

Unpacking High-Impact Instructional Practices and Student Engagement in a Preservice Teacher Preparation Program

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The literature on SoTL contains numerous studies examining the relationship between High-Impact Practices (HIPs) as adopted by the American Association of Colleges and Universities (AAC&U), student engagement, and student learning outcomes as measured on the National Survey of Student Engagement (NSSE). To further understand how these practices might affect student engagement and learning within college courses, this study examined the relationship between HIPs, reported student engagement and reported learning outcomes in a preservice teacher preparation program. Focus group interviews and a modified version of the NSSE survey were used to “unpack” how these practices related to student engagement and learning in five courses with 94 enrolled students. Major themes from the analyses included the importance of applied learning, collaborative assignments, understanding diverse points of view and constructive feedback on assignments as essential components of engagement and learning. Implications for teaching and future research were discussed.

The quality of undergraduate education in the U.S. has been part of the national debate on higher education reform for several decades (Arum & Roksa, 2011; Hu & McCormick, 2012; National Commission on the Future of Higher Education, 2006). Kuh (2008), a founder of Indiana’s Center for Postsecondary Research and the National Survey of Student Engagement (NSSE), has postulated that in order for students to achieve success in college, they need to experience at least two high-impact practices in their college career. NSSE assesses the extent to which college students are engaged in learning based on 42-survey items organized into five clusters of related student behaviors and experiences, such as level of academic challenge, collaborative learning, student-faculty interaction, educational experiences, and supportive campus environment (NSSE, 2004). The survey has been widely used and normed across a number of universities nationwide, and Kuh (2008) has identified several practices that seem to account for student engagement and learning. These high-impact practices, or HIPs, were adopted by the Association of American Colleges and Universities (AAC&U) over a decade ago as evidence of sound pedagogy in higher education. The AAC&U has served as a clearinghouse for research on the potential impact of instructional practices on student engagement and improved learning outcomes (Black, 2018; Brownell & Swaner, 2009; Coker, Heiser, Taylor, & Book, 2016; Finley & McNair, 2013; Hu & McCormick, 2012; Kilgo, Sheets, & Pascarella, 2015; Sandeen, 2012; Trosset & Weisler, 2018; Zilvinskis & Dumford, 2018; Zumbunn, Kim, Buhs, & Hawley, 2014).

The Scholarship of Teaching and Learning (SoTL) may be viewed as an effort undertaken by faculty, sometimes with student input, to conduct systematic inquiry about student learning, informed by prior inquiry, and then going public with the results (Center for Engaged Learning, 2014). The prior inquiry discussed in this paper points to evidence the HIPs that are the basis for this paper, when implemented with fidelity, can make a meaningful impact on student learning by promoting student engagement with their own learning. One of the main objectives of this study was to clarify ways in which HIPs might contribute to self-reported student engagement and learning in courses within a

teacher preservice teacher preparation program in which faculty had made intentional efforts to include HIPs as an important element of their instructional practices.

Kilgo, Sheets, and Pascarella (2015) contributed to the body of the existing literature by conducting a longitudinal, pretest/posttest design study based on the data from the Wabash National Student of Liberal Arts Education in order to investigate the relationship between high-impact practices and liberal arts educational outcomes. The initial study was conducted with 4,193 students from 17 institutions in 2006, with additional follow-up data collected in 2010 with 2,212 students. Consistent with the previous Kuh’s work (2008), the researchers found that active and collaborative learning and undergraduate research associated with highly positive effects on student learning and engagement. However, study abroad, internship, capstone experiences, and service-learning had minor positive effects, noting a need for future studies on these practices.

While the majority of research have been conducted with regular college students, Zilvinskis and Dumford (2018) also found a relationship between transfer status, student engagement, and participation in HIPs in the 2014 NSSE data from 22,994 senior students. They found that for transfer students, student-faculty interaction is an important determinant of whether or not they participate in HIP experiences. In addition, Sandeen (2012) discovered that online programs “seemed to do a better job at intentionally incorporating many high-impact practices” (p. 86) compared to the traditional professional continuing education environment where students are much older, have more than one degree, and work full time.

The HIPs adopted by the AAC&U are as follows: First-Year Seminars and Experiences, Common Intellectual Experiences, Learning Communities, Writing-Intensive Courses, Collaborative Assignments and Projects, Undergraduate Research, Diversity/Global Learning, Service Learning, Community-Based Learning, Internships, and Capstone Courses and Projects (Kuh, 2008). More recent research has provided evidence for what might be considered an eleventh high-impact practice -- the ePortfolio (Eynon & Gambino, 2017).

Kuh, O'Donnell and Schneider (2017) have also described eight “key features” of these practices that could account for improved student learning outcomes. These are:

- Performance expectations set at appropriately high levels
- Significant investment of concentrated effort by students over an extended period of time
- Interactions with faculty and peers about substantive matters
- Experiences with diversity, wherein students are exposed to and must contend with people and circumstances that differ from those with which students are familiar
- Frequent, timely, and constructive feedback
- Opportunities to discover relevance of learning through real-world applications
- Public demonstration of competence
- Periodic, structured opportunities to reflect and integrate learning. (Kuh et al., 2017, p. 11)

These features can be considered characteristics of “HIPs done well” (Kuh et al., 2017, p. 11) because of their impact on student engagement and learning. However, Hu and McCormick (2011) have postulated, “There is an urgent need for educational leaders and other practitioners to better understand college students and design effective policies and programs to enhance student learning outcomes and help students succeed” (p. 739).

Pedagogical Approaches in Teacher Education

In spite of the research support for the use of HIPs and important features of these practices in higher education, less is known about the way in which these features of pedagogy are represented in teacher education programs. The American Educational Research Association (AERA), in its panel report on research in teacher education, published by Cochran-Smith and Zeichner (2009), reported findings on pedagogical practices in teacher preparation programs as one of its nine topics of study. The report found that common elements of pedagogical practices in teacher preparation programs associated with improved learning outcomes included: 1) Use of *laboratory experiences* based on micro-teaching and computer simulations based on a behavioral approach, 2) Reliance on *case studies*, 3) Reliance on *video and hyper-media*, 4) Use of *portfolios*, and 5) Involving students in *practitioner research* (Cochran-Smith & Zeichner, 2009).

The practices listed above seem to incorporate several of the important features of HIPs. For example, use of laboratory experiences and case studies emphasizes applied learning. Use of video may also provide an opportunity to learn through observation of content applied in a real-world setting. As mentioned, portfolios were recently identified as the 11th HIP (Eynon & Gambino, 2017). Practitioner research is considered one of the HIPs, though the panel commented on the challenges posed by trying to incorporate meaningful research into teacher preparation courses. Nevertheless, the AERA panel review suggests the presence of several features of HIPs in pedagogical practices contained in teacher education programs (Cochran-Smith & Zeichner, 2009).

Another study of instructional methods used in teacher preparation programs supports the use of HIPs as an important component of effective pedagogy. The study, conducted with preservice language arts teachers in England, demonstrated a relationship between teaching research skills as part of a course

on writing methods and positive learning outcomes. Students reported their involvement in research was a significant learning experience (Medwell & Wray, 2014).

An alternative model, proposed by Desimone (2009), presents a different conceptual framework for evaluating the impact of preservice teacher education programs. This framework includes a *content focus, active learning, coherence, duration and collective participation*. However, a meta-analysis by Saylor and Johnson (2014) on the presence of these practices in teacher in-service programs indicated few programs contained all of these components in their programs. Rather, many programs extended their duration to include longer periods of reflective practice. Nevertheless, several of the areas proposed by Desimone share a conceptual link with important features of HIPs “done well.” However, while the framework provided by Desimone may serve as a convenient heuristic tool, the framework provided by Kuh, O'Donnell, and Reed (2013) has established a basis for the relationship between instructional practices, student engagement and learning outcomes, and is therefore the basis for this study.

CONCEPTUAL FRAMEWORK

This study used the conceptual framework suggested by Kuh et al. (2013) based on the research on high-impact practices for two reasons. First, there has been an established and still growing body of research supporting the notion that these practices are associated with student engagement and improved learning outcomes, especially among minority and first-generation college students. Second, without sound evidence that students in teacher preparation programs learn in substantially different ways from students in other areas of study, there is little reason to believe that HIPs would be any less effective in promoting learning and engagement. If these practices do in fact promote student engagement and learning across content areas, they should promote engagement and foster student learning in teacher preparation programs as well.

Kuh (2003) defined student engagement as “the time and energy students devote to educationally sound activities inside and outside of the classroom” (p. 24). Kuh (2009) asked the NSSE analyst team to take a closer look at these items in light of the original four NSSE scales (academic challenge, active and collaborative learning, student-faculty interaction, and supportive campus environment) and evaluate their relationship to certain self-reported learning gains, such as critical thinking, writing competence, and quantitative reasoning. The results were consistently positive, indicating that participating in any one of these activities was related to higher engagement levels and more robust learning outcomes (Pike & Kuh, 2005).

In this model, student engagement and learning outcomes are prompted by the aforementioned “HIPs done well”, and these characteristics are embodied in the eight features of quality instruction listed above (Kuh, 2008; Kuh et al., 2013). According to Kuh et al. (2013), what makes a HIP powerful is that all of these practices, when done well, promote high levels of student engagement in substantive tasks that are in turn associated with deeper learning.

While the research on HIPs has yielded a core base of evidence to support the effectiveness of these practices in promoting student engagement and learning outcomes, less is known about the ways in which they manifest themselves in teacher preparation programs. Little is also known about the

ways specific elements of course design and instructional practice relate to student engagement in learning in those programs. The present study examined the extent to which courses that contained identified elements and important features of high-impact practices contributed to student engagement in a preservice teacher education program. The following questions were addressed:

In what ways, if any, are high-impact practices as defined by the AAC&U evident in a sample of courses in teacher preparation programs in a College of Education?

Which elements of these practices seem to be most associated with student-reported engagement and learning?

METHODS

The present study employed a mixed methods design (Creswell, 2013). Mixed methods research in the social sciences has been gaining in popularity in recent years (Greene, 2007; Tashakkori & Teddlie, 2010). The approach used in the study was a concurrent transformative design, based on a typology of design approaches set forth by Creswell, Plano, Gutmann, and Hanson (2003). In this design, both qualitative and quantitative data are collected concurrently guided by the research questions and theoretical perspective of the study. The quantitative component was based on the modified NSSE survey completed by students to address levels of self-reported engagement in their coursework. The qualitative component involved the incorporation of focus group interviews to unpack the most critical features of high-impact practices.

A proposal was submitted to the Institutional Review Board of the participating institution and was approved prior to the start of the study. In addition, the principal investigators obtained permission to use and modify the NSSE instrument through a licensing agreement. Faculty from a College of Education were nominated by their Academic Unit Heads (AUHs) based on specific criteria from prior student evaluations and recommendations from their AUHs. Nominated faculty were invited to participate, and five faculty who accepted the invitation and who were also able to provide access to their students were included in the study. A total of 94 students in these courses completed the modified NSSE instrument and focus group interviews the same semester. Signed consent forms were obtained from all faculty and students prior to their participation. All of the faculty were White. Three of them self-identified as female, and two self-identified as male. The race and ethnic breakdown of the students is included in Table 1 below.

Table 1. Student Race and Ethnicity

Race/Ethnicity	Frequency	Percent
Missing	1	1.1
Asian	3	3.2
Black or African American	2	2.1
Hispanic or Latino	2	2.1
White	78	83.0
Other	2	2.1
More than one checked	6	6.4
Total	94	100.0

DATA COLLECTION

The data were derived from three sources. First, faculty were interviewed in focus groups and individually to gain insight into their instructional practices as they might relate to their use of HIPs. Second, students completed a modified version of the NSSE survey. Third, students participated in a follow-up focus group interview based on the survey items where they responded to questions about their self-reported engagement in the course. The faculty and student interviews were recorded, transcribed and coded by the investigators.

The modified NSSE survey consisted of 24 items based on student demographics, course practices, engagement and learning outcomes. Since the primary objective of the study was to examine student engagement as it related specifically to course practices and not broader campus activities and relationships, only those items that specifically pertained to academic coursework and instructional practices were retained.

In the original version of the NSSE survey, engagement themes and related indicators were developed through a combination of theory and statistical analysis. Items on the survey were evaluated using both qualitative and quantitative analyses. Those themes and related indicators were developed over an exhaustive two-year process that included cognitive interviews with students, pilot testing and analysis. A number of empirical procedures were used to assess reliability and validity of the measures. Statistical indicators included the use of factor analysis, principal component analysis, confirmatory analyses, reliability analyses, generalizability theory and item analysis theory (Center for Post-Secondary Research, 2019). The 24 retained items included several but not all of the engagement indicators represented on the original NSSE instrument.

Three out of the four engagement themes and seven of the 10 related indicators from the original NSSE survey were retained in the modified survey for analysis in this study:

1. *Academic Challenge*: related indicators included Higher Order Learning, Reflective and Integrative Learning, Learning Strategies and Quantitative Reasoning;
2. *Learning with Peers*: related indicators included Collaborative Learning and Discussion with Diverse Others;
3. *Experiences with Faculty*: related indicators included Effective Teaching Practices.

Faculty Interviews

We decided to first conduct focus group and individual interviews with faculty, since they were gatekeepers to their courses and would not only provide us with data but also develop a better understanding of the study objectives. These interviews enabled the researchers to hear what these faculty members had to say about the use of high-impact practices in their courses and how they perceived these practices affected their student engagement. Once the faculty focus group and follow-up individual interviews were completed, we were given permission to administer a survey to all students in their chosen course and conduct a focus group interview with these students immediately following the survey.

In the focus group, faculty completed a matrix defining each of the high-impact practices and then described in writing the extent to which they used a similar practice in their course. The researchers then asked the faculty questions designed to explore those practices further. For each practice, faculty indicated the practices used in the course and were asked to describe the

activities in as much detail as possible. Faculty had an opportunity to clarify or ask additional probing questions if needed. They were specifically asked to describe the anticipated effect the practice had on their students' engagement and how they assessed whether or not the practice had met their engagement objectives. Faculty were required to describe activities pertaining only to the course they were teaching from which students would also be surveyed and interviewed. The same core question was asked for each of the high-impact practices, and additional probing questions were used as needed. Not every high-impact practice was represented in the courses sampled in this study. The core question is listed below:

Please describe the ways in which you incorporate elements of (HIGH-IMPACT PRACTICE) in one or more of the courses you teach. Include the following in your description:

- Why you use this practice and/or consider it instructionally effective
- The relative amount of time devoted to this practice in your course(s)
- Anticipated engagement of students in response to this practice
- Reported feedback from students on the effect of this practice on their learning, if any
- Whether or not you consider this practice to be essential to the course, or whether you would consider an alternative practice in its place.

The focus group interview lasted approximately one hour and 15 minutes. Since this was not sufficient time to address all 10 of the practices, individual follow-up interviews were conducted with each of the faculty as well.

Faculty Interview Data Coding Procedures

The interview responses were transcribed by the researchers. They independently reviewed the transcript of the faculty focus group and coded the participants' responses using NVivo qualitative analysis software (NVivo, 2019). Each participant response was coded based on the central idea conveyed in the response (these are called "nodes" in the NVivo language) based on guidelines provided by Glaser and Strauss (1967). Some participant responses received more than one code depending on the length of the response and the complexity of the ideas contained in the response. The researchers then met to discuss the codes and adjusted the language of the codes until 100% agreement was reached.

The researchers then grouped the codes into larger code families based on similarity of content. These code families were grouped into themes that seemed to faithfully describe the participants' responses. A similar procedure was used to code the responses for the follow-up faculty interviews and the student focus group interviews. The analysis of faculty interviews yielded 61 "nodes," which were summarized into 10 themes.

The number of "nodes," the smallest unit of qualitative analysis, can be a numerical indicator of the relative importance of that idea or theme during the interviews. For example, if the researchers found a particular idea was being discussed more frequently than others, they would assign the code a higher number of times during the analysis of the transcripts. The number of "nodes" associated with each HIP practice and its related theme are reported for this purpose.

Student Surveys and Focus Group Interview Procedures

All students in the courses that were the subject of the faculty interviews were asked to complete the modified NSSE survey and participate in a follow-up focus group interview in their class setting. The survey administrations and follow-up focus group interviews were conducted by one or both of the authors. Once students completed the survey, the focus group interview immediately followed. During the interviews, students were asked to further explain the basis for their survey responses. The survey administrations lasted between 15 and 20 minutes, while the focus group interviews lasted between 30 and 45 minutes. An example of one of the student focus group questions is listed below.

Reflect on your responses to question 1. Of the activities or outcomes listed in the question, which, if any, did you find were most associated with your engagement with the course objectives and/or content? Please explain why.

Student responses in the interviews were summarized using a coding process similar to the one used to code the faculty interview responses to the questions about student engagement. This process produced 126 nodes and 18 themes. Since the students were discussing their responses to the survey items in the interviews instead of the HIPs themselves (as was the case during the faculty interviews), the number of nodes is reported for each theme instead of for each HIP as an indicator of the relative "strength" of that theme during the discussions.

Survey responses were analyzed using SPSS 25. Analyses included descriptive statistics and a Multiple Analysis of Variance (MANOVA) to determine potential differences between the five courses in student perceptions of the effects of instructional practices on the highest rated learning outcomes.

RESULTS

Faculty Interviews

The analysis of the faculty interview responses indicated there was evidence that six out of the 10 HIPs examined in the study were represented in the courses taught by the faculty in the sample. These included: Learning Communities, Writing Intensive Practices, Collaborative Assignments, Diversity and Global Learning, Service Learning, and Internships. The number of comments faculty made about each practice, which is represented by the number of "nodes" associated with the themes aligned with each practice, can be viewed as an indicator of the prevalence of that practice in these courses through a process of "quantizing" the qualitative data (Onwuegbuzie & Dickinson, 2008). For example, there were 16 nodes associated with the themes related to Internships, suggesting that Internships were the most commonly represented HIP in this sample. The HIPs and themes represented in the courses based on faculty input are described in Table 2.

The 10 themes identified in the analysis provided a more detailed look into the features associated with these practices. For example, faculty emphasized learning based on application rather than memorization, feedback was an integral part of writing assignments, assignments emphasized collaboration, and there was an ongoing connection between what was learned and future employment as a teacher.

High Impact Practice	Themes	Number of Nodes
Internships	Students apply classroom content in a supervised, job-related setting.	16
Collaborative Assignments	Grouping procedures should be intentional	11
	Collaboration enhances learning of course content	
Writing Intensive Practices	Writing assignments require ongoing revision and feedback.	10
	Writing assignments help prepare students for employment	
	Writing assignments are often collaborative	
Learning Communities	Content of courses is closely aligned with content of other courses in programs.	9
Diversity and Global Learning	Diverse cultural and economic factors impact student learning.	8
	Good instruction encourages and accepts diversity	
Service Learning	Service learning is an unstructured, career-related experience.	7

Grade Level	Frequency	Percent
Freshman	5	5.3
Sophomore	4	4.3
Junior	25	26.6
Senior	58	61.7
Graduate	1	1.1
Other	1	1.1
Total	94	100.0

Student Surveys

Student Class Level

In addition to the race/ethnicity data reported above, students were also asked to report their class level. Table 3 shows the relative percentages of students in each of the class levels in the sample.

As can be seen from the table, the vast majority of the students in the courses represented in the study were “upper-classmen” in their third or fourth years of college.

	Mean	Std. Deviation
Connected ideas to prior knowledge	3.57	.66
Learned something that changed understanding	3.36	.83
Understand views of others	3.25	.89
Connected learning to societal issues	3.15	.85
Included diverse perspectives	3.05	1.00
Examined strengths/weaknesses of own views	3.04	.97
Combined ideas from different courses	3.00	.88

Note: (N = 94; Rating scale: 4=Very often; 3=Often; 2=Sometimes; 1=Never)

Academic Challenge

The student survey data are presented based on the engagement themes and indicators identified through the empirical and thematic analyses conducted on the NSSE survey discussed above (Center for Postsecondary Research, 2019). Table 4 describes the results related to the theme of Academic Challenge and the indicator of Reflective and Integrative Learning.

Students reported engagement in a number of activities associated with reflective and integrative learning often or very often. The most frequently occurring of these was connecting ideas to prior knowledge. Other academically challenging activities reported by students to occur most frequently were learning something that changed their prior understanding, understanding diverse views, and connecting their learning to societal issues.

Table 5 provides the results on another engagement indicator related to Academic Challenge, use of Learning Strategies.

The most frequently reported learning strategy was identifying key information from reading.

	Mean	Std. Deviation
Identified key information from reading	3.42	.81
Summarized what you learned	2.91	.89
Reviewed notes after class	2.40	1.04

Note: (N = 94; Rating scale: 4=Very often; 3=Often; 2=Sometimes; 1=Never)

Table 6 provides students' reports of the ways in which they learned course material. These data reflect the theme of Academic Challenge as it relates to the indicator of Higher Order Learning.

Students reported often learning in ways typically associated with Bloom's higher levels of understanding (Anderson & Krathwohl, 2001). They indicated that learning based on applying facts, evaluating, developing new ideas, and analyzing ideas occurred often to very often in their courses. In contrast, learning based on memorization was reported occurring infrequently.

Item	Mean	Std. Deviation
Applying facts	3.34	.77
Analyzing ideas	3.29	.81
Forming new ideas	3.16	.85
Evaluating point of view	3.06	.96
Memorizing course material	1.72	.79

Note: (N = 94; Rating scale: 4 = Very often; 3 = Often; 2 = Sometimes; 1 = Never; Memorizing course material is not associated with higher order learning. It is included to show the contrast with higher order learning ratings of the other items.)

The fourth engagement indicator associated with Academic Challenge, Quantitative Reasoning, is reported in Table 7.

	Mean	Std. Deviation
Reached conclusions based on analysis of numerical data	2.69	1.10
Evaluated what others have concluded from numerical information	2.60	.95
Used numerical information to analyze problems	2.27	.99

Note: (N = 94; Rating scale: 4 = Very often; 3 = Often; 2 = Sometimes; 1 = Never)

Unlike the other two engagement indicators, students did not report their use of quantitative reasoning as an indicator of engagement in these courses. The means for the items related to that indicator suggested they occurred sometimes, but less than often.

Learning From Peers

Students reported considerable engagement based on collaborative learning activities involving working with their peers on assignments. Table 8 shows the data for the theme, Learning from Peers and the related engagement indicator, Collaborative Learning.

	Mean	Std. Deviation
Worked with other students on projects	3.48	.68
Explained course material to other students	2.69	.84
Asked another student to help understand	2.41	.77

Note: (N = 94; Rating scale: 4=Very often; 3=Often; 2=Sometimes; 1=Never)

Students reported that working with other students occurred often to very often. However, other indicators associated with learning from peers, such as explaining material to another student or seeking clarification from other students occurred somewhat less so.

Table 9 shows the results for the theme of Learning from Peers related to the Discussions with Diverse Others indicator.

Topic	Mean	Std. Deviation
Race or ethnicity	2.68	1.01
Economic background	2.83	.82
Religious beliefs	2.79	.91
Political views	2.60	.86

Note: (N = 94; Rating scale: 4=Very often; 3=Often; 2=Sometimes; 1=Never)

On average, discussions with diverse others was reported to occur between “sometimes” to “often.” The relative lower frequency of ratings on these items may be due to the racially and ethnically homogeneous nature of the sample. In interviews, students indicated that discussions with diverse others took place mainly when they went out into their schools during internship activities.

Experiences with Faculty

The NSSE survey measures two indicators related to interactions with faculty. One of these is based on relationships outside of the classroom and was not addressed in this study. The other, however, is based on classroom teaching practices and was of great interest in the study. Table 10 reports students’ ratings on items related

	Mean	Std. Deviation
Used examples or illustrations	3.68	.57
Provided feedback on tests	3.50	.74
Clearly explained course goals	3.41	.79
Course organized	3.41	.83
Provided feedback on work	3.36	.95

Note: (N = 94; Rating Scale: 4=Very much; 3=Quite a bit; 2=Some; 1=Very little)

to the theme, Experiences with Faculty and Effective Teaching Practices indicator.

Of all of the engagement indicators evaluated in this study, items related to the Effective Teaching Practices indicator were rated the highest as a whole. The lowest rated of the five items on this indicator received a mean rating of 3.36, and the highest a rating of 3.68. These are the items that reflect the features of “HIPs done well” (Kuh et al., 2013). Students reported that their faculty frequently used videos and illustrations, provided clear and consistent feedback, used clear goals and explanations, and delivered course material in a well-organized manner.

Analysis of Most Important Learning Outcomes

The analysis of survey responses indicated students considered *Acquiring Job Knowledge*, *Working Well with Others*, and *Thinking Critically* as the three most important learning outcomes in their courses. A MANOVA conducted to determine if these outcomes varied significantly from one course to the next suggested that while students in one of the courses (Course 2) rated *Job-Related Knowledge* and *Critical Thinking* somewhat lower, there were no other significant differences between the ratings of each course in students’ perceptions of the three most important learning outcomes. The means for each course on each of the learning outcomes are reported in Table 11.

Learning Outcome	Course	Mean	Std. Deviation	N
Thinking critically	1	3.04	1.02	21
	2	2.91	.90	23
	3	3.71	.46	21
	4	2.91	.95	13
	5	3.12	.62	16
Acquiring job knowledge	1	3.80	.40	21
	2	3.17	.89	23
	3	3.81	.40	21
	4	3.31	.75	13
	5	3.62	.72	16
Working well with others	1	3.71	.56	21
	2	3.52	.73	23
	3	3.48	.68	21
	4	3.15	.80	13
	5	3.75	.58	16

The results of the MANOVA are summarized in Table 12.

Tests of Between-Subjects Effects						
Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	Thinking critically	8.869 ^a	4	2.217	3.303	.014
	Acquiring job knowledge	6.934 ^b	4	1.734	4.028	.005
	Working well with others	3.375 ^c	4	.844	1.879	.121
a. R Squared = .129 (Adjusted R Squared = .090)						
b. R Squared = .153 (Adjusted R Squared = .115)						
c. R Squared = .078 (Adjusted R Squared = .036)						

Student Focus Group Interviews

The analyses of the responses students provided to questions about the NSSE survey, which took place immediately after completion of the survey for each course, helped confirm and “unpack” the basis for the survey ratings. The themes and number of nodes associated with each are reported in Table 13.

Table 13. Unpacking the NSSE Items: Student Focus Group Interview Themes and Number of Nodes

NSSE Item	Themes	Number of Nodes
Item 1: Course Practices	Applied course content to the real world	6
	Connected ideas from other courses or prior experience	3
	Activities were based on social/peer interactions	9
	Activities viewed from multiple perspectives	6
Item 2: Discussions with Others Different from You	Professor encouraged different points of view	3
	Familiar cohort helped level of comfort with different points of view	3
	Understanding different points of view helped frame culturally responsive teaching	6
	Understanding different points of view was challenging	4
	Uncategorized responses	4
Item 3: Ways of Learning	Applied learning emphasized	14
	Memorization de-emphasized	2
	Uncategorized	4
Item 4: Instructor Practices	Emphasis on videos, illustrations and example	8
	Extensive use of feedback	8
	Clearly explained expectations, objectives and assessments	3
	Uncategorized	3
Item 5: Learning Outcomes (Knowledge, Skills or Personal Development)	Ample opportunity to address real-world problems and acquire job-related knowledge	10
	Opportunities to teach and work effectively with others	2
	Uncategorized	1
Item 6: Intensive Writing Assignments	Writing is a tool for reflection	3
	Writing is a tool to organize thought and communicate in class	3
	Uncategorized	4
Question 7: Level of Challenge	Challenge is based upon application of content to teaching practices and future employment	19
Note: Total number of nodes = 128; Percent of nodes categorized into themes = 88%.		

Perhaps the most prevalent *big idea* reflected in the discussions of the students' interview responses, which can be seen in a number of the themes, is the importance of applied learning as an engagement tool. Discussions based on many of the survey items often revolved around this topic, as can be seen from the themes, *applied course content to the real world*, *applied learning emphasized*, *ample opportunity to address real-world problems and acquire job-related knowledge*, and *challenge is based upon application of content to teaching practices and future employment*. Of the 128 coded statements in the student interviews, 49, or 38%, revolved around the importance of applied knowledge as the basis for engagement and learning. A quote from one of the students illustrates this point:

...this class goes directly to what we all want to do in our future career, so that makes me want to work hard and do well because I know that this is stuff that I am going to have to do in the very near future. So, that makes me want to work hard and do well and clearly understand what I do... (Participant #3, Course 3)

Students also emphasized the importance of teaching practices that stressed timely and constructive feedback, as well as teaching methods that presented information in a variety of ways, such as through the use of videos, illustrations and examples. These two themes (11 and 12) accounted for an additional 13% of the total coded statements. A student illustrated this idea with the following point:

She is very transparent in her teaching so she tells you what she wants and how people have done it in the past and she provides examples from past semester. And if there is something that's difficult, she will try to demonstrate it to the best of her ability for us first and she provides feedback and she is just very ... she wants you to succeed and knows that the way to do that is by telling us what she wants out of an assignment or clarifying any misconceptions and giving you opportunities to do things a different way as long as she knows you are doing them a different way. (Participant #15, Course 2).

Students also raised the importance of viewing the course material from a variety of perspectives, even if those perspectives were different from their own, and even if seeing things from multiple points of view was a challenge. Discussions also pointed to the importance of the instructor's role in facilitating understanding of differences and the role of working with a familiar cohort played in accepting those different points of view. Discussions on these topics (themes 4, 5, 6, 7 and 8) accounted for an additional 17% of the coded statements. An example is provided in the following quote:

...like try[ing] to better understand someone else's views by imagining how the issue looks from their perspective was a helpful way to engage us because as teachers we're going to have lots of different students and lots of different perspectives on how you might address a problem and in this instance a math problem, so I feel like being able to understand someone else's point of view is a great way for use to be better teachers and that helped me engage because it's like a practical thing that I would want to implement in my classroom. (Participant #22, Course 3)

The value of working with peers in collaborative groups was also stressed during the discussions (themes 3 and 15). These ideas represented another 9% of the coded statements. An example is provided in the following statement:

...she put a very strong emphasis on working effectively with others. At one point, she told us how important it was to, even if when you are a teacher you are not always going to be best friends with your, whoever you are collaborating with, but it is important to know how to collaborate with that person even if it's not your best friend or the person you get along with the most but how important it is to adapt and to be available to work effectively with others regardless of differing opinions, beliefs, traditions. (Participant #20, Course 5)

DISCUSSION

The results from this study support the use of the high-impact practices adopted by the AAC&U (Kuh, 2008, 2009) as a conceptual model for assessing the potential effects of teaching and learning practices on student learning and engagement. Faculty in these preservice teacher preparation programs employed several features of “HIPs done well” (Kuh et al., 2013), and students responded with high levels of engagement and strong reported learning outcomes. While other models exist and have their merit, the results of this study support the conclusion that the reported benefits of HIPs implemented more broadly on college campuses, as measured by the NSSE survey, may extend to specific practices within courses in teacher preparation programs.

The faculty in the study described not only the broad categories of HIPs in their courses, but the essential instructional features of those activities as well (Kuh et al., 2013). The emphasis on applied learning as an important feature of a HIP was an essential component of the faculty’s teaching methods. Faculty also stressed the importance of feedback, understanding multiple points of view and presenting material in a variety of different ways as essential to their teaching. High-impact practices could be seen throughout their courses from the beginning to the end.

The expectation that these practices would engage students and contribute to learning outcomes was borne out in students’ responses to the modified NSSE survey. Students confirmed that their professors implemented teaching activities that actively engaged them and promoted their learning. The value of applied learning could not be overstated as it permeated virtually every discussion about their ratings in the focus groups.

Even though the student population was racially and ethnically homogeneous, students valued the way in which their professors encouraged understanding of diversity and understanding of positions different than their own. As teachers, their ability to respond to students who come from backgrounds different than their own is not only the “right thing to do,” but is imperative if they are going to teach them effectively. These students understood that they would need to step out of their own perspectives and views if they were going to be successful in teaching students from backgrounds other than their own.

As it pertains to diversity, it is worth noting that the issue of diversity, as discussed above and framed by the NSSE, is focused primarily on ethnicity and race. Teachers face other forms of diversity that can also impact on student engagement and learning. For example, the age and experience of the student can pose significant challenges to the teachers as they attempt to teach students with diverse levels of experience based on age. These differences, based on age alone, can significantly impact the ability of the student to connect and engage with the material. In addition to age, teachers increasingly face diversity in the form of disability and sexual identity that also affect engagement with the topic being taught.

The focus group interviews with students provided additional nuances that explained the basis for their engagement and learning. Writing assignments were short, feedback was immediate, and their writing was the basis for class discussion. Their writing served a purpose, which was to help them discuss what they had learned in an organized way in class. Students worked collaboratively and learned from each other perhaps as much as they learned from their teachers. Their ability to “publicly display competence,” an important feature of a high-impact practice, was

evident when they worked with each other in class as well as when they went to their internship placements.

This study contributes to the body of knowledge on high-impact practices and student engagement by opening a window into not only how HIPs can engage students in college courses, but how students in college teacher preparation can in turn use similar practices to engage their students by implementing similar practices they have seen modeled in their preservice teacher education programs. These preservice teachers will then be able to adopt many of these sound teaching practices themselves when they secure their own jobs as teachers.

While we observed that HIPs, and some of their best features, readily occurred in these courses, we cannot conclude a *causal* relationship between these practices and student engagement. Further study is needed. However, in the student interviews the students *claimed* that these practices directly accounted for their engagement and learning. This study provides evidence that looking at teacher preparation courses through the lens of high-impact practices can be a useful way of assessing and promoting student engagement and self-reported improved learning outcomes.

LIMITATIONS

As with any study, sample size and demographics can limit the generalizability of findings, and we should be careful to not extrapolate to other educational settings where these results may not apply. For example, the student sample was almost exclusively white and female, and largely third- and fourth-year students. These, more experienced students, may be better prepared, because of their foundational knowledge obtained previously, to apply the knowledge they have learned and display the teaching skills they have acquired. For new students, a reliance on application and demonstration of skills could be potentially risky because students have not acquired the foundational skills and self-confidence to take advantage of learning in these ways.

Second, the courses studied here, which are a part of preservice teacher education programs, have built-in internship components that highlighted the value of applied learning. These applications would have been harder to observe in courses that did not have those internship components.

Finally, this study does not address what might be considered the ultimate “litmus test” of the impact of HIPs on learning, which is the extent to which the students in this study adopted one or more of these practices in their own teaching. A study that assesses the extent to which teachers who are exposed to HIPs while in preservice teacher education programs use these practices in their own teaching and impact their own students’ learning in measurable ways would be an important goal for further study. This would be an excellent topic for further study under SoTL.

AREAS FOR FURTHER RESEARCH

The authors would like to encourage other researchers to pursue further inquiry into teacher education programs that explore specific features of high-impact practices in further detail. For example, what are the elements of feedback that engage students the most, and how can it be provided to maximize learning? Similarly, how can collaborative assignments be designed in teacher preparation programs to maximize engagement? For example, in what situations might jigsaw activities be effective compared to other types of grouping methods? In what ways do these differ-

ent grouping methods need to be differentiated depending on student characteristics?

We hope to be able to address these and other areas for future research by extending this research to include faculty who teach different content areas in other preservice teacher preparation programs. Expanding this research to include a wider sample of faculty and students may help determine the applicability and generalizability of these findings.

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