossible, for researchers to tease out the utility of particular GE courses or programs, large-scale empirical studies may never exist to precisely answer such questions.

If there is an agreed upon and somewhat measurable intended GE outcome it would be critical thinking. Some researchers have suggested that GE does create/promote critical thinking while others believe GE isn't making any appreciable difference in any respect. Pascarella and Terenzini (2005) found that when compared to freshmen, seniors are better critical thinkers. The researchers suggested that seniors more skillfully use reason and evidence to approach more abstract open-ended problems, are intellectually more flexible, and that they develop more refined and abstract structures to deal with complexity.

In stark contrast to the benefits found by Pascarella and Terenzini is research that indicates that GE may be making no impact at all. Austin (1993) surveyed student perceptions of their GE experiences (n = 24,000) and found that as implemented, GE programs "do not seem to make much difference in any aspect of the student's

cognitive or affective development.” This conclusion aligns with the opinions of many in academia, including a former president of Harvard University, the institution most responsible for the form of GE programs used in the United States today, who suggested that the goals of GE are probably not achievable in a four-year curriculum by any currently employed approach (Bok, 2005).

Pascarella and Terenzini’s (2005) findings suggest that GE programs are indeed working to create critical thinking; however, the researchers do not suggest (nor does other research) exactly which programs are most effective or which classes contribute most or least. If the theory detailed in this inquiry serves, programs of GE should improve critical thinking. Thus, it would follow that because seniors have completed their GE programs, they should be better critical thinkers when compared to freshman. However, those findings may just as well be attributed, at least in part, to unobserved or omitted factors/variables such as greater accumulation of life experience and/or the process of natural maturation. More likely yet is that critical thinking is a product of the combined effects of all of the aforementioned elements (i.e., GE, life experience, maturation) in concert with any number of other, hard to quantify, omitted elements/experiences (e.g., military, parenting, family background, quality of the elementary and secondary education, access and exposure to media).

The GE literature indicates there is no consensus on across the board best practices, contribution to the major curriculum, and little agreement about desired outcomes (Fox, 2016). Because rigorous empirical research doesn’t offer conclusions regarding the makeup of an ideal GE curriculum, nor the number, types, or combinations of classes that would lead to the desired theoretical outcomes -- it has been entirely appropriate for this inquiry to explore whether altering GE programs/requirements would impact metrics like graduation, dropout, student debt, and workforce statistics. Unfortunately, there seems to be no concrete answers to those questions.

Rigorous empirical research efforts are confounded because there are numerous types of students attending many kinds of postsecondary institutions for a limitless number of reasons. However, the preponderance of the literature suggests that GE approaches designed to serve students attending highly selective institutions would likely be much less effective -- or possibly outright damaging -- if those approaches were implemented at moderately selective or open enrollment colleges and universities.

There are things we do know. Programs of GE take considerable time to complete and consume significant sums of money. General education (GE) requirements account for approximately one third of the credits required to earn a bachelor’s degree in Missouri, as they do in the rest of the United States. This means that if a student enrolls in the minimum 12 credit hours per semester required for fulltime status, without having earned any college level credits during high school, s/he can

expect to dedicate three or four semesters (one and one-half to two years) to completing GE requirements.

The University of Missouri's 2019-2020 academic year undergraduate per credit hour tuition rate is \$299.00 for residents and \$899.70 for many non-residents (University of Missouri Cashiers Office, 2019). Thus, the 15 class, 42 credit hour GE program at MU translates to \$12,558 in tuition costs for in-state undergraduates (\$37,787.40 for many non-residents). If most bachelor degree programs require a minimum of 120 credit hours to complete (keeping in mind that many require additional credits and fees (e.g., engineering, nursing, teaching), rough calculations suggest that 35 percent of the total tuition costs needed for completion are dedicated to general education (GE).

It has been suggested that GE programs can be described as somewhat arbitrary -- so one arbitrary suggestion to reduce GE requirements would be to modify CORE 42 to require one class (three credit hours) in social and behavioral sciences, one class (three credit hours) in written communications, one class (three credits) in oral communications, three credits (one class) in natural sciences, three credits (one class) in mathematics, six credit hours in humanities (two classes), and three credits in the fine arts (one class). This suggestion would total eight classes and 24 credit hours, approximately half of the current CORE 42 requirements. At the University of Missouri this arbitrary GE program would allow full-time students to complete their programs in two semesters (one academic year or less) and save resident students nearly \$5,400 in tuition.

At first blush, it would seem a simple matter for Missouri to use legislation (e.g., reduce CORE 42 requirements) if it wishes to further condense GE requirements statewide, especially in light of some evidence to suggest that doing so would result negligible consequences for students. However, while CORE 42 streamlined/standardized GE in Missouri, it did so in a way that is substantially compatible with GE programs in private institutions and in other states. Thus, Missouri students have the ability to transfer to out-of-state institutions (and to in-state private CORE 42 nonparticipants) and students from other states can transfer to Missouri colleges and universities without excessive differences or difficulty. Interstate student transfer raises an important point. As was suggested previously, there are limits to the unilateral changes that Missouri may make.

If Missouri were to reduce GE requirements in such a way that they would become substantially dissimilar to those in other states, out-of-state transfer may become less attractive to Missouri students because many would not enroll in programs that would require additional time and money to complete. It is also possible that if Missouri GE requirements were substantially less than those in other states, more out-of-state students would see Missouri as an attractive place to attend college. Missouri students (and students from other states) could benefit financially in terms of costs, incursion of debt, accelerated program completion times, and hastened

workforce entry. As a state, Missouri might benefit from a population with a higher percentage of college graduates and a less indebted, higher earning workforce capable of paying higher taxes. Conversely, there may be unintended and unwanted consequences if GE programs are compressed or reduced to the extent that they no longer serve their individual and societal purposes.

Theory suggests that curricular modification can produce long-lasting and significant individual and societal effects -- both intended and otherwise. Thus, any GE modifications should be undertaken soberly and deliberately. Overly truncated GE programs could produce graduates who are less successful in the marketplace because of underdeveloped soft skills and critical thinking/reasoning abilities. If Missouri institutions begin to produce less able graduates, credentials/degrees earned in Missouri will become less desirable/valuable. Thus, more Missouri students might seek to attend institutions in other states and fewer out-of-state students may wish to study in Missouri colleges and universities. Radical reduction of GE requirements would by definition lead to a less educated population and if theory serves -- the possibility of a more polarized citizenry. If GE programs are compressed or reduced to the extent that they fail to instill and reinforce the common beliefs that are essential for the protection and reproduction of the prevailing social order, as is the central task of liberal arts education, then theory suggests that strained societal frameworks may thwart economic development initiatives.

***Recommendation.* The Missouri Department of Higher Education and Workforce Development is urged to convene a working group of all interested stakeholders, including representatives from interstate higher education cooperatives, to carefully examine GE programs to determine, in reasonably measurable terms, whether GE is serving intended purposes including whether the programs are instilling individual student critical thinking and serving society at large by instilling and reinforcing the institutions, traditions, and values considered essential for the protection and reproduction of Missouri's prevailing social order.**

The working group is encouraged to carefully and thoroughly examine GE programs to determine whether programs of GE are impacting students' cognitive and/or affective development and in what specific ways. The group should identify metrics and develop a reporting system to allow individual institutions to justify individual GE classes/programs/requirements by explaining the relevance/value of GE classes/programs/requirements for the students who attend particular institutions.

In the event that the findings of the workgroup indicate that GE programs continue to serve critical purposes for today's students, the group is encouraged to determine how they are doing so and how GE programs can continue to serve those purposes while streamlining programs to the greatest degree possible (e.g., integrate GE curriculum into major coursework, reduce

the number of classes needed in particular knowledge areas). If, as some of the literature suggests, the work group determines that GE classes/programs/requirements are failing to serve today's students or Missouri society as intended or, that GE programs or particular classes are wasteful, the working group should offer a plan for reimaging, redesigning, or possibly discontinuing GE programs as they are currently configured.

Open Curriculum

True open curriculum approaches to GE have no course requirements per se, and no restrictions on the courses students must take as part of a degree program. Therefore, the open curriculum approach was considered as an approach to reduce coursework traditionally associated with GE, thereby creating more time and opportunity for students to take more coursework in their majors. No generalizable rigorous research findings were uncovered to suggest the open curriculum approach could not be used to achieve such ends, however the literature did indicate that open curriculums are seldom used and when they are -- they are most often employed in the nation's elite private liberal arts institutions. Additionally, many believe the success of the open curriculum approach can be credited largely to the highly capable, self-directed and motivated students who attend the aforementioned institutions. In other words, these students would likely be successful in any postsecondary setting, no matter the GE framework.

The literature examined suggested that open curriculum may introduce greater ambiguity to programs of study thus, paths to completion -- as compared to other GE arrangements -- are more difficult for many students to navigate. This led to the impression that the wider spread use of open curriculum may aggravate already high rates of degree/program non-completion, especially among underrepresented populations (e.g., first generation, non-traditional, minority students) who often attend moderate and open enrollment institutions. On that particular point, Complete College America seems to concur.

Complete College America (CCA) is a national advocacy organization for increasing college completion by implementing effective reforms and policies for improving graduation statistics. CCA believes students often proceed through their degree programs without purpose by selecting from a slate of courses and degree requirements rather than following a clear, fully articulated, pathway to completion -- a position that is in substantial agreement with those who have suggested that GE programs have neither design nor purpose and that students do not value GE (American Association of Colleges and Universities, 1994, Bok, 2005, Fox, 2016). CCA asserts that ambiguous degree corridors cause students to make poor early choices about majors and coursework that often result in non-completion (Academic Maps with Proactive Advising Complete College America, n.d).

The abstraction that would presumably be inherent in the wider-spread utilization of open curriculums would certainly be at odds with CCA's philosophy as well as with the logic behind Missouri's comprehensive initiative to streamline GE requirements -- the Higher Education Core Transfer Curriculum Act (aka CORE 42). CORE 42 was formulated to reduce course redundancy and -- most important in this context -- reduce student confusion to enhance completion/graduation statistics.

This examination also asked whether teacher education programs could utilize open curriculum to allow students to enroll in more specialty area coursework (e.g., chemistry, history, mathematics, physics) or as a way to accelerate graduation. Once again, no large-scale empirical evidence was uncovered to suggest that open curriculum could not be so utilized. However, for the same reasons offered above (e.g., increased ambiguity for completion paths resulting in depressed graduation statistics, increased program costs for student advising, etc.), the logic behind the suggested wider spread use of open curriculum in teacher preparation programs is questionable.

Teacher preparation program requirements have a tendency to expand in response to a variety of social pressures and legislative mandates. As a result, students often require five years to complete them. Analysts at Education Commission of the States indicated no national trends to suggest that GE programs within teacher education programs are changing -- including by utilizing open curriculum. However, the analysts did note that some states are encouraging STEM majors to go into teaching through programs that shorten time to graduation by combining coursework for the STEM major with training/coursework in education.

***Recommendation:* While it is important to note that no large scale generalizable research was uncovered to suggest that utilizing open curriculum has been or would be harmful, the bulk of the available literature suggests that the wider spread use of the open curriculum approach to GE would likely introduce degree completion path abstraction/ambiguity to such a degree that completion/graduation rates would be harmed -- and especially so among student populations that can least afford it. In light of dismal teacher attrition and retention statistics, and in a time when fewer and fewer students are choosing to become teachers, the possibility of harming graduation rates is an obvious concern when considering the use of open curriculum for teacher preparation programs.**

The literature also suggests that open curriculum approaches are expensive to administer because students require substantial one-on-one guidance from faculty and advisors to ensure they choose coursework that enhances their overall programs of study. For these reasons, the use of open curriculum is questionable for widespread use and should probably be tested on a limited and voluntary basis at open enrollment and moderately selective institutions to determine whether wider spread use is indicated.

General Education and Activist Teaching

Apart from questions surrounding time, cost, effectiveness, and perceived value, general education (GE) programs are facing concerns for another troubling reason – perceived or actual discrimination and indoctrination. While the true extent of the problem is unknown, some believe that some professors use required GE classes to spread ideas/philosophies with which some students and their families profoundly disagree. Students say they feel unwelcome in these required courses because their personal ethical, moral, religious, and/or political views do not comport with those of the professor. Some have reported instances of being belittled, bullied, threatened, or worse -- physically assaulted – as a result of the cultures created in these learning environments.

Because professors have many kinds of power over learners (e.g., formal, authoritative, transactional), some students say they feel pressure to acquiesce to the opinions/positions of such instructors to achieve desirable outcomes (e.g., grades, recommendations, etc.). Students, parents, and others believe this is a clear abuse of power and amounts to indoctrination - especially when it occurs in courses students cannot avoid. Moreover, if, as theory suggests, GE serves to provide the common experiences and reference points that reinforce society, then teaching practices that seek to contradict or undermine those reference points and experiences have potential to damage students and society.

Going beyond the desirable and altogether appropriate circumstance where students are exposed to numerous perspectives to provide them with the opportunity to enhance and develop critical thinking skills by weighing various positions (including those they may find disagreeable), *activist teachers* promote the *adoption* of ideas, dispositions, and philosophies that are intended to challenge, undermine, or outright destroy long-standing institutions, traditions, and values.

Deborah Kerdeman (2014, p. 396) suggests activist teachers:

... choose to interrupt the status quo, interrogate privilege, and promote social justice. While this position certainly may include the choice to make a range of perspectives available to students, some perspectives clearly will be out of bounds. For example, homeless shelters, medical clinics, and food cooperatives are legitimate sites for activist service learning; foreclosure agencies, “concierges” medical services, and agribusinesses are not.

Kerdman indicates that because some student/parent/faculty/institutional perspectives do not promote or support a particular activist professor’s value set or point of view -- that instructor may unilaterally declare those perspectives unacceptable. Decisions of that kind clearly hinge on an individual professor’s personal and subjective value judgements regarding inherently nebulous issues (e.g., equity, privilege, and social justice).

Nonetheless, activist teaching theory suggests this is appropriate practice if the professor feels her/his viewpoint *should be* the viewpoint adopted by students. Such explicitly bias practices are troubling and would certainly be at odds with the copious literature presented regarding the societal purposes of GE.

On the idea of education's relation to the family, the 1945 Harvard Committee on General Education wrote:

In the sphere of moral instruction, the school shares its responsibilities with numerous other institutions, of which the family is the most important. Moreover, the school's responsibility is less than that of the family in this field. To use an earlier figure, there is a danger in regarding school as a modern Atlas to whom is entrusted the bearing of the whole task of the formation of man. A wise society does not put all its eggs in one basket. By the same token, the school cannot remain uninterested in the task of moral education. Just as liberal education, while strictly liberal, must somehow be oriented toward vocationalism, so in this way will school and college be oriented toward moral character (Harvard Committee on General Education, 1945).

Teaching that insists on the adoption of a teacher's personal value set over those instilled by the family -- particularly when the teacher's points of view are in stark contrast to widely accepted cultural canons and traditions -- is in clear conflict with the purposes of education. When individual teachers/professors seek to instill personal values and viewpoints that are antithetical to the institutions, traditions, and values considered indispensable for the protection and reproduction of American social order, theory suggests we should expect to pay a price -- possibly a large one.

***Recommendation.* In an age of increasing individualism, vocational specialization, and intensifying societal polarization set against an environment of decreasing trust in society's institutions (e.g., government, religion, and education), programs of GE -- both in the high schools and in the universities -- may be the single remaining force that can fit the population together as citizens who share a common heritage and culture. If we accept this is indeed an appropriate aim and outcome of education, and in particular GE, then the relevance and value of GE to society is truly immense, indispensable, and indisputable. Conversely, if GE fails to serve those purposes, or worse, if it is used as a vehicle to instill ideas and values that are anathema to society's prevailing culture, institutions, and traditions -- theory presented here suggests the consequences may be profound.**

***Activist teaching* goes beyond the desirable and appropriate circumstance where students are exposed to numerous perspectives to provide them with the opportunity to enhance and develop critical thinking skills by weighing various positions (including those they disagree with). Activist teaching insists on the adoption of ideas, dispositions, and philosophies that are**

intended to challenge, undermine, replace and/or outright destroy long-standing institutions, traditions, and values.

While it may be difficult to precisely define when lines are crossed between advocating/teaching ideas/philosophies to enrich and inform students' critical thinking skills and inculcating/indoctrinating students in accord with agendas they regard as repugnant to dearly held views and values, it is asserted that educators/administrators should -- to paraphrase United States Supreme Court Justice Potter Stewart -- know activist teaching when they see it. In the area of moral instruction, philosophy posits that the school shares its responsibilities with numerous other institutions, of which the family is the most important (Harvard Committee on General Education, 1945). Therefore, it is recommended that public institutions of education in Missouri protect students from activist teaching practices.

Missouri public institutions of education should take seriously student complaints of activist teaching, particularly when it occurs in classes that are required under GE programs, as they may manifest themselves in practices that aim to discredit or devalue the moral, religious, or political beliefs of students and their families and supplant those beliefs with the ideologies of an individual educator who holds power over the student. Institutions are encouraged to create and implement policies that discourage activist teaching, particularly in required general education (GE) classes, and provide students with the opportunity for immediate and meaningful relief without fear of reprisal. It is further recommended that Missouri public education institutions keep detailed records of all complaints of professor/teacher abuses of power as they may manifest themselves in activist teaching practices to include the number of complaints, the nature and particulars of individual complaints, and how the institution addressed each complaint.

CONCLUSION

Education for occupation teaches a narrow set of competencies focused on creating the ability to engage in a specific career or vocation. Because society is increasingly dependent on specialists, the economic and occupational success of individuals is largely dependent on whether they develop a specialty and the specific area of specialization (e.g., accountant, doctor, plumber, nurse, welder). Thus, that part of the overall educational experience dedicated to occupation or career (i.e., the major or concentration) naturally garners more attention and emphasis while the portion dedicated to liberal arts or general education (GE) is often perceived as ancillary or worse -- superfluous. If theory serves, this is a mistake.

Philosophy posits GE works in close concert with the concentration/major to instill the ability to function, perform, react, and evolve in response to a wide variety of challenges that exist within the context of complex human emotions and societal

settings and situations. This mental agility/flexibility is often associated with what many believe is one of the most important purposes of education -- to create critical thinking.

Opinion polls conducted by Hart Research Associates find nearly unanimous agreement among postsecondary faculty and administrators on the idea that critical thinking is an essential component of undergraduate education (Hart Research Associates, 2009, 2016) and critical thinking skills are cited as among the most important soft skills sought after by business and industry (Talent for Tomorrow, 2018).

The Foundation for Critical Thinking defines critical thinking as:

“... that mode of thinking -- about any subject, content, or problem -- in which the thinker improves the quality of his or her thinking by skillfully analyzing, assessing, and reconstructing it” (The Foundation for Critical Thinking, 2019).

Because students are now training for careers that may become extinct at some point in the future, or do not yet exist at all, education should, perhaps now more than ever, aim to create vocational competence as well as critical thinking to -- as Einstein suggested -- “train the mind to think of things that cannot be learned from textbooks.”

The theoretical value of GE to the lives of individual students is compelling and clear, but we must not forget that GE also exists to teach students to function in a free society as free citizens. This inquiry presented theory to suggest that GE introduces students to civilization’s traditions and culture and serves to inculcate common experiences and points of reference. In this way, GE should serve to impart and reinforce the institutions, traditions, and values that are essential for the protection and reproduction of the prevailing social order (Adler, 1982; Dewey, 1938; deMarrais & LeCompte, 1995; Counts, 1978; Noddings, 1995; Owens, 2012; Reed & Johnson, 1996).

In the time before compulsory primary and secondary education and the advent of most forms of mass media, the entire higher education curriculum was what would today be considered GE. Before majors and elective classes, a common higher education existed that was designed to augment, compliment, and complete not only the intellectual but also the ethical/moral education/formation initiated at previous educational levels and in the home. Student bodies in those times were much less diverse, consisting primarily of the children of those in the upper classes thus the GE curriculum supported, protected, and inculcated the dominant -- significantly more homogenous culture -- along with its institutions and traditions.

While socioeconomic diversity drives campus cultures today – conformity with the culture of the dominant, but much narrower segment of the population, was much more the rule than the exception in pre-World War II American institutions of higher

education. In addition, institutions believed they had a part to play in providing moral education -- albeit a subservient role in comparison to the family (Harvard Committee on General Education, 1945). It is therefore logical to assume that GE's societal purpose (i.e., to introduce, reproduce, and protect the societies prevailing institutional structures) was relatively easier to accomplish because the academy's positions were much closer to the positions of the relatively homogeneous population it served. Higher education was expensive, uncommon, and therefore greatly prized.

When supply increases, value decreases. This may well apply to GE in the modern era because education in the traditional GE knowledge areas is now widely available and accessible both inside institutions of education and outside of them as well. Most, if not all, of the knowledge taught in GE courses can now be accessed by anyone with a television and/or an internet connected computer. The fact that education in the traditional GE knowledge areas is much more available and accessible may in part explain why there seems to be so little consensus in the higher education community itself -- let alone in the general public or among policy makers -- regarding the form, composition, and *value* of GE.

We have seen that regional higher education accreditation entities make no explicit statements about the make-up of GE curriculums or even suggest the use of a common GE definition. Over the years, the course content of GE programs have changed considerably evolving to such a degree that there is no longer a common curriculum and there is no universal agreement about desired GE outcomes or best practices (Fox, 2016). The American Association of Colleges and Universities (1994) found that students do not value GE because the curricula lacks an understandable unifying philosophy. Others have gone even further in criticizing programs of general education. Education policy pundit, George Leef, in a 2013 Forbes interview stated rather bluntly that students are "... apt to spend (and borrow) a lot of money and devote years of their lives to getting a degree that signifies nothing but persistence in piling up credits." In an era of lack luster graduation rates, skyrocketing student debt levels and stubbornly persistent workforce shortages, suggestions that GE may be a nonfactor in contributing to the intellectual development of students -- and worse, a waste of time and money -- are extremely unsettling and upsetting.

One can fairly ask how a program of education with so much theoretical and philosophical importance and potential has earned such poor standing among some in the academic community -- the community most likely to defend and support it. The answer may be, as some scholars have suggested, that GE and its modes of delivery offer limited value to today's students and that may be so. If one thing is clear, it is that students are coming from increasingly diverse backgrounds and the landscape of higher education is changing quickly, therefore GE is especially worthy of careful consideration going forward to better serve the need for a better educated citizenry and workforce. The recommendations of this study suggest that Missouri do

exactly that -- make much-needed concerted, considered, and comprehensive efforts to reimagine/redesign GE so that it truly serves all of Missouri's citizens as productive members of a free society.

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