A Preliminary Study of ACT WorkKeys Curriculum Effectiveness at Nevada State High School

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The ACT® WorkKeys® Curriculum includes lessons, practice questions, and quizzes to help individuals develop foundational workplace skills needed for success in a broad range of occupations. This ACT Technical Brief describes results from a preliminary WorkKeys Curriculum effectiveness study conducted with data from Nevada State High School (NSHS). NSHS provides a unique opportunity to examine the effectiveness of the WorkKeys Curriculum because many NSHS students take the WorkKeys Assessments—Applied Math, Workplace Documents, and Graphic Literacy—before and after engaging with the WorkKeys Curriculum. Results from this preliminary study indicated that the WorkKeys Curriculum may help improve WorkKeys performance.

Students who attain certain WorkKeys scores are awarded an ACT® WorkKeys® National Career Readiness Certificate® (NCRC) at the Bronze, Silver, Gold, or Platinum level.[1] NSHS Students who did not achieve a Gold NCRC (i.e., Level 5 or higher on each assessment) in fall 2017 were assigned to WorkKeys Curriculum courses before retesting in spring 2018. In 2017–2018, NSHS students were assigned WorkKeys Curriculum lessons and quizzes, but not the practice questions. **Because exposure to the WorkKeys Curriculum was incomplete, the results reported here were treated as preliminary.**

When analyzing all available data, paired-sample *t*-tests indicated statistically significant score increases on all three WorkKeys assessments. The mean increases were 2.4 points on Applied Math (N = 134), 2.1 points on Workplace Documents (N = 123), and 2.2 points on Graphic Literacy (N = 48). The changes were great enough that 73% of students who initially earned a Bronze NCRC increased to Silver or Gold, and 55% who initially earned a Silver NCRC increased to Gold or Platinum. Given the long time span between pre-test and post-test, factors other than use of the WorkKeys Curriculum could potentially explain those increases (e.g., learning in relevant courses at NSHS).

WorkKeys Curriculum usage data revealed there were students who did not seriously engage with the curriculum, so their data could have depressed observed score increases. In subsequent analyses, engaged students were identified as those who spent more than 40 minutes on a course, had an average quiz question response time greater than 25 seconds, had a quiz percent correct greater than 50%, and completed three or more quizzes. On average, students spent 99, 62, and 38 minutes on the Applied Math, Workplace Documents, and Graphic Literacy courses, respectively.

A series of regression models were fit to examine how engagement with the WorkKeys Curriculum was associated with post-test WorkKeys scores while controlling for pre-test scores. For Applied Math, the engagement indicator had a coefficient of 1.005 ($p < .05$). That is, when comparing engaged and disengaged students with the same pre-test score, engaged students were expected to score 1.005 points higher on the post-test (Figure 1). The engagement coefficient was 1.220 ($p < .05$) for Workplace Documents (Figure 2). Sample sizes for Graphic Literacy were low, which made it difficult to obtain precise estimates of regression coefficients; though not significantly greater than zero, the engagement coefficient was 1.531 ($p = .194$). Those coefficients translated to effect sizes of 0.16, 0.18, and 0.25 standard deviations, respectively.

In conclusion, NSHS students were expected to increase scores on WorkKeys between fall 2017 and spring 2018, but those who engaged with the curriculum were expected to increase more. However, results from this non-experimental study cannot prove the effectiveness of the WorkKeys Curriculum. For example, it is possible that students classified as "engaged" were also the kind of students who worked harder and learned more from their NSHS courses and who were especially motivated to perform better on the WorkKeys post-test. In future use of the WorkKeys

Curriculum, NSHS will ensure that students are assigned to complete practice questions in addition to lessons and quizzes. Also, it is recommended that student engagement be monitored closely. Under such conditions, the effectiveness of the WorkKeys Curriculum may be estimated more accurately.

Figure 1. Scatter Plot of Pre-test and Post-test Applied Math Scores with Regression Lines

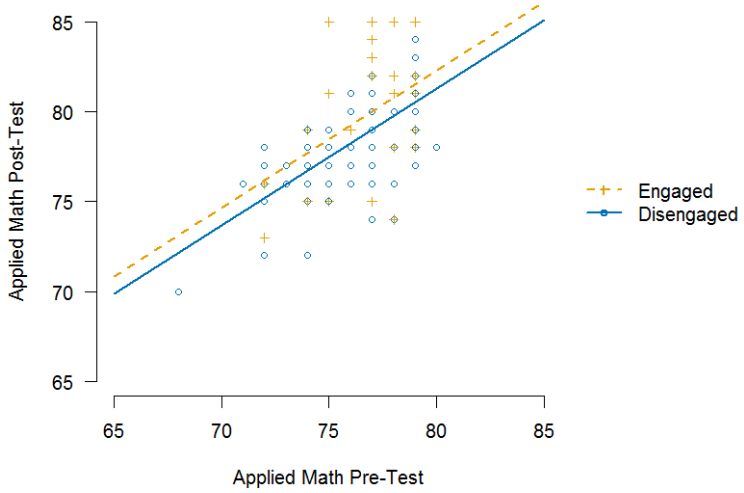
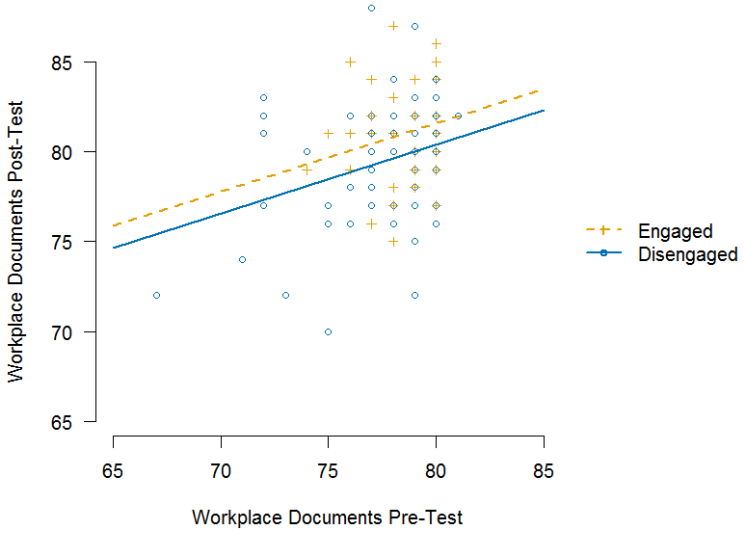


Figure 2. Scatter Plot of Pre-test and Post-test Workplace Documents Scores with Regression Lines



Notes

1. ACT. (2014). *ACT National Career Readiness Certificate*. Iowa City, IA: ACT. Retrieved from http://forms.act.org/certificate/pdf/NCRC-InformationFlyer.pdf

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