Pre-Service Core Practices: Overview

2019

Research on Pre-Service Personnel Preparation

A meta-synthesis of high impact practices for preservice teacher professional preparation was prepared for ECPC through a formal contract with Pucket Institute (Dunst et al, 2018), to inform institutes of higher education (IHE) on faculty-related practices that have been found to increase university student learning outcomes. A total of 130 studies were included in the meta-synthesis, with a combined total of 3 million+ study participants. Findings from this analysis contribute to the improvement of pre-service outcomes by providing evidence of seven high impact faculty instructional practices that can be embedded into IHE policy, programs and faculty instruction that prepare personnel who work with children birth-5 years old. Ultimately, early childhood (EC) and early intervention (EI) pre-service educators who experience a range of faculty instructional practices are more likely to use instructional strategies within their own EC/EI classrooms and with their students.

The Purpose

The purpose of this brief is to share the findings, from the pre-service personnel preparation meta-analysis, to early childhood personnel who have interest, influence and/or planning responsibilities related to preparing high quality EC/EI professionals.

A meta-analysis is a study of the available research in which research findings are combined, statistically analyzed and then summarized. The findings can help IHE administrators, faculty members and students understand research-based practices that lead to higher quality pre-service EC/EI teacher education program, which in turn help new teachers to provide their EC/EI students with higher quality learning experiences.

Seven Evidence-Based Core Practices

The next seven At A Glance Series will share more in-depth information about the research-based practices and how to use them in preparation of highly qualified EC/EI educators. The seven categories of practices found to contribute to the improvement of pre-service preparation programs are:

1. **Student Field Experiences** describe experiences that teacher candidates have in order to practice their skills, including practicum experiences and student teaching.
2. **Teaching Methods of Instruction** describe the strategies IHE professors use to deliver instruction, including simulation activities and peer instruction.
3. **Clinical Supervision** includes direct observation of targeted skills and performance feedback during the clinically based experience.
4. **Faculty Coaching & Instructional Practices** describe the strategies of faculty coaching, mentoring, and just-in-time training.
5. **Course-Based Learning Practices** describe the instructional practices used by professors to deliver content to pre-service professionals. These include using case studies, problem-based learning experiences, and project-based learning.
6. **Web-Based and E-Learning Practices** describe the use of web-based learning tools and virtual learning experiences.
7. **Cooperative Learning Practices** describes learning opportunities, such as small group learning, peer tutoring, and peer instruction, that allow students work together to learn and practice their skills.

How Can This Information be Used?

Pre-Service Preparation Programs can:

- Evaluate coursework to determine if and how core practices are used within pre-service teacher preparation courses.
- Share the core practices with current faculty and adjunct faculty to enhance their knowledge base of evidence-based practices that support teacher candidate learning and achievement.
- Share with Doctoral Candidates to consider how the core practices can be used to design educational research.
- Use this information to consider pre-service teacher preparation program quality.

The Findings

Practices used in teacher preparation programs were categorized into 14 core practices. Each of the 14 core practices included a variety of strategies defining the details of the strategy. These details are explained in subsequent briefs. Practices were analyzed to identify which ones had the highest impact on helping pre-service teachers to learn and use the strategies to improve student learning. The findings identified that seven of the teacher preparation practices had very high and/or high impact, while the remaining seven were found to have medium to no impact, see table below.

Core Practices in Pre-service Teacher Preparation

Teacher Preparation Practices	Degree of Impact				
	Very High	High	Medium	Low	None
Clinically-Rich Field Experiences	X				
Teaching Methods of Instruction	X				
Clinical Supervision	X				
Faculty Coaching and Instructional Practices	X				
Course-Based Learning Practices		X			
Web-Based Learning Practices		X			
Cooperative Learning Practices		X			
Methods of Course Delivery			X		
School-Based Mentoring and Coaching			X		
Teacher Degree				X	
Teacher Certification				X	
Teacher Preparation Programs					X
Course Work					X
In-Field Certification					X

Why Are These Findings Important?

These findings describe the evidence-based practices that have the highest impact on student learning and outcomes. Embedding these practices into EC/EI teacher preparation programs means that teacher candidates will engage in a variety of high-quality learning experiences evidenced to have higher student learning outcomes. As a result of using these practices, EC/EI teacher candidates are more likely to use what they have learned in their programs of study to provide young children with high quality learning experiences; thus, improving the outcomes for children.

References

Dunst, C., Hamby, D., Howse, R., Wilkie, H., & Annas, K. (2019). Metasynthesis of preservice professional preparation and teacher education research studies, *Education Sciences*, 9(50), 1-36.

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Pre-Service Core Practice: #1 Student Field Experiences

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1. Student Field Experiences
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5. Course-Based Learning Practices
6. Web-Based & E-Learning Practices
7. Cooperative Learning Practices

What are Student Field Experiences?

Student field experiences are the preservice opportunities teacher candidates have that allow them to apply newly learned teaching strategies in the classroom with students.

These experiences include:

- Student teaching
- Practicum experiences
- Course-based field experiences
- Course-based service learning

How is it Measured?

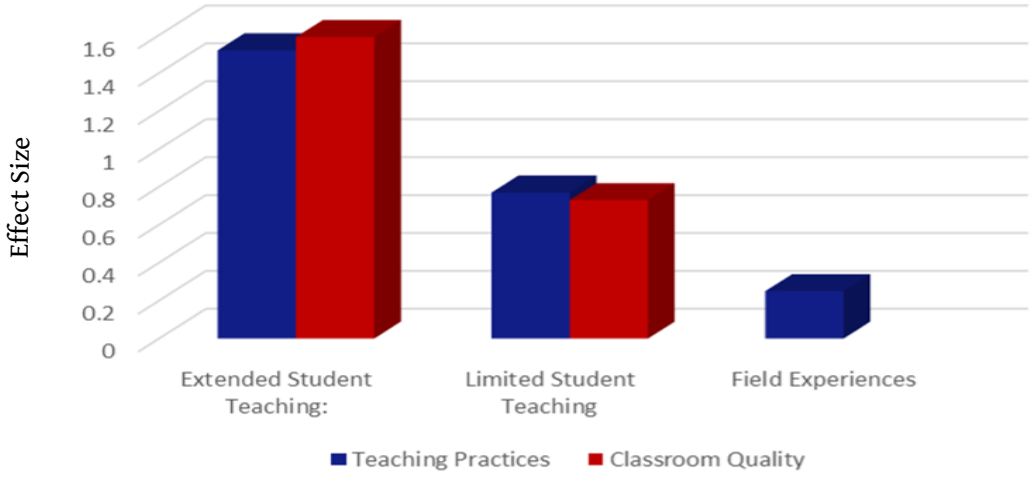
To examine the practice of Student Field Experiences, four meta-analyses and one survey were reviewed. These studies included a variation of field experiences such as a 10-week student teaching experience, service learning and course-based field experience. Outcome measures for this practice included teaching practices, university student and beginning teacher performance, and beliefs. Each of the studies reviewed for the Student Field Experience Practice utilized comparison models including, but not limited to, student teaching experiences vs. no student teaching experience and service learning compared to no field experience.

What did the Research Find?

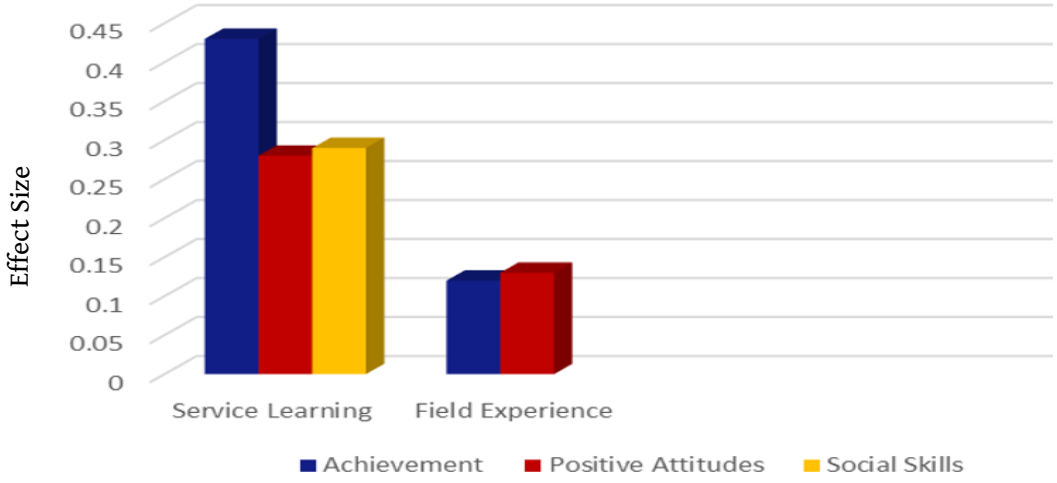
The results were clear:

- The more time students participated in field experiences, the more they used the teaching practices applied in their experience.
- Increased student teaching experience resulted in increased classroom quality.
- Service learning was shown to have 2 to 3 times greater effect on student outcomes than course-based learning experiences.
- Combined, service learning and course-based field experiences were associated with university student achievement, skill acquisition, and attitudes toward teaching (Dunst et al, 2019).
- Development of expert performance requires deliberate practice.

Relationship Between Types of Field Experiences and Teaching Practices



Relationship Between Types of Field Experiences and Student Outcomes



How Pre-service Preparation Programs Can Use this Information

Pre-Service Preparation Programs can:

- Ensure that all pre-service teacher preparation courses include opportunities for practicum experiences.
- Include service-based learning opportunities into the coursework of pre-service teachers.
- Create intentional course-based learning experiences allowing pre-service teachers to intentionally apply and use teaching practices taught in the coursework.

References

Dunst, C., Hamby, D., Howse, R., Wilkie, H., & Annas, K. (2019). Metasynthesis of preservice professional preparation and teacher education research studies, Education Sciences, 9(50), 1-36.

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Pre-Service Core Practice: #2 Teaching Methods of Instruction

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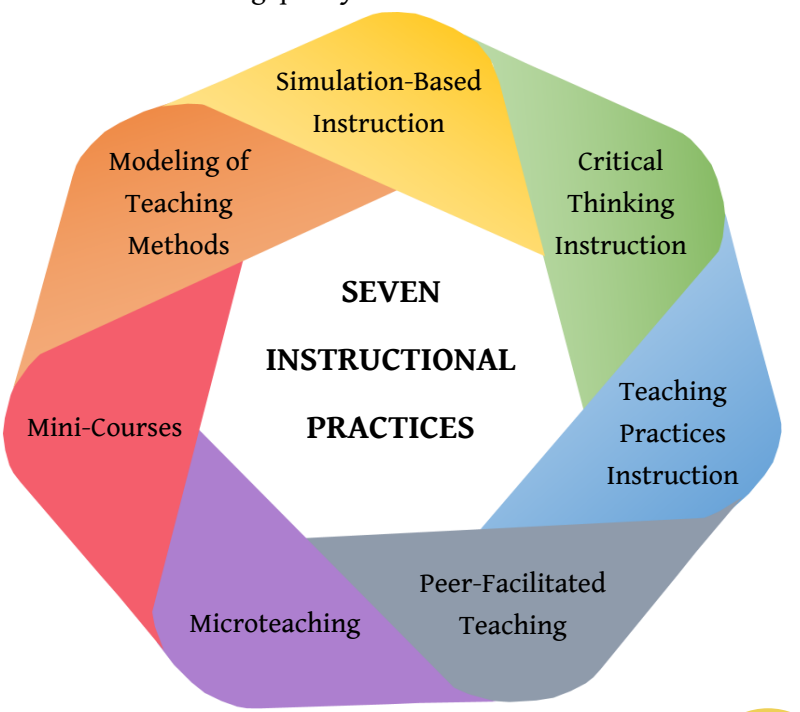
What is Teaching Methods of Instruction?

Teaching Methods of Instruction refers to the instructional techniques and strategies used by Institute of Higher Education (IHE) faculty in the classroom to improve student outcomes. Seven instructional practices were related to student teaching quality outcomes.



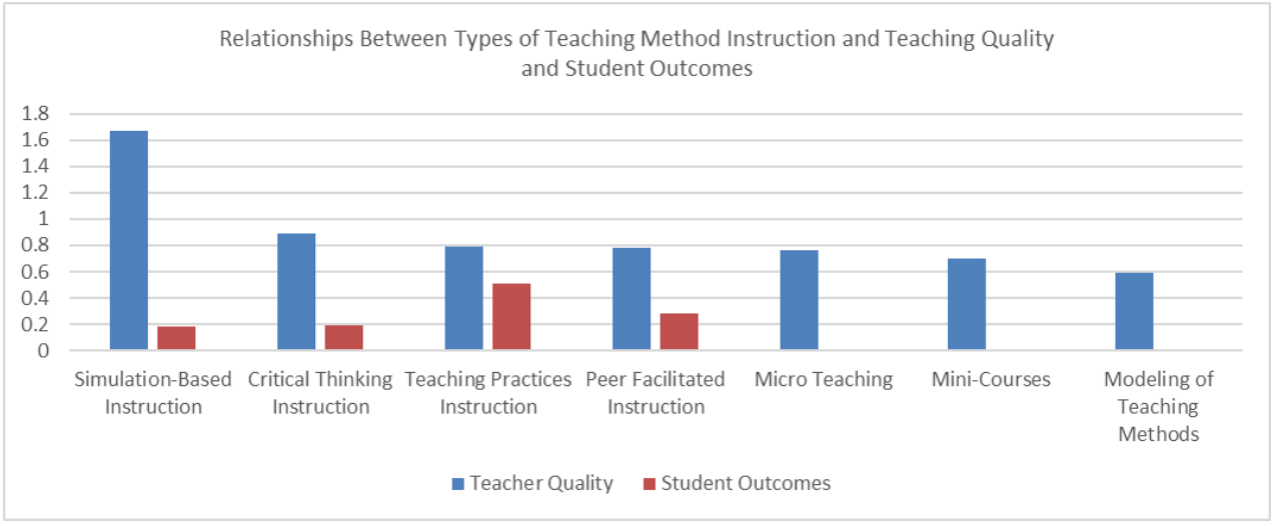
How Was it Measured?

Eight meta-analyses were examined to identify instructional practices used by faculty to influence students' knowledge and use of teaching practices during preservice coursework. Proxy measures for teaching method instruction, including simulation-based instruction and micro counseling, were included in the study due to a low number of meta-analyses located for pre-service teaching methodology. Instructional practices were measured to identify the relationship between types of teaching method instruction and teaching quality and student outcomes.

What Did the Research Find?

The results showed:

- ALL seven practices were related to student teaching quality outcomes.
- The most effective practice for increasing teaching quality was the use of simulation-based instruction with intentionally designed opportunities to improve students' clinical practice. Simulation-based instruction, without intentionally designed opportunities, had a smaller positive effect.
- Critical thinking instruction and simulation-based instruction had small effect sizes for increasing student knowledge and skill acquisition.
- All seven practices used explicit activities to teach students different types of instructional practices.



How Pre-Service Preparation Programs Can Use this Information

Pre-Service Preparation Programs can:

- Review coursework to determine if and how intentionally designed simulation-based instruction is used to deliver teaching practices content.
- Review coursework to identify how critical thinking instruction is used to deliver content.
- Provide IHE faculty resources and research to increase their use of different types of teaching methods.

References

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Pre-Service Core Practice: #3 Clinical Supervision

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What is Clinical Supervision?

Clinical Supervision for this meta-synthesis included studies investigating clinical supervision of graduate students in counseling programs and the performance feedback provided to undergraduate and graduate students.

How is it Measured?

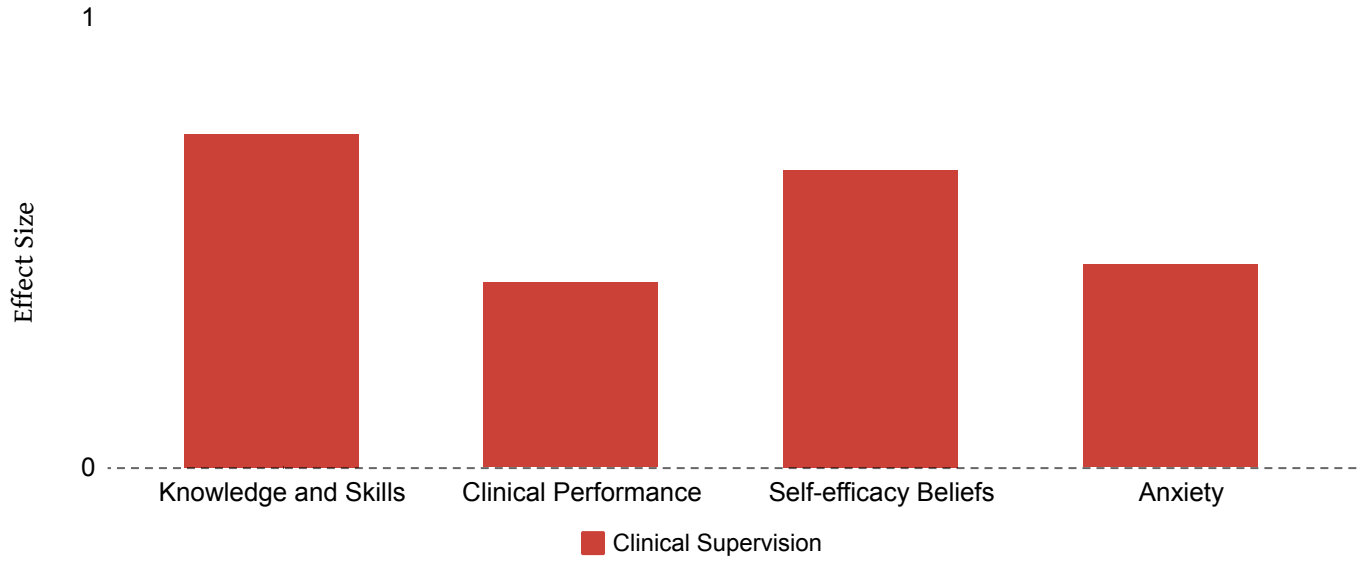
Three meta-analyses were located and used to examine the effect of clinical supervision and performance feedback. Graduate students in counseling programs were the focus of clinical supervision studies. Both graduate/ undergraduate students were the focus of studies measuring performance feedback used within clinical supervision. Student performance, self-efficacy beliefs and anxiety were used to measure the effects of these practices; both when used with students and when not used with students.

What did the Research Find?

The results showed:

- Undergraduate and graduate students increased their knowledge and skills when provided clinical supervision.
- Graduate students in counseling programs increased their professional performance and had increased self-efficacy related to personal clinical abilities when participating in clinical supervision.
- Graduate students engaged in clinical supervision reported an increase in anxiety.
- Performance feedback had positive outcomes when used with both undergraduate and graduate students.
- Undergraduate and graduate students also reported stronger self-efficacy beliefs related to their practice when receiving performance feedback.

Relationship Between Clinical Supervision and Related Practices and University Student Outcomes



How Pre-service Preparation Programs Can Use this Information

Pre-Service Preparation Programs can:

- Discuss with students the rationale of using clinical supervision to increase their knowledge and skills.
- Provide IHE faculty with knowledge and tools related to using performance feedback with students.
- Consider ways to mediate anxiety response from students when using clinical supervision with students.

References

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Pre-Service Core Practice: #4 Faculty Coaching and Instructional Practices

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What is Faculty Coaching and Instructional Practices?

Faculty coaching and instructional practice refers to the course-based interactions between faculty members and students. These interactions include in course coaching of students, student mentoring and the different types of feedback provided to give students guidance when learning teaching strategies.

How is it Measured?

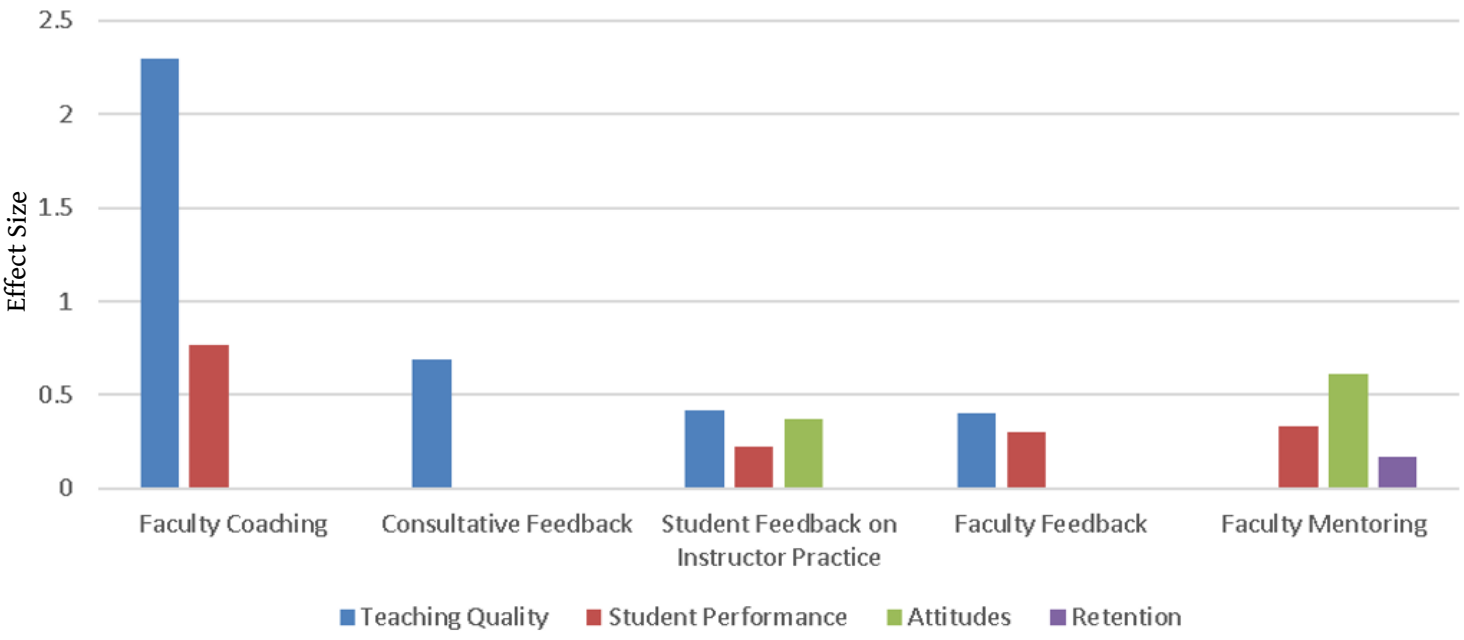
Twelve meta-analyses were reviewed to examine findings on the relationships between faculty practices and faculty-student interactions. Outcome measures included achievement, instructional practices and attitudes. One study included retention as an outcome measure. The measures for studies reviewed were based on student assessment of faculty performance.

What did the Research Find?

The results showed:

- Students reported the most positive judgments of faculty instructional practices when faculty used coaching as part of the classroom practice/course.
- Students positively rated faculty performance when faculty used one of three types of feedback in their instruction: consultative feedback, student feedback on faculty instruction and faculty feedback on student performance.
- University student performance was related to faculty coaching, faculty member mentoring, faculty feedback on student performance and student feedback on faculty member instruction.
- Student performance was more positive when students had positive faculty interactions.
- Students had more positive attitudes towards faculty instructional practices when faculty used mentoring student feedback on instructional practices.

Relationship Between Faculty Instructional Practices and Study Outcomes



How Pre-service Preparation Programs Can Use this Information

Pre-Service Preparation Programs can:

- Provide IHE faculty professional opportunities to learn about different types of feedback.
- Build ways for students to give instructors feedback on the strategies used during class time.
- Help IHE faculty to embed different types of feedback into coursework.
- Help IHE faculty to consider how they encourage positive faculty-student interactions by creating explicit opportunities to engage and promote student learning.
- Share research with IHE faculty demonstrating the importance of feedback, support, and guidance as factors for supporting student learning and achievement.

References

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Pre-Service Core Practice: #5 Course-Based Learning Practices

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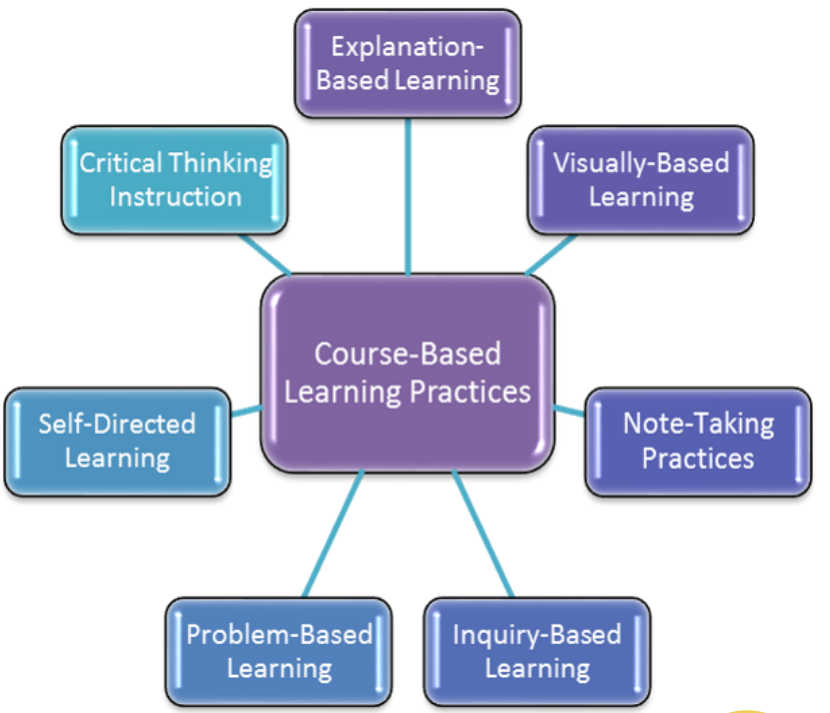
What are Course-Based Learning Practices?

Course-Based Learning Practices describe the instructional strategies used by faculty to engage pre-service professionals during face to face classroom experiences. This study examined the following seven types of course-based learning strategies:



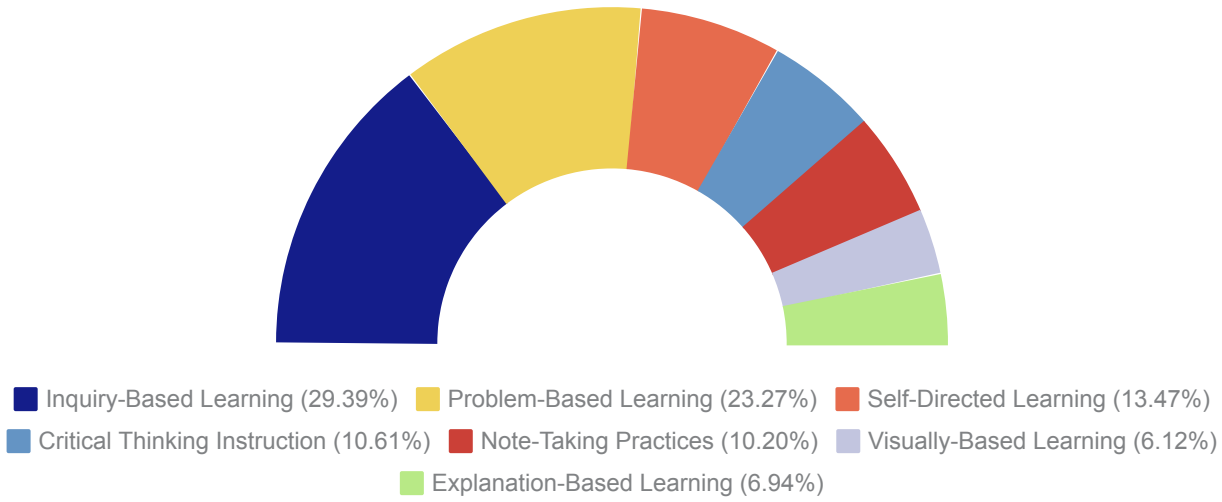
How Was it Measured?

These seven different types of learning methods were included in twenty-one meta-analyses that measured student performance and beliefs. Student performance was measured in a variety of ways including achievement, knowledge acquisition, and course grades. Student belief appraisals were examined by measuring self-efficacy beliefs and attitudes toward the learning practices of problem-based and visually-based learning.

What Did the Research Find?

The results showed:

- Inquiry-based learning, including discovery learning and project-based learning, had positive effects on the quality of teachers' use of teaching practices and on university student achievement.
- Compared to the other six strategies, inquiry-based learning had the largest impact on student learning.
- Problem-based learning, self-directed learning, critical thinking instruction and different types of note-taking all showed a small positive impact on student learning.
- Visually-based learning and explanation-based learning require less student engagement which could account for a low impact on student learning when these strategies were used.
- Problem-based learning was positively related to student belief appraisals.
- Visually-based learning experiences were related to negative student belief appraisals.



How Pre-service Preparation Programs Can Use this Information

Pre-Service Preparation Programs can:

- Work with IHE faculty to replace visually-based learning experiences with high impact inquiry-based learning experiences including discovery and project-based learning.
- Provide IHE faculty information on how to embed student learning experiences that include problem-based learning.
- Provide resources to students on different types of note-taking practices to be used in coursework.

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Pre-Service Core Practice: #6 Web-Based and E-Learning Instruction

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What is Web-Based and E-Learning Instruction?

Web-Based and E-Learning Instruction is any instruction delivered over the internet whether instructor-assisted or self-guided. There are many types of Web-Based and E-Learning Instruction, such as:

Virtual Reality Instruction	is a program using digital technology to imitate real life classrooms where student teachers can experience teaching in an interactive simulation.
Computer-Assisted Instruction (CAI)	is a self-directed format for students to use technology allowing them to practice skills, solve problems and engage in tutorials.
Information & Communication Technology Learning (ICT)	is the use of a variety of technology tools, such as internet browsers, electronic presentations, web pages and animation, to engage students in classroom instruction.
Intelligent Tutoring Instruction	is a computer system designed to provide customized instruction and feedback to students.
Technology-Assisted Instruction	is instruction that uses technology as the main feature used to deliver and present information to students.
Internet-Based Instruction	is when course information is presented using only an internet platform such as Blackboard or Sakai.

How Was it Measured?

Twenty-Eight meta-analyses were reviewed and resulted in the examination of six types of technology and e-learning instruction. The majority of studies compared the effects of technology instruction to traditional classroom instructional experiences on student outcomes.

What Did the Research Find?

The results showed:

- Virtual reality, ICT, CAI, and intelligent tutoring had greater effect sizes than technology assisted and internet-based instruction.
- Technology-based instructional practices had a favorable advantage compared to traditional instruction.
- Students had higher belief appraisals with technology-assisted, internet-based and computer-assisted instruction.
- Positive student achievement with ICT; however, students reported lower student belief appraisals.

How Pre-service Preparation Programs Can Use this Information

Pre-Service Preparation Programs can:

- Survey faculty regarding the types of technology used in coursework.
- Embed different types of technology to deliver and present coursework.
- Train IHE faculty to use virtual reality in the classroom to promote student practices of teaching strategies.

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Pre-Service Core Practices: #7 Cooperative Learning Practices

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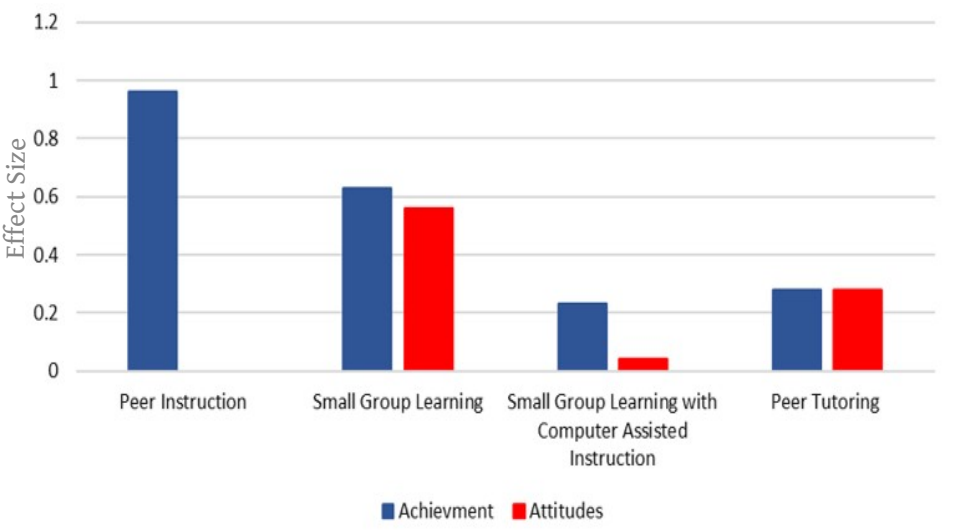
What are Cooperative Learning Practices?

Cooperative Learning Practices include the different types of instruction that allow students to work together to increase their knowledge and use of teaching practices. Cooperative Learning Practices include small group learning, peer tutoring, and peer instruction.

How is it Measured?

Cooperative Learning Practices were examined using fourteen meta-analyses in which the following groups were compared: small group learning to traditional classroom instruction/individual student instruction, peer tutoring to no peer tutoring, and peer instruction compared to faculty instruction. Outcome measures used in these studies included student achievement/performance and student attitudes toward cooperative learning.

Relationships Between Cooperative Learning Practices and University Student Outcomes



What Did the Research Find?

The results showed:

- Peer instruction, used during traditional classroom instruction, was found to have the most impact on student achievement.
- Peer tutoring was found to have positive outcomes related to student achievement.
- Positive attitudes and student performance were associated with small group learning experiences; however, small group learning with computer assisted instruction only had a positive impact on student achievement.
- Small group learning with computer-assisted instruction was not related to positive attitudes towards cooperative learning.
- Peer instruction and faculty instruction are equally effective for student knowledge and skill acquisition.

How Pre-service Preparation Programs Can Use this Information

Pre-Service Preparation Programs can:

- Ensure that faculty use peer instructional opportunities and small group experiences during their traditional classroom instruction.
- Create programs that allow students to engage in peer tutoring.
- Embed peer tutoring opportunities into pre-service preparation programs to increase student achievement.

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