Measuring Transformational Learning in Faculty Development Programs

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ABSTRACT: Research in higher education indicates that professional development programs can serve as catalysts for moving institutions from a teaching to a learning-focused paradigm. Research also indicates that new faculty as well as junior scientists or graduate students are particularly open to exploring new approaches to teaching and many academic development programs target junior colleagues

In this paper, we present preliminary results from a study designed to measure the impact of two such programs: a large-scale new faculty program of University of Virginia and a certificate program at Bielefeld University. The study adds nuance to the research on course design institutes and learning communities by investigating the degree to which our different interventions change teaching beliefs, self-efficacy and course design practices. We will briefly describe the structure of our two programs and describe the assessment tools we used to measure impact, including (a) a rubric to measure the learning-focus of syllabi and (b) pre-and post-surveys that examine changes in beliefs and self-efficacy. Overall, our findings suggest that although the cultural contexts differ both programs are effective in helping instructors adopt a more learning-focused approach to teaching. Finally, we will discuss limitations of the study and suggest avenues for further research.

1 PREPARING THE NEXT GENERATION OF FACULTY FOR LEARNING-FOCUSED TEACHING

Research on academic development indicates that professional development programs can serve as catalysts for transforming college teaching and move instructors from focusing on content and coverage to focusing on students' learning (Barr & Tagg, 1995). This is particularly true for interventions that are sustained over a period of time, such as learning communities and multi-day course design workshops. Although they may differ in length and intensity, most interventions focused on course design draw on the research on backward and integrated course design (Fink, 2013; Wiggins & McTighe, 2005), educative assessment (Huba & Freed, 2000; Wiggins, 1998), active learning (Bonwell & Eison, 1991), and student motivation (Schunk, Pintrich & Meece, 2007; Svinicki, 2004). The main goals of these interventions are to help instructors adopt evidence-based teaching practices and move from a content-focused to a learning-focused approach to teaching.

Research also shows that efforts focused on future and new faculty have the potential of being more impactful than those aiming to change the practices of more established colleagues (Gibbs & Coffey, 2004; Ebert-May et al., 2011). In addition, some institutions are currently experiencing a significant generational turnover. Therefore, focusing on new faculty new, offers academic developers with the opportunity to effect large scale change.

This paper reports on the assessment of two interventions aiming to prepare the next generation of college teachers in different cultural contexts: the Certificate Program of Higher Education of Bielefeld University (Bielefeld U), Germany and the Ignite Program of the University of Virginia (UVA), USA. Both educational development interventions include course design as a central building block. They both rest on the belief that course design is an excellent vehicle for participants to apply what they learn about teaching to their work in the classroom and translate learning-focused beliefs into the design of a new course (Blumberg, 2009; Diamond, 2011; Fink, 2013; Hansen, 2012).

In Bielefeld U's certificate program, course design is the first of three modules. It is the program's foundational module (35 contact hours) stretched over the course of a semester (Riewerts, Paulsteiner-

Doms & Weiß, 2016)[1]. Likewise, course design is a central part of UVA's year-long Ignite Program which begins with an intensive, week-long Course Design Institute (35 contact hours). The Institute is followed by a half-day retreat and monthly learning community meetings yielding a program total of 51 contact hours. Although the focus on course design is shared, it is important to note that UVA's Ignite and Bielefeld U's certificate program vary in intensity and length (51 vs. 120 contact hours total, and one year vs. two years on average, respectively) and number of participants (approximately 32 vs. 15 per cohort).

Established in 2010, Bielefeld U's certificate program is open to faculty in all career stages, but mainly attracts faculty with 0-3 years of teaching experience. To date, 43 faculty have completed the Bielefeld program successfully, 71 are at present active in one of the modules. Established in 2015, the Ignite program also targets all faculty, regardless of career stage, who are within their first three years of teaching at UVA. With an annual cohort of about 35 faculty, close to 70 faculty have participated in the Ignite Program so far.

1.1 Designing Learning-Focused Courses

The overall goals of both programs are for participants to learn to teach well by applying basic theories of student learning and motivation, become reflective practitioners, and appreciate and harness student perspectives. The foundational, hands-on course design modules at Bielefeld and Virginia introduce participants to the principles of integrated backward design (Fink, 2013). Participants generate significant learning goals and measurable objectives, create educative assessments with frequent formative feedback opportunities, and design learning activities that give students practice at the skills, knowledge and attitudes instructors seek to foster. When mapping their learning goals onto Fink's taxonomy of significant learning (Fink, 2013, p. 83), participants realize that in order to achieve their goals they need to consider motivational aspects and engage not only the cognitive domain but also affective and self-directed learning domains of the learners.

Throughout this design process, instructors at UVA and Bielefeld U translate their design decisions into a promising, learning-focused syllabus (Bain, 2004). Learning-focused syllabi are here understood as documents that are written primarily for students with the goal to motivate deep learning and to provide guidance for how to be successful in the course. Learning-focused syllabi stand in contrast to content-focused syllabi which have been the standard in US higher education for many decades. As required documents for departmental curriculum approval processes and record-keeping purposes (Parkes & Harris, 2002; Slattery & Carlson, 2005), content-focused syllabi in the US typically include a course description, course requirements, policies, and a schedule of topics. In recent years, learning-focused syllabi have gained in popularity. In addition to the elements of the content-focused syllabus, learning-focused syllabi include course goals, measurable learning objectives and evaluation criteria, as well as information about resources for students' success. As a guiding document for students, learning-focused syllabi address students directly and are written in an inclusive and engaging language and tone.

Whereas syllabi are obligatory in the US, most German instructors are unfamiliar with the idea of writing more than a short commentary for the university calendar (*Vorlesungsverzeichnis*). This and other cultural differences in the German and US higher education systems affect participants' understanding of learning-focused course design principles and concepts such as learning goals and objectives, rubrics, summative and formative assessment, etc. These differences affect the way that syllabi are introduced, created, and assessed (Bach, Weiß, Inkelas & Riewerts, 2016).

2 ASSESSMENT AND RESULTS

To evaluate the impact of Bielefeld U's certificate program and UVA's Ignite, we used a number of assessment tools. In this paper, we focus on the analysis of participant-created syllabi and participants' teaching beliefs and confidence with classroom practices (self-efficacy). For Bielefeld U, we analysed data from the 5th (2014-15; 14 participants) and 6th (2015-16; 13 participants) cohorts; for the syllabus analysis we also include data from the 7th cohort (2016-17; 14 participants). To date, UVA has had two cohorts of new faculty in the Ignite Program (2015-16 and 2016-17). The data reported here pertains to the 2015-16 Ignite cohort which was comprised of 32 faculty members.

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[1] http//www.uni-bielefeld.de/pep/zertifikat [21.04.2017]

2.1 Syllabus Rubric

To analyse participants' syllabi, we used a syllabus rubric (Palmer, Bach & Streifer, 2014a, b). The valid and reliable rubric measures where a syllabus falls on a continuum between content-focused and learning-focused teaching. The full syllabus rubric is organized around five large-scale criteria: (1) learning goals and objectives, (2) assessment activities, (3) learning activities, (4) schedule, and (5) overall learning environment, which includes a syllabus' tone, promise, and inclusivity. These large-scale criteria are broken down in 16 components and are scored on the strength of supporting evidence, the maximum score being 58. On the 58-point range of the full rubric scores between 0 and 18 designate a content-focused, scores between 19 and 40 a transitional and scores between 41 and 58 a learning-focused syllabus (Palmer et. al., 2014a, b).

Since the emphasis in the course design workshops at Bielefeld U lies on encouraging participants to develop and apply learning-focused activities, we used the complete rubric to assess the syllabi, including the criteria for learning activities. The maximum score on this scale is 58. In contrast, for UVA's Ignite program we concentrated on the five main criteria and did not score the learning activities. The maximum score possible then is 46. On this 46-point scale we categorize syllabi based on the following ranges as content-focused: 0-16, as transitional: 17-30, and as learning-focused: 31-46 (Palmer et. al., 2014a, b).

Because syllabi are not widespread in Germany, most participants in the Bielefeld program were introduced to the concept during the course design workshop. For most participants, it was the first time writing a full syllabus. Therefore, a pre-, post-program comparison between syllabi was not possible and the Bielefeld data shows only results for the syllabi that participants completed after the basic module (see *Fig. 1*). At Bielefeld U most of the syllabi are in the transitional state, but there is also a considerable number of syllabi rated as learning-focused.
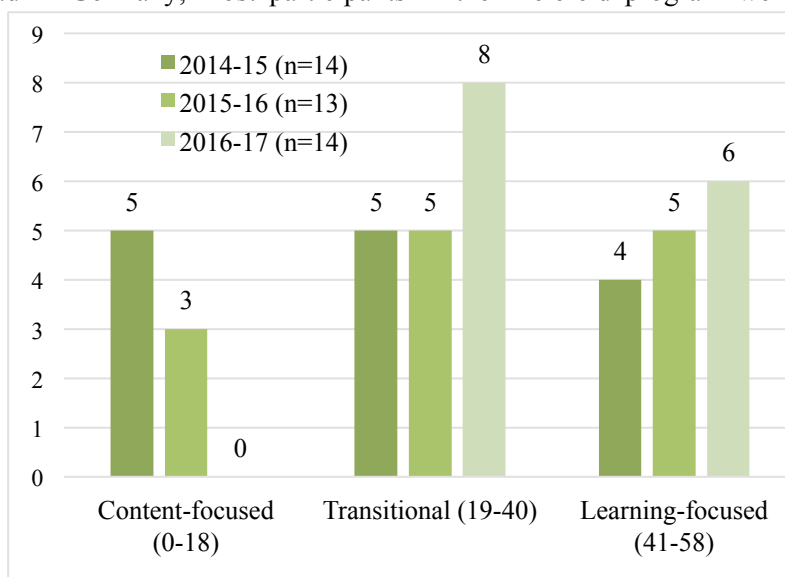

Fig. 1. Frequencies of syllabi rated as content-focused, transitional or learning-focused for the Bielefeld U cohorts

For UVA's cohort, we scored course syllabi produced by participants before they started the program (pre) and syllabi produced during and after the week-long Course Design Institute (CDI) (post). A total of 40 syllabi (11 pre and 29 post) were used in the analysis and there were 9 syllabi with pre and post matches (see *Fig. 2*).

The results show that the Ignite program was successful in helping faculty design more learning-focused syllabi. They confirm findings from a larger study comparing 54 pre-/post-Course Design Institute (CDI) syllabi pairs (108 syllabi) (Palmer, Streifer & Williams-Duncan, 2016).

Fig. 2. Frequencies of syllabi rated as content-focused, transitional or learning-focused for the 2015-16 UVA cohort of the Ignite Program (pre and post the course design institute)
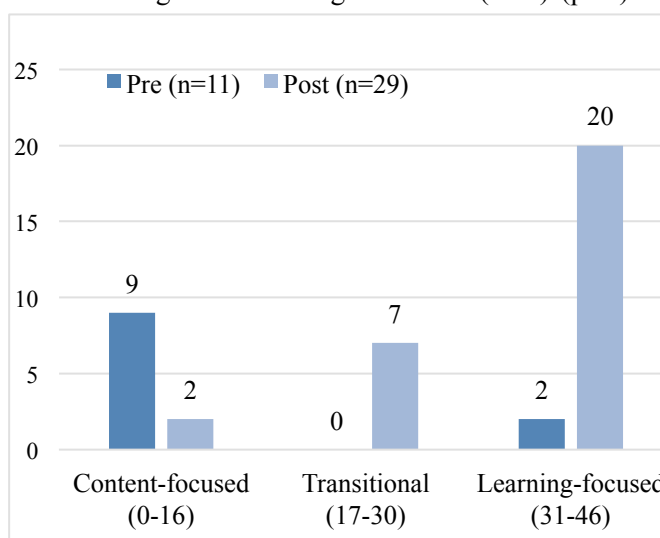
2.3 Teaching Beliefs and Confidence with Classroom Practices

To evaluate participants' teaching beliefs, we asked participants to complete the Revised Approaches to Teaching Inventory (ATI-R; Trigwell & Prosser, 2004; Trigwell et al., 2005). They also completed the Teaching Appraisal Inventory (TAI; adapted from Balam, 2006) for perceived confidence in certain teaching practices (self-efficacy). The TAI was used for the 5th and 6th cohort of the Bielefeld certificate program, the ATI-R only for the 6th. Both tests were applied before the basic module started (pre) and after finishing the basic module on course design (post). For the 2015-16 cohort of UVA's Ignite program the TAI and the ATI were applied at three points of time: before the program (PreIgnite), after the course design institute (PostCDI) and at the end of the program (PostIgnite).

2.3.1 *Results of the Approaches to Teaching Inventory (ATI-R)*

This inventory is designed to explore a dimension of the way that academics go about teaching in a specific context. The German version (Lübeck, 2009, 2010) asks respondents to answer the items with a concrete course in mind. In the English version, the survey gives respondents a choice to answer with either a specific course or their subject in mind. Participants rate statements on a scale of 1 (only rarely) to 5 (almost always) depending how often they apply a particular teaching approach in their course (or subject).

Responses on each item were combined into two subcategory scores: Information Transfer/Teacher-Focused (ITTF: e.g. "I present material to enable students to build up an information base in this subject.") and Conceptual Change/Student-Focused (CCSF: e.g. "In teaching sessions for this subject, I deliberately provoke debate and discussion."). Thus, for each subcategory a maximum score of 55 is possible.

At Bielefeld U 9 of the 15 participants of the 6th cohort answered the pre- and the post-test. As *Fig. 3* shows, teacher-focused (ITTF) as well as student-focused scores (CCSF) increased marginally after the course design workshops.

AT UVA 9 of the 32 participants answered the pre- and the post-test. Teacher-focused scores (ITTF) increased slightly and the student-focused scores (CCSF) increased considerably (see *Fig. 4*). CCSF scores showed a difference between PreProgram scores and PostIgnite scores, but little difference between PostCDI and PostIgnite. These results indicate that participation in initial course design institute explains most of the change. Overall, we conclude that Ignite helps instructors employ more learning-focused approaches in their classrooms.
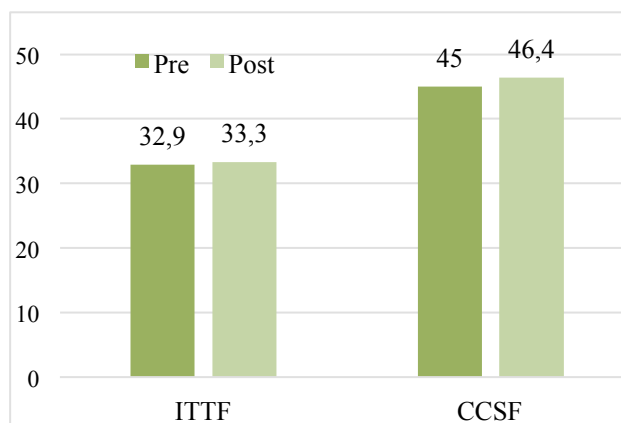

Fig. 3. Mean scores for the ITTF and the CCSF subcategories in the ATI-R before (Pre) and after (Post) the basic module of the Bielefeld U certificate (6th cohort 2015-16)

In contrast, at Bielefeld both approaches seem to be strengthened by attending the course design workshops. It is also remarkable that the mean score for the CCSF subcategory was already very high and higher as the score for the ITTF subcategory before the program started.

Due to the small sample-size of the post-test (n=9 for Bielefeld and n=9 for Virginia), we were not able to determine statistical significance.

Fig. 4. Mean scores for the ITTF and the CCSF subcategories in the ATI-R before the Ignite program (PreProgram), after the Course Design Institute (PostCDI) and after the complete Ignite program (PostIgnite) at UVA (cohort 2015-16)
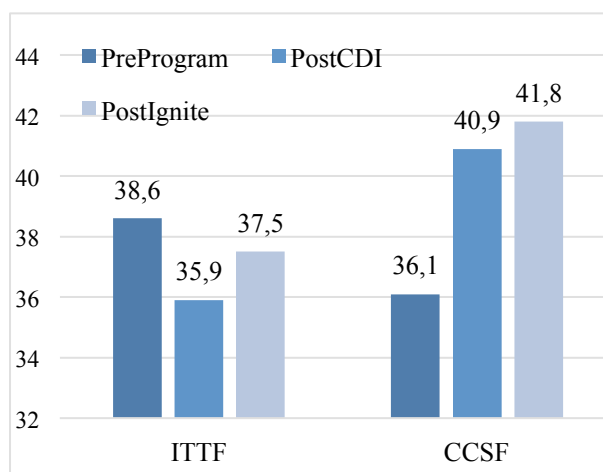
2.3.2   Results of the Teaching Appraisal Inventory (TAI)

The TAI asks participants to indicate on a scale of 1 to 7 how confident they felt about employing different teaching practices (e.g. confidence in integrating different techniques to assess students' learning vs. confidence in keeping the class on task during class periods). For the Bielefeld program we translated the 43-item instrument used in Virginia and applied a shorter version consisting of 20 items. For the Virginia program the 43-item instrument was adopted.

To allow us to more directly connect the 20/43 classroom practices probed with the TAI to the intended outcomes, we grouped them into seven overarching categories, or scales: Goals and Objectives, Assessment, Classroom Environment, Learning Activities, Class Facilitation, Effective Assignments, and Overall Teaching.

At Bielefeld U 19 of the 29 participants of the 5th and 6th cohort answered the pre- and the post-test. In all categories, there are positive gains in confidence with classroom practices (see *Fig. 5*).
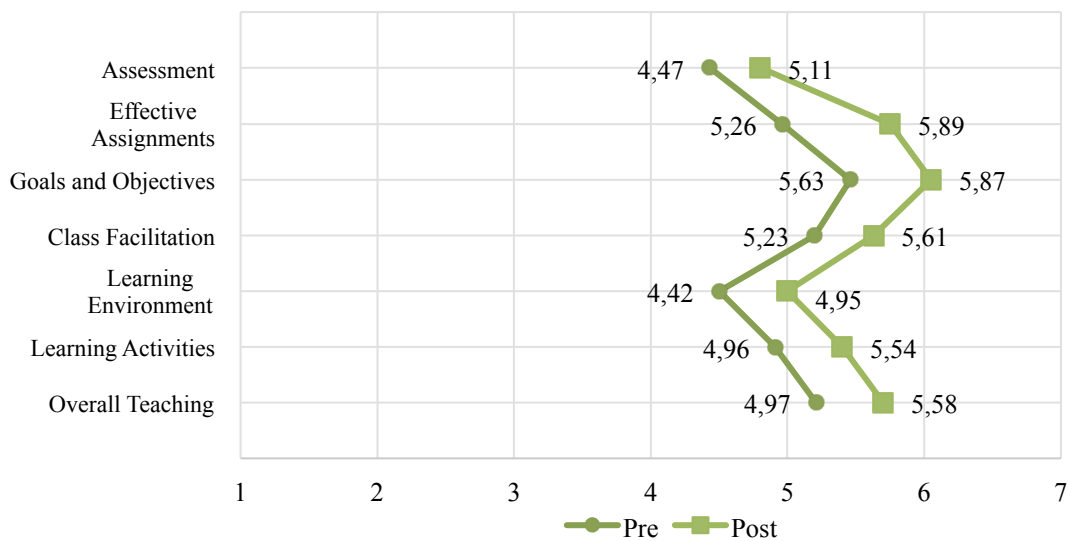

Fig. 5. Results of the TAI for the 5th and 6th cohort before (Pre) and after (Post) the basic module of the Bielefeld U certificate

For UVA 9 participants answered the pre- and the post-test. As with Bielefeld's program, we also found positive gains in confidence with classroom practices at UVA (see *Fig. 6*).
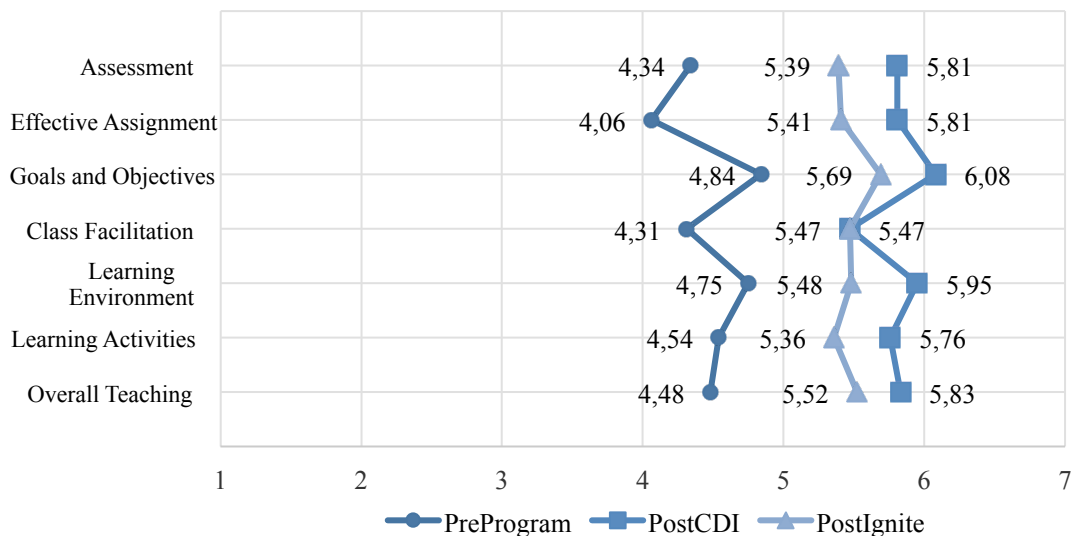

Fig. 6. Results of the TAI before the Ignite program (PreProgram), after the Course Design Institute (PostCDI) and after the complete Ignite program (PostIgnite) at UVA (cohort 2015-16)

Counterintuitively, the gains in PreProgram and PostCDI scores were higher than the gains in PreProgram and PostIgnite scores. However, instead of viewing this negatively, we could speculate that participation in Ignite helps faculty maintain increased confidence with classroom practices. Also, the slight decrease in confidence between PostCDI and PostIgnite may be explained by a more realistic understanding of these practices and a more accurate assessment of one's teaching abilities after implementing a learning-focused course.

Again, similarly to the findings from the ATI-R, the TAI scores for some of the categories were higher in Bielefeld before the program started and there was not as much gain as in the UVA program.

3   DISCUSSION

This paper describes preliminary findings from a study aimed at measuring the impact of faculty development interventions at Bielefeld U and UVA. The initial data suggests that both interventions were successful in moving instructors to a more learning-focused approach to teaching.

Syllabi created by participants in the UVA intervention scored higher on a syllabus rubric measuring learning-focus than syllabi created in the Bielefeld program. Although a greater data set is needed to establish significance, this difference may be explained with US instructors' greater fluency with the concept of the syllabus. This interpretation is supported by feedback from Bielefeld participants who in some cases voice their resistance to creating syllabi and sharing them with students (Bach et al., 2016). Potentially, it may also be explained by a lesser familiarity with learning-focused teaching practices.

The data from the Revised Approaches to Teaching Inventory (ATI-R) shows slight increases for teacher-focused scores (ITTF) and significantly increased student-focused (CCSF) scores at Virginia. In contrast, at Bielefeld the data shows increases in both approaches. It is important to note that, at Bielefeld, the mean score for the CCSF subcategory was already on the high end of the spectrum pre-program (45), higher than the post-program CCSF score for Virginia instructors (41.8). This seems to contradict the syllabus analysis findings that show fewer learning-focused syllabi for Bielefeld instructors. The higher scores on the ATI-R suggest that Bielefeld instructors perceive to be using *more* learning-focused approaches. Further research is needed to explore potential explanations which may include, for example, Bielefeld faculty having more teaching experience, less familiarity with syllabi, and/or a different understanding of what student-focused teaching looks like.

An analysis of data collected via the Teaching Appraisal Inventory (TAI) shows that participation in either program increased instructors' perceived confidence in teaching practices (self-efficacy).

It is important to note the limitations of our study. Due to contextual factors, our data sets do not mirror each other perfectly and in some cases we used variations of our assessment tools. Furthermore, the data sets for both institutions are relatively small and only suggestive of trends. In addition, we recognize that syllabus design, teaching beliefs and confidence with classroom practices are only a proxy for actual classroom practices and student learning. In itself, it is neither a measure of teaching effectiveness nor necessarily an accurate reflection of an instructor's values. However, a recent study on student perceptions of syllabi show that the document matters. Students reading learning-focused syllabi have more positive perceptions of the course and the instructor compared to those reading content-focused syllabi (Palmer, Wheeler & Aneece, 2016). Through a large-scale classroom observation study currently underway at UVA, we hope to determine whether changes in espoused teaching values detailed in course syllabi lead to actual changes in teaching practices. Further research is also needed to investigate how changes in teaching practices influence student learning.

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