

**Session VII:**

Future Directions and Opportunities

***Program Revision: Preparing Technology and Engineering Teacher Candidates for Teaching  
in Diverse Classrooms***

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# **Program Revision: Preparing Technology and Engineering Teacher Candidates for Teaching in Diverse Classrooms**

## **Introduction**

In what ways are Technology and Engineering Education students prepared with the methods and knowledge to effectively teach underserved populations? The nature of the technology and engineering classroom continues to change, especially in the urban setting. Students' language, cultural identity and disabilities are at the forefront of the increasingly diverse student population witnessed in most schools systems. How can a teacher education program assist teacher candidates with the development of multicultural awareness that is infused in their pedagogies? The Feinstein School of Education and Human Development at Rhode Island College revised its programs to provide solutions for fulfilling the need for more culturally responsive novice teachers through a combination of practices, including: early career experiences in urban classrooms, Special Education and Teaching English as a Second Language endorsements, and professional sequence revisions that embed multicultural themes.

## ***Technology Teacher Education Revision***

During the spring of 2017, the Technology Education Program at Rhode Island College began its participation in a school-wide curriculum revision -- "*Education (Re)Imagined.*" This effort started after the last Rhode Island Department of Education (RIDE) accreditation visit to the Feinstein School of Education and Human Development. Subsequently, discussions began on how to best prepare teacher candidates for the changing demographics in Rhode Island's schools. During the late spring and into the early summer, whole school meetings were held to address the preparation of teacher candidates to effectively teach with an emphasis on learner diversity. In an effort to move from the previous isolated attempts to address the complicated terrain that comes with the multicultural classroom, the redesign embraced an eagerness to develop classroom preparation strategies supported by field experiences in multicultural school settings. Often, during the breakout groups, programs reviewed program goals, their frameworks, sociopolitical structures, and ways that social justice could be reflected in our teacher education programs. In some ways, these were foreign concepts for a program that relied on skill building and preparing good teachers who would enter the Technology Education classroom. One facet of the program revision was to emulate the suggestions of early proponents of multicultural education; the faculty at RIC proposed to create a coherent program across the Feinstein School of Education and Human Development.

Assaf et.al. (2010) reported the following:

According to Darling-Hammond, Hammerness, Grossman, Rust, and Shul-man (2005) one way to make long-lasting changes in the way teacher candidates are prepared to work with diverse students is to create coherent programs where teacher educators build a shared vision of good teaching, use common standards of practice that guide and assess coursework and clinical work, and demonstrate shared knowledge and common beliefs about teaching and learning.

... In other words, creating a coherent multicultural teacher education program requires faculty members to strive for and identify a central focus for teacher learning, to be collectively responsible, and to have the opportunity to influence policies and practices.  
(p.116)

And so began the work of reimagining the programs in the Feinstein School of Education, an effort explicitly steered toward making multicultural education an integral part of everything that happens in the education enterprise (Gay, 2004). This includes insuring that Technology Education classroom management, lesson execution, and instructor/student interactions are grounded in social justice practices.

Furthermore, the course work enables teacher candidates to find identity and voice so that they are able to advocate for teaching and learning experiences that will enrich themselves and the students they will serve. This is particularly important as teacher candidates take on the work of teaching their own classes during student teaching. Examination of practice and reflection about the host cooperating teachers' methods are critical for the teacher candidate to seamlessly adapt to the new setting. However, with our revised program it is going to be necessary to incorporate new initiatives that may be foreign to a veteran Technology Education teacher, particularly someone who has not engaged in social justice and multicultural practices. College faculty members will need to examine their own practices and beliefs, too; for they must assist with the discussions between the cooperating teacher and teacher candidate that will create clearer understanding of what has been learned in other courses in the professional sequence. This three-way conversation, not only helps to clarify the teacher candidates' intentions in the classroom, but will ease tensions between a veteran and novice teachers when a novel instructional approach is used in place of a formerly standard practice. With collaboration of the supervising instructor and the cooperating teacher, the teacher candidate will develop confidence in the skills they develop, but also as a change agent in the school.

One of the cornerstones of the program revision is the use of clinical field experiences. There is a strong belief that teacher preparation programs must provide field experiences where students gain teaching experience, community knowledge, critical skills, and dispositions to work with diverse student populations (Bennett, 2013; Singer, et. al. 2010; Ukpokoda, 2007). The Technology Education program provides early field experiences for teacher candidates beginning in the first year of their academic careers. All education students begin their journey to learn the craft of teaching with enrollment in FNED 101. Here students are taught about teaching for social justice and are made aware of the critical skills required to teach in diverse settings.

Siwatu, et.al. (2011) encouraged authentic learning activities where students:

...engage in tasks that resemble those that they will encounter once they enter the teaching profession. In other words, prospective teachers need to be placed in real-world settings so that they can practice what they have learned in their teacher education courses. (p. 215)

Further they stated:

However, substituting the lecture-textbook method with opportunities for students to observe, examine, and analyze the practice of culturally responsive teaching may influence the development of preservice teacher's self-efficacy beliefs. (p. 216)

The program revision does not assume that other FSEHD courses will provide the experiences needed to assist with the preparation of the teacher candidate for the rigors of the classroom. Course sequencing plays a critical role in their development; essentially they have opportunities to observe, assist, and teach by the time they are sophomores. Each placement for field experiences is made with purpose and with a specific school location in mind. All the experiences are supervised and followed up with reporting out of field notes and a reflection piece describing what they encountered. In the early stages of the teacher candidates' career, learning theory and the practice of multicultural strategies is made more meaningful when it is enhanced with immersions in schools that are infused with strong culturally-diversity. Bennett (2013) suggested that these immersions not only benefit pre-service teachers' professional growth and enhance their learning, but teacher candidates learn about their own cultural identity, develop increased self-awareness, and gain awareness of their own biases.

During the field experiences teacher candidates develop their ability to deliver meaningful content and gain knowledge of their students and the community they are working in. Developing an understanding of their students’ experiences and lives outside the classroom will assist our students with insights of justice and equity in the community (Beaudry, 2015). With a wealth of qualitative and quantitative data about their students, teacher candidates can also develop more personal student centered lessons. It is in the methods and practicum courses that teacher candidates learn to use this data to assist student success in the classroom.

***What the Data Tells Us***

Faculty and teacher candidates use data from local and national sources to investigate the contextual factors of the school systems they teach in. The information gathered, sometimes eye opening, helps teacher candidates plan goals, assessment, and instructional strategies for their classes. The recognition that the school and community’s contextual factors, demographics, culture, learners’ abilities, socioeconomic status, etc., have instructional implications will lead teacher candidates to make appropriate instructional decisions using accepted methods or research-based practices that are geared toward the students they will teach.

Data sets, like those below are used across the education program at RIC to help students inform their practice. During practicum and student teaching, teacher candidates develop a Teacher Candidate Work Sample to create a portrait of the students they are teaching.

Poverty remains a problem across the state, and should not be perceived as solely an urban condition. Even with the use of the data sets, teacher candidates must understand that diversity comes in many forms; and poverty is just one of the many conditions that students in our public schools deal with every day. In a small state like RI, diversity may be found in ethnic and racial differences, geographic locations (coastal to rural), political affiliations, socioeconomic status, gender identity, and religious affiliations.

Language differences are also a challenge for students and teacher candidates alike. Hos and Papa (2019) reported that, “English learners (ELs) represent the fastest growing student population in Rhode Island. According to Rhode Island Department of Education’s student census, Rhode Island’s EL and minority population has grown from 9,683 students in 2012 to 13,593 students in 2017, a 40 percent increase over a five-year period.” Within the new methods and two practicum courses, teacher candidates are introduced to reading and writing strategies that connect student interest and culture with the lessons that are being taught. It was through visits to observation sites that it became abundantly clear that teachers’ inability to meet students’ linguistics differences adversely affected students socially and academically.

Our program revisions strive to make Technology Education teacher candidates more sensitive and respectful to the diversity they encounter in their classrooms and labs. With the use of data, considerate reflection about culture, analysis of one’s own beliefs, and instructional skills that support student success, teacher candidates can create classrooms that respect students’ self-worth and are caring for all.

***Rhode Island Data***

<p><b><i>Child Poverty</i></b></p> <ul style="list-style-type: none"> <li>• 17 percent of Rhode Island’s children were poor in 2016—a total of 35,106 children—and children of color were disproportionately poor.</li> <li>• 25 percent of Black, 27 percent of Hispanic and 11 percent of White children were poor.</li> </ul>	<p><b><i>Education:</i></b></p> <ul style="list-style-type: none"> <li>• 73 percent of Black, 80 percent of Hispanic and 50 percent of White 4<sup>th</sup> grade public school students could not read at grade level in 2015.</li> <li>• 85 percent of Black, 85 percent of Hispanic and 56 percent of White 8<sup>th</sup> grade public school students</li> </ul>	<p><b><i>Child Population:</i></b></p> <ul style="list-style-type: none"> <li>• 208,381 children lived in Rhode Island in 2016.</li> <li>• 41 percent were children of color: 7 percent were Black; 25 percent were Hispanic; 4 percent were Asian; and &lt;1 percent were</li> </ul>
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<ul style="list-style-type: none"> <li>• 8 percent of children were extremely poor (their family had income at less than half the poverty level).</li> <li>• 18 percent of children under 6 were poor.</li> </ul>	<p>could not read at grade level in 2015.</p> <ul style="list-style-type: none"> <li>• 77 percent of Black, 76 percent of Hispanic and 87 percent of White students graduated high school on time during 2014-2015.</li> <li>• 24 percent of Black, 21 percent of Hispanic and 11 percent of White public secondary students had at least one out-of-school suspension in 2011-2012.</li> </ul>	<p>American Indian/Alaska Native.</p>
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(From Children's Defense Fund 2017)

***US Education Data:***

- Most public school children cannot read or compute at grade level and children of color are particularly behind in educational achievement.
- In 2015 the majority of public school children in fourth and eighth grades could not read at grade level, including more than 75 percent of fourth and eighth grade Black, Hispanic and American Indian/Alaska Native public school students compared with less than 60 percent of White students.
- Less than 80 percent of Black, Hispanic and American Indian/Alaska Native public school students graduated on time during the 2014-2015 school year compared with 87 percent of White students.

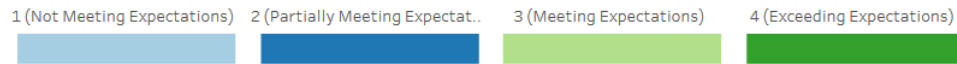
(From Children's Defense Fund, 2017)

# Rhode Island Achievement Scores

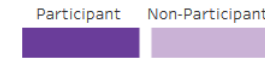
## 2017-18 State Assessment Data

The state assessments include RICAS (grades 3-8), SAT (grade 11), and DLM Alternate Assessments (grades 3-8, 11).

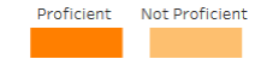
### Performance Level Legend



### Participation Legend



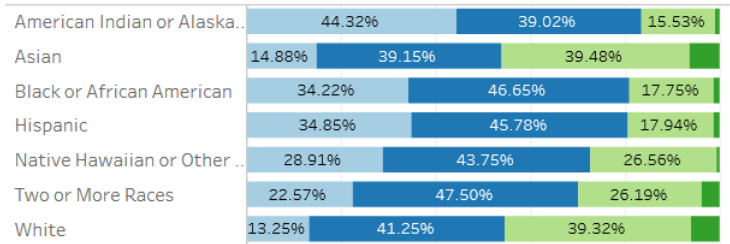
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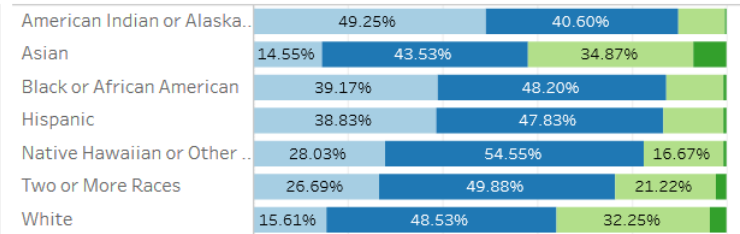
### ELA Performance in State Assessments

Subgroup: Race/Ethnicity



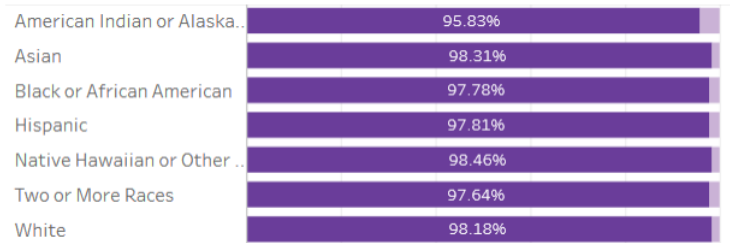
### Math Performance in State Assessments

Subgroup: Race/Ethnicity



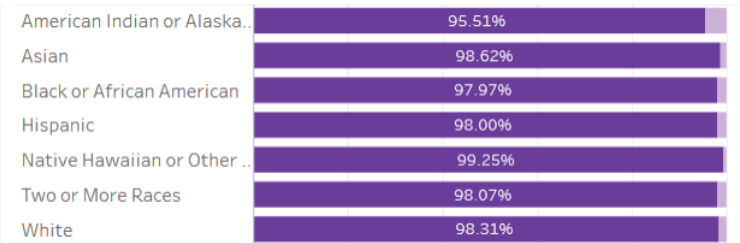
### ELA Participation in State Assessments

Subgroup: Race/Ethnicity



### Math Participation in State Assessments

Subgroup: Race/Ethnicity

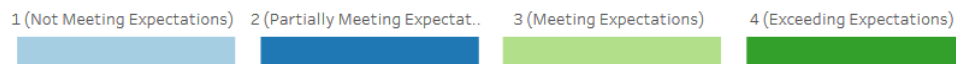


# ELL and Students with Intellectual Disabilities

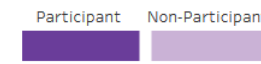
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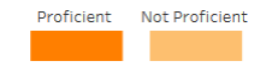
### Performance Level Legend



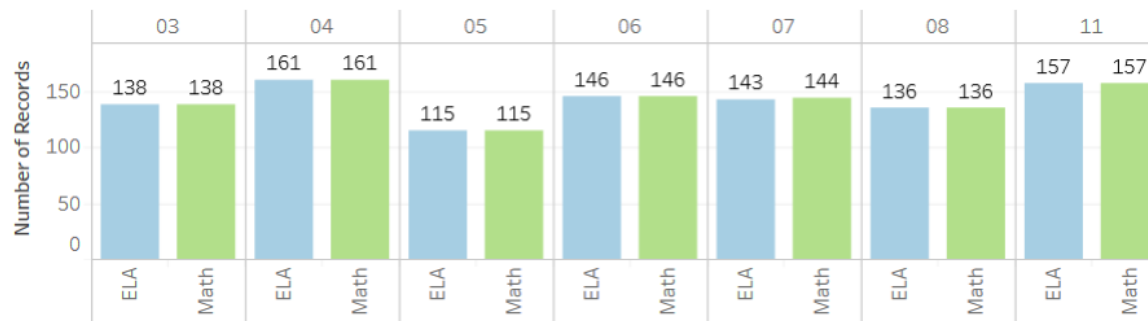
### Participation Legend



### Proficiency Level Legend



## Students Assessed with a DLM Alternate Assessment By Grade and Subject



Number of recently arrived English learners exempted from the reading/language arts assessments

696

English language proficiency of English language learners

95.99%

Data Source: Rhode Island State Assessments include RICAS, DLM Alternate Assessment and SAT. English language proficiency of English language learners is assessed with ACCESS or Alternate ACCESS

The state of education in Rhode Island is not good. The Providence school system, the largest in the state, was taken over by the Rhode Island Department of Education after a scathing report was released by the Johns Hopkins Institute for Education Policy. The report revealed chaos and dysfunction at every level of the school system. Lack of student achievement was painfully obvious, especially in the poorer schools where resources were spare and teacher morale was at an all-time low. However, these conditions might provide an opportunity for our students to become change agents within the system.

## **Revised and New Teacher Preparation Course Work**

Technology Education intended majors begin their pre-service journey in a newly revised course, TECH 305 Teaching and Learning in Technology Education. In this course students not only create lessons that acknowledge necessary accommodations for a range of student diversity, but they also make visits to schools in urban communities where we have established good collaborative efforts. The addition of this course puts teaching candidates out into the school community earlier than in the previous program of study. Students begin the process of observing, assisting, and then instructing in an academic and lab setting. This course work will be essential for our students to teach with a deeper understanding of their responsibilities to provide quality instruction enabling all students to have the chance to succeed. As teacher candidates begin to develop their own identities, it is with the hope that they will become non-judgmental and more sensitive to their students' diversity. Certainly, the teacher candidate, who is immersed in the diverse school community, should be given opportunities to observe and reflect on the challenges within the Technology Education classroom so that they have a chance to sort out difficult teaching and learning situations in order to rectify them when they arise in their own classrooms in the near future. Teacher candidates must develop reflective practices that engage them in a continuous process of improvement and conceptualize and deliver meaningful learning experiences for the diverse populations that attend our schools. The revision of the programs in the Feinstein School of Education and Human Development has made inroads toward that goal.

The following courses have been revised or created to better prepare our pre-service teacher candidates for the rigors of teaching Rhode Island's statistically and geographically growing populations of English Language learners, students with exceptionalities and other underrepresented populations, including LGBTQ students. The classes utilize both academic settings and field experiences in urban, urban ring, and suburban schools. All teacher candidates, including Technology Education students, must take the FNED 101 and 246, SPED 333, and TESOL 401 courses which are now common to the professional sequence across the Feinstein School. Students can earn Rhode Island Department of Education endorsements in Special Education or Teaching English as a Second Language when they complete SPED 433 or TESOL 402.

A description of the course work that has been added to the Technology Education program follows.

### ***Foundations of Education***

#### **FNED 101: Introduction to Teaching and Learning**

*Students construct a map for their journey of developing a professional educator identity. Students explore essential questions of social justice education through academic and field experiences.*

The FSEHD redesign preparation that supports early development of a teacher identity requires students to explore essential questions of social justice education through academic and field experiences. This course will provide these opportunities and will reflect discipline knowledge and learning consistent with teacher preparation programs across the country. At this early stage in development of a teacher identity, students will begin to examine how knowledge, beliefs, intentions, and practices about social justice can inform pedagogical approaches and practices in the classroom. Teaching about social justice matters to students and their teachers.

#### **FNED 246: Schooling for Social Justice**

*Students critically examine the purposes of schooling as a tool of oppression or liberation and the sociocultural forces that affect learning. Eighteen hours of clinical practice are required.*

FNED 246 is a four credit course that will build on the foundation of FNED 101, offering teacher candidates expanded opportunities to study education through a social justice lens. The newly designed course has the following distinctions:



1. Deeper exploration of TESOL and Special Education concepts
2. Description and interpretation of clinical observations
3. Explicit study of relevant RIDE Initiatives

### ***Special Education***

The Department of Special Education was charged with offering additional coursework to better prepare general educators for the social, emotional, and learning diversity inherent in all classrooms.

#### **SPED 333: Introduction to Special Education: Policies/Practices**

*Special education policies/practices will be addressed. General educator candidates explore specific teaching strategies and legal/ethical implications for working with students/families with exceptionalities.*

This course serves as the initial course in a two-course sequence (with SPED433) focused on policies/procedures in special education. Enrollment in a specific (non-special education) teaching program will be required.

#### **SPED 433: Special Education: Best practices and Applications**

*Primary learner characteristics guide lesson planning, instruction, and assessment to address the strength/needs of students with exceptionalities. Focused field experiences in special education are required.*

This course serves as the 2nd course in a two-course sequence (with SPED 333) focused on practical applications in special education. Enrollment in a specific (non-special education) teaching program will be required.

### ***Teaching English as a Second Language***

#### **TESOL 401: Introduction to Teaching Emergent Bilinguals**

*Students learn methods and techniques for supporting Emergent Bilingual students in regular education classrooms. Students experience observation and practice through early clinical preparation. Concurrent enrollment in a practicum is recommended.*

TESOL 401 introduces teaching candidates to material which will prepare them to understand and effectively teach emergent bilingual (ELL) students in regular education classrooms, including ELL student demographics and rights, program models, assessment, second language acquisition processes, and effective instructional practices.

#### **TESOL 402 Applications of Second Language Acquisition Theory**

*Students examine theories and research relating to second-language acquisition, which are examined from a pedagogical perspective. Emphasis is on variables affecting language learning and language teaching.*

TESOL 402 examines research and theory in second language acquisition and bilingualism. The course explores instructional, individual, group, linguistic, and contextual variables affecting emergent bilingual students' learning of language and academic content.

### ***Technology Education***

#### **TECH 305: Teaching and Learning in Technology Education**

*Students are introduced to the materials and skills that will assist them with the development of the formative abilities necessary to deliver effective instruction in (K-12) Technology Education programs.*

Teacher candidates will study the planning, methods, development of content and curriculum, and assessment skills necessary to become a successful teacher in the diverse Technology Education classroom. Major emphasis is focused on introducing the nature of the teaching/learning process, with emphasis on teaching emergent bilingual students and students with exceptionalities, introduction to research-based/best practice models of instruction, classroom management, learning environments and motivation to learn.

### ***Implications for Technology Education***

... "teacher educators themselves must engage in unflinching self-examination about underlying ideology in much the same way that they urge for teacher candidates" (p. 956).

The journey to prepare Technology Education teacher candidates for diverse classroom settings is a daunting challenge. This process made me grapple with my own belief system, unintentional biases, and worldview. It was uncomfortable, in a good way. It caused me to reflect on my own behaviors as a mentor to many teacher candidates. Rhode Island College's Technology Education teacher candidates come from all backgrounds and with different beliefs and interests. The program is mostly populated by young White middle class males who are technically competent. It is incumbent that cultural competency become part of the skill set required to teach in RI's public schools. How will they develop these cultural competencies?

During the course of the program revision I had many opportunities to have conversations with faculty who were already practitioners of social justice and multicultural education. Sometimes after these discussions, I felt that my attempts to make students aware of the challenges of teaching in diverse settings were woefully inadequate next to these champions of social justice and multiculturalism. During the last two years of the revision process, I read what was suggested by other faculty, observed classes that incorporated social justice strategies, and continued to discuss how to teach Technology Education teacher candidates so they could develop cultural competencies. The effort revealed that the revision required a review of our teaching competencies and methods. In this new and cohesive structure our former curriculum might not adequately meet the needs of our own teacher candidates as well as those of the students they would teach.

One hurdle to overcome was to learn how to examine our biases. How do they influence the way we think and act? Behaviors that may be unconscious and unintentional cause negativity and inequality need to be identified. It is an uncomfortable exercise for all.

#### *What Examples am I Setting?*

- What are my beliefs about diversity and learning?
- Am I modeling deficit perspectives?
- Am I reproducing social inequities in schools through my belief system and lack of explicitly addressing racism and discrimination in my courses?
- Am I creating stereotyping of diverse populations before TCs go to their placements?
- Have I done a good job helping students change their biases and attitudes about teaching in schools with diverse populations?
- Have I expressed the rich cultural heritage of diverse communities?

Hopefully, the combined efforts of the new course work and revised curriculum will provide teacher candidates with many opportunities to examine and recognize biases that would prevent them from supporting all students. It is critical that Technology Education teacher candidates engage with diverse school populations as often as possible. We use early career visitation to schools around the state and build on this practice all the way through student teaching. This practice enhance students' views of the communities they will work in and provides them a continuous view of the education landscape of RI.

The comprehensive and collaborative efforts of the FSEHD faculty to design and deliver cohesive programs with cultural competency, multicultural strategies, and social justice as foundations for learning to teach was a monumental effort. Teacher candidates will develop the required knowledge and skills to become great teachers who have the ability to recognize bias, stereotypes and inequity that hampers the teaching and learning process.

The implication for Technology Education at RIC is that, not only will our teacher candidates have a skill set to help all students meet or exceed expectations, but they will have empathy for their students and the necessary means to stamp out inequities in their classrooms.

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