

# Timeless Principles for Effective Teaching and Learning: A Modern Application of Historical Principles and Guidelines

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## Abstract

The purpose of this study is twofold: (a) to assess the perceived relevance of the Seven Timeless Principles and guidelines posited by Gregory (1886) for current educators and educators-in-training and (b) to develop and pilot test the instrument needed to accomplish the former. The “Rules for Teachers” Gregory attributes to each of these laws were used as guidelines to develop an assessment instrument. Eighty-four educators and future educators across three universities participated in an online survey using a 4-point Likert scale to evaluate the consistency of Gregory’s guidelines with modern best-teaching practices. Responses were framed within the Timeless Principles, providing a measure of pedagogical universality. Total mean scores for all principles and guidelines were greater than 3.0, suggesting that Gregory had indeed identified foundational principles of teaching and learning that maintain relevance across academic disciplines and in a variety of settings in which learning occurs.

**Keywords:** teaching and learning, principles of teaching, historical pedagogy, educational principles

## 1. Introduction

In 1886, John Milton Gregory published a book entitled *The Seven Laws of Teaching* that offered a set of principles to support and strengthen teachers’ capabilities systemically and comprehensively. The primary purpose of this study was to explore whether Gregory’s principles are consistent with faculty and student perceptions of 21st century best teaching practices. To accomplish the primary purpose, a secondary goal of the study was to pilot and provide evidence of reliability and validity of an instrument based on Gregory’s principles and guidelines. The study evaluated the value and relevance of these 19th century principles to modern teachers via a researcher-developed instrument using the guidelines established within each of Gregory’s principles and then presented results to validate concept transferability. After examining the basic structure of *The Seven Laws of Teaching* in the context of modern approaches, we suggest that these seven laws represent Timeless Principles of the science and art of teaching.

### 1.1 Background

Discussions of foundational principles that frame effective teaching are not unique to Gregory, and the educational literature contains an abundance of suggested principles, strategies, and guidelines. Thorndike (1906) identified three essential principles that included readiness, exercise, and effect. The Law of Readiness suggested that a child must be ready to learn in order to learn most efficiently. It is the responsibility of the teacher to develop the readiness to learn in the student. The Law of Exercise is further divided into the Law of Use and Law of Disuse. Repetition strengthens understanding, and practice makes perfect. Conversely, if one does not “use it,” they tend to “lose it.” It is the responsibility of the teacher to ensure practice is interesting and meaningful in order to enhance learning. Thorndike’s Law of Effect suggests that: (a) actions that elicit feelings of pleasure and satisfaction enhance effective learning, (b) any action met with frustration and annoyance will likely be avoided, and (c) success breeds success and failure leads to further failure.

Rosenshine and Furst (1971) conducted what is considered the first literature review of the research addressing principles for effective teaching. They outlined five “most important” teacher-effectiveness variables, which include: clarity, variability, enthusiasm, task-oriented behavior, and student opportunity to learn criterion material. Almost 30 years later, Walls (1999) posited four similar criteria, including outcomes, clarity, engagement, and enthusiasm. Walls stressed that it is important for students to understand the direction in which the teacher is guiding their learning—and the teacher’s intentions for going there—by providing clear goals and related learning outcomes. It is vital to build upon what students already know while making material as clear as possible.

In 1987, Chickering and Gamson posited seven principles that they argued are representative of good practice in undergraduate education: (a) encourage contacts between students and faculty, (b) develop reciprocity and cooperation among students, (c) use active learning techniques, (d) give prompt feedback, (e) emphasize time on task, (f) communicate high expectations, and (g) respect diverse talents and ways of learning. These seven principles are “intended as guidelines for faculty members, students, and administrators to improve teaching” (Chickering & Gamson, 1987, p. 3).

Walls (1999) agreed with Thorndike (1906) that students must be engaged to learn, stressing the importance of active learning, which encompasses aspects of Thorndike’s laws. Students must be engaged to learn, as people learn what they practice (Law of Exercise). Both the student and the teacher should be enthusiastic about the learning (Law of Effect); if the teacher does not enjoy the teaching, how can students be expected to enjoy the learning?

More recently, distinct approaches have offered an element of novelty but ultimately integrated pre-existing principles. Perkins (2008) used baseball as a metaphor to depict his principles of teaching. The principles set the stage for what Perkins further referred to as conditions and principles of transfer. The principles include: (a) play the whole game (develop capability by utilizing holistic work); (b) make the game worth playing (engage students through meaningful content); (c) work on the hard parts (develop durable skills through practice, feedback, and reflection); (d) play out of town (increase transfer of knowledge with diverse application of experiences); (e) play the hidden game (sustain active inquiry); (f) learn from the team (encourage collaborative learning); and (g) learn the game of learning (students taking an active role in their learning).

Tomlinson’s (2017) differentiation emphasized the need for teachers to respond dynamically within a given classroom by varying (“differentiating”) instruction to meet student needs. Conceptually, Tomlinson identified respectful tasks, ongoing assessment and adjustment, and flexible grouping as general principles driving differentiation while identifying the primary domains of the teacher (content, process, and product) and the student (readiness, interests, and learning profile).

Beyond the contributions of individual approaches, the past 20 years have also seen an increase in collaborative, research-based recommendations for educational principles that draw upon the experiences of educators, researchers, and policymakers. Workforce entry and academic preparation for college have been the primary aspects of these recommendations. The *InTASC Model Core Teaching Standards* delineated competencies based on key principles that are intended to be mastered by the teacher (Council of Chief State School Officers, 2011). It is anticipated that proficiency in these standards supports sufficient preparation for K-12 students to succeed in college and to obtain the skill sets needed for a future workplace. *Preparing 21st Century Students for a Global Society* set forth four skills found to be most important, including critical thinking, communication, collaboration, and creativity, and stated, “What was considered a good education 50 years ago, however, is no longer enough for success in college, career, and citizenship in the 21st century” (National Education Association, 2012, p. 3).

In specific academic disciplines, similar discussions and statements have been made. For example, in the field of health education and promotion, Auld and Bishop (2015) stated that “given today’s rapid pace of change and health challenges, we are called to identify, adapt and improve key elements that make teaching and learning about health and health promotion successful” (p. 5). Pruitt and Epping-Jordan (2005) discussed the need to develop a new approach to training for the 21st century global healthcare workforce. Regardless of approach or discipline, there is a clear desire among educators to identify a universal set of principles to guide effective teaching.

### *1.2 Overview of the Seven Laws of Teaching*

Gregory (1886) drew upon the metaphor of examining natural laws or phenomena to define the foundational principles that govern effective teaching. In step with what is now recognized as a positivist paradigm, Gregory believed that in order to understand such laws, one must subject the phenomenon to scientific analysis and identify its individual components. Gregory (1886) posited that the essential elements of “any complete act of teaching” are composed of:

Seven distinct elements or factors: (1) two personal factors—a teacher and a learner; (2) two mental factors—a common language or medium of communication, and a lesson or truth or art to be communicated; and (3) three functional acts or processes—that of the teacher, that of the learner, and a final or finishing process to test and fix the result. (p. 3)

Further, he argued that regardless of whether that which to be learned is a single fact requiring a few minutes or a complex concept requiring a lesson of many hours, all seven of these factors must be present if learning is to occur; none can be missing. For the purposes of this article, the concept of a “law” of teaching as expressed by Gregory (1886) has been re-termed to be a “principle.” We also embraced Gregory’s general grouping of these elements as key dimensions of the Seven Principles (i.e., actors, mental factors, functional processes, and finishing acts).

### 1.2.1 The Seven Principles Stated

There are a variety of ways that these seven principles can be expressed. Gregory (1886) first stated the overarching principles, then expressed them as direct statements for teachers to follow in their pursuits. Below are the principles exactly as Gregory wrote them (emphasis his own):

1) **The Principle of the Teacher:** A *teacher* must be one who KNOWS the lesson or truth or art to be taught... [As expressed to teachers:] Know thoroughly and familiarly the lesson you wish to teach,—teach from a full mind and a clear understanding.

2) **The Principle of the Learner:** A *learner* is one who ATTENDS with interest to the lesson given... [As expressed to teachers:] Gain and keep the attention and interest of the pupils upon the lesson. Do not try to teach without attention.

3) **The Principle of the Language:** The *language* used as a MEDIUM between teacher and learner must be COMMON to both... [As expressed to teachers:] Use words understood in the same way by the pupils and yourself—language clear and vivid to both.

4) **The Principle of the Lesson:** The *lesson* to be mastered must be explicable in terms of truth already known by the learner—the UNKNOWN must be explained by means of the KNOWN... [As expressed to teachers:] Begin with what is already well known to the pupil upon the subject and with what [they themselves] experienced,—and proceed to the new material by single, easy, and natural steps, letting the known explain the unknown.

5) **The Principle of the Teaching Process:** *Teaching* is AROUSING and USING the *pupil's mind* to grasp the desired thought... [As expressed to teachers:] Stimulate the pupil’s own mind to action. Keep [their] thoughts as much as possible ahead of your expression, placing [their] in the attitude of a discoverer, an anticipator.

6) **The Principle of the Learning Process:** *Learning* is THINKING into one’s own UNDERSTANDING a new idea or truth... [As expressed to teachers:] Require the pupil to reproduce in thought the lesson [they are] learning—thinking it out in its parts, proofs, connections and applications till [they] can express it in [their] own language.

7) **The Principle of Review:** The *test and proof* of teaching done—the finishing and fastening process—must be a REVIEWING, RETHINKING, RE-KNOWLEDING, REPRODUCING, and APPLYING of the material that has been taught... [As expressed to teachers:] Review, review, REVIEW, reproducing correctly the old, deepening its impression with new thought, linking it with added meanings, finding new applications, correcting any false views, and completing the true. (Gregory, 1886, pp. 5-7)

### 1.2.2 Essentials of Successful Teaching Using the Seven Principles

There are a variety of understandings that are essential for applying these Seven Principles to effective teaching. The first understanding is that the Seven Principles are both necessary and sufficient for effective teaching. Gregory (1886) stated that “these rules, and the laws which they outline and presuppose, underlie and govern all successful teaching. If taken in their broadest meaning, nothing need be added to them; nothing can be safely taken away” (p. 7). He posited that when these principles are used in conjunction with “good order,” no teacher need be concerned about failing as a teacher, provided each principle is paired with effective behavior management. Thus, Gregory indicated that profound understanding and consistent application of these principles forms the foundation for all successful teaching and learning experiences.

Another understanding essential for successful teaching with the principles is the deceptiveness of their simplicity. At first review, it is easy for the reader to conclude that these principles “seem at first simple facts, so obvious as scarcely to require such formal statement, and so plain that no explanation can make clearer their meaning” (Gregory, 1886, p. 8). As one begins to examine the applications and effects of these principles, it becomes apparent that while

there is constancy, there is also opportunity for variation as each teacher finds their personal expression of each principle.

The functionality of the principles is not temporally constrained; the principles are as applicable for the 21st century teacher as they were for teachers of the 19th century. For example, while the language of the learners of the 1800s was likely to have been substantially different from the language of the learners of the 2000s, teachers must prepare their lesson with the language of their learners in mind regardless of the century in which they taught or are teaching. Gregory's (1886) principles offer a basis for modern strategies and theories of teaching and learning that is consistent with broader philosophies of education. For this reason, we will refer to them as the Seven Timeless Principles.

The ubiquitous nature of these Seven Timeless Principles needs to be understood in order for the principles to be applied in effective teaching. Gregory (1886) stated that the laws "cover all teaching of all subjects and in all grades, since they are the fundamental conditions on which ideas may be made to pass from one mind to another, or on which the unknown can become known" (p. 8). In this way, he suggested that the principles are just as applicable to the elementary school teacher as they are to the college professor, equally important to the music teacher as to the health teacher.

Associated with each principle were what Gregory (1886) described as "Rules for Teachers" (p. 31). These rules herein subsequently will be referred to as guidelines. These guidelines detail the core components that shape each principle. For example, a guideline under the Teacher Principle would be: "Prepare each lesson by fresh study. Last year's knowledge has necessarily faded somewhat" (Gregory, 1886, p. 20). A guideline posited for the Learner Principle: "Adapt the length of the class exercise to the ages of the pupils: the younger the pupils the briefer the lesson" (Gregory, 1886, p. 30).

### *1.3 Significance and Study Objective*

Gregory's (1886) original work has been recognized as making valuable contributions to the teaching and learning process in some circles (Stephenson, 2014; Wilson, 2014). In a recent reprint of Gregory's first edition text, Stephenson (2014) provided supplemental materials that included study questions, self-assessment, and a sample teacher observation form. In the same book, Wilson (2014) argued that one of the essential elements of effective teaching is that teachers understand the distinction between the methods of teaching and the principles of teaching.

Wilson (2014) stated, "Methods change. They come and go. In the ancient world, students would use wax tablets to take notes, and now they use another kind of tablet, one with microchips inside" (p. 4). Wilson suggested that a teacher using the methods of wax or stone needed to know what was going to be said and why just as much as a teacher using the methods of a smart board or computer in today's classroom. The purpose of this study is twofold: (a) to assess the perceived relevance of the Seven Timeless Principles and guidelines posited by Gregory (1886) for current educators and educators-in-training and (b) to develop and pilot test the instrument needed to accomplish the former. The research hypothesis of this study is that the principles and guidelines posited by Gregory are affirmed as relevant by current and future educators. The approach is to translate Gregory's guidelines into a survey instrument capable of providing evidence of the value of the overarching principles.

## **2. Method**

### *2.1 Research Design*

This research was an exploratory study with a cross-sectional design that used a convenience sample. Research sites were chosen because of their accessibility to the researchers. The research protocol was approved by the institutional review boards (IRBs) of all of the institutions with which the authors are affiliated.

### *2.2 Sample and Participant Selection*

The participants for this study consisted of current educators and educators-in-training. The current educators were higher education professors from three universities ranging in size from small- to mid-sized: one in the South, one in the Midwest, and one in the North. The educators in training participants were students enrolled in the undergraduate teacher education programs at two of the universities. Recruitment for all participants was conducted via an email or in-class invitation to participate in the research project by completing the survey.

Student participants were recruited from two classes: an introduction to teacher education course and a senior-level course. Surveys were taken by students prior to participating in their student teaching experience, and bonus points were offered for participation. Faculty participants were recruited through the faculty development process, though participation in the process was not required to participate in the survey. All participants voluntarily completed the

survey after reading and acknowledging the informed consent form.

### 2.3 Data Collection and Analysis

Participant invitations and all surveys were administered in the 2018 spring and fall academic semesters using Google Forms, from which aggregated data were downloaded. Statistics for descriptive and reliability analyses were generated using SPSS Version 26 software. Means and standard deviations were calculated for all 43 guidelines, including all aggregate groupings for principles and dimensions. To affirm reliability of the instrument and the subscales, Cronbach's alphas were computed on the total scale and on each of the principle subscales.

### 2.4 Institutional Approvals and Ethical Considerations

The protocol of this project was approved by the IRBs of Western Michigan University, Mid-America Nazarene University, and University of Tennessee at Martin. Prior to completing the electronic survey, each potential participant reviewed an IRB-approved informed consent form online. Potential participants who agreed to participate clicked on the "proceed to survey" button, which led them to the initial questions of the survey. The informed consent notified participants that they could discontinue participation at any time.

Participant confidentiality and anonymity were protected through the security of the Google survey management system and the encrypted, password-protected security of the investigators' university computers. There is limited psychometric risk to participation in an online survey. No prior psychometric data were available for the instrument, as one purpose of this study was to pilot its use.

### 2.5 Instrument Development: Assessment and Measures

The instrument used in this research was developed by the authors and is based upon Gregory's (1886) Seven Timeless Principles. The instrument contains two basic components. The first component of the survey was basic demographic information, including: age, binary gender, race, level of involvement in teaching, and primary academic discipline. No identifying information beyond the above-mentioned variables was collected.

The second component of the instrument was developed directly from the guidelines for teachers described by Gregory (1886) to measure teacher perception of the guidelines' modern relevance. Each guideline was used as an item on the instrument. Evidence of face validity was obtained by a panel of education professionals who reviewed each of the guidelines for its relevance to the principle with which it was associated. In some instances, minor changes were made to the language of Gregory's guidelines in order to present the content in more modern language. Care was taken to ensure that each statement accurately reflected its original meaning.

The final instrument consisted of five demographic items and 43 items related to the guidelines for effective teaching, creating a Timeless Principles Scale. The items (guidelines) associated with each of the seven principles were combined into subscales comprised of  $n$  items (i.e., Principle of the Teacher [ $n = 6$ ], Principle of the Learner [ $n = 6$ ], Principle of the Language [ $n = 6$ ], Principle of the Lesson [ $n = 6$ ], Principle of the Teaching Process [ $n = 9$ ], Principle of the Learning Process [ $n = 4$ ], and Principle of Review and Application [ $n = 6$ ]).

Using a 4-point Likert scale, participants affirmed or rejected the perceived relevance of each item (guideline) as it relates to teacher best practices in 21st century educational settings (1 = *strongly disagree* to 4 = *strongly agree*). Means and standard deviations were computed for the total scale, for each of the subscales, and for each of the 43 items. Responses and mean scores of 3.0 or greater were considered affirming of the relevance of the principle and/or guideline for current teaching and learning.

## 3. Results

### 3.1 Demographics

Of the 84 educators and education students who participated in the study, 86.9% identified as White and 9.6% identified as African American/Black, Hispanic, Asian, or Native American; 3.6% did not identify race. The majority of participants were female (57.1%), with 39.3% participants identifying as male and 3.6% that did not identify gender. With regard to primary discipline, health sciences was most common (25.0%), followed by physical sciences (15.5%), behavioral sciences (13.1%), and social sciences (11.9%). Humanities, language arts, music or fine arts, and physical education represented 8.3%, 9.5%, 4.8%, and 2.4% of disciplines, respectively.

The majority of respondents were educators in higher education settings (70.2%). Education students represented 28.6% of participant responses, and other workforce professionals represented 1.2% of the sample. Most participants in higher education reported employment at a full-time level (44% of total), with 4.8% reporting a part-time teaching

position. Of the 59 total teachers/professors, 50% stated that their education included training and course work in effective teaching practices.

### 3.2 Total Scale

Mean and standard deviation scores for the total scale, the subscales, and for each item are presented in Table 1. The mean total score for the Timeless Principles Scale (consisting of all 43 items on the instrument) was 3.37 with a standard deviation of 0.348 (see Table 1). This result indicates that participants agreed overall, and were inclined to strongly agree, with the guidelines and principles identified by Gregory's (1886) laws. Cronbach's alpha calculated for the total scale was 0.954, indicating a high level of internal consistency and that the total scale is reliable.

**Table 1.** Mean, Standard Deviation, and Cronbach's Alpha Scores for the Timeless Principles Scale

Item	<i>M</i>	<i>SD</i>	$\alpha$
Timeless Principles: Total Scale	3.37	.348	.954
Principle of the Teacher - An effective teacher should:	3.30	.385	.667
1) Prepare each lesson by fresh study. Last year's knowledge has necessarily faded somewhat.	3.02	.640	-
2) Find the connection of the lesson to the lives and duties of the learners. Its practical value lies in these connections.	3.48	.611	-
3) Keep in mind that complete mastery of a few things is better than an ineffective smattering of many.	3.23	.704	-
4) Have a plan of study, but do not hesitate, when necessary, to study beyond the plan.	3.39	.560	-
5) Make use of all good books and resources available to you on the subject of the lesson.	3.33	.627	-
6) Get the help of the best scholars and thinkers on the topic at hand to solidify your own thoughts.	3.30	.561	-
Principle of the Learner - To enhance student engagement, an effective teacher should:	3.52	.376	.754
7) Never exhaust wholly the learner's power of attention. Stop or change activities when signs of attention fatigue appear.	3.39	.602	-
8) Adapt the length of the class exercise to the ages of the pupils: The younger the pupils the briefer the lesson.	3.43	.556	-
9) Appeal whenever possible to the interests of your learners.	3.62	.513	-
10) Prepare beforehand thought-provoking questions. Be sure that these are not beyond the ages and attainments of your learners.	3.64	.530	-
11) Make your lesson as attractive as possible, using illustrations and all legitimate devices and technologies. Do not, however, let these devices or technologies be so prominent as to become sources of distraction.	3.60	.518	-
12) Maintain in yourself enthusiastic attention to and the most genuine interest in the lesson at hand. True enthusiasm is contagious.	3.45	.629	-
Principle of the Language ( <i>n</i> = 6) - In order to ensure a common language, an effective teacher should:	3.31	.414	.800
13) Secure from the learners as full a statement as possible of their knowledge of the subject, to learn both their ideas and their mode of expressing them, and to help them correct their knowledge.	3.27	.588	-
14) Rephrase the thought in more simple language if the learner fails to understand the meaning.	3.54	.525	-
15) Help the students understand the meanings of the words by using illustrations.	3.37	.533	-
16) Give the idea before the word, when it is necessary to teach a new word.	3.11	.581	-
17) Test frequently the learner's sense of the words she/he uses to make sure they attach no incorrect meaning and that they understand the true meaning.	3.30	.636	-
18) Should not be content to have the learners listen in silence very long at a time since the acquisition of language is one of the most important objects of education. Encourage them to talk freely	3.25	.641	-
Principle of the Lesson - In order to create an effective lesson, an effective teacher should:	3.51	.415	.828
19) Find out what your students know of the subject you wish to teach to them; this is your starting point. This refers not only to textbook knowledge but to all information they may possess, however acquired.	3.37	.655	-
20) Relate each lesson as much as possible with prior lessons, and with the learner's knowledge and experience.	3.65	.503	-
21) Arrange your lesson so that each step will lead naturally and easily to the next; the known leading to the unknown.	3.61	.515	-
22) Find illustrations in the most common and familiar objects suitable for the purpose.	3.46	.525	-
23) Lead the students to find fresh illustrations from their own experience.	3.48	.571	-

Item	M	SD	$\alpha$
24) Urge the learners to use their own knowledge to find or explain other knowledge. Teach them that knowledge is power by showing how knowledge really helps solve problems.	3.51	.570	-
Principle of the Teaching Process - To create and effective teaching process, the effective teacher should:	3.37	.407	.858
25) Select and/or develop lessons and problems that relate to environment and needs of the learner	3.49	.549	-
26) Excite the learner's interest in the lesson when starting the lesson, by some question or statement that will awaken inquiry. Develop a hook to awaken their interest.	3.57	.521	-
27) Place yourself frequently in the position of a learner among learners, and join in the search for some fact or principle.	3.42	.587	-
28) Repress the impatience which cannot wait for the student to explain themselves, and which takes the words out of their mouth. They will resent it, and feel that they could have answered had you given them sufficient time	3.29	.654	-
29) Count it your chief duty to awaken the minds of the learners and do not rest until each learner shows their mental activity by asking questions.	3.06	.766	-
30) Repress the desire to tell all you know or think upon the lesson or subject; and if you tell something to illustrate or explain, let it start a fresh question.	3.30	.555	-
31) Give the learner time to think, after you are sure their mind is actively at work, and encourage them to ask questions when puzzled.	3.48	.548	-
32) Do not answer the questions asked too promptly, but restate them, to give them greater force and breadth, and often answer with new questions to secure deeper thought.	3.34	.590	-
33) Teach learners to ask What? Why? and How? in order to better learn the nature, cause, and method of every fact, idea, or principle observed or taught them: also, Where? When? By whom? and What of it? - the place, time, actors, and consequences.	3.37	.599	-
The Principle of the Learning Process - In order to facilitate an effective learning process, the effective teacher should:	3.40	.462	.684
34) Ask the learner to express, in their own words, the meaning as they understand it, and to persist until they have the whole thought.	3.35	.674	-
35) Let the reason why be perpetually asked until the learner is brought to feel that they are expected to give a reason for their opinion.	3.29	.721	-
36) Aim to make the learner an independent investigator - a student of nature, a seeker of truth. Cultivate in them a fixed and constant habit of seeking accurate information.	3.58	.542	-
37) Seek constantly to develop a profound regard for truth as something noble and enduring.	3.37	.638	-
The Principle of Review and Application: To affirm the learning that has occurred and apply it, the effective teacher should:	3.37	.348	.852
38) Have a set time for reviews. At the beginning of each lesson take a brief review of the preceding lesson	3.25	.618	-
39) Glance backward, at the close of each lesson, to review the material that has been covered. Almost every good lesson closes with a summary. It is good to have the learners know that any one of them may be called upon to summarize the lesson at the end of the class.	3.30	.619	-
40) Create all new lessons to bring into review and application, the material of former lessons.	3.12	.722	-
41) The final review, which should never be omitted, should be searching, comprehensive, and masterful, grouping all parts of the subject learned as on a map, and giving the learner the feeling of a familiar mastery of it all.	3.28	.668	-
42) Seek as many applications as possible for the subject studied. Every thoughtful application involves a useful and effective review.	3.33	.627	-
43) An interesting form of review is to allow members of the class to ask questions on previous lessons.	3.23	.533	-

Note.  $N = 84$ . Survey questions (“guidelines”) were aggregated by subscales representing Gregory’s (1886) Seven Laws (“Principles”) of Teaching. Values were calculated from 4-point Likert scale responses (1 = *strongly disagree*, 2 = *disagree*, 3 = *agree*, 4 = *strongly agree*).

### 3.3 Principles and Guidelines

The mean and standard deviation for each of the principle subscales were computed as follows: Principle of the Teacher ( $M = 3.30$ ,  $SD = 0.385$ ), Principle of the Learner ( $M = 3.52$ ,  $SD = 0.376$ ), Principle of the Language ( $M =$

3.31,  $SD = 0.414$ ), Principle of the Lesson ( $M = 3.51$ ,  $SD = 0.415$ ), Principle of the Teaching Process ( $M = 3.37$ ,  $SD = 0.407$ ), Principle of the Learning Process ( $M = 3.40$ ,  $SD = 0.462$ ), and the Principle of Review and Application ( $M = 3.37$ ,  $SD = 0.348$ ). This represents affirmation of each of the seven principles as relevant to current educational settings.

Cronbach's alpha for each of the subscales were as follows: Principle of the Teacher ( $\alpha = 0.667$ ), Principle of the Learner ( $\alpha = 0.754$ ), Principle of the Language ( $\alpha = 0.800$ ), Principle of the Lesson ( $\alpha = 0.828$ ), Principle of the Teaching Process ( $\alpha = 0.858$ ), Principle of the Learning Process ( $\alpha = 0.684$ ), and Principle of Review and Application ( $\alpha = 0.852$ ). These values affirm the internal consistency of each of the subscales.

The mean scores of each of the 43 items (guidelines) were above 3.0. The item mean scores ranged from 3.02 to 3.65 with standard deviations ranging from 0.503 to 0.766. These results reflect that each individual guideline was affirmed as being relevant to current educational settings.

## 4. Discussion

### 4.1 Implications

In this paper, we examined the relevance of the principles (laws) presented in 1886 by John Milton Gregory in *The Seven Laws of Teaching*. We presented evidence that these principles may indeed represent enduring Timeless Principles of effective teaching that, while their application in the 21st century may look different than it did in the 19th century, encapsulate the necessary elements to facilitate effective learning. The results of this exploratory study confirm affirmation from educators and educators-in-training of the current relevance of these principles.

The results of the study also affirm the perception of applicability of the guidelines—or as Gregory (1886) described them, rules for teachers—for faculty members of institutions of higher education as well as prospective K-12 teachers. However, neither we nor Gregory posit that the guidelines presented in the study represent a comprehensive, exhaustive list of appropriate guidelines. For example, one could envision a guideline such as “Learn students’ names to help them feel connected to the learning community” as an element of effective teaching. However, this statement could easily be considered as a fit for the Principle of the Learner, as the feeling of being connected to the learning community certainly contributes to learner engagement. It is reasonable and should be expected that other guidelines for teachers would be consistent with one of the seven principles.

The mean score of respondents to each guideline statement was above 3.0 on a 4-point Likert scale in which a 3 represented *agree* and a 4 represented *strongly agree* (lowest  $M = 3.02$ , highest  $M = 3.65$ ). In addition, the mean scores for the subscales representing each principle had mean scores ranging from 3.31 to 3.52, reflecting strong affirmation of the current relevance of each of the Seven Timeless Principles.

The enduring nature of these Seven Principles may be a result of their consistency with research-based practices whose impact has been shown since Gregory (1886) described his Laws for Teachers. For example, the concept of cognitive load theory (Atkinson & Shiffrin, 1968) is consistent with both the Principle of the Learner and the Principle of the Lesson. In addition, elements of self-determination theory (Ryan & Deci, 2000) are clearly consistent with the guidelines in the Principle of the Teaching Process, and spaced-retrieval practice (Karpicke & Roediger, 2007) easily fits within the Principle of Review, the *reviewing*, *rethinking*, *re-knowing*, and *reproducing* of the learning. Eyster's (2018) description of curiosity as one the fundamental elements of how humans learn contains many elements that overlap with and are similar to the language used by Gregory to describe the Principle of the Learner. In order for learning to occur, the learner must actively engage in the learning process and must demonstrate curiosity toward that which is to be learned.

As Wilson (2014) indicated, “highly effective teachers will understand the profound differences between methods of teaching and principles of teaching” (p. 3). For example, lesson plan development is a common method used in teacher preparation programs to emphasize the importance of comprehensive understanding of the lesson to be taught. The lesson plan includes objectives, a review of previous lessons, a summary of the content, and identification of activities that will be used to facilitate the learning. These activities represent methods that are consistent with the Principle of the Lesson. The teacher must have a clear understanding of what is to be learned in this class and how the content to be learned builds upon previous lessons or classes.

Additionally, in the higher education arena, institutions and accreditation bodies have a variety of methods designed to be consistent with the Principle of the Teacher. A teacher must be one who knows the lesson or truth to be taught. Potential faculty are evaluated on the relevance of their degrees, research, and experiences to the classes to be taught,

all of which is done in an attempt to demonstrate that the instructor knows the lesson or truth to teach.

There is danger in too great of a focus on methods rather than the principles. For example, the actions of some accrediting bodies in higher education imply that the only way an instructor can learn about a particular content area is to take courses at a university or college. However, it is easy to elicit examples of respected experts who developed their expertise outside the traditional classroom. Another example can be easily observed in the developing role of the digital classroom. While the methods of developing and maintaining the engagement of students are likely to be quite distinct from a face-to-face classroom versus an online or hybrid classroom, the Principle of the Learner is equally relevant in both settings.

#### 4.2 Limitations and Future Work

While embracing convenience sampling and incentivizing student participation increases reliability and power associated with sample size, it also influences who accepts the invitation to participate. This increases the potential non-response bias of the study. Similarly, while adhering to Gregory's (1886) language closely was a primary component of identifying transferability, the structure of the instrument may increase desirability and acquiescence biases. Such response biases are possible when evaluating a series of statements without embedded item controls. While a highly controlled instrument was outside the scope of this work, future studies can leverage an in-depth analysis of specific principles and guidelines using survey techniques designed to mitigate bias.

The sample size, while sufficient for the statistical purposes of the study, is not necessarily sufficient to make an argument that it is representative of a national population of educators or future educators. However, we believe the sample is strengthened by the diversity of academic disciplines that are represented in it. Additional replications of the study with larger, more representative samples will be necessary to extrapolate the results to a larger population; this will be a focus of continued research.

Additional efforts are needed to examine each of the Seven Timeless Principles in-depth and to provide insights into the application in 21st century education. This includes more detailed research involving a larger and more diverse sample, as well as the addition of mixed methods for a more comprehensive portrayal of data. Further, future efforts will attempt to demonstrate that current-day teaching theories and methods, as well as modern policies and regulations that are considered innovative, are founded in these Timeless Principles. In addition, there is potential to create a framework for the teaching and learning process that assists teachers at all levels of education to clearly associate their strategies and methods of teaching with the Timeless Principles.

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