

# OEQA: OGET and ACT Analysis

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## Executive Summary

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The Oklahoma Office of Educational Quality and Accountability (OEQA) undertook a research study to evaluate options for meeting the standards set forth by the Council for the Accreditation of Educator Preparation (CAEP; 2013) for the quality of selected teacher candidates. Specifically, part of this requirement that will go into effect for the 2016 academic year (2016-2017) is that the pool of accepted candidates within each program must demonstrate an adequate level of performance on a nationally normed or ability/achievement measure of ability or achievement (e.g., ACT, SAT, GRE). In lieu of using performance on one of these national measures, programs have the opportunity to use a state-normed ability/achievement assessment if they can demonstrate the correspondence between the state-normed assessment and one of the designated national assessments. The purpose of this study was to evaluate the correspondence between performance on the Oklahoma General Education Test (OGET) and the ACT.

Data for this project was provided by 19 teacher preparation programs across the state of Oklahoma representing accepted teacher candidates between 2010 and 2015. Over 4,000 records were used to evaluate the relationship between these two measures. Through two types of analyses it was determined that there was a strong, significant relationship between performance on the ACT and performance on the OGET. Through regression analysis, a score concordance table was created to show the correspondence between each ACT score and the OGET score scale.

Using the relationship between these two score scales, the full set of candidate records (over 6,000) was evaluated to determine how the performance of the teacher candidate pools for each institution would compare to the CAEP expectations. Overall, the average performance of teacher candidates (GPA and OGET) across the included years indicated that all institutions would meet the requirements set forth for the 2016 and 2017 academic years. However, the increased expectations for the 2018 academic years and beyond were higher than the average performance reported by some institutions.

This report provides detail on each of assessments that were the focus of this study, the dataset collected for the purposes of this analysis, the results of the comparative evaluation, and how these results can be used to demonstrate adherence to the CAEP expectations. Additional suggestions for future research and evaluation are also provided.

# Introduction

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The Oklahoma Office of Educational Quality and Accountability (OEQA) undertook a research study to evaluate the performance of teacher preparation candidates across the state of Oklahoma. The specific focus of this investigation was on the new expectations set forth by the Council for the Accreditation of Educator Preparation (CAEP). This report details the methodology, data involved, and results of this study.

## CAEP Standards

Within the 2013 CAEP Accreditation Standards (CAEP, 2013), there are expectations regarding the performance of teacher candidates (evaluated as a cohort or selected pool) on nationally normed ability/achievement assessments. Specifically, standard 3.2 states

3.2 REQUIRED COMPONENT: The provider sets admissions requirements, including CAEP minimum criteria or the state's minimum criteria, whichever are higher, and gathers data to monitor applicants and the selected pool of candidates. The provider ensures that the average grade point average of its accepted cohort of candidates meets or exceeds the CAEP minimum of 3.0, and the group average performance on nationally normed ability/achievement assessments such as ACT, SAT, or GRE:

- is in the top 50 percent from 2016-2017;
- is in the top 40 percent of the distribution from 2018-2019; and
- in the top 33 percent of the distribution by 2020.

[ALTERNATIVE 1] If any state can meet the CAEP standards, as specified above, by demonstrating a correspondence in scores between the state-normed assessments and nationally normed ability/achievement assessments, then educator preparation providers from that state will be able to utilize their state assessments until 2020. CAEP will work with states through this transition.

[ALTERNATIVE 2] Over time, a program may develop a reliable, valid model that uses admissions criteria other than those stated in this standard. In this case, the admitted cohort group mean on these criteria must meet or exceed the standard that has been shown to positively correlate with measures of P-12 student learning and development.

The provider demonstrates that the standard for high academic achievement and ability is met through multiple evaluations and sources of evidence. The provider reports the mean and standard deviation for the group. (p.9)

Considering Alternative option #1 as described by CAEP, the OEQA is interested in evaluating the feasibility of using the Oklahoma General Education Test (OGET) to demonstrate this requirement as described in Alternative 1.

## ACT

The ACT is a nationally normed assessment of academic college readiness. There are four components of the ACT (in addition to an optional writing assessment):

1. English: written English and rhetorical skills [75 questions]
2. Mathematics: skills typically acquired up to the beginning of grade 12 [60 questions]
3. Reading: comprehension [40 questions]
4. Sciences: interpretation, analysis, evaluation, reasoning, and problem-solving skills required in the natural sciences [40 questions]

Scores on the ACT are reported on a scale of 1 to 36 and the composite score (used in this study) represents the average scale score for a student across all four components. The national ranks for the ACT scores are shown in Table 1 as cumulative percentages. These rankings are based on high school graduates from 2013, 2014, and 2015 and reported scores during 2015-2016 (ACT, 2015).

**Table 1. National Rank for ACT Composite Scores**

Score	% of students who achieved this score or below	Score	% of students who achieved this score or below
1	1%	19	43%
2	1%	20	50%
3	1%	21	56%
4	1%	22	63%
5	1%	23	68%
6	1%	24	74%
7	1%	25	79%
8	1%	26	83%
9	1%	27	87%
10	1%	28	90%
11	1%	29	92%
12	4%	30	95%
13	7%	31	96%
14	12%	32	98%
15	18%	33	99%
16	24%	34	99%
17	30%	35	99%
18	36%	36	99%

## OGET

The OGET is a measure of general knowledge targeting the state core general education knowledge and skills (Pearson, 2015). A passing score is required as one component of the teacher certification program in the state of Oklahoma and is required for admission to many teacher preparation programs throughout the state. The test content is divided into four subareas:

1. Critical Thinking Skills: Reading and Communications
2. Critical Thinking Skills: Mathematics Computation Skills
3. Liberal Studies: Science, Art, and Literature, Social Sciences
4. Critical Thinking Skills: Writing

The OGET assessment includes 100 selected-response questions (80% of the total score) and 1 constructed-response writing assignment (20% of the total score). Scores are reported on a scale that ranges from 100 to 300 with an equated cut score of 240.

## Approach

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### Current Study

To investigate the possibility of using performance on the OGET to demonstrate acceptable levels of performance on ability achievements (CAEP requirement), a research study was designed and conducted through a collaboration between OEQA staff and their psychometric consultants. Specifically, two research questions were posed:

1. What is the relationship between performance on the ACT and performance on the OGET?
2. If the relationship between the ACT and OGET scores can be established, how do the CAEP expectations align with the OGET score scale?

### Data

To answer these questions, OEQA requested data from all teacher preparation programs throughout the state. Programs were asked to provide records for admitted candidates from 2010 to 2015 including demographic information (gender, ethnicity), institution admission information (ACT score), and program admission information (college GPA, OGET score). In total, the request was made of 24 programs, however, 2 of the programs are new and did not have the historical records to provide. Of the remaining 22 programs, 19 provided data for this study (83% response rate) submitting a total of 6,061 records of which 4,406 records had complete data for the purpose of this study (ACT and OGET scores). The reasons for the incomplete data in these cases varied by institution and candidate. The incomplete records are part of the overall cohorts admitted to each program but cannot be used in the analysis to establish the relationship between OGET and ACT scores. Information about the programs that provided data is detailed in Table 2. This information includes admission requirements (ACT score required for institution admission, college GPA required for program admission) and number of candidate records provided.

**Table 2. Program- and Institution-Level Information**

School	ACT Requirement [Institution]	GPA Requirement [Program]	Total Records	Complete Records [ACT & OGET]
Institution 1	20 <sup>1</sup>	2.50	188	188
Institution 2	20	2.50	214	161
Institution 3	19	2.75	8	8
Institution 4	19	2.50	53	28
Institution 5	18	2.75	36	18
Institution 6	20	2.75	161	161
Institution 7	20	2.50	138	58
Institution 8	20	2.50	324	293
Institution 9	-- <sup>3</sup>	2.75	114	114
Institution 10	22	2.75	51	51
Institution 11	19	2.50	81	38
Institution 12	21 <sup>1</sup>	2.75	1433	1199
Institution 13	20	2.50	175	100
Institution 14	20	2.50	520	246
Institution 15	20 <sup>1</sup>	2.50	290	290
Institution 16	21 <sup>2</sup>	2.50	22	13
Institution 17	20	2.75	1324	751
Institution 18	22 <sup>1</sup>	2.50	206	71
Institution 19	23	2.75	723	618
<b>Total</b>			<b>6061</b>	<b>4406</b>

<sup>1</sup> Applicants with ACT scores below this requirement may be admitted depending on their high school GPA and class rank.

<sup>2</sup> Applicants with ACT scores below this requirement may be admitted on probation

<sup>3</sup> No requirement

A summary of the candidate records included in this analysis is provided in Table 3. As shown in the Table, the data represented several cohort years (2015 was notably smaller as some schools had not processed all records from this year at the time the data was collected), the ACT scores included a large range, the OGET scores covered the full range of passing scores (as a passing score is required for admission) and the GPA covers a range of the overall scale but the average indicates a high level of performance.

**Table 3. Summary of Candidate Measures Included in Analysis (N=4406)**

	Count	Range	Average
Cohort Year	2010 – 770 (18%) 2011 – 662 (15%) 2012 – 785 (18%) 2013 – 982 (22%) 2014 – 933 (21%) 2015 – 253 (6%)		
ACT Score		10 - 36	22.9
OGET Score		240 - 300	266.2
GPA		2.3 - 4.0	3.7

The next sections detail how this data was used to evaluate and address the research questions posed for this study.

## Results

### **Question 1: What is the relationship between performance on the ACT and performance on the OGET?**

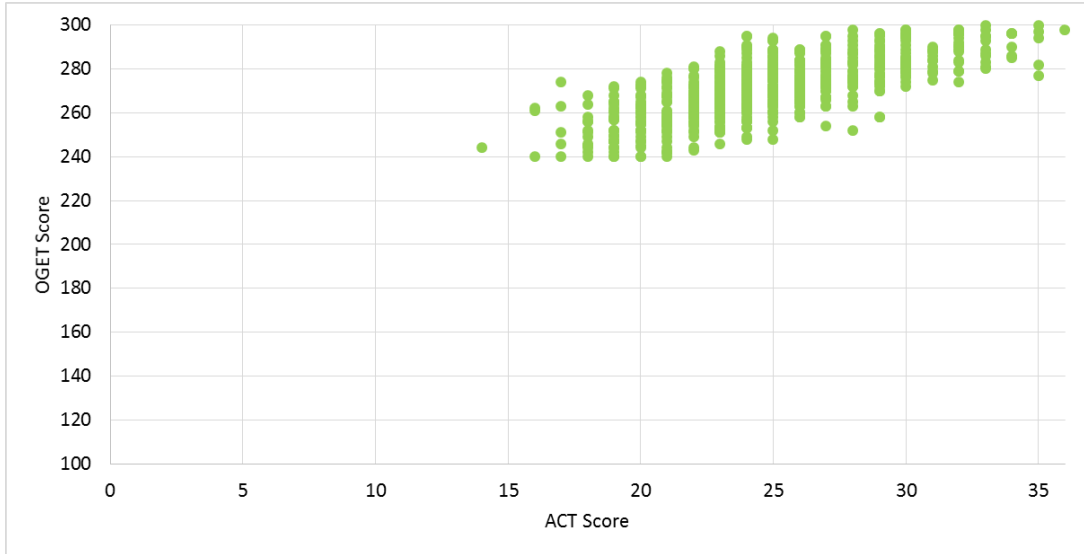
To address the first research questions, the relationship between performance on the OGET and performance on the ACT was estimated. This relationship is shown graphically in Figure 1. As is shown in the Figure, each ACT score was observed associated with several OGET scores. This is due to the fact that the ACT is reported on a smaller scale (only 30 possible scores) whereas passing OGET scores represent a wider score scale (60 possible points). In addition, the ACT scores included in this study represented students who were accepted into these institutions. As shown in Table 2, most institutions required an ACT score of 19 or above (median requirement of 20). Therefore, the range of ACT scores in this analysis is even further reduced (most scores within an 18-point range). The correlation between the scores is 0.72 which indicates a significant positive relationship ( $t=68.85$ ,  $df=4404$ ,  $p < .0001$ ). In addition, this correlation could be corrected for attenuation (i.e., reduce the influence of measurement error by dividing the correlation value by the square root of the test reliabilities<sup>1</sup>). The corrected correlation is 0.76 indicating a slightly stronger relationship.

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<sup>1</sup> Reliability for the ACT is 0.96 as noted in the most recent technical report provided by ACT. The reliability for OGET is 0.93 which represents the average across all forms administered during the most recent program year.



**Figure 1. Comparison of ACT and OGET performance**



This relationship was further explored through a regression analysis to determine if OGET scores could be predicted from ACT scores (or vice versa). A simple linear regression was run with the entire dataset to determine how scores on each scale corresponded with those on the other. The results of the regression analysis are shown in Table 4. The correlation value between the two sets of scores is represented by the value of R. The  $R^2$  value (0.518) indicates the proportion of variance in OGET scores that can be explained by the ACT score. In establishing the relationship between these two sets of scores, the intercept represents the score on the OGET associated with an ACT score of 0 (which is not possible as the score scale starts at 1) and the slope represents the difference in points on the OGET scale with every increase in a point of the ACT scale. Therefore, the expected difference in OGET scores between two students who earned ACT scores of 20 and 21 would be 2.53 score points. The F value represents the strength of the model which was significant indicating that ACT scores were a significant predictor of OGET scores.

**Table 4. Results of Overall Linear Regression Analysis**

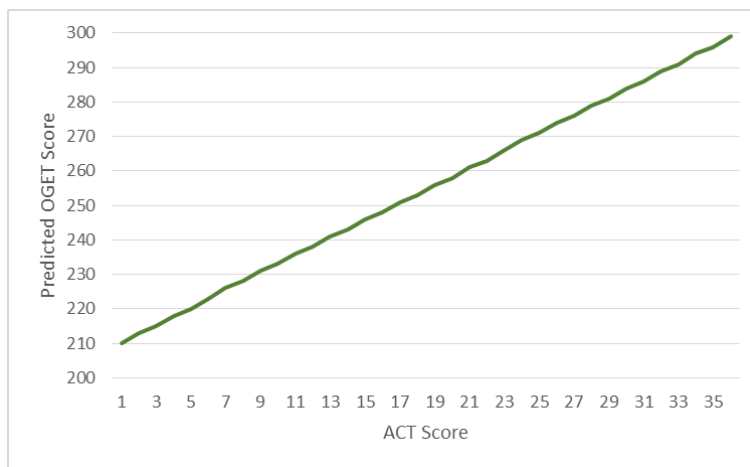
Statistic	Result
N	4406
R (correlation)	0.720
$R^2$	0.518
Intercept	207.8
Slope	2.53
F	4734.72
Sig (F)	0.000

These results, and specifically these two values (Intercept and Slope) can be used to estimate the relationship between the full score scales for ACT and OGET. These results are shown in Table 5 and graphically in Figure 2.

**Table 5. Predicted OGET Scores**

ACT Score	OGET Score	ACT Score	OGET Score
1	210	19	256
2	213	20	258
3	215	21	261
4	218	22	263
5	220	23	266
6	223	24	269
7	226	25	271
8	228	26	274
9	231	27	276
10	233	28	279
11	236	29	281
12	238	30	284
13	241	31	286
14	243	32	289
15	246	33	291
16	248	34	294
17	251	35	296
18	253	36	299

**Figure 2. Estimated OGET Scores from ACT Scores**



Overall, the regression results indicated a strong relationship between these two performance measures with the understanding that the relationship is stronger at the critical area of the ACT scale (18-30) as there was more data for analysis in this area. For the purposes of this investigation, this increased confidence in predictability within this area is also beneficial as the critical norming values (as indicated by the CAEP expectations) are found within this range.

This relationship was further explored by conducting the regression analysis separately by cohort year (2010-2015). Across years, the  $R^2$  values ranged from 0.51 to 0.54 indicating that at least 50% of the variance in OGET scores could be predicted by ACT scores (all relationships were significant). The full set of predicted OGET scores, by year (see Table 6), indicate that there were some slight differences in the results across years but these were very minimal within the critical area of the ACT scale (scores of 18-30, most predicted scores were within 1 point of the overall estimated OGET score).

**Table 6. Predicted OGET scores by Cohort Year**

ACT Score	Predicted OGET Scores						
	Overall	2010	2011	2012	2013	2014	2015
1	210	209	210	212	208	212	208
2	213	212	213	214	211	215	210
3	215	214	215	217	214	217	213
4	218	217	218	219	216	220	216
5	220	220	220	222	219	222	218
6	223	222	223	224	221	224	221
7	226	225	225	227	224	227	223
8	228	227	228	229	226	229	226
9	231	230	230	232	229	232	229
10	233	233	233	234	232	234	231
11	236	235	235	237	234	237	234
12	238	238	238	239	237	239	237
13	241	240	241	242	239	242	239
14	243	243	243	244	242	244	242
15	246	246	246	247	244	246	245
16	248	248	248	249	247	249	247
17	251	251	251	252	249	251	250
18	253	253	253	254	252	254	253
19	256	256	256	257	255	256	255
20	258	259	258	259	257	259	258
21	261	261	261	262	260	261	260
22	263	264	264	264	262	263	263
23	266	266	266	267	265	266	266
24	269	269	269	269	267	268	268
25	271	271	271	272	270	271	271
26	274	274	274	274	273	273	274
27	276	277	276	277	275	276	276
28	279	279	279	279	278	278	279
29	281	282	281	282	280	281	282
30	284	284	284	284	283	283	284
31	286	287	286	287	285	285	287
32	289	290	289	289	288	288	289
33	291	292	292	292	291	290	292
34	294	295	294	294	293	293	295
35	296	297	297	297	296	295	297
36	299	300	299	299	298	298	300

In summary, the results from addressing the first research question suggest that there is a strong relationship between performance on the ACT and performance on the OGET. This relationship can be used to predict performance on the OGET from ACT scores which, in turn, will allow the national norms from the ACT to be mapped to the OGET score scale.

### **Question 2: How do the CAEP expectations align with the OGET score scale?**

To address this second question, the next step in the process was to evaluate the alignment of the CAEP expectations to the OGET scale through the relationship established between OGET and ACT performance. The results in Table 7 show the ACT scores alongside the national norms (from Table 1), the aligned OGET score (from Table 5) and the CAEP expectations based on the national norms of the ACT. As shown in Table 7, the CAEP expectation for the 2016 and 2017 academic years that the average score of candidates to be “in the top 50%” would align with an ACT score of 20 and an OGET score of 258. Similarly, the expectation for 2018 and 2019 for the average score to be “in the top 40%” would align with an ACT score of 22 and an OGET score of 263. Finally, the CAEP expectation for the average score to be “in the top 33%” for 2020 would align with an ACT score of 23 and an OGET score of 266.

**Table 7. Alignment of CAEP Expectations to ACT and OGET Scores**

<b>ACT Score</b>	<b>% of students who achieved this ACT score or below (national norms)</b>	<b>Aligned OGET Score</b>	<b>CAEP Expectations</b>
1	1%	210	
2	1%	213	
3	1%	215	
4	1%	218	
5	1%	220	
6	1%	223	
7	1%	226	
8	1%	228	
9	1%	231	
10	1%	233	
11	1%	236	
12	4%	238	
13	7%	241	
14	12%	243	
15	18%	246	
16	24%	248	
17	30%	251	
18	36%	253	
19	43%	256	
20	50%	258	<-Top 50% (2016-2017)
21	56%	261	
22	63%	263	<- Top 40% (2018-2019)
23	68%	266	<- Top 33% (2020)
24	74%	269	
25	79%	271	
26	83%	274	
27	87%	276	
28	90%	279	
29	92%	281	
30	95%	284	
31	96%	286	
32	98%	289	
33	99%	291	
34	99%	294	
35	99%	296	
36	99%	299	

These aligned expectations were then compared to the average performance reported for the teacher candidates at each institution. These averages were estimated across all cohort years included in the dataset as not all institutions had submitted records for every year and the sample sizes were smaller for some years. This was deemed appropriate given the overall stability of ACT scores (national norms are based on several years of data) and the consistent use of the same reporting scale for the OGET. The averages, reported in Table 8, indicate that all institutions reported average GPAs for their teacher candidates above the CAEP expectation of 3.0<sup>2</sup>. In addition, all schools had an average OGET score above the 2016/2017 criterion as determined through the regression analysis (258, see Table 7). However, not all schools reported an average OGET score that would meet the 2018/2019 expectation (263) or the 2020 expectation (266).

**Table 8. Average Candidate Performance by School**

School	N	Average GPA	Average OGET
Institution 1	188	3.18	262.37
Institution 2	214	3.45	261.78
Institution 3	8	3.32	261.63
Institution 4	53	3.18	260.00
Institution 5	36	3.52	263.69
Institution 6	161	3.24	260.30
Institution 7	138	3.20	258.83
Institution 8	324	3.81	269.85
Institution 9	114	3.45	270.09
Institution 10	51	3.60	271.31
Institution 11	81	3.15	261.46
Institution 12	1433	3.28	266.18
Institution 13	175	3.66	269.52
Institution 14	520	3.23	261.61
Institution 15	290	3.28	262.25
Institution 16	22	3.31	264.00
Institution 17	1324	3.25	264.59
Institution 18	206	3.22	264.58
Institution 19	723	3.30	271.06

In summary, the CAEP expectations for performance in relation to national norms on the ACT can be mapped to the OGET scale through the results of the regression analysis. The performance of candidates at each of the teacher preparation institutions can then be compared to these expectations using the common measure of the OGET.

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<sup>2</sup> These averages are based on college GPA at the time of acceptance into the teacher preparation program. It is unclear from the CAEP expectations if these values should be based on high school or college GPA.

## Results Verification

To verify the results of the regression and the findings from the comparative analysis with the CAEP standards, the average performance of teacher candidates from each score was estimated for both the OGET and the ACT. If the regression results are appropriate for evaluating compliance with the CAEP expectations, there should be agreement between the average ACT and average OGET results as to whether an institution would meet the CAEP expectations (i.e., decision consistency between the two measures).

These results are displayed in Table 9. In addition to the sample size (total records, records with an ACT score, records with an OGET score), the average scores for each measure are reported along with an evaluation for each set of criteria (each test for 2016/2017, 2018/2019, and 2020) to look for agreement between the two. The differences in how the criteria would be evaluated are identified with red text in the table. There are five instances where the two evaluative approaches would disagree. In three of these cases, at least one performance average is based on a sample size of less than 50 indicating a potential lack of stability in the estimate. In the remaining two cases, the average values were within one point of the criteria. For example, the average ACT score for Institution 2 is 22.7 and the criteria for 2018/2019 is 22 (above the critical value by 0.7 points). Similarly, the average ACT score for Institution 15 is 22.2 (again, above the 2018/2019 critical value by 0.2 points). These differences indicate that an agreement decision is within an expected margin of error given that the regression represents an overall estimation of a relationship and the evaluation is based on averages. Therefore, across the 57 comparisons that are made (19 schools x 3 evaluation criteria), 52 are in agreement (91%), 3 disagreements are likely due to sample size (5%) and 2 disagreements likely represent the error in this estimation (4%). Overall, these results suggest a high level of agreement between the OGET and ACT results for the purpose of evaluating performance of teacher candidate cohorts against normative expectations.

**Table 9. Evaluation of CAEP Criteria by School**

School	Sample Size			Average Scores		Meet Criteria 2016/2017		Meet Criteria 2018/2019		Meet Criteria 2020	
	Total	ACT	OGET	ACT	OGET	ACT (20)	OGET (258)	ACT (22)	OGET (263)	ACT (23)	OGET (266)
Institution 1	188	188	188	21.1	262.4	Yes	Yes	No	No	No	No
Institution 2	214	161	214	22.7	261.8	Yes	Yes	Yes	No	No	No
Institution 3	8	8	8	21.4	261.6	Yes	Yes	No	No	No	No
Institution 4	53	28	53	18.8	260.0	No	Yes	No	No	No	No
Institution 5	36	18	36	21.9	263.7	Yes	Yes	No	Yes	No	No
Institution 6	161	161	161	21.1	260.3	Yes	Yes	No	No	No	No
Institution 7	138	71	123	20.3	258.8	Yes	Yes	No	No	No	No
Institution 8	324	299	314	24.2	269.9	Yes	Yes	Yes	Yes	Yes	Yes
Institution 9	114	114	114	25.0	270.1	Yes	Yes	Yes	Yes	Yes	Yes
Institution 10	51	51	51	25.3	271.3	Yes	Yes	Yes	Yes	Yes	Yes
Institution 11	81	38	81	21.7	261.5	Yes	Yes	No	No	No	No
Institution 12	1433	1199	1433	23.2	266.2	Yes	Yes	Yes	Yes	Yes	Yes
Institution 13	175	104	172	24.3	269.5	Yes	Yes	Yes	Yes	Yes	Yes
Institution 14	520	247	519	21.2	261.6	Yes	Yes	No	No	No	No
Institution 15	290	290	290	22.2	262.3	Yes	Yes	Yes	No	No	No
Institution 16	22	13	22	23.6	264.0	Yes	Yes	Yes	Yes	Yes	No
Institution 17	1324	797	1324	22.1	264.6	Yes	Yes	Yes	Yes	No	No
Institution 18	206	102	151	22.5	264.6	Yes	Yes	Yes	Yes	No	No
Institution 19	723	625	713	25.1	271.1	Yes	Yes	Yes	Yes	Yes	Yes



## Summary

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The purpose of this study was to evaluate the feasibility of using the OGET to evaluate teacher candidate ability for the purposes of meeting expectations set forth in the accreditation standards created by CAEP. The results of the analysis indicated that there is a strong relationship between performance on the OGET and performance on the ACT, particularly when considering the restriction of range of both measures. Furthermore, this relationship was used to determine alignment of specific scores on the ACT to specific scores on the OGET.

The alignment of the ACT and OGET score scales was used to determine how the national norms of the ACT aligned to the OGET score scale. Specifically, the norms that aligned with the expectations set forth by CAEP were mapped to the OGET score scale to determine the average performance that would be required to meet the accreditation standards. Using the expectations for the 2016 and 2017 academic years, the average performance of teacher candidates was evaluated by program and all programs appeared to meet or exceed this expectation. However, some of the current reported averages are below the 2018/2019 and 2020 expectations. The results of this system of evaluation were further explored through a verification of the decision that would be made using each set of expectations (2016/2017, 2018/2019, 2020).

There are three limitations worth noting in this study. First, data was requested of all Oklahoma teacher preparation institutions. However, only 19 provided information for this analysis out of 24 possible. Therefore, it is assumed that this relationship would also represent cohorts from those institutions included in this analysis. Second, the relationship estimated through the regression analysis is based on the ACT and OGET performance of teacher candidates who were accepted into the programs. The effective score scales were limited to those students who passed the OGET (240 and above) and had an ACT score that met the admission requirements for the given institution (most required 19 and above). In turn, the results of the regression (i.e., alignment of scores) below an OGET score of less than 240 or an ACT score of 19 may be unreliable or have higher margins of error than the results in other areas of the score scale. Third, and finally, the ACT score is reported on a relatively narrow scale and therefore small differences may be magnified when trying to map these scores to a larger scale.

Despite these limitations and cautions, the results for the critical area of the ACT scale (18-30) were estimated with a large sample of data and the results indicate a strong relationship and a significant level of predictability. Therefore, it can be concluded that the results of this study support the use of the OGET as an alternative state-normed measure to evaluate the overall achievement and ability of teacher candidates under the CAEP model.

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