Using a custom authoring online product to create (education) theory-informed online asynchronous learning environments

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Abstract

Selecting tools for delivery of online asynchronous undergraduate instruction can be a challenge. To address this challenge, first a philosophical framework for instruction should be developed to make explicit what an institution assumes to be true about student knowledge and learning. Education research offers many theoretical constructs that can be used to construct such a philosophical framework. Second, an online learning product consistent with the philosophical framework must be selected. If an online learning product conflicts with the philosophical framework, course design will fall short of alignment with the philosophical framework. In this action research project, 7 undergraduate general education courses were designed using a philosophical framework within a custom authoring online learning product. Use of the Instructor Created Content feature from zyBooks allowed enhanced levels of implementation of our philosophical framework as compared with prior learning platforms (implementation gains ranging from 14.8% to 42.4%). Enhanced implementation resulted in reduced student attrition in all 7 courses (attrition reductions of 1.8% to 17.6%).

Problem

In order for students to be prepared to enter the workforce, students must be supported throughout their educational experience. Seminal education theory can guide instructional choices to support this preparation. Grounding instructional choices in educational theory and research helps ensure students develop working models of knowledge that will serve them as employees and allow them to fill the skill gaps that employers have identified.

Creating scalable online asynchronous learning environments grounded in educational theory can be challenging. Many online learning products and tools are in conflict with, or create barriers to, implementing learning strategies consistent with educational theory (Osler & Wright, 2015). As a result, the theory to practice gap in online education remains considerable. The impacts of this gap are highlighted by the often-reported misalignment between industry employers' needs and the outcomes at institutions of higher education (Arun Kumas, 2022; MIT Open Learning, 2021).

Those responsible for selecting online learning products are often confused because many products highlight the multiple ways they are grounded in research. In many cases, those claims are accurate. Some online learning products align to theories and research related to information processing (Pearson Inc., 2022; McGrawHill, 2022), while others do not specify the theories in which their research is grounded (John Wiley & Sons, Inc., 2022). Information processing research and frameworks support the idea that information is processed by being broken down into a series of complex steps. While understanding this algorithmic approach to learning can be helpful, it does not support the application and transfer of knowledge. As a result, instructional strategies grounded solely in information processing research may not prepare students with skills needed to enter the ever-changing, socially situated, and complex workforce where a deep, conceptual understanding of multiple constructs is required.

Education research addresses those complexities in the context of educational systems and environments. Education research relies on interdisciplinary works from fields like psychology, neuroscience, sociology, and linguistics. The American Educational Research Association defines education research as follows:

> Education research is the scientific field of study that examines education and learning processes and the human attributes, interactions, organizations, and institutions that shape educational outcomes. Scholarship in the field seeks to describe, understand, and explain how learning takes place throughout a person's life and how formal and informal contexts of education affect all forms of learning. Education research embraces the full spectrum of rigorous methods appropriate to the questions being asked and also drives the development of new tools and methods. (American Educational Research Association, 2022)

This action research project sought to explore whether creating and adhering to an education-research based framework for learning is supportive of student success in higher education.

The goal of this action research was to answer the following research questions:

1. Can an online learning product be used to enhance, and not conflict with, our (educational research-based) philosophical framework?
2. If we can create online asynchronous classroom environments aligned to our philosophical framework, can student attrition be reduced?

Background

A gap has consistently been identified between employer needs and higher education outcomes (Hillman & Zipper, 2019). While graduates are often able to demonstrate evidence of knowledge in a specific industry, they frequently lack other skills employers expect. When businesses struggle to recruit and retain employees, the impact of this skills gap is magnified. A 2020 report identified the common skills most frequently listed on job postings for candidates with undergraduate degrees. These skills included management, operations, communications, customer service, leadership, sales, planning, scheduling, and problem solving (Lightcast, 2022). Many of these skills involve complex human interactions and require knowledge synthesis and transfer. These skills and abilities might not be addressed through instructional frameworks grounded in information processing research, as discussed above.

Our goal, as institutions of higher education, must be to help students develop functioning mental models so they can transition to a career and successfully apply their knowledge. A mental model framework, based in education research, highlights one way to prepare students for the workforce. In this framework, students create models to explain and predict phenomena. Models can vary greatly in simplicity, however, students must be able to provide 5 different types of explanations: (1) intentional explanations, which provide justification of relevance and importance, (2) descriptive explanations, which answer how the phenomenon behaves, (3) interpretive explanations, which enable classification and comparison to like cases, (4) causative explanations, which answer what causes the specific phenomenon, and (5) predictive explanations, which allow predictions to be made about like situations or similar phenomena (Gilbert, Boulter, & Rutherford, 1998). Though even strong models have limitations, if a model cannot offer each type of explanation, it is deemed faulty. If we focus on student learning through this framework of model construction, it becomes apparent how the 5 resulting explanations of a functioning mental model support students as they apply what they have learned in the classroom to workforce environments.

A philosophical framework for instruction serves as a representation of agreed-upon assumptions about learning. It can bring multiple stakeholders to consistency by explicitly defining what is believed to be true about how students learn and are successful. To explore how best to support students' ability to create functioning mental models, we developed a philosophical framework.

Original implementation in two undergraduate general education quantitative reasoning courses leveraged the course learning tool, zyBooks. Implementation proved favorable, and in both courses, student attrition reduced, student performance on summative assessments improved, and positive student sentiment increased (Kelly, Bruno, Edgecomb, Vahid, & Gordon, 2022). This implementation demonstrated the zyBooks platform was consistent with our philosophical framework (Kelly, Bruno, Edgecomb, Vahid, & Gordon, 2022). Following this successful initial implementation, our philosophical framework was revisited for iteration.

Table 1 represents the adopted philosophical framework following revision. This revised framework is used to help consistently define what we view as knowledge, teaching, learning, and assessment. The framework helps inform our instructional choices across course features. By implementing this framework, we can attempt to maximize education theory and research-informed experiences, which support students from college through career.

Table 1. Theoretical Claims of the Adopted Philosophical Framework

Theoretical Construct	**Theoretical Claim**	**Thought Leaders and References**
Conceptual Change	Students learn through conceptual development and conceptual change.	(Strike & Posner, 1992) (Carey, 1999) (Carey, 2000) (Chinn & Brewer, 1993) (Chi, 2008)
Social Constructivism	Learning occurs and knowledge exists between social entities and is developed through social interaction.	(Vygotsky, 1986)
Metacognition & Affect	Learning is influenced by metacognitive process and affective state.	(Dole & Sinatra, 1998) (Mayer, 1998) (Moons & Mackie, 2007) (Sinatra, 2005)
Systemic Functional Linguistics	Language is contextual; teaching students to navigate those contexts is essential for learning and communicating knowledge.	(Halliday & Matthiessen, 2004) (Holliday, Yore, & Alvermann, 1994) (Achugar, Schleppegrell, & Oteiza, 2007) (Fang, 2005) (Lemke, 1998) (Markman, 1991)
Academic Self-Concept	Academic self-concept is the strongest quantitative predictor of student persistence.	(Marsh & Shavelson, 1985) (Bong & Skaalvik, 2003) (Davis, Hanzek-Brill, Petzold, & Robinson, 2019)
Hidden Curriculum	Unintentional messages about learning and knowledge are delivered to students from the structure and policies of the learning environment.	(Giroux & Penna, 1979) (Dewey, 1986) (Lemke, Talking science: Language, Learning and Values, 1990) (Melville & Bartley, 2013) (Cotton, Winter, & Bailey, 2012)

With this revised framework, we planned implementation in additional courses. For additional implementation, we needed a robust online learning product. A review of online learning products revealed many available options would conflict with our philosophical framework. We realized tremendous flexibility would be needed in an online learning product so the learning environment could be customized to align with our philosophical framework.

We approached zyBooks and requested the ability to custom-author content within the zyBooks platform. They suggested we explore the Instructor Created Content (ICC) feature of zyBooks. In this product, institutions can author custom content within the zyBooks platform and leverage learning features like participation activities, automatic grade pass back, and data reporting as they exist in the standard zyBooks learning platform. By using ICC, the institution maintains intellectual ownership of the authored content and can quickly update content as needed.

Initially, we assessed ICC for consistency with our philosophical framework. These findings are summarized in Table 2. zyBooks platform is structured in a way that encourages information chunking by first explaining a concept with short text and then eliciting active learning from students by following the text with interactive questions designed to evoke thoughtful engagement with the concepts. Next, students are provided an opportunity to reflect on potential misconceptions by reading the feedback to their responses, which both addresses misconceptions and further explains the content. The back-and-forth nature of these interactive questions and feedback is a more conversational experience than traditional text. Instructor notes can also be embedded in the content, furthering the social nature of the learning environment and providing customization of advisory language.

The zyBooks tool respects students' time and cognitive load by providing access to content, assignments, and other embedded resources (i.e., videos) in one location. Students are also able to track their own progress on content completion, which gives them a sense of ownership over their learning. When students revisit content, their prior answers to questions are not shown, which promotes more successful studying since students must engage more deeply to re-answer the questions rather than just looking at a short reminder of what the answer was.

In the ICC model, all components of the zyBooks content structure are customizable. This allows custom authoring of content, formative questioning, coaching, and advisory language.

Table 2. zyBooks Instructor Created Content Feature Alignment to Philosophical Framework

Theoretical Construct	**ICC Feature Consistent with Framework**
Conceptual Change	● Authoring in scaffolded pieces ● Ability to probe and elicit misconceptions throughout presentation of content (embedded)
Social Constructivism	● Mimic conversational convention by use of embedded content, questioning, and coaching tools
Metacognition & Affect	● Ability to embed reflective questioning ● Students can track their progress and feedback
Systemic Functional Linguistics	● Customization allows adding content consistent with this framework
Academic Self-Concept	● Customization allows controlling tone and underlying messaging associated with course content
Hidden Curriculum	● Iterations are encouraged and promoted through coaching comments ● Automatic grade feedback sent to the gradebook ● Student friendly technological experience free from multiple technology reported issues

We determined the flexibility of ICC was aligned to our philosophical framework, and course design could commence.

Method and Process

Seven undergraduate general education courses were identified for course design and revision with the use of ICC: GEN/201, SCI/163T, SCI/220T, ENV/100T, PSY/110, MTH/213, and MTH/214. In each case, course design was unique and based on the needs of students in the courses. In all cases, our philosophical framework was used to guide course design. Since use of ICC requires substantial content authoring, and due to the diverse nature of the courses, implementation of our philosophical framework was different in each course.

Table 3 outlines some of the strategies and key features associated with course design. The use of ICC allowed implementation of diverse design processes, course intentions, instructional strategies, and outcomes. While all cases were consistent with our framework, ICC allowed us to implement the framework in ways that were varied.

Table 3. Course Design Processes Using ICC

Course	**Description of Course and Student Population**	**Notes from Course Design Process**
GEN/201	Entry point course for all undergraduate students; introduction to university	● The College, in collaboration with a team of faculty, worked on the revision ● Entire classroom resource used authored content and leveraged embedded/real time formative assignments ● Intentional focus on the needs of new students
SCI/163T	Introductory undergraduate general education health and wellness course	● The College, in collaboration with Instructional Designers, worked on the revision ● Used authored content to create characters representative of student population, link to supplemental library resources, leverage embedded/real time formative assignments ● Used characters to destigmatize the receipt of accommodations and embed resources for contacting the Office of Accessibility and Disability Services
SCI/220T	Introductory undergraduate general education nutrition course	● The College, in collaboration with Instructional Designers, worked on the revision ● Used authored content to create characters representative of student population, link to supplemental library resources, leverage embedded/real time formative assignments
ENV/100T	Introductory undergraduate general education environmental science course	● Environmental Science Faculty Council, in collaboration with Associate Dean, worked on the revision

		● Authored content in the form of a children's book; scientific concepts were anthropomorphized ● ICC used to complete custom authoring, link to supplemental library resources, leverage embedded/real time formative assignments
PSY/110	Required course for most undergraduate students following entry-point course	● The College, in collaboration with a team of faculty, worked on the revision ● Entire classroom resource used authored content, leveraged embedded/real time formative assignments ● Intentional focus on the needs of new students ● Integration of embedded custom video content, "Dr. Phoenix," embedded throughout content
MTH/213	Undergraduate general education mathematics for teachers enrolled in elementary teaching programs, part I	● Associate Dean and Faculty council worked on the revision ● Authored entire custom content resource to specifically reflect the needed conceptual development of introductory mathematics education ● Used authored content to embed multiple simulations and micro labs to support students with scaffolding concepts, integrate metacognitive reflections, and create real time formative assignments
MTH/214	Undergraduate general education mathematics for teachers enrolled in elementary teaching programs, part II	

Use of the ICC tool ranged from fully authoring all custom course content to creating a consistent space for students to access curated content and complete formative assignments. All design choices were guided by our philosophical framework. However, for pragmatic reasons, it was not realistic to expect complete alignment. Some factors that impeded implementation of various components of our framework included system constraints within the University's learning management system, course scheduling, opportunities to deploy assessments, and policies guiding student/faculty attendance and required engagement. As a result, opportunities for framework implementation were determined by those involved in each distinct course revision. Following implementation, we needed a way to assess the extent of implementation of the framework in each course. After courses were designed, they were scored for their level of implementation of our philosophical framework by using our Philosophical Framework Inventory.

Philosophical Framework Inventory

Our Philosophical Framework Inventory guided course development and assessed the degree of philosophical framework implementation in a particular course. The inventory identified course features

that can be changed in online undergraduate general education courses. The course features identified, listed in Table 4, were advisory language, discussion questions, content resources, formative assignments, and summative assessments.

Table 4. Course Features for Course Design

Course Feature	**Course Feature Description**
Advisory Language	Advisory language includes all instructions and informational text to the student throughout the course. Advisory language is used to tell students what to do and guide how they think about the course, content, and layout.
Discussion Questions	Discussion questions are the weekly course component required in all courses. Students are presented with a question prompt and must create a response. They must then respond to at least two other posts by classmates or faculty each week.
Content Resources	Content resources include all assets that support students with acquiring the knowledge needed in the course. These might include reading assignments, videos, reference material, external websites, and library content.
Formative Assignments	This includes all work students might be asked to complete to practice or demonstrate knowledge of learning outcomes. Often these are lower stakes but tied to earned points within the gradebook.
Summative Assessment	Assessments include summative depictions of student demonstration of course student learning outcomes. They are high stakes.

For each course feature, we created criteria to assess the level of philosophical framework implementation that existed, shown in Table 5. Each course feature was assessed for each construct in our philosophical framework and received a rating from 0-2 (0=Evidence from Framework Not Present, 1=Some Evidence from Framework Present, 2=Strong Evidence from Framework Present). A possible score range of 0-60 was possible for each assessed course, with a score of 0 indicating no evidence of philosophical framework implementation within the course and a score of 60 indicating strong evidence of philosophical framework implementation.

Table 5. Philosophical Framework Inventory

Course Feature	**Theoretical Construct**					
	Conceptual Change	*Social Constructivism*	*Metacognition & Affect*	*Systemic Functional Linguistics*	*Academic Self-Concept*	*Hidden Curriculum*
Advisory Language	Provides rationale for the process of eliciting prior knowledge and building concepts.	Provides rationale for the importance of social interaction for processing information and constructing knowledge.	Promotes reflective thinking and self-regulating behavior. Explanation of the role of emotions in thinking and learning.	Addresses the differences between technical and colloquialism. Encourages students to identify and discuss them.	Nontechnical and addresses students at an accessible level. It is neither threatening nor exclusive.	Empathetic to the learners' responsibilities over and above being a student. It creates spaces safe to share these.

Discussion Questions	Acknowledge and elicits prior experience that will impact integration of new information.	Promote students building knowledge between each other and the instructor. Acknowledge social interaction is how knowledge can be built and extended.	Promote reflective thinking rather than information recall. Acknowledge and elicit the role of emotions in processing.	Compare technical and colloquial language. Help students navigate, formalize, and make sense of these distinctions.	Rooted in student lived experience. Do not make students feel like imposters.	Tone is supportive, welcoming, and open; not dichotomous. Value student perceptions.
Content Resources	Acknowledge preconceptions. Support eliciting, resolving (if needed), and building on previous conceptions.	Engage with the student. Not authoritarian, mimics conversation, and provides opportunities to socially construct knowledge.	Identify cognitive and affective processes required to construct knowledge and access prior information.	Use operational definitions. Distinguish differences in technical and colloquial contexts; provide support for switching between them.	Promote sense of belonging. Content is not written in language that is foreign and cold.	Promote learning as a complicated, non-linear process. Acknowledge learner differences
Formative Assignments	Build concepts. Allow iterative practice by eliciting, confronting, and resolving (if necessary) preconceptions. Not presented as high stakes.	Practice expressing thought through language. Feedback opportunities from an additional social partner.	Identify metacognitive and affective processes. Provide strategies for maximizing affective states to build knowledge.	Navigate language in varied contexts. Help students practice switching back and forth.	Promote feeling capable of becoming academic scholars in the discipline.	Provided multiple opportunities to improve and practice. No late penalties.
Summative Assessment	Assess series of concepts needed to demonstrate the learning outcome at same level as formative opportunities and learning outcome. Distractors reflect common misconceptions.	Support with demonstrating thought through language, providing opportunities to express ideas in multiple ways.	Create environment to support student affect so appropriate heuristics can be accessed. Required metacognitive processes consistent with formative opportunities.	Clear about and assess technical language use. Clear about the context and tone that is being used and is expected.	Do not attempt to make students feel like imposters.	All course components are scaffolded into assessment to prepare for demonstration of knowledge. Level, tone, and expectations are aligned to other course experiences.

A team of college leadership familiar with our philosophical framework and course design scored each course according to the inventory. Each criterion was discussed, evidence from the course was presented, and discussion continued until consensus was achieved.

Student Attrition Rate

Student attrition rate was defined as the percentage of students earning an F grade in or withdrawing from the course. Attrition rates were collected for the first 2 months after launching the revised course with the implemented philosophical framework. These attrition rates were named Post-Implementation. For historical comparison, we collected the same 2 months attrition rate the previous year for each course and called this Pre-Implementation. Pre- and Post-Implementation rates were compared to provide insights to the potential effect of implementation of our philosophical framework on student attrition. To better understand and make comparisons, a normalized gain was calculated for each set of attrition rates (Hake, 1998).

Philosophical Framework Inventory scores and student attrition rates were examined to understand the changes that occurred as a result of course design that implemented our philosophical framework.

Results and Discussion

Philosophical Framework Inventory scores for the 7 revised courses were collected and are shown in Table 6. For each of the 7 courses, there was at least some evidence of each theoretical construct from the framework present. Scores ranged from 31-51.

Table 6. Philosophical Framework Inventory Score by Theoretical Construct

Course	**Philosophical Framework Inventory Score by Theoretical Construct**						
	Conceptual Change	*Social Constructivism*	*Metacognition & Affect*	*Systemic Functional Linguistics*	*Academic Self-Concept*	*Hidden Curriculum*	*Total*
GEN/201	6	4	6	3	10	8	37
SCI/163T	8	5	5	3	8	8	37
SCI/220T	6	4	4	4	5	8	31
ENV/100T	9	6	6	4	7	7	39
PSY/110	6	7	7	6	10	9	45
MTH/213	10	9	10	5	9	8	51
MTH/214	10	9	10	5	9	8	51

Scoring made apparent certain aspects of our philosophical framework were more prominent in some courses. For example, in the entry-point courses (GEN/201 and PSY/110), there was greater emphasis on academic self-concept than in other courses. Those involved in course design confirmed this intention. The focus of the revision was to support new students as they onboarded to the college environment. Emphasis was placed on supporting students feeling a sense of belonging and identifying as a successful member of the academic community. The mathematics courses for elementary educators (MTH/213 and MTH/214) focused on supporting elementary math teachers with understanding conceptual processes for early learners of mathematics. As a result, conceptual understanding and attention to metacognitive approaches were emphasized. The varied scoring results reflect the flexibility and ability of ICC to emphasize theoretical constructs in diverse ways to maximize likelihood of success for students in each course.

To explore trends in the level of implementation of our Philosophical Framework among course features, implementation scores were examined for each course feature and are shown in Table 7. It

became apparent that discussion questions were most often in strong alignment with our philosophical framework, while much lower levels of implementation existed in advisory language within the courses.

Table 7. Philosophical Framework Inventory Score by Course Feature

Course	Philosophical Framework Inventory Score by Course Feature					
	Advisory Language	Discussion Questions	Content Recourses	Formative Assignments	Summative Assessments	Total
GEN/201	5	9	8	7	8	37
SCI/163T	3	10	10	8	6	37
SCI/220T	0	10	8	7	6	31
ENV/100T	9	10	9	7	4	39
PSY/110	7	10	11	9	8	45
MTH/213	6	11	12	11	11	51
MTH/214	6	11	12	11	11	51

Upon initial review, it seemed ICC was a learning tool that supported implementation of our Philosophical Framework. It did not have features or constraints that were in conflict with the framework. Additionally, it allowed use of diverse instructional strategies and the flexibility to emphasize different components of the framework.

Prior to answering the first research question, a historical review of Pre-Implementation courses was conducted. Table 8 shows the online learning product used in the Pre-Implementation version of the course, Pre- and Post-Implementation scores from our Philosophical Framework Inventory, and the normalized gains from revision. These normalized gains represent the difference between evidence of our philosophical framework in the old and revised versions of each course. Names of online learning products were replaced with placeholder names for the purpose of disseminating the results of this work.

Table 8. Pre and Post Implementation Scores on Philosophical Framework Inventory

Course	**Pre-Implementation Online Learning Product**	**Pre-Implementation Score without ICC**	**Post-Implementation Score Using ICC**	**Normalized Gain**
GEN/201	Product A	21	37	20.3%
SCI/163T	Product A	20	37	21.3%
SCI/220T	Product B	19	31	14.8%
ENV/100T	Product B	21	39	22.8%
PSY/110	Product A	33	45	17.9%
MTH/213	Product C	15	51	42.4%
MTH/214	Product C	15	51	42.4%

Levels of implementation of our philosophical framework increased in every course using ICC and custom authored content. Increases in implementation ranged from 14.8%-42.4%. Our Philosophical Framework Inventory scores serve as data that the ICC tool allowed greater levels of our philosophical framework implementation than any of the 3 pre-implementation online learning products.

The first research question was 1) Can an online learning product be used to enhance, and not conflict with, our (educational research-based) philosophical framework? Descriptive data allows us to conclude that the answer to the first research question is "yes." The online learning product, ICC, can be used to enhance, and not conflict with, our philosophical framework.

To answer the second research question, we examined student attrition related to philosophical framework implementation. Attrition rates Pre- and Post-Implementation are shown in Table 9. In every course, attrition rates reduced Post-Implementation.

Table 9. Pre and Post Student Attrition Metrics

	Pre-Implementation			Post Implementation			
Course	Dates	Sample Size	Attrition	Dates	Sample Size	Attrition	Normalized Gain
GEN/201	Jan-Feb 2020	5718	22.0%	Jan-Feb 2021	5257	20.8%	-1.5%
SCI/163T	Feb-Mar 2020	375	7.2%	Feb-Mar 2021	336	5.7%	-1.6%
SCI/220T	Feb-Mar 2020	2561	6.8%	Feb-Mar 2021	1785	5.1%	-1.8%
ENV/100T	Oct-Nov 2020	508	10.6%	Oct-Nov 2021	512	7.8%	-3.1%
PSY/110	Dec-Feb 2021	3335	22.6%	Dec-Feb 2022	3853	18.9%	-4.8%
MTH/213	Feb-Mar 2021	223	17.0%	Feb-Mar 2022	236	10.6%	-7.7%
MTH/214	Feb-Mar 2021	224	23.7%	Feb-Mar 2022	261	10.3%	-17.6%

The second research question was 2) If we can create online asynchronous classroom environments aligned to our philosophical framework, can student attrition be reduced? Descriptive data allows us to conclude that the answer to the second research question is "yes." As a result of increased implementation of our philosophical framework in 7 undergraduate general education courses, student attrition was reduced. The ability to achieve these results was dependent on finding an online vendor product, in this case ICC, that allowed increased implementation of a philosophical framework aligned to education research.

Conclusions

To prepare students for the ever-changing workforce, adoption of a philosophical framework aligned to education research is required. Frameworks like this will align instructional strategies to the ability to help students develop deep conceptual understandings of content, which can be used to create coherent and functioning mental models. These mental models are what support students with transferring and applying complex learning from the classroom to the workforce environment.

Finding an online learning product that allows alignment to education theory is ideal for maximizing the ability to implement strategies consistent with a philosophical framework. If the online learning product is in conflict with the underlying theories from a framework, it may prevent implementation of instructional strategies the framework suggests are best practice.

In order to determine whether an online vendor product aligns with a philosophical framework, first a philosophical framework must be adopted. Institutions and units responsible for creating learning environments must explicitly define their frameworks so all stakeholders are operating from the same assumptions and claims about knowledge and learning. There is no single framework that will serve all students. Instead, a thorough examination of research in education must be conducted to reflect the diverse and unique needs of each student population served by an institution.

Once a philosophical framework is developed and adopted, online learning products can be examined for continuity with that framework. Learning management systems can be selected to ensure their limitations are not in conflict with the framework. Finally, courses can be designed, and instructional strategies can be developed. An institutional philosophical framework does not mean all courses and learning strategies are identical within the institution. Instead, it ensures the same language of education is being spoken and used to guide decision-making about instructional environments.

With an adopted framework, decisions can become more strategic, and progress towards positive student outcomes will seem more intentional. As theory and research continue to evolve in the education space, philosophical frameworks can be updated. Adopting a philosophical framework grounded in educational theory serves as the first step in closing the theory-to-practice gap and creating sustainable, scalable learning environments consistent with the best practices of education research.

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