

Developing a Developmental Mindset:

Best Practices from Developmental Education for Use by College-Level Faculty



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DevEd?

- ∞ “Developmental education is a comprehensive process that focuses on the intellectual, social, and emotional growth and development of all students. Developmental education includes, but is not limited to, tutoring, personal/career counseling, academic advisement, and coursework,” (NADE).
- ∞ In 2016, 68% of community college students took at least one DevEd course (CCSSE 2016).

Teaching Dev Ed

- ∞ “[Underprepared adults] lack the foundation and skills required for rigorous college curriculum and many of them have adult responsibilities that place excessive demands on their time and other resources. These students present challenges to developmental educators that often far exceed those presented by traditional college students” (Smittle 2003)

Recent DevEd Reforms

- ∞ 2013 - Transition to DRE and DMA
 - Accelerated, integrated, contextualized courses
 - 4 weeks for math
 - 8 weeks for reading and English
- ∞ 2016 - Transition to Multiple Measures
 - GPA used as primary placement method
 - Students need 2.6 to enter gateway courses
 - High school GPAs good for five years

What's Next?

NC-S. 561 (2015)

AKA

R.I.S.E. (2020)

How Does This Effect Me?

Developmental education reform is not limited to developmental education.

This shift impacts every area of the college, including you –
curriculum level faculty.

Remember...

- ∞ “We are all developmental learners depending on the context in which we find ourselves” (Cassaza 1999)

Evolution



Best Practices

1. Student-centered, active learning teaching strategies
2. Developing critical thinking and problem solving skills
3. Explicitly teaching learning and college success strategies
4. Offering supplemental instruction
5. Thoughtfully integrating technology
6. Creating learning communities
7. Offering frequent testing opportunities

“Says Who?”

- ⌘ Schwartz and Jenkins (2007)
- ⌘ Boylan (2002)
- ⌘ Boylan and Saxon (1998)
- ⌘ Roueche and Kirk (1974)

Active Learning

- ∞ Active or student-centered learning [...] has been demonstrated to be effective with adult, nontraditional, and developmental students (Schwartz and Jenkins 2007)
- ∞ Active learning is any approach to instruction in which all students are asked to engage in the learning process (Center for Educational Innovation)

Active Learning – Applied 1

∞ Freeman, Eddy, et al (2014)

- Meta-analysis of 225 studies comparing active learning and traditional lecturing in STEM courses
- Students in traditional classes were 1.5 times more likely to fail
- Exam scores in active learning classes were an average of half a letter grade higher
- Active learning techniques included
 - Group problem solving
 - Tutorials completed during class
 - Personal response systems (clickers)
 - Workshop course designs

Active Learning – Applied 2

∞ Ruediger (2014)

- Principles of Microeconomics students over three semesters
- Half of the sections used an automated response system (ARS)
- The other half were control
- In experimental group, the 75 minute class was divided into two 25 minute sections
- After each section, students answered multiple choice questions with ARS
- Instructor used student input to guide review and discussion
- Students using ARS scored 5% higher on exam 3

Critical Thinking

- ∞ A comprehensive developmental education curriculum includes critical thinking, analytic reasoning, and problem solving skills (Schwartz and Jenkins 2007)

Critical Thinking – Applied 1

- ∞ Zarifsanaiey, Amini, and Saadat (2016)
 - Two sections of Principles and Practical Nursing Skills
 - 10 two hour sessions of critical thinking strategies added to experimental group
 - Students presented with a hypothetical situation to discuss in small groups facilitated by instructor
 - Out of ten stations on a final practical exam, the experimental group was significantly higher on 4 stations
 - Average scores were significantly higher for experimental group

Critical Thinking – Applied 2

- ∞ deNoyelles and Reyes-Foster (2015)
 - Two sections of Language and Culture, online and hybrid
 - Students in both sections divided into smaller discussion groups for asynchronous online discussion
 - Half of discussion groups were given a speech as a prompt
 - Other half were given same speech as a word cloud as prompt
 - Word cloud groups had higher scores for critical thinking and engagement

Learning and College Strategies

- ∞ In order to help students engage in more strategic learning, developmental instructors need to encourage students to understand their strengths and weaknesses as learners. [The students] must also be taught to employ alternative strategies to facilitate the learning of material they do not understand (Boylan 2002)
- ∞ Strategies include guidance on taking notes, group- and self-study, test taking, time management, and successful education and personal habits (Schwartz and Jenkins 2007)

Strategies – Applied 1a

∞ Grills (2017)

- All Sociology students earned 5% participation grade for attending 4 sessions
- Workshop hosted by student services
- Workshops focus on organization, time management, note-taking, reading textbooks, test preparation, exam strategies
- Each skills workshop attended led to a 0.27 increase in course GPA (when HS GPA held constant)

Strategies – Applied 1b

∞ Grills (2017)

- Introductory Biology students earning D or below on first test strongly encouraged to attend
- Workshop hosted by student services
- Workshops focus on organization, time management, note-taking, reading textbooks, test preparation, exam strategies
- Each skills workshop attended led to a 0.11 increase in course GPA (when HS GPA held constant)

Strategies – Applied 2

- ⌘ Rodriguez, Rivas, et al (2018)
 - Six sections of Molecular Biology (4 control, 2 experimental)
 - Students in experimental group received 10 minute lecture about the benefits of spacing studying and self-testing
 - Experimental group also reminded each week to use these strategies
 - Control groups received no input about study strategies
 - Students who used spacing had 5.7-6.2% increase in course performance
 - Students who used self-testing demonstrated 4.6-6.5% increase

Supplemental Instruction

- ∞ Supplemental instruction is probably the single most well documented intervention available for improving the academic performance of underprepared students (Boylan 2002)
- ∞ Supplemental instruction consists of highly structured course-related group tutoring, frequently conducted by a student who has successfully completed the course (Schwartz and Jenkins 2007)

SI – Applied 1

∞ Reinholz (2017)

- 124 student Calculus I course
- Three lectures and two breakout sessions each week
- Four small groups – Control A, Control B, Seminar, Workshop
- Seminar added 2 x 50 minute Co-Calculus sessions
 - Designed to build community among commuter students
- Workshop added 2 x 2 hour Co-Calculus sessions
 - Designed to engage underserved STEM students (income, first-generation)
 - Sessions taught by advanced undergraduate
- Students in Workshop group scored a significant 10% higher

SI – Applied 2

- ∞ Toby, Scott, et al (2016)
 - Physical Chemistry I
 - Supplemental instruction offered to all students
 - No statistical evidence of simple relationship between course grade and number of sessions attended
 - No statistical evidence of relationship between grade and session attended when math ability was considered
 - When controlling for prior GPA, attendance at sessions did significantly impact course grade

Thoughtful Technology

- ∞ [Computers] cannot discuss learning problems, make referrals to campus services, and provide social reinforcement (Boylan 2002)
- ∞ Computers were best used as a supplement rather than as a substitute for traditional classroom instruction (Boylan, 2002)
- ∞ Computer models may: allow students to learn at their own pace, reinforce an instructor's efforts, monitor students' learning progress, and provide diagnostic feedback" (Schwartz and Jenkins 2007)
- ∞ Computers offer immediate, individualized feedback

Technology – Applied 1

∞ Johnston (2015)

- Analysis of MOOCs
 - Reports from MOOC instructors and students
 - Author's experience as MOOC student
 - Author's experience incorporating MOOC aspects into traditional courses
- Lesson 1 – Use video lectures to deliver content
 - Can replace textbook and/or lecture
- Lesson 2- Use peer assessments for feedback and evaluation

Technology – Applied 2

∞ Hegeman (2015)

- Online College Algebra course
- Original course used publisher material
- Redesigned course used instructor-generated material
 - Guided note-taking sheets and video lectures
 - Recorded with Panopto and a doc cam
- Student scores for online homework were not significantly different
- Scores for online quizzes, online exams, handwritten midterm, and handwritten final were all significantly higher in the redesigned course

Learning Communities

- ∞ The more students are involved in the social and academic life of an institution, the more likely they are to learn and persist (Tinto 1998)
- ∞ Previous iterations of developmental education tend to “isolate and marginalize” students (Tinto 1998)
- ∞ Opportunities for “educational interaction, shared inquiry, and a coherent learning experience” can be found in a learning community in which a group of students takes a set of courses organized around a theme (Schwartz and Jenkins 2007)

Learning Communities – Applied 1

- ∞ Doolen and Biddlecombe (2014)
 - Engineering Orientation I
 - One section of students also enrolled in a common set of courses for the semester
 - No significant difference between groups in terms of course performance
 - Retention rates were higher for experimental group at both one term (10% vs. 19%) and one year (10% vs. 21%).

Learning Communities – Applied 2

∞ Johnson (2014)

- Survey of students in a health care learning community
- 80% of respondents viewed the learning community as “a source of personal and social support and as a major factor for their learning and retention”
- Open-ended responses include “experience working with others, help staying focused and oriented, fellowship, bringing healthcare students together as a whole, support, decreased stress, and sharing of ideas”
- Other areas identified as helpful include career knowledge (55%), academic success (30%), networking (25%), and faculty rapport (20%).

Frequent Testing Opportunities

- ∞ Frequent feedback lets students, “monitor their own performance based on some standard and adjust their study and practice activities accordingly. Frequently, developmental students lack the discipline to engage in such study and practice on their own,” (Boylan, 2002).
- ∞ Testing can include group work, projects, and other informal methods in addition to exams (Schwartz and Jenkins, 2007)
- ∞ Benefits include encouraging student interaction with material, allowing metacognitive review of performance, and providing instructors with feedback.

Frequent Testing – Applied 1

∞ Felderman (2014)

- Introductory Psych course
- Traditional delivery method
- One section had 6 exams, second section had 12 exams
- Same course content covered, just divided into more sections
- Students in class with more exams had higher scores and greater growth

Frequent Testing – Applied 2

∞ Nakos and Whiting (2018)

- 6 sections of international business course
- Hybrid delivery method
- All students took 4 major in-class exams
- Experimental group had 11 additional shorter exams
 - Shorter exams had 8 questions directly related to readings and activities due for that class meeting
- Students with additional exams scored higher on the 4 required exams

Research-Based Suggestions

- ☞ Incorporate group problem solving
- ☞ Use clickers
- ☞ Conduct in-class tutorials
- ☞ Incorporate problem-based learning
- ☞ Consider word clouds
- ☞ Promote student success workshops
- ☞ Teach study techniques
- ☞ Create and promote supplemental instruction opportunities
- ☞ Invite previous students to be a guest speaker
- ☞ Use instructor-generated videos to deliver content
- ☞ Include peer evaluations
- ☞ Provide guided note-taking sheets
- ☞ Encourage community building among students
- ☞ Facilitate study groups outside of class
- ☞ Use icebreakers and team building exercises
- ☞ Test smaller amounts of material more frequently

Your Turn!

- ∞ What are some ways that you can use these practices in your class?
- ∞ What is one concrete thing that you have learned from this presentation?

Dev Ed

- ∞ “[Developmental] instruction should seek to **develop undeveloped abilities, remediate difficulties in the individual’s learning processes and assist students in replacing poor study habits** with effective study habits. Such programs should also embody a content that will optimize the learning experience for the student by using methods and materials that **challenge and provoke curiosity** and are also in congruence with the **student’s general ability level, specific strengths and weaknesses**, and the particular **sociocultural identity.**” (Tomlinson 1989; emphases are mine)

Questions?

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