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# A Curriculum Crosswalk of the Core Entrustable Professional Activities for New Pharmacy Graduates.

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## Abstract:

**Objective.** To cross reference the core entrustable professional activities (EPAs) to a complete set of educational guidance documents for the Doctor of Pharmacy (PharmD) curriculum to create a map for pharmacy educators.

**Methods.** The Mapping EPAs Task Force consisted of nine members who first worked independently and then together in small working groups to map five assigned educational guidance documents (eg, Center for the Advancement of Pharmacy Education [CAPE] Outcomes, Accreditation Council for Pharmacy Education [ACPE] Standards 1-4, and the Essential Elements for Core Advanced Pharmacy Practice Experiences [APPEs]) to the Core Entrustable Professional Activities for New Pharmacy Graduates. Four working groups completed the mapping process during phases 1 and 2, which was followed by an independent quality assurance review and consensus in phase 3.

**Results.** All 15 core EPA statements were mapped to one or more of the educational documents. One item from the CAPE Outcomes could not be mapped to a core EPA statement. The first five EPA statements mapped directly to the five elements of the Pharmacists' Patient Care Process: collect, assess, plan, implement, and follow-up: monitor and evaluate.

**Conclusion.** This comprehensive EPA map is the first curriculum crosswalk that encompasses a complete set of educational guidance documents including the Essential Elements for Core APPEs for the Doctor of Pharmacy curriculum. If adopted by the Academy, this curriculum crosswalk will provide pharmacy schools with a common interpretation of important educational guidance documents; serve as the foundation for curricular development, revision, and assessment; and ensure student pharmacists are prepared to enter the pharmacy profession.

**Keywords:** Entrustable Professional Activities, Curricular Mapping for Experiential Education, Center for the Advancement of Pharmacy Education Outcomes, Pharmacists' Patient Care Process, Advanced Pharmacy Practice Experience Essential Elements

## Full Text:

### INTRODUCTION

The term entrustable professional activities (EPAs) has been used in medicine and other health professions to describe professional tasks that represent a core set of responsibilities learners should be able to perform at a sufficient level of competence prior to entering the profession. (1,2) The Academic Affairs Standing Committee of the American Association of Colleges of Pharmacy (AACP) proposed core entrustable professional activities for new pharmacy graduates in 2017.<sup>3</sup> Six domains and 15 EPAs were identified for schools and colleges of Corresponding Author: Tina J. Kanmaz, St. John's pharmacy to teach in the didactic and introductory pharmacy practice experience (IPPE) curriculum as well as in the advanced pharmacy practice experience (APPE) curriculum. Fourth-year pharmacy students' ability to perform these professional tasks and achieve a sufficient level of entrustment ensures they will enter the profession with a core set of knowledge, skills, and attitudes. (4-8) As the role of the pharmacist continues to expand from product-focused to patient-focused services, entry-level pharmacists must demonstrate competency across the spectrum of pharmacists' responsibilities to ensure positive patient care outcomes.

Building upon the Accreditation Council for Pharmacy Education (ACPE) Standards 2016, Center for the Advancement of Pharmacy Education (CAPE) Educational Outcomes 2013, the Pharmacists' Patient Care Process (PPCP), and the North American Pharmacist Licensure Examination (NAPLEX) Competency Statements (Blueprint), the EPAs seek to operationalize educational outcomes to ensure graduates are practice and team ready. (9-12) More recently, the AACP Experiential Education Section Task Force on Essential Elements for Core APPEs (Common Core Task Force) developed a set of practice activities and skills for the core APPEs intended to guide colleges and schools of pharmacy in performing quality assurance across experiential practice sites. Demonstrating

the connections between these five educational guidance documents can assist pharmacy programs with curricular design and assessment of student learning. (13) The goal of the AACP Experiential Education Section's 2017-2019 Mapping EPAs Task Force Report was to provide a curriculum crosswalk of available professional and educational outcomes in order to facilitate curricular planning and mapping at individual schools and colleges of pharmacy.

## METHODS

The charges for the Mapping EPAs Task Force were to collaborate with the Essential Elements for Core APPEs Task Force to obtain the in-progress Essential Elements for Hospital/Health System Pharmacy APPE, and to map the EPAs to these pharmacy education guidance documents: ACPE Standards 1-4 and Pre-APPE domains, CAPE Outcomes, Essential Elements for Core Required APPEs, the PPCP, and NAPLEX Blueprint. At the time, the Essential Elements for Core APPEs Task Force and the Mapping EPAs Task Force were completing their work in parallel. The essential elements for the core APPEs were developed for acute care, ambulatory care, and community APPEs. The essential elements for the hospital/health-system APPE were not finalized when the Mapping EPAs Task Force was convened; therefore, they were not included in the initial EPA curriculum crosswalk. The essential elements for the hospital/healthsystem APPEs were finalized in July 2019 and added to the final map thereafter. Institutional review board exemption for this nonhuman subjects research was obtained from all institutions for all investigators.

Two task force members with prior experience mapping EPAs shared program-specific documents to serve as a foundation for the task force's work. Published data, albeit limited, was referred to as well; however, published data were only used to orient the task force to the EPA mapping process. (3,13) The task force initially communicated in October 2017 and developed a mapping philosophy. The task force elected not to reference previous work or published data during the mapping process. The ACPE Standards 2016 were mapped to the level of the 15 key elements; the CAPE Outcomes were mapped to the level of the 15 subdomains and not to the level of the examples of learning objectives. The task force held seven 1-hour meetings via Webex (Cisco, Milpatas, CA) through June 2018. The task force reconvened in August 2019 to incorporate the Essential Elements for Core APPEs for the hospital/health-system APPE.

The task force consisted of nine members. Mapping was divided into three phases (Table 1). During mapping phase 1, the task force divided into four working groups: three groups of two members and one group of three members. During phase 1, the nine members worked independently to map assigned guidance document(s) to the EPAs. Once the individual mapping was complete, each working group compared their mapping and came to a consensus. However, they did not discuss their results with other groups. The working groups were then assigned different guidance documents to map during phase 2. The task force met as a group after phase 2 to compare and validate the work from phases 1 and 2. All members discussed each document, compared, debated, and came to consensus on the EPA map for Phase 2. During phase 3, each member worked independently reviewing each map for all educational guidance documents for a final quality assurance review. The task force met one last time to discuss and compare all maps and establish a final mapping consensus for phase 3. The content of this curriculum crosswalk reflects original work.

## RESULTS

The Mapping EPAs Task Force successfully mapped all 15 core EPA statements to the five educational guidance documents: ACPE Standards 1-4 Key Elements, APPE Essential Elements, CAPE Outcomes 2013, the PPCP, and NAPLEX Blueprint (Table 2). All EPAs were mapped to one or more components of the educational documents. For 13 core EPA statements, each of the five documents were addressed via mapping. For two core EPA statements, gaps were identified. In the Practice Manager Domain, the EPA statement, "Oversee the pharmacy operations for an assigned work shift," could not be mapped to the Pharmacists' Patient Care Process. Also, in the Self-Developer Domain, the EPA statement, "Create a written plan for continuous professional development," could not be mapped to APPE Core Elements, NAPLEX Blueprint, or the PPCP. The CAPE Educational Outcomes 2013, Domain 4, Outcome 4.3, "Innovation and Entrepreneurship," could not be mapped to an EPA. The first five core EPAs were mapped directly to the five elements of the PPCP: collect, assess, plan, implement, and follow-up: monitor and evaluate.

## DISCUSSION

During the last decade, significant attention within academia has shifted toward student pharmacist competency-based education and programmatic assessment to ensure practice readiness of pharmacy graduates. Current pharmacy education guidance documents, while intended to guide curricular design and assessment, may cause confusion for educators and students. Confusion often arises from inconsistent language used within the many published guidance documents and lack of a well-defined connection among them. The EPAs evolved from previously established guidance documents that provided a clearer framework to communicate and operationalize the assessment of essential learning outcomes in preparation for APPEs and entry-level practice. (4)

After the 2017-2019 Mapping EPAs Task Force concluded its work, the previously published 2016-2017 Academic Affairs Committee map was reviewed. (3) Several differences were identified, specifically with respect to how EPAs were mapped to the PPCP. The 2017-2019 Task Force interpreted the steps in the PPCP in a literal sense, recognizing that although all the steps are integrated, each step serves its individual role in the process. First, the population health promoter domain includes the EPA "Identify patients at risk for prevalent diseases in a population." The 2017-2019 Task Force mapped this EPA to PPCP "collect" and "assess," while the 2016-2017 Committee only mapped the EPA to "collect." Assessment is part of the process of identifying patients at risk for prevalent diseases, and the 2017-2019 Task Force agreed that this step was applicable to map. Second, the information master domain includes the EPA, "Educate patients and professional colleagues regarding the appropriate use of medications." The 2017-2019 Task Force mapped this EPA to the "implement" and "follow up" steps, while the 2016-2017 Committee mapped it to all of the PPCP steps except "collect."

The 2017-2019 Task Force interpreted the PPCP as a purely patient care-focused process. The skills used in the PPCP, however,

can be transferrable to non-patient care situations and may explain the following differences in the mapping. As such, the 2017-2019 Mapping EPAs Task Force did not map the practice manager domain EPA "Oversee the pharmacy operations for an assigned work shift" to any steps of the PPCP, while the 2016-2017 Academic Affairs Committee mapped this EPA to all the steps of the PPCP except "collect." The 2017-2019 Task Force did not directly connect the PPCP to performing pharmacy operations which tend to focus primarily on administrative processes, such as managing pharmacy technicians, pharmacy workflow, and the drug distribution process. Additionally, the 2017-2019 Mapping EPAs Task Force did not map the self-developer domain EPA "Create a written plan for continuous professional development" to the PPCP, while the 2016-2017 Academic Affairs Committee mapped this EPA to all five steps of the PPCP. Creating a written plan for continuous professional development applies to individuals who may be pursuing leadership development, career advancement, or administrative initiatives that do not connect directly to the PPCP.

The 2017-2019 Mapping EPAs Task Force identified several strengths and limitations of the mapping process. The EPA mapping process was organized, systematic, and consensus-driven. All task force members had equal involvement in creating and approving the final map. Previously published curriculum maps served only as a guide for the mapping process and did not influence the final curriculum crosswalk. The EPAs were mapped to the CAPE Outcome sub-domains and not further down to the learning examples. The example learning objectives provided for each sub-domain are not meant to be prescriptive. Instead, they are intended to be used to meet mission-specific goals of individual institutions. This curriculum crosswalk is the only document that maps the Essential Elements for Core APPEs to the EPAs and the other guidance documents.

Limitations to this study include the task force members having different interpretations of and philosophy regarding the mapping process, particularly with respect to the PPCP. The Mapping EPAs Task Force was charged with mapping EPAs to education guidance documents used in the United States and did not include global education standards. A similar mapping process as described in this report could be applied to the International Pharmaceutical Federation Global Competency Framework and other related global standards. This curriculum crosswalk represents the thoughts and opinions of the EPA Task Force members and was not vetted nor approved by AACP nor the AACP Experiential Education Section.

## CONCLUSION

This curriculum crosswalk is the first comprehensive document that encompasses the Essential Elements for Core APPEs from AACP's Experiential Education Section Task Force and all other pharmacy education guidance documents. It maps out the necessary connections among the educational guidance documents so that the EPAs may better serve as a foundation for schools and colleges of pharmacy to use in curricular development and assessment.

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Table 1. Process Used to Map the Core Entrustable Professional Activities to Key Educational Guidance Documents Used in Pharmacy Education Working Working Working Working Group 4 Group 1 Group 2 Group 3 Phase 1 APPE ACPE PPCP CAPE Outcomes and Essential Standards NAPLEX Blueprint Elements (Acute care, ambulatory and community) Phase 2 CAPE APPE ACPE PPCP Outcomes Essential Standards and Elements NAPLEX (Acute Blueprint care, ambulatory and community) Phase 3 Quality Assurance: All task force members individually reviewed the entire map and all educational guidance documents Final Additions and Approval: All task force members added and reviewed APPE Essential Elements (Hospital /Health-Systems) and approved final map. Abbreviations: APPE = advanced pharmacy practice experiences, ACPE = Accreditation Council for Pharmacy Education, PPCP = Pharmacists' Patient Care Process, CAPE = Center for the Advancement of Pharmacy Education, NAPLEX = North American Pharmacist Licensure Examination

Table 2. Curriculum Crosswalk of the Core Entrustable Professional Activities to Key Educational Guidance Documents Used in Pharmacy Education EPA Patient ACPE Standards CAPE Care Provider Domain Collect 1.1 Foundational 1.1 Learner information Knowledge 2.1 Patient-centered care to 2.1 Patient-centered identify a care patient's medication-related problems and health-related needs. Analyze information 1.1 Foundational 1.1 Learner to determine knowledge 2.1 Patient-centered care the effects of 2.1 Patient-centered 3.1 Problem solving medication care therapy, identify 3.1 Problem solving medication-related problems, and prioritize health related needs. Establish 1.1 Foundational 1.1 Learner patient-centered knowledge 2.1 Patient-centered care goals 2.1 Patient-centered 3.1 Problem solving and create a care care 3.3 Patient advocacy plan for a 3.1 Problem solving 3.4 Interprofessional patient in 3.3 Patient advocacy collaboration collaboration with 3.4 Interprofessional 3.5 Cultural sensitivity the patient, collaboration 3.6 Communication caregiver(s), and 3.5 Cultural other health sensitivity professionals that 3.6 Communication is evidence based and cost-effective. Implement a 2.1 Patient-centered 2.1 Patient-centered care care plan in care 3.1 Problem solving collaboration 3.1 Problem solving 3.2 Educator with the patient, 3.2 Education 3.4 Interprofessional caregivers, 3.4 Interprofessional collaboration and other health collaboration 3.6 Communication professionals. 3.6 Communication Follow-up and 2.1 Patient-centered 2.1 Patient-centered care monitor a care care 3.1 Problem solving plan. 3.1 Problem solving 3.4 Interprofessional 3.4 Interprofessional collaboration collaboration 3.6 Communication 3.6 Communication Interprofessional Team Member Domain Collaborate as a 2.1 Patient-centered 2.1 Patient centered care member of an care 3.4 Interprofessional interprofessional 3.4 Interprofessional collaboration team. collaboration 3.6 Communication 3.6 Communication Population Health Promoter Domain Identify patients 2.4 Population-based 2.4 Population-based care at risk for care 3.3 Patient advocacy prevalent 3.3 Patient diseases in a advocacy population. Minimize adverse 2.2 Medication use 2.2 Medication use drug events systems systems management and medication management 2.3 Health and wellness errors. 2.3 Health and 3.3 Patient advocacy wellness 3.3 Patient advocacy Maximize the 2.2 Medication 2.2 Medication use appropriate use systems management use of systems 2.3 Health and wellness medications in management 2.4 Population-based care a population. 2.3 Health and 3.3 Patient advocacy wellness 3.5 Cultural sensitivity 2.4 Population-based care 3.3 Patient advocacy 3.5 Cultural sensitivity Ensure that 2.3 Health and 2.3 Health and wellness patients have been wellness 3.3 Patient advocacy immunized against 3.3 Patient vaccine-preventable advocacy diseases. Information Master Domain Educate patients 3.2 Education 3.2 Educator and professional 3.3 Patient 3.3 Patient advocacy colleagues advocacy 3.6 Communication regarding the 3.6 Communication appropriate use of medications. Use evidence-based 1.1 Foundational 1.1 Learner information knowledge 2.1 Patient-centered care to advance 2.1 Patient-centered 2.2 Medication use patient care. care systems management 2.2 Medication use 2.4 Population-based care systems management 2.4 Population-based care Practice Manager Domain Oversee the 2.2. Medication use 2.2. Medication use pharmacy systems systems management operations management 3.1. Problem solving for an assigned 3.1 Problem solving 3.6 Communication work shift. 3.6. Communication 4.2 Leadership 4.2 Leadership Fulfill a 2.2. Medication use 2.2. Medication use medication systems systems management order. management Self-Developer Domain Create a written 4.1 Self awareness 4.1 Self-awareness plan for 4.2 Leadership 4.2 Leadership continuous 4.4 Professionalism 4.4 Professionalism professional development. EPA Patient APPE Core Elements NAPLEX Care Provider Domain Collect PPC2 Efficiently 1.1.0 Obtain, information and interpret, to appropriately assess, identify a optimize and/or patient's patient-specific evaluate... medication-related outcomes for acute problems care patients and using the health-related Pharmacist Patient needs. Care Process. Analyze information PPC1 Demonstrate 1.1.0 Obtain, to determine appropriate depth interpret, the effects of and breadth of assess, medication pharmacotherapeutics and/or therapy, identify and disease-related evaluate... medication-related knowledge for a problems, and variety of common prioritize health conditions related needs. seen in adult acute care patients. PPC2 Efficiently and appropriately optimize patient-specific outcomes for acute care patients using the Pharmacist Patient Care Process. Establish PPC2 Efficiently 1.2.0 Develop and patient-centered and appropriately implement goals optimize individual and create a care patient-specific treatment plan for a outcomes for plans, patient in acute care taking into

collaboration with patients using the consideration... the patient, Pharmacist 1.4.0 Techniques caregiver(s), and Patient Care for Effective other health Process. Communication professionals that IPC1 Actively /Documentation is evidence contribute as of the based and a member of an Development, cost-effective. interprofessional Implementation, healthcare team. and EB1 Apply Assessment evidence-based of medicine Individualized practices to Treatment demonstrate k Plans knowledge of information applicable to acute care medicine. Implement a PPC2 Efficiently 1.2.0 Develop and care plan in and appropriately implement collaboration optimize patient individual with the patient, specific treatment caregivers, outcomes for acute plans, and other health care patients taking into professionals. using the PPCP. consideration PPC3 Accurately 1.4.0 Techniques prioritize for Effective multiple Communication patient care /Documentation responsibilities of the /need in times Development, of high Implementation, activity and and workload. Assessment C&E1 Document of patient care Individualized activities Treatment clearly and Plans concisely to reflect the PPCP in the appropriate site-specific health record systems. C&E3 Perform patient-centered medication education. C&E4 Adjust communication style, techniques, and language in response to patient-specific needs and individual social determinants of health. IPC1 Actively contribute as a member of an interprofessional healthcare team. PSR1 Perform institutional procedures and apply best practices to ensure continuity of care for patients transitioning across healthcare settings. Follow-up and PPC2 Efficiently and 1.3.0 Assess and monitor a care appropriately modify plan. optimize individualized patient-specific treatment outcomes for acute plans, care patients considering... using the Pharmacist Patient Care Process. PPC3 Accurately prioritize multiple patient care responsibilities /needs in times of high activity and workload. Interprofessional Team Member Domain Collaborate as a C&E2 Educate 1.4.0 Techniques member of an healthcare team for Effective interprofessional members on pharmacy Communication team. topics relevant /documentation to their roles of the and practice. development, IPC1 Actively implementation, contribute as and assessment a member of an of interprofessional individualized healthcare team treatment plans Population Health Promoter Domain Identify patients C&E4 Adjust 1.5.0 Advocate at risk for communication individual prevalent style, and diseases in a techniques, and population-based population. language in health and response to safety, patient-specific considering... needs and individual social determinants of health. EB1 Apply evidence-based medicine practices to demonstrate knowledge of information applicable to acute care medicine. PH1 Provide patients with health and wellness strategies including provision of community screening and education services when indicated. Minimize adverse PPC2 Efficiently and 1.5.0 Advocate drug events appropriately individual and medication optimize and errors. patient-specific population-based outcomes for acute health and care patients safety, using the considering... Pharmacist Patient Care Process. C&E3 Perform patient-centered medication education. C&E4 Adjust communication style, techniques, and language in response to patient-specific needs and individual social determinants of health. PSR1 Perform institutional procedures and apply best practices to ensure continuity of care for patients transitioning across healthcare settings. Maximize the PPC2 Efficiently and 1.5.0 Advocate appropriate appropriately individual use of optimize and medications in patient-specific population-based a population. outcomes for health and acute care safety, patients using the considering... Pharmacist Patient Care Process. C&E3 Perform patient-centered medication education. C&E4 Adjust communication style, techniques, and language in response to patient-specific needs and individual social determinants of health. EB1 Apply evidence-based medicine practices to demonstrate knowledge of information applicable to acute care medicine. Ensure that PH1 Provide patients 1.5.0 Advocate patients have been with health and individual immunized against wellness strategies and vaccine-preventable including population-based diseases. provision of health and community safety, screening and considering... education services when indicated. Information Master Domain Educate patients PPC1 Demonstrate 1.4.0 Techniques and professional appropriate depth for Effective colleagues and breadth of Communication regarding the pharmacotherapeutics /Documentation appropriate use of and disease-related of the medications. knowledge for a Development, variety of common Implementation, conditions and seen in adult Assessment of acute care Individualized patients. Treatment C&E2 Educate Plans healthcare team members on pharmacy topics relevant to their roles and practice. C&E3 Perform patient-centered medication education. C&E4 Adjust communication style, techniques, and language in response to patient-specific needs and individual social determinants of health. Use evidence-based EB1 Apply 1.2.0 Develop and information evidence-based implement to advance medicine individual patient care. practices to treatment demonstrate plans, knowledge of taking into information consideration... applicable to acute care medicine. Practice Manager Domain Oversee the PPC3 Accurately 2.1.0 Employ pharmacy prioritize various operations multiple patient techniques for an assigned care to calculate work shift. responsibilities 2.2.0 Compound /need in times sterile and of high activity non-sterile and products workload. 2.3.0 Review, PM1 Demonstrate the dispense, role of a and pharmacist in administer managing drugs and legal, human, drug and financial, products technologies and/or physical resources for day to day operations in the pharmacy. PM1 Oversee the workflow of the dispensing process. PM2 Participate in continuous quality improvement techniques to optimize the medication use process. D&S 3. Respond appropriately to basic drug procurement issues using site protocol(s). Fulfill a PPC4 Apply 2.1.0 Employ medication pharmacokinetic various order. dosing principles techniques for a to variety of calculate commonly 2.2.0 Compound used drugs to sterile determine the and correct dose. nonsterile D&S1 Accurately products verify new 2.3.0 Review, medication orders. dispense, D&S2 Use a and computerized administer pharmacy drugs and management drug system and best products practices related to safe medication use in distribution of medications to patients. D&S 2. Ensure the accurate preparation of medication orders. D&S 3. Respond appropriately to basic drug procurement issues using site protocol(s). D&S 4. Perform IV admixture. Self-Developer Domain Create a written N/A N/A plan for continuous professional development. EPA Patient PPCP Care Provider Domain Collect Collect information to identify a patient's medication-related problems and health-related needs. Analyze information Assess to determine the effects of medication therapy, identify medication-related problems, and prioritize health related needs. Establish Plan patient-centered goals and create a care plan for a patient in collaboration with the patient, caregiver(s), and other health professionals that is evidence based and cost-effective. Implement a Implement care plan in collaboration with the patient, caregivers, and other health professionals. Follow-up and Follow-up monitor a care plan. Interprofessional Team Member Domain Collaborate as a Collect, Assess, member of an Plan, interprofessional Implement and team. Follow Up Population Health Promoter Domain Identify patients Collect, Assess at risk for prevalent diseases in a population. Minimize adverse Collect, Assess, Plan, drug events Implement and and medication Follow Up errors. Maximize the Collect, Assess, Plan, appropriate Implement and use of Follow Up medications in a population. Ensure that Collect, Assess, Plan, patients have been Implement and immunized against Follow Up vaccine-preventable diseases. Information Master Domain Educate patients Implement, and professional Follow up colleagues regarding the appropriate use of medications. Use evidence-based Collect, Assess, Plan, information Implement and to advance Follow up patient care. Practice Manager Domain Oversee the N/A pharmacy operations for an assigned work shift. Fulfill a Implement medication order. Self-Developer Domain Create a written N/A plan for continuous professional development. 1 Includes the essential elements for Acute Care, Ambulatory Care, Community, and Hospital/Health-System APPEs 2 Abbreviations: EPA = Entrustable Professional Activities, ACPE = Accreditation Council for Pharmacy Education, CAPE = Center for the Advancement of Pharmacy Education, 3 APPE = Advanced Pharmacy Practice Experiences, NAPLEX = North American Pharmacist Licensure Examination, PPCP = Pharmacists' 4 Patient Care Process, PPC = Pharmacist Patient Care, IPC = Interprofessional Collaboration, EBM = Evidence Based Medicine, C&E = Communication and Education, PSR = Practice-Specific Responsibilities, 5 PH = Population Health, PM = Practice Management, D&S = Dispensing System and Safety Management

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