The State of Funding for Curriculum Materials Centers and Collections

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Using Spearman's rank correlation coefficient, researchers analyzed whether there was a correlation between education student enrollment and curriculum materials center/collection (CMC) budget across eighty universities in the United States. Findings indicate that there is a positive correlation between those variables, although the relationship is weak. Universities with large education programs tend to have better-funded CMCs; however, variability across institutions is still significant. Findings suggest that many university CMCs may be comparatively underfunded based on student enrollment in education and historical trends.

Curriculum Materials Centers and the University

Curriculum materials centers and collections (CMCs) collect P-12 classroom resources—such as children's and young adult literature, textbooks, and more—to be used by pre-service and current educators in lesson planning, curriculum exploration, and clinical experiences. CMCs are "essential to the instructional and research needs of students and faculty in programs preparing educators for preschool through 12th grade (P-12) schools" (Pauly et al., 2017, p. 2). CMCs may self-identify under different terminology, such as curriculum laboratories, if they fulfill this role or function. Despite the user overlaps, CMCs have some distinct characteristics from education libraries.

CMCs first rose in popularity in the 1920s and 1930s as key educator preparation universities opened centers (Attebury & Kroth, 2012; Kohrman, 2012b). Early scholars (Drag, 1947; Leary, 1938) commented on the muddiness of the then more common terminology, "curriculum laboratory," which led to inconsistent usage and is sometimes misaligned with modern understandings of CMCs. In the following decades, a more consistent definition was established: "[t]o serve the needs of all students and faculty in the undergraduate teacher education programs, by providing print and non-print resources and support methods courses, by allowing students to examine and evaluate materials they will be using in practice teaching and future classrooms" (Mace, 1993, p. 23). For our purposes, all centers and collections affiliated with institutions of higher education serving teacher education programs in this way are considered a CMC.

This study investigates the statistical relationship between undergraduate education student enrollment, graduate education student enrollment, and total education student enrollment with funding levels of CMCs across the United States. The authors also explored the extent to which

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CMC funding has increased (or not) with inflation over time. Although relevant national research is available, it is outdated or does not fully address these research questions. Specifically, much of the literature has focused on characterizing factors such as CMC holdings, location, and staffing (Godbey & Melilli, 2021; Kohrman, 2015; Osa, 2003; Teel, 2008; Williams, 2011). Catalano (2015) remarked on the difficulty of statistically interpreting data from Strnad et al. (2009) because CMC budgetary information was collected as ordinal variables (e.g., $1,001–$3,000) rather than continuous variables (e.g., $2,987.54) which made institutional comparisons more complicated. Our study provides a methodology to better use and interpret ordinal variables in existing national CMC data sets such as Strnad et al. (2009) and Kogut et al. (2023).

Literature Review

Value of Curriculum Materials Centers

It is important to first establish why CMCs are a crucial resource for teacher education students and hold enduring value for their users. On educational resources for teacher preparation, Witt (1963) suggested that "Materials cannot be studied in the abstract. … One learns to use materials by using them. Consequently, students who are studying to be teachers need to have quick and easy access to a generous supply of materials of all types" (p. 46). It is vital that, during teacher preparation programs, future teachers have hands-on experience with curriculum materials so they are prepared for their future classroom work (Alteri, 2012; Kohrman, 2012; MacVean, 1958). Kohrman (2012) found that "[a]s educators, community leaders, and national leaders realized the need for well-trained and certified teachers, they called for laboratories, centers, or libraries at teacher training institutes" (p. 17). Grossman and Thompson (2008) argued, based on a longitudinal study of recent graduates turned teachers, that "new and aspiring teachers need opportunities to analyze and critique curriculum materials" (p. 1). Gelber and Uhl (2013) concurred, stating "[T]he quality of teacher education must not be compromised by the absence of necessary teacher education components, such as specific library resources and services, which directly support educational courses" (p. 64).

The value of CMCs is also demonstrable through their high usage. Tillman (2001) found that "CMC materials, services, and facilities are used far more than typical library materials, services, and facilities. … It is not unusual for a CMC to account for 20% of a library's circulation and receive 1% of the materials budget" (p. 32). Ultimately, CMCs are highly used collections (Catalano, 2015; Meyer 2012; Teel, 2008). Ideally, they provide future teachers with the necessary education resources to examine, analyze, and use, so that they are better prepared for the curriculum materials landscape. While curriculum materials held by CMCs may also be located at local schools or public libraries, Gallinger (1974) stated, "The needs of college faculty and students are too immediate and demands too heavy to make it practical for them to be served except locally in-house" (p. 3). Ellis (1969) moved that CMCs are of "inestimable value to teacher education programs" (p. 13) with Alteri (2012) echoing the significance of CMCs for future teachers (p. 33). While the value of CMCs is well-established, their positive outcomes for teacher educators can be compromised by outside factors such as funding.

Curriculum Materials Centers Nationally

Many researchers have conducted national surveys to gain insight into CMCs and their role in the United States (Drag, 1947; Ellis, 1969; Flandro, 1957; Gregor et al., 2014; James, 1963; Johnson, 1973; Kogut et al., 2023; Leary, 1938; Lehman & Kiewitt, 1985; Strnad et al., 2009; Toifel, 1992). According to Gregor et al. (2014), Leary (1938) produced the first significant

national study to survey the prevalence of CMCs. In that 1936–1937 survey, Leary (1938) found 35 institutions of higher education with CMCs. Subsequently, other early scholars of CMCs conducted surveys to account for CMCs occurrences while seeking to better define their natures and offerings (Drag, 1947; Flandro, 1957). The unavoidable reality of scholars using varied sampling approaches and divergent qualifying criteria for CMCs leads to shortcomings in understanding the popularity and rise of CMCs nationally that persist to this day.

Regardless, the number of CMCs recorded nationally increased significantly by 1965, when 443 CMCs were identified in the 1965–1966 NCATE Annual Report, and 303 institutions confirmed their CMC in 1969 (Ellis, 1969). Beginning in 1981, the Association of College and Research Libraries (ACRL) Education and Behavioral Sciences Section has periodically published a directory of known CMCs (Table 1) and their key features (Kogut et al., 2023). Subsequently, the various editions of the *Directory of Curriculum Materials Centers and Collections* will be referred to as *Directory,* indicating the appropriate edition(s) as needed.

TABLE 1
Number of CMCs Included in Each Edition of the Directory

Year Published	Edition	Number of CMCs
2023	8th	112
2015	7th	161
2009	6th	204
2001	5th	203
1996	4th	278
1990	3rd	272
1985	2nd	175
1981	1st	189

Note. Adapted from "Directory of Curriculum Materials Centers and Collections 8th Edition," by A. Kogut, C. Stewart, A. Dovydaitis, C. Boff, J. Johnson, N. Grimes, T. Fontno, L. Cameron, and K. Hangauer, 2023. https://alair.ala.org/handle/11213/20091. Copyright 2023 by the EBSS Curriculum Materials Committee. National surveys of CMCs provide the best contemporary insight into the prevalence of CMCs in the United States. They are frequently used as benchmarks for peer institutions to evaluate staffing, resources, and more at their own institution. Of most relevance to this study are those that tracked education student enrollment and/or CMC budgets.

CMC Funding Levels

Tillman (2001) asserts that "In many cases, CMCs are highly used, historically underfunded, and politically powerless" (p. 30). This perception has remained, with adverse circumstances heightened after the financial crisis and the 2007/2008 Great Recession. In the years following, academic libraries were broadly and deeply impacted by state budget cuts to public universities (Guarria & Wang, 2011), which significantly reduced spending per student (Mitchell et al., 2016). These choices at the state level impacted the academic library funding and materials budgets of CMCs. Catalano (2015) interviewed CMC librarians at public institutions and found reports of significant resulting budget cuts, which were especially hard given "an increase in education reform [following the adoption of Common Core and Next Generation

Science Standards] requiring an abundance of newly published materials" and the decline of vendor-supplied free resources or cost-effective negotiated collections (p. 13). CMC budgets were not the only casualty during this time, as CMCs also closed or operationally changed to work within leaner means. Kohrman (2015) found that, of 10 Michigan CMCs that had closed, shrunk, or merged between 2005 and 2014, 80% attributed it to budget costs. Comparing institutional reports in the 6th, 7th, and 8th editions of the *Directory* reveals that while select CMCs' budgets have increased, many others have experienced flat or declining funding over the last 15 years (Gregor et al., 2014; Kogut et al., 2023; Strnad et al., 2009).

The unique mission of these special collections means CMC librarians often need to transition collections quickly, modernize, and keep pace with changing educational standards and approaches (Catalano, 2015; Kohrman, 2015). As a result, there is a higher turnover of materials in most CMCs, including more frequent weeding and higher demand for new purchases (Lare, 2004). Williams (2011) notes that even CMCs with substantial funding have under-resourced collection areas as needs develop and emerge. Given the long-held perception of CMCs being under-funded (Attebury & Kroth, 2012; Tillman, 2001), researchers have proposed methods for stretching a CMC budget to purchase or strategically provide materials (Carr, 2001; Catalano, 2015; Godbey & Melilli, 2021; Kohrman, 2015; Lare, 2004; Meyer, 2012; Miller & Meyer, 2008; Osa, 2003; Tillman, 2001; Williams, 2011).

CMC Funding Given Education Student Enrollment

Researchers have suggested that CMC funding levels should be reflective in some way of education student enrollment (Catalano, 2015; Fabbi et al., 2007; Lare et al., 1992; Melilli et al., 2018; Pauly et al., 2017) even if they recommend alternate strategies for precise budget allocation. Allen and Dickie (2007) tested the hypothesis that a positive relationship exists between academic library funding and enrollment (in addition to other variables such as Ph.D. fields) and found from a sample of 113 libraries "a modicum of correlation" (p. 174). The proposed interrelatedness of education student enrollment and CMC budgets is not new. In an article chronicling the history of the Education Library at Wayne State University, Alteri (2009) shared evidence of faculty members' "deep anxiety over the inability of the library to purchase enough materials for the students in the College of Education" (p. 14). The report exemplifies the long-held perception that CMCs must be able to fiscally provide *enough* materials for the student population.

In *A Guide to Writing CMC Collection Development Policies,* Melilli et al. (2018) asserted that the "Funding level for collection materials should reflect the enrollment of education majors and pre-service teachers in comparison to other majors within the institution" (p. 26). This is consistent with Fabbi et al.'s guide from 2007. Tillman (2001) suggested that "Enrollment and course-offering tallies should include students and courses from all departments that use CMC materials. Some of the departments may be located outside of the College of Education" (p. 27). Lare et al. (1992) go further—as an ad hoc committee of the Curriculum Materials Center Interest Group of the Academic Libraries Association of Ohio—by creating guidelines for established CMC collections and recommending the annual expenditures for CMC resources should be based on full-time equivalent teacher education enrollment, rather than just being enough to support enrolled students adequately. They proposed a system for calculating CMC budgets based on education student enrollment.

Having enrollment as a factor for library budget has also been cautioned, as it is a "lagging indicator" (FuLong Wu & Shelfer, 2007, p. 180) and makes library funding "vulnerable to stable or declining enrollment" (Cooper, 1986, p. 1). As a result, while enrollment should be considered, it may not be preferable to use it as a variable when allocating a budget. For example, the current edition of the *Guidelines for Curriculum Materials Centers* (2017) suggests that funding "should be reflective of the college of education or department of education enrollment" not necessarily calculated based upon it, while also prioritizing other factors, such as "compliance with state department of education and other accrediting bodies' standards, college/department of education program needs, as well as guidelines in this document in the areas of collection, facilities, services, and personnel" (Pauly et al., 2017, p. 3). Although some fixed costs may not change much based on the number of CMC users, at other times, more extensive programs likely require more resources for student use, such as more copies, more titles, and higher e-resource fees.

National Studies on CMCs Including Budget as a Factor

The question then emerges: Are the budgets of CMCs sufficient to support education programs? The depth or scope of analysis widely varies among national studies in the United States that consider budgets of CMCs. Johnson (1973) simply asked, "Do you have a separate budget for curriculum materials? Yes/No" (p. 51). Flandro (1957) included a report of the operating budget of surveyed CMCs, focusing on the agency setting the budget (i.e., education department, library) and annual budget allocation in intervals (p. 67–70). The most current data on national funding of CMCs exists in the recent editions of the ACRL *Directories*. The different editions of the *Directories* include budget information but often suffer from time-consuming survey instruments (Kogut et al., 2023) or lead to trouble analyzing findings if funding intervals were used (Catalano, 2015).

Toifel (1990, 1992) did not use ranges for the budget data collected, which allowed that author to calculate the mean annual book/media budget for 172 CMCs (representing 32.8% of teacher education institutions contacted) between 1986 and 1989. Toifel also grouped institutions into three categories by enrollment to determine differences in funding for CMCs based on university size. Toifel (1990, 1992) determined there was a positive relationship between enrollment and CMC funding. While still relevant, his findings are over 30 years old and compare CMC budgets to total student enrollment rather than education student enrollment. The authors of this study were unable to find more recent research that accomplished this; they therefore seek to address the gap in the literature. As a result, a modern national study focusing on the relationship between education student enrollment and CMC budgets is needed.

Method

This study on the relationship between education student enrollment and funding in CMCs uses quantitative research methods. The authors tested three null hypotheses in this investigation, and therefore, three paired variables.

1. No correlation exists between undergraduate education student enrollment and CMC collection budget.
2. No correlation exists between graduate education student enrollment and CMC collection budget.

3. No correlation exists between combined education student enrollment (graduate and undergraduate) and CMC collection budget.

The alternative hypothesis for each is that there is a monotonic increasing relationship between the variables, which would be a single right-tailed relationship.

The authors used pre-existing data from the 8th edition of the *Directory of Curriculum Materials Centers and Collections* (Kogut et al., 2023). The authors verified that all CMCs identified in the *Directory* had complete information on university name, collection budget, undergraduate education student enrollment, and graduate education student enrollment. Universities that omitted fields, stated data were unavailable, or answered with non-comparable free text were removed from the eventual research dataset. Given these disqualifications, the final statistical analysis included 80 CMCs from the same number of universities.

The survey design in the 8th edition of the *Directory* asked respondents to select one of the following for the CMC collection budget: $0–$1,000; $1,001–$3,000; $3,001–$5,000; $5,001–$10,000; $10,001–$20,000; $20,001-$30,000; $30,000+. Survey participants also reported undergraduate and graduate education enrollment, with the choices limited to: <100; 101–500; 501–1,000; 1,001–3,000; 3,001–5,000; >5,000 education students (Kogut et al., 2023). The survey methodology provided more than two ranges that could be ranked for these categories but did not have a consistent scale of increasing correlation; therefore, the data was captured as ordinal variables (Chen & Popovich, 2002, p. 35).

The dataset from the 8th edition of the *Directory* met the assumptions for Spearman's rank correlation coefficient, which is best for variables lacking absolute measurement, because it relies on comparison rather than measurement (Spearman, 1987). This approach "is a measure of correlation that captures the strength of association between two variables without making any assumptions about the frequency distributions of the underlying variables" (Spearman, 2008, p. 46). In other words, it is a nonparametric measure that looks at the "interrelatedness of the ranks of two variables" (Darity, 2013, sec. C2). Although this approach is less powerful than the Pearson correlation coefficient, the assumptions for that test are violated by the dataset, namely that there is not an obvious linear relationship.

Responses for each university identifying CMC collection budget, undergraduate education enrollment, and graduate education enrollment were ranked based on which range was selected and how that range compared to the other possibilities (i.e., was the range chosen bigger or smaller?). Due to the nature of the data, there were many occurrences of universities sharing a rank for a given variable. In those cases, rank was determined by the average rank those values would occupy. For example, the six universities with the lowest CMC collection budget rank shared the rank of 3.5 out of 80. Although the Kendall rank correlation coefficient could be a methodological alternative to the Spearman rank correlation coefficient for interpreting ordinal data, Puth et al. (2015) determined "if there are any ties in the data, irrespective of whether the percentage of ties is small or large, Spearman's measure returns values closer to the desired coverage rates, whereas Kendall's results differ more and more from the desired level as the number of ties increases, especially for large correlation values" (p. 1). As this dataset held many ties, Spearman was deemed more appropriate for analysis.

A monotonic relationship is not clearly identifiable in the two scatter plots (see Figures 1 and 2), which consider just undergraduate education enrollment or graduate education enrollment as separate factors to compare with budget.

FIGURE 1
Relationship Between Undergraduate Education Enrollment Rank and CMC Collection Budget Rank

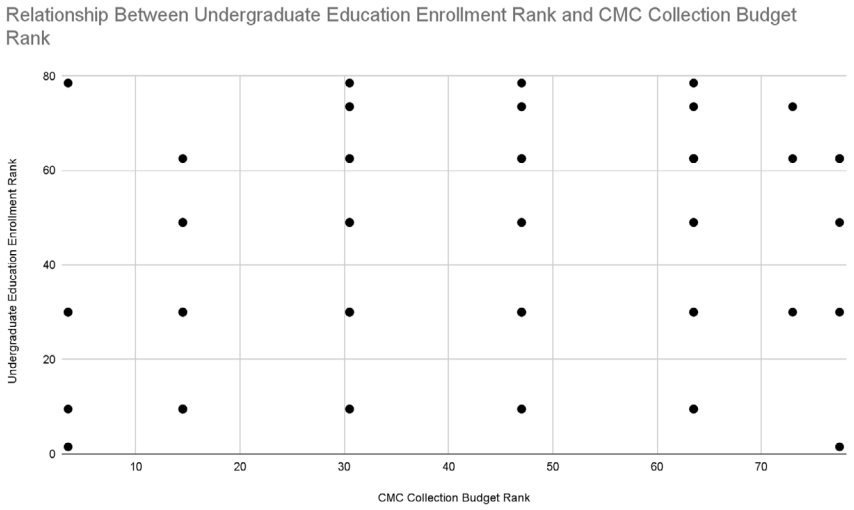
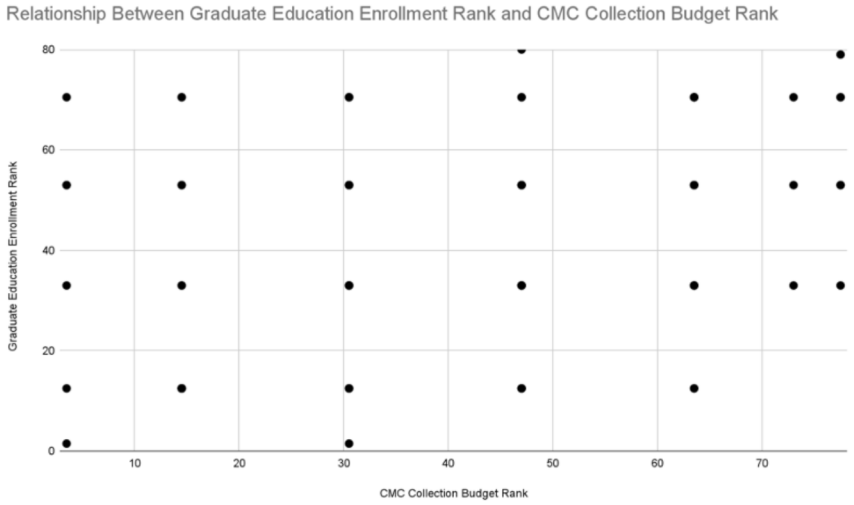
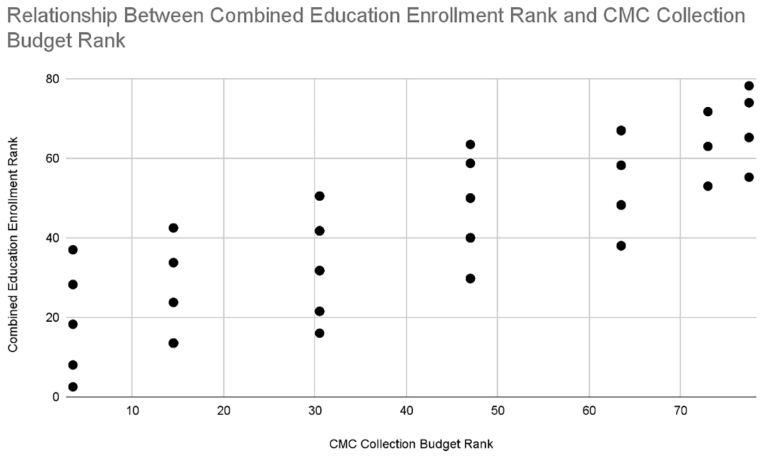


FIGURE 2
Relationship Between Graduate Education Enrollment Rank and CMC Collection Budget Rank



However, a possible positive monotonic relationship is suggested in Figure 3, which reflects a university's combined education enrollment rank determined by the average of the university's undergraduate education enrollment rank and graduate education enrollment rank. Each of these three measures of education enrollment was compared to CMC collection budget rank as paired variables.

FIGURE 3
Relationship Between the Combined Education Enrollment Rank and CMC Collection Budget Rank



The CORREL function was used to calculate the Spearman rank correlation coefficient (r_s) due to the tied ranks in the dataset. The formula used in the function is:

$$r_s = \frac{n(\Sigma x_i y_i) - (\Sigma x_i)(\Sigma y_i)}{\sqrt{(n\Sigma x_i^2 - (\Sigma x_i)^2)(n\Sigma y_i^2 - (\Sigma y_1)^2)}}$$

The formula finds the Spearman rank correlation coefficient, r_s, which suggests the strength and direction of the correlation between two variables in the sample. Three statistical analyses were completed, one for each null hypothesis. If the Spearman rank correlation coefficients are zero, there is no monotonic relationship between the paired variables.

Due to the relatively large sample size, the *t*-statistic rather than a set chart was used to determine the *p*-value. The formula for the *t*-statistic used was:

$$t = \frac{|r_s| \times \sqrt{n-2}}{\sqrt{1-|r_s|^2}}$$

Using the *t*-statistic, the *p*-value could be calculated with the TDIST function, with the variables being the *t*-statistic, degrees of freedom (*n*-2), and a single-tailed distribution. The sample or *n*, is 80 universities, which means the degree of freedom is 78. The *p*-value communicates the statistical significance of the findings. A 1% level of significance was used ($\alpha = 0.01$). The median for each variable was also identified, as it is the traditional measurement used for ordinal variables where calculating a mean is impossible.

As a secondary analysis, researchers also compared the collection budget range identified for a given university's CMC in the 8th edition of the *Directory* (Kogut et al., 2023) to the budget the same university supplied in the 2nd edition of the *Directory* (Lehman & Kieweitt, 1985). Twenty-one universities, when considering name changes, participated in both directories, and provided budgetary information in each response. The U.S. Bureau of Labor Statistics' CPI Inflation Calculator was used to account for inflation between January 1985

and December 2022 to better compare purchasing power trends over time. When adjusted for inflation, the budget shared in 1985 was compared with the budget range identified in 2022 to determine if the most recently shared budgetary information suggested growth, decline, or mostly stable funding.

Results

When looking at the data generally, the median for both undergraduate education enrollment and graduate education enrollment is between 101 and 500 education students. The median CMC collection budget falls between $5,000 and $10,000. However, this fails to provide insight into the relationship between education enrollment and CMC collection budget. Following the procedures above, findings will be outlined for each of the three paired variables (i.e., CMC collection budget and three metrics of education student enrollment). This includes whether the null hypothesis is rejected for each and the strength of the positive monotonic relationship, should there be one. The paired variables include:

1. Undergraduate education enrollment rank and CMC collection budget
2. Graduate education enrollment rank and CMC collection budget
3. Combined education enrollment rank and CMC collection budget

The calculations without interpretation are represented in Table 2.

TABLE 2
The Spearman Rank Correlation Coefficient, *t*-Statistic, and *p*-Value Found for the Three Paired Variables Tested

	Spearman rank correlation coefficient (r_s)	*t*-statistic (*t*)	*p*-value (*p*)
Undergraduate Education Enrollment Rank and CMC Collection Budget	0.30	2.72	0.004
Graduate Education Enrollment Rank and CMC Collection Budget	0.35	3.29	0.001
Combined Education Enrollment Rank and CMC Collection Budget	0.37	3.55	0.000

The authors found a positive monotonic relationship between undergraduate education student enrollment and CMC collection budget, $r_{78} = 0.30$, $p = .004$. Because the *p*-value is less than 0.01, we reject the null hypothesis and conclude that there is a positive monotonic relationship between undergraduate education student enrollment and CMC collection budget. At the 1% level of significance, we conclude that more undergraduate education students tend to co-occur with a higher CMC collection budget. However, the Spearman rank correlation coefficient represents the strength of that relationship, with zero indicating no correlation. As a result, a Spearman rank correlation coefficient of 0.30 still suggests a weak but increasing monotonic relationship.

Researchers also found a positive monotonic relationship between the paired variables, graduate education student enrollment and CMC collection budget, $r_{78} = 0.35$, $p = .001$. Because the *p*-value is less than 0.01, we reject the null hypothesis and conclude that there is a positive monotonic relationship between graduate education student enrollment and CMC collection budget. At the 1% level of significance, we conclude that more

graduate education students tend to mean a higher CMC collection budget. Although a Spearman rank correlation coefficient of 0.35 still suggests a weak positive relationship, there is a slightly stronger relationship between graduate education student enrollment and CMC collection budget than undergraduate education student enrollment and CMC collection budget.

Finally, when looking at the relationship between combined education student enrollment and CMC collection budget, there is still evidence of a positive monotonic correlation, $r_{78} = 0.37$, $p = .000$. With a p-value less than 0.01, we reject the null hypothesis and confidently conclude that there is a positive monotonic relationship between combined education student enrollment and CMC collection budget. At the 1% level of significance, we conclude that universities with higher numbers of undergraduate and graduate education students tend to have a higher CMC collection budget. Because the Spearman rank correlation coefficient is only slightly higher than with the previous pair, the 0.37 result still suggests a weak positive relationship. However, the relationship is stronger between combined education enrollment rank and CMC collection budget than either type of education enrollment. Therefore, the three alternative hypotheses are statistically compelling, and we suggest that there is a correlation between education student enrollment and CMC collection budget. Universities with more education students tend to have a larger CMC collection budget.

Discussion

Interpretation of Findings

There were discrepancies and broad differences in funding for CMCs with education enrollment numbers within the same range. The variation is represented in Table 3 (for undergraduate education enrollment) and Table 4 (for graduate education enrollment).

TABLE 3
Comparing Undergraduate Education Student Enrollment with CMC Collection Budget by the Number of Universities

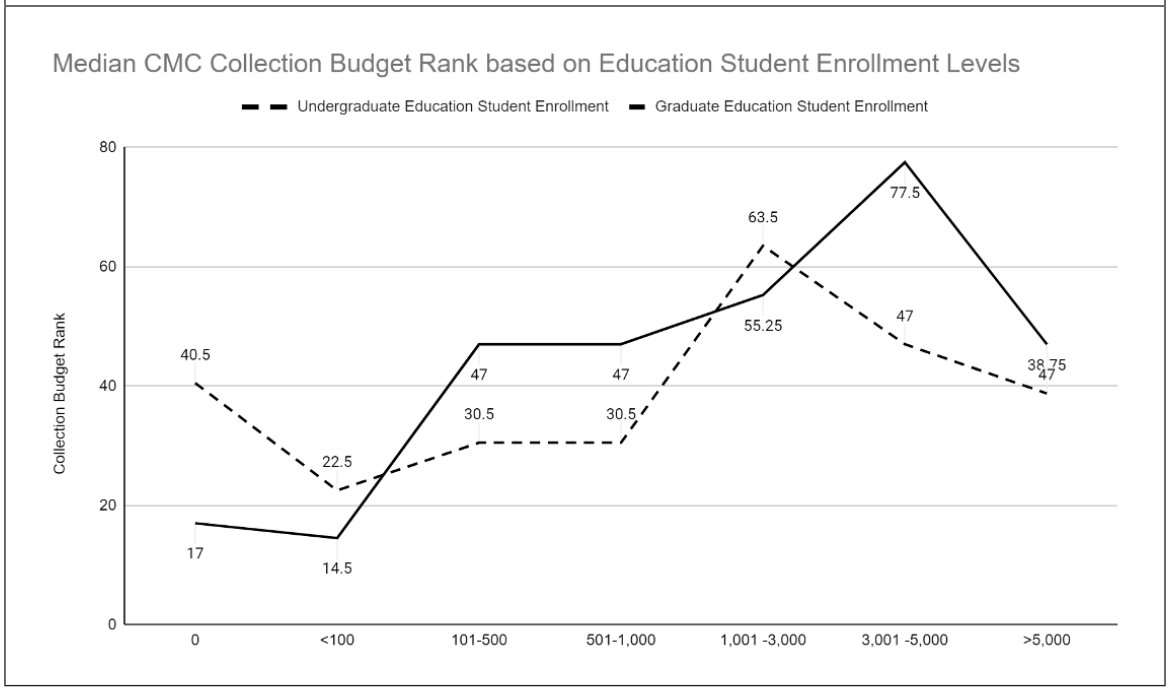
	$0 - $1,000	$1,001 - $3,000	$3,001 - $5,000	$5,001 - $10,000	$10,001 - $20,000	$20,001 - $30,000	$30,000+	Grand Total
0	1						1	2
<100	1	6	2	2	3			14
101-500	3	6	6	7	3	1	1	27
501-1,000		3	3	2	2		1	11
1,001-3,000		1	2	3	6	1	3	16
3,001-5,000			2	2	1	1		6
>5,000	1		1	1	1			4
Grand Total	6	16	16	17	16	3	6	80

TABLE 4
Comparing Graduate Education Student Enrollment with CMC Collection Budget by the Number of Universities

	$0 - $1,000	$1,001 - $3,000	$3,001 - $5,000	$5,001 - $10,000	$10,001 - $20,000	$20,001 - $30,000	$30,000+	Grand Total
0	1		1					2
<100	1	10	3	4	2			20
101-500	1	2	5	6	5	1	1	21
501-1,000	2	2	4	4	4	1	2	19
1,001-3,000	1	2	3	2	5	1	2	16
3,001-5,000							1	1
>5,000				1				1
Grand Total	6	16	16	17	16	3	6	80

Although there is a statistically significant yet slight correlation between education student enrollment and CMC collection budget, budgets still varied between $0.00–$1000.00 and $30,000+ for universities with the median number of undergraduate and graduate students. The median CMC collection budget rank for a given undergraduate and graduate education student enrollment range is provided in Figure 4.

FIGURE 4
Median CMC Collection Budget Rank Based on Education Student Enrollment Levels



Ultimately, this further depicts that there is not a clear pattern of increasing median collection budget rank when looking at either undergraduate or graduate education student enrollment. This reinforces the significant variation among CMCs and how outlier institutions may influence findings when using this type of analysis. The variation could possibly be explained by elements not controlled for, such as location, institution type, or library budget allocation formulas. For public universities, total student enrollment and university funding are often strongly related based on state funding trends; this is not necessarily true for education student enrollment and CMC materials budget.

Implications of Findings

To a limited extent, these findings can be used in conversation with Toifel's study (1992), which found that as total student enrollment increases, so do CMCs' budgets on average. Directly comparing median and mean with non-normal distributions across studies is not valid. However, Toifel's findings can provide a comparison point for modern CMCs (i.e., in which category does their institution fall and what was the mean for their institution size thirty years ago). Among the 172 CMCs who responded to Toifel's (1992) national survey, the mean annual book/media budget was $10,317.96. Large institutions (12,000+ student enrollment) had an average budget of $18,313.90, whereas medium-sized institutions (7,000–11,999 student enrollment) had $8,863.16, and small institutions (1–6,999 student enrollment) only $3,767.81 (pp. 5–8). Toifel (1992) compared his findings to James (1963) and reinforced that at these funding levels "There seems little indication that the budgetary constraints mentioned by James in 1963 have improved significantly twenty years later" (p. 17).

Additionally, based on the 2022 *Directory* dataset, it is likely that many CMCs' budgets have not significantly changed in the last 30 years, continue to be constrained, and have failed to keep up with inflation (Kogut et al., 2023). As one example, Sacramento State University (previously California State University, Sacramento) was identified in the 1985 *Directory of Curriculum Materials Centers* 2nd edition as having a materials budget of $7,300 (Lehman & Kieweitt, 1985). When adjusted for inflation, this is roughly $21,250 in 2024 (U.S. Bureau of Labor Statistics, n.d.). However, in the 8th edition of the *Directory*, this same CMC indicated that their collection budget fell within the $3,001–$5,000 range (Kogut et al., 2023). Examples like this reinforce concerns about flagging funding levels and decreased purchasing power of CMCs.

Of the 21 CMCs that participated in both the 2nd and 8th editions of the *Directory* and provided collection budget information in each, 11 reported in 2022 budget ranges which, when adjusted for inflation, were lower than their budget in 1985. Seven CMCs reported a materials budget in 1985, which, when adjusted for inflation, fell into the budgetary range they indicated in the 2022 *Directory*. Only three CMCs reported 2022 budget ranges larger than the adjusted budget in 1985 (Kogut et al., 2023; Lehman & Kieweitt, 1985), suggesting stronger funding than in the past. These trends have widespread implications for the availability of current and historic resources for future educators.

Pauly et al. (2017) established that the funding level of a CMC should be such that the institution's educational curriculum, the diverse research needs of stakeholders, and the mission of the CMC are well supported. The funding of CMCs has been impacted by state funding (Johnson, 1973; Mitchell et al., 2016), e-resources cost inflation (Tillman, 2001), university and department enrollment (Alteri, 2012; Toifel, 1992), support from university administration

(Alteri, 2012), and other factors which may influence academic library funding and budget allocation. When compared with the findings from Toifel (1992), our study reinforces Alteri's (2012) claim that CMC budgets continue to become increasingly restricted while holding less purchasing power on a broad level. This pattern of decline is not necessarily true institution by institution.

Troublingly, this trajectory is often misaligned with assumptions of education faculty, staff, and students. As one example, Flandro (1957) cites a University of Connecticut School of Education 1951 bulletin, which expresses both "considerable interest and expectation for expansion in terms of larger quarters, larger budget, and extended services" (p. 22). Teclehaimanot and Patterson (1992) compared the perceptions of the CMC coordinators and college executives at 103 colleges regarding the functions and value of the CMCs in the present and future. The authors' survey found, "The college executives predicted that the CMC of the future will be provided with appropriate funding and instructional support to carry out the mission of this support center" (Teclehaimanot & Patterson, 1992, p. 4). At the same time, "The coordinators, on the other hand, were pessimistic about funding and instructional support in the present and the future" (Teclehaimanot & Patterson, 1992, p. 4).

The implications of this are clear. Many CMCs have operated below adequate funding levels in the past; trends show that the purchasing power of CMCs continues to abate despite users expecting an increase in future services. Considered together, these trends suggest that CMCs may be under-resourced to the extent that their mission to support future and current teachers is compromised. Ultimately, budgets must be sufficient to support education programs; however, there is a pervasive and decades-long pattern of CMC personnel advocating for more funding and support while their resources are stretched to a breaking point. Doing more with less has become so entrenched in the tradition of CMCs that it can be hard to imagine what a sufficiently funded CMC could provide for teacher education programs at institutions that have been underfunded since conception. The authors feel strongly that systemically CMCs have not been provided the resources needed to fully realize their mission as a partner and core tenant of teacher preparation. The work that CMC personnel have done is a testament to their flexibility, creativity, and drive to serve users despite resource gaps.

Study Limitations

Despite the conclusions that can be drawn, certain limitations exist for this study. The dataset from the *Directory of Curriculum Materials Centers and Collections*, 8th Edition (Kogut et al., 2023) upon which this study relies, acknowledged a few key limitations of data collection including that: 1) Convenience sampling was used when contacting participants via professional listservs and based on prior *Directories* and does not reflect all CMCs in the United States; 2) Institutions shared that in some cases their answers were best estimates; 3) Information shared such as education student enrollment and CMC budget was not individually verified by surveyors; and 4) The information collected is not stagnant, and the numbers may not be representative of the institution outside of the data collection period.

Additionally, because our study answered new research questions using existing data, the appropriate methods were always dictated by the nature of the pre-existing dataset. This prevented deeper or more precise methods tailored to the research questions possible with original surveying. For example, the 8th edition *Directory* survey did not ask participants to speak about the ramifications or implications of their materials budget on their CMC users,

most specifically education students, which would have helped to better represent the relationship between the two. Additionally, there was no way to discern the number of education students who were likely to be users of a CMC based on institutional differences in programs housed in a college or department of education or specific curricular requirements. With a new survey, specific questions could have been added to 1) control for variables such as donations or vendor samples that may alter the ideal operating budget of CMCs; 2) explicitly connect materials budgets to gaps in collections, especially as they pertain to issues of inclusion, equity, diversity, or access; and 3) analyze active or high potential users of a CMC.

Finally, although this study proposes a method to interpret the data captured as ordinal variables in the 8th edition of the *Directory* (Kogut et al., 2023), which could be applied to other existing data sets, it lacks the specific analysis possible with data collected as continuous variables. Despite this limitation, revisiting existing data sets for more in-depth analysis could add nuance to our current understanding of the contemporary and historical conditions of CMCs in the United States.

Future Areas of Study

A recommended future area of study would be collecting information on exact funding levels and education student enrollment nationally related to CMCs, allowing for a different statistical method for identifying and interpreting more precise trends. Including other variables—such as university budget, library budget, total student enrollment, and location—would add precision and additional context to the analysis. Although this study relies on data from the 8th edition of the *Directory* (Kogut et al., 2023), it could be worthwhile to also compare enrollment and funding variables at the same institution over time in a longitudinal study. Additionally, Toifel (1992) completed a twofold descriptive and attitudinal survey which found a wide margin between the existing and desired state of the budget according to CMC personnel based on indicators such as "the curriculum materials center is a fully recognized budgetary item" and "the budget adequately supports the number and range of programs served by the curriculum materials center's collection" (p. 13). A follow-up attitudinal survey of CMC personnel could be used to gauge satisfaction with revenue sources and amounts while making the implications of the CMC budgets more transparent. An example could be asking whether respondents feel their CMC budget allows them to meaningfully and broadly purchase authentic, culturally responsive texts that deepen education students' proficiency with topics of equity, diversity, inclusivity, and accessibility. Given national trends of declining CMC funding, researching if CMC personnel and their users expect funding levels to rebound and show growth in the future could be compelling. The authors also found a lack of modern research on student perceptions of the value of CMCs and would favor future research addressing this perspective.

Conclusion

This study found strong evidence of a statistically significant monotonic relationship with a positive correlation between education student enrollment (undergraduate and graduate) and CMC materials budget. The correlation between these variables was weak due to wide disparities among institutions, highlighting some CMCs as incredibly under-resourced based on historical trends. CMCs that support comparable numbers of education students may have hugely different materials budgets and, therefore, may offer vastly different collections

for future educators to use when building their pedagogical repertoire. The materials budget of CMCs determines the resources available for users of CMCs, especially future teachers. Given the mission of CMCs, the need for current, authentic, high-quality titles for CMC users to investigate, critically engage with, and use seems paramount. CMC collection budgets must keep pace with the needs of the university and the number of enrolled students. Teacher preparation and quality may be regionally or nationally impacted if they do not.

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