

Hub Practice Brief: Impact, Replication and Scaling of  
Academic Interventions  
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# **Intrusive Mentoring: An “impactful” intervention model. (Part I)**

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In this practice brief, findings will be presented that show an unprecedented grade improvement obtained from 22 students whose collective fall semester GPA was 0.8 but increased to 2.3 in the following spring semester. The college students participated in an intense one week “boot camp” followed by 16 weeks of intrusive mentoring by trained upperclass mentors. The intervention model was replicated at a local high school in which high school students engaged in a self-paced, online algebra tutoring platform outside of the school day. The high school students went from 0 hours of after-school academic activity to as many as 8 hours on the platform over 12 weeks. The increased time on task resulted in significantly increased scores on an online Algebra test. Finally, we will report on a scaling effort that will involve 200 provisionally accepted first year VSU students using our intrusive near-peer mentoring model during the summer of 2024.

Linda Darling Hammond once remarked on the “pop-corn” nature of academic interventions; potentially impactful activities that are not sustained once the grant funding ends or the originator leaves. In our view “popcorn” interventions are prevalent because many intervention efforts are effective but not impactful. Efficacy can be measured by a change in a targeted parameter that is of interest to the researcher or measured by the level of participation. However, we define impact as showing a direct or causal relationship with a student’s course grade and gradual improvement in GPA that is sustained over time. Impact, in our view, is about causing a student to change their academic behavior and to maintain sound academic habits until graduation.

Our experience at Virginia State University has shown that **while all impactful interventions are effective, not all effective interventions are impactful**. Moreover, in order to replicate and scale impactful academic interventions, it is necessary to secure buy-in from multiple departments and administrative units within the university or to create formal partnerships with community organizations outside of the University. Either way, internal or external partnerships/collaborations are needed in order to reach large numbers of students. Finally, for the impact to be sustained once the grant ends or the originator retires, there must be institutional commitment in the form of financial and human resources dedicated to support the effort.

The results of the impactful research effort reported here has taken more than ten years to achieve. The research has been supported by four NSF grants, two teams of investigators and partnerships within and outside of Virginia State University

Impact is a high bar.

## Initial Impact- Learning to Learn 2024

For most stake holders involved in educational enhancement, an important goal is to show improvement in persistence, retention and graduation rates; all of which are contingent upon grades. However, course letter grades are lag measures. They are awarded only after a myriad of small, antecedent behaviors or lead measures have been performed by the student over the course of weeks and sometimes months. Identifying these antecedent behaviors and helping students remain motivated to practice them for an entire semester is the ultimate goal of any

academic intervention. Thus, at their core, academic interventions are psychological interventions.

Studies aimed at describing, explaining and predicting what is needed to elicit student behavior change require hypothesis testing, model creation, and theoretical frameworks. The limited use of psycho-social theory, particularly, has contributed to the paucity of causal and predictive models needed for the replication of effective academic interventions. Therefore, the initial goal of this intervention was to test the usefulness of a psycho-social theory in identifying the most essential characteristics of a proven intervention model- mentoring.

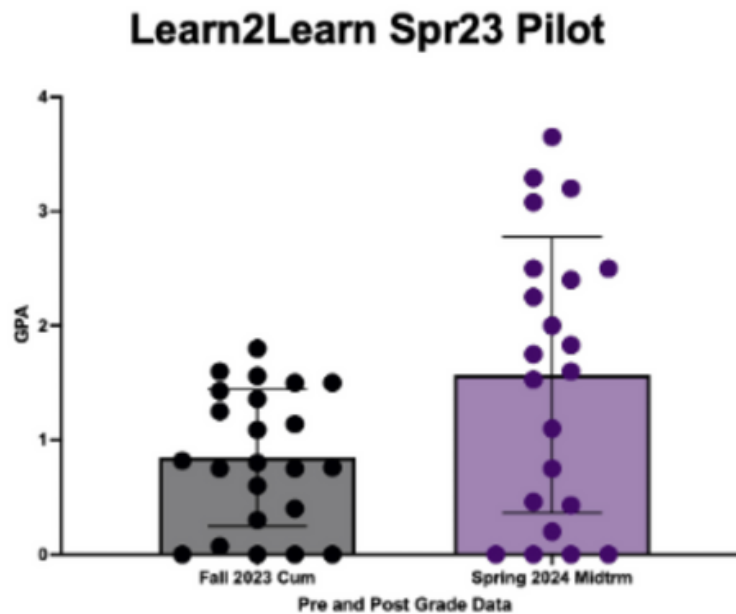
The Phenomenological Variant of Ecological Systems Theory (Spencer, Dupree PVEST) PVEST was used as a guiding theory in the conceptualization, implementation and interpretation of data from Project Knowledge, an academic intervention and research study that ran from 2014-2019 at VSU. As an intervention, Project Knowledge focused on building resilience by targeting the affective or feeling side of academic motivation. Project Knowledge first began at Virginia State University in 2014 to help entering STEM students acquire and maintain sound academic habits (NSF# . ). The behaviors (time management, adaptive coping, note taking, self-advocacy and others) were both taught in weekly sessions and “caught” by having the behaviors modeled by trusted upper class (near-peer) mentors. These relationships were fostered within a dedicated academic community. Since then, the project has received over \$2.5M in funding from the National Science Foundation (NSF #'s. ) and has been continuously funded for over a decade.

Initially, PVEST was used to help identify specific classes of protective and risk factors that were associated with attaining high grades. Project Knowledge, programming elements were then designed to augment protective factors and decrease risk factors. We also posited that if the student’s risk and protective factors could be ascertained a priori by a qualitative assessment then it would be possible to design the intervention activities based on these data. This would allow customizing of the intervention to best fit the needs of our students. We reasoned that PVEST would assist in limiting the number of possible variables to those associated with grade improvement. Therefore, the intervention did not include tutoring or remediation. Nor was academic content a target of the intervention. Instead the mentors were trained to create a psychological safe space in which students could ultimately learn how to be a successful college student.

The principles learned from Project Knowledge now inform several learning interventions at Virginia State University. One recent effort involved 22 VSU students who had earned less than a 1.0 GPA during their first semester. Over 60 students were invited, 30 came to the opening session. Of those, 22 completed the intensive 5-day boot camp called *Learning 2 Learn*.

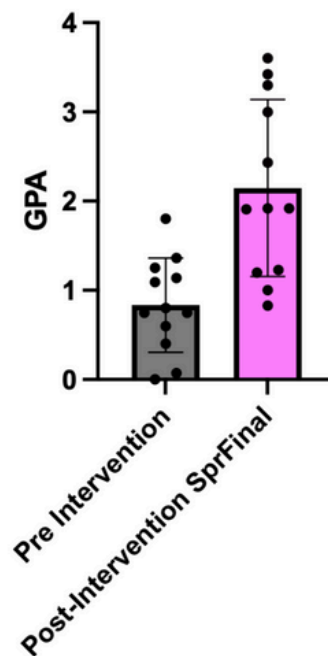
*Learning 2 Learn* was developed by the Academy of Process Education and taught by one of the Academy’s lead facilitators. The boot-camp allowed students to identify and acknowledge the behaviors that had contributed to their underperformance during the first semester. The boot-camp was followed by a 16 week intrusive near peer mentoring intervention in which mentees were assigned to a mentor in a ratio of no more than 1 mentor to 5 mentees.

The midterm average of the group rose nearly a grade point



For those students who continued to participate, the final grades for the spring semester revealed that every single participant demonstrated some grade improvement.

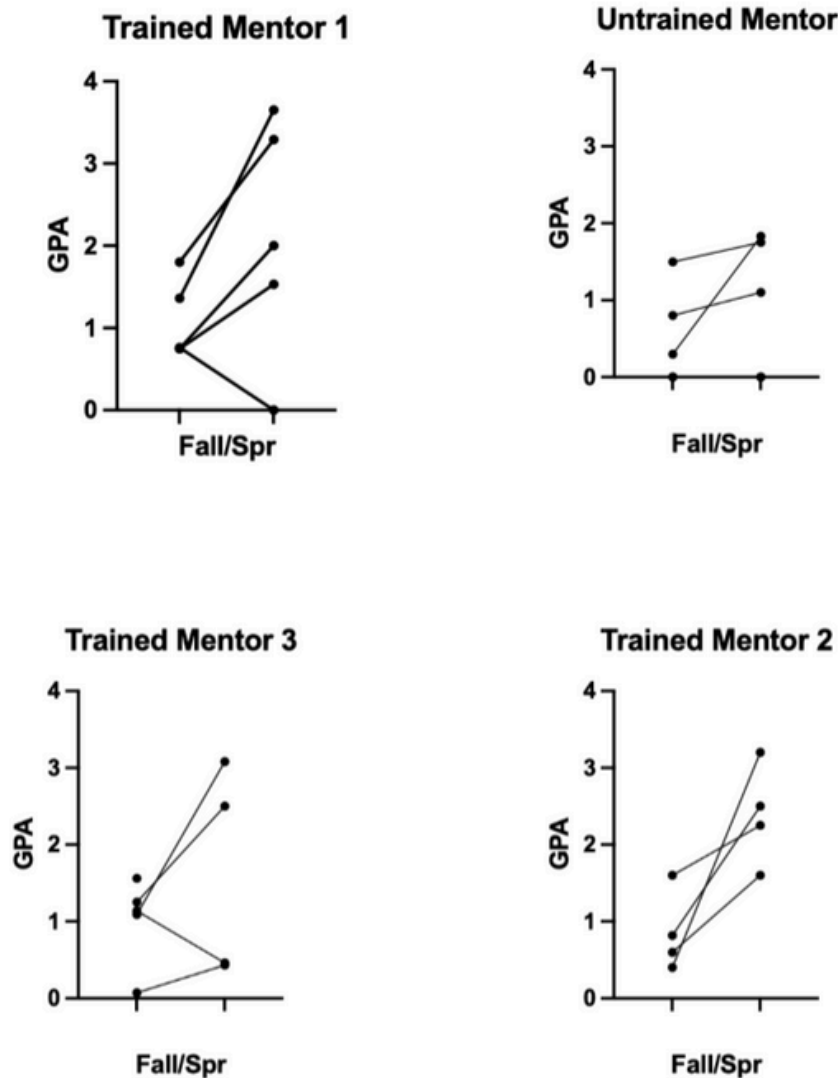
### Learning 2 Learn 2024



**Spring Semester Final Grades compared to Overall GPA Pre-Intervention**

( $t=3.16$  (21)  $p = 0.0047$ ) The final grades for the fall and spring semester are statistically different from each other. This change was attributed to the intervention.

We believe that the grade improvement that followed the semester-long effort was associated in large part to the training received by the mentors. Participants who were included in a group with a trained mentor were more likely to show improvement than those whose mentor was not trained.



Participants in groups with a trained mentor were more likely to show improvement than those in a group with an untrained mentor. (Data from Spring Semester 2024- Learning 2 Learn)

## Conclusion

The near-peer mentoring model used by Project Knowledge has demonstrated that students, even previously low-performing students can be motivated and trained to engage in sound academic behaviors. **The unprecedented results showed grade improvement from 0.8 to 2.3 GPA in ONE semester.**

Moreover, we are now demonstrating that the results can be replicated in different settings. In part 2 of this practice brief we provided evidence from high school students that showed **improvement in math (Algebra) obtained over 3 months.** The students were engaged in an asynchronous self-paced program outside of school hours. This is also a remarkable finding and we believe it was made possible because of the mentoring bond and the extrinsic rewards given to participate in learning activities.

Finally, in part 3 we will report on the results from the summer of 2024. The goal is a scale program using the same methodology with 200 students. The goal will be to support provisionally accepted students (2.0-2.5 high school GPA) in obtaining at least a 2.0 GPA for their first full semester starting in August 2024. The theory upon which Project Knowledge is based posits that by **augmenting protective and reducing risk factors an intervention can encourage students to adopt more adaptive responses to stressors**, such as coming to college for the first time. Identification of the protective and risk factors is the goal of the STEM-US Assessment Instrument. The funding of this project contributed to the development of the STEM-US Assessment Instrument.