



Special Report

Placing social science research at the service of the Church in the United States since 1964

Science and Religion in Catholic High Schools

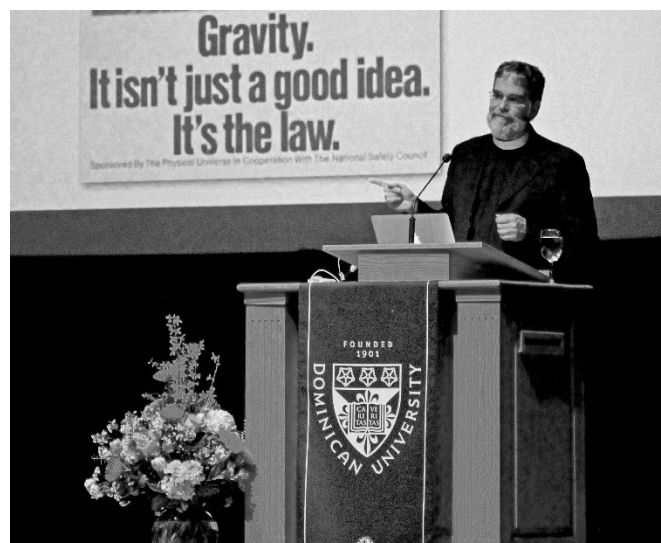
Sr. Florence Emurayevaya, EHJ, M.A. | Mark M. Gray, Ph.D.

Catholic educational institutions are unique in that they have long aimed to teach religion and science under the same roof in the United States. Yet, many Americans are seemingly unaware of this. If one uses Google to search “Do Catholic schools” the auto-finish feature, showing common queries, will offer “teach evolution.” In what might be called the “Curse of Galileo,” many Americans seem to believe the Church is anti-science.

Dr. Christopher Kaczor, Professor of Philosophy at Loyola Marymount University, explains “One reason that people view faith and science as in opposition is that they often view faith and reason more generally as in opposition. Our culture often pits faith against reason, as if the more faith-filled you are, the less reasonable you are. Faith and reason in the minds of so many people are polar opposites, never to be combined, and never to be reconciled. In this way, our culture often offers us false alternatives: live either by faith or by reason. To be religious is to reject reason; to be reasonable is to reject religion. ... the Church invites us to harmonize our faith and our reason because both are vitally important to human well-being.”¹

How well do Catholic high schools help students reconcile their knowledge of their faith and science? In 2017 and 2018, CARA conducted a survey of all Catholic high schools in the United States.² Each school received three sets of surveys. These were completed by the principal, one religion teacher, and

one science teacher (selected by the principal). This special report details the findings from this study, which was funded by the John Templeton Foundation.



Director of the Vatican Observatory and science educator Bro. Guy Consolmagno, S.J. speaking at Dominican University, 2010. He is a frequent speaker at Catholic high schools and was an advisor to this study.

Principals: Integration of Religion and Science

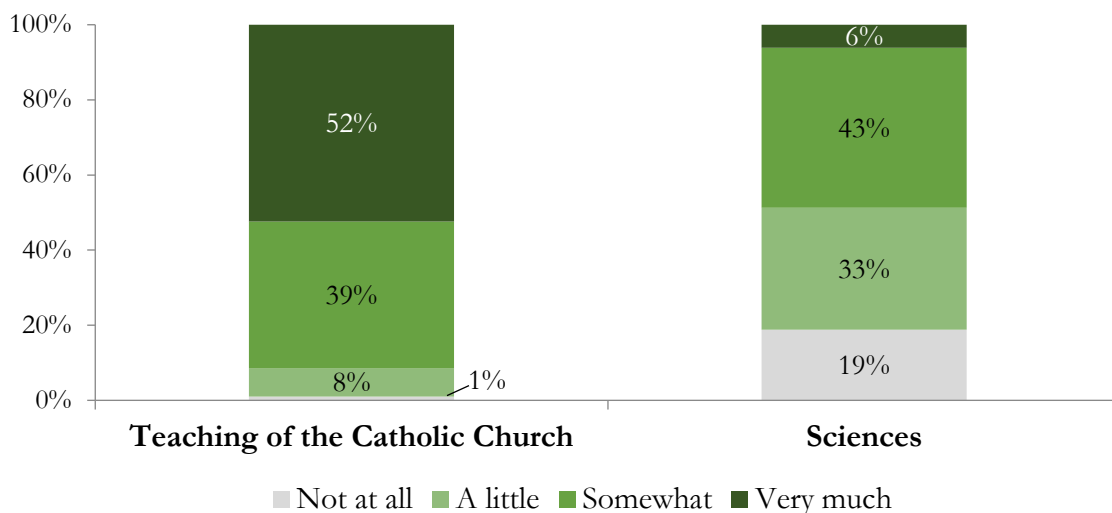
In order to ascertain how Catholic high schools in the United States, combine the two subjects into their curriculums, the survey of principals asked if their school deliberately tries to integrate the teachings of the Catholic Church and the sciences, in some way, in all academic classes.

¹ Kaczor, Christopher “The Church Opposes Science: The Myth of Catholic Irrationality” *CERC Catholic Education Resource Center*.

² The survey was based on a population of 1,175 high schools. In all, 564 principals and teachers from 199 schools responded for a school

response rate of 17%. The survey results have a margin of sampling error of ± 6.3 percentage points.

Does your school deliberately try to integrate the _____ in some way, in all academic classes



Ninety-one percent of principals indicated that their school deliberately integrates the teaching of the Catholic Church in all academic classes “somewhat” or “very much.” Fewer, 49%, said that their campus deliberately integrates sciences in all academic classes this much.

Science, technology, engineering, and math (STEM) has become an important education focus in recent years. Many have added the arts to create a STEAM focus. CARA was interested in adding religion and asked principals if they are STREAM focused using the following question, “Do you consider your school to be a campus where some combination of science, technology, religion, engineering, the arts, and/or math are taught cohesively in one curriculum?” nearly six in ten principals (59%) say they consider their school to “somewhat” or “very much” fit this typology.

The typical Catholic high school requires students to take three science courses and four religion classes to graduate.

Eighty-six percent of principals report their school addresses evolution, the Big Bang, and the Book of Genesis together in the classroom. Seventy-seven percent say the same for transubstantiation, the Real Presence, and substance and accidents. Many, 72%, also say biology, anatomy, the soul, and the afterlife are

addressed together in classes. Fewer indicate that their classes address the faith of scientists such as Copernicus, Descartes, Mendel, Pasteur, or Lemaître.

Fifty-seven percent indicate that Pope Francis’ encyclical on the environment, *Laudato Si*, is included in the school curriculum and 35% say their campus has provided programs about this document.

Ninety-seven percent of Catholic high schools require their faculty to participate in training and/or ongoing development programs. Among the schools that do require these, 98%, include religion topics in these programs and half say these incorporate content related to science. Only 4% of principals personally perceive any conflict between science and Catholicism.

Ninety-four percent of principals said parents of students complain “a little” or “not at all” about how science is taught in their schools. Among those who reported any complaints at all, the following responses are representative examples of what they hear from parents:

- Curriculum is not rigorous enough
- The science department, historically, has had weaker teachers at our school
- Some questions and concerns arise when students are conducting dissections

- There's always a general interest in how issues of evolution are taught as well as human sexuality
- They and I would like to see a greater integration of science beyond just the science classroom

Many Catholic high schools have extra-curricular activities and/or groups related to math, science, and engineering. The most common offerings include: conservation/recycling (69%), math (67%), robotics (65%), and computer science/programming (62%).

Science Teachers in the Catholic Classroom

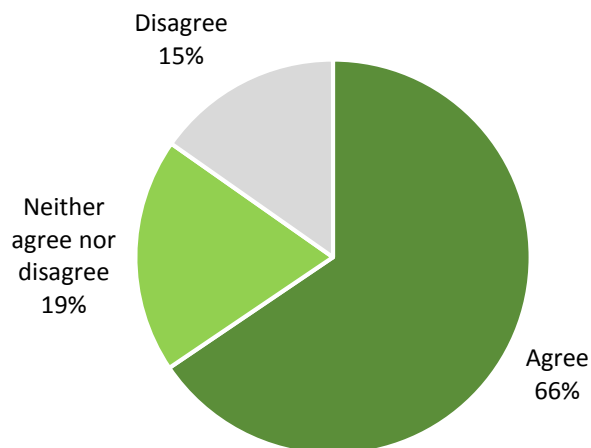
The science teachers responding to the survey were most often involved in teaching biology (54%) followed by chemistry (33%), physics (26%), environmental science (18%), general science and methods (14%), and earth science (11%). Other courses taught by responding teachers include astronomy, robotics, forensics, algebra, engineering, botany, genetics, anatomy, and neuroscience.

Sixty-five percent of science teachers say they have monthly or more frequent meetings with other teachers to discuss curriculum. Seventy-two percent say they have “very much” influence on subject matter taught in their classes. Twenty-two percent say they have “some” influence and only 6% say they have “a little” or no influence at all on this. Most also say they have “very much” influence on textbooks (72%) and which supplies are purchased (71%). Significantly fewer indicate they have this level of influence on the size of the budget they have for supplies (24%).

The science teachers are less likely than their principals to agree that the sciences are integrated, in some way, in all classes. Thirty-six percent of science teachers agree with this “somewhat” or “very much” that this occurs in their school compared to 49% of principals. They are also less likely to agree that the teachings of the Catholic Church are integrated in all academic classes (83% of science teachers compared to 91% of principals). Overall, 63% of science teachers agree that their school has a STREAM curriculum.

Science teachers in Catholic schools do not frequently field questions from students about the relationship between the Catholic faith and science in class. Only 7% say this happens on a weekly basis or more often. Twenty-one percent say it happens to them at least once a month. Most say this occurs only a few times a year (45%) and some say it happens less often (24%) or never (3%). These teachers say these questions come even less often outside of class. Only 13% say this occurs at least monthly.

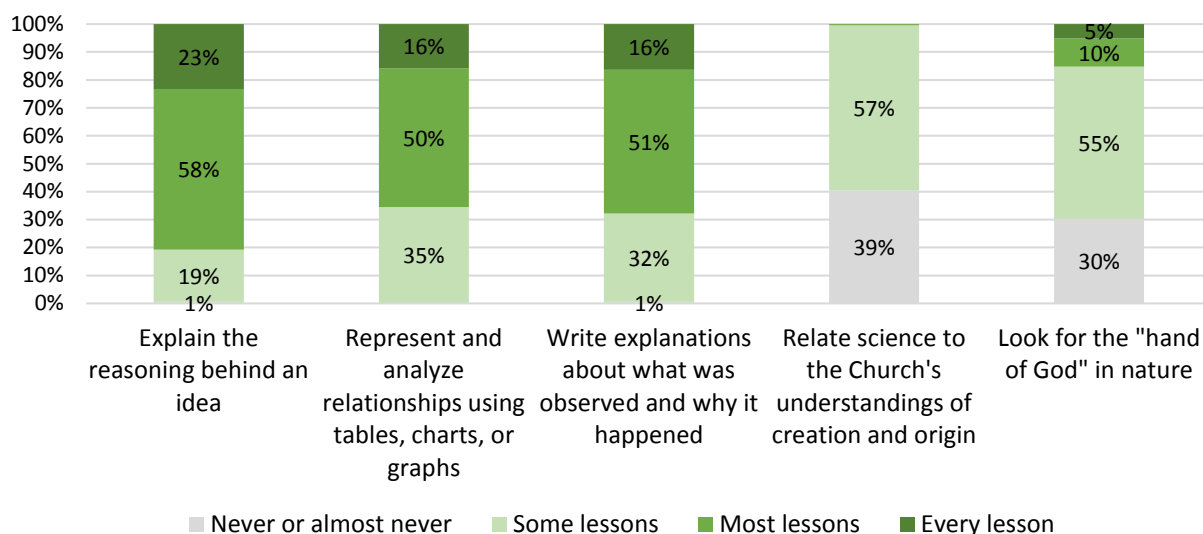
Science Teachers: *Students in my classes have no trouble reconciling their faith with science.*



Two-thirds of science teachers agree that students in their classes have no trouble reconciling their faith with science. Nineteen percent neither agree nor disagree and 15% disagree. Seventy-six percent of science teachers agree that their classes help students reconcile perceived conflicts between Catholicism and science. Only 6% disagree with this statement and 18% neither agree nor disagree.

Science teachers were asked if the lives and work of Catholic scientists are included in science classes at their school. Ninety-eight percent say Gregor Mendel, heredity, and the creation of genetics is covered. Similar numbers note that Louis Pasteur, the discovery of germ theory, pasteurization, and vaccination are part of course content (97%). Most say Nicolaus Copernicus, Galileo Galilei, and the heliocentric view (83%) and Georges Lemaitre (78%) are discussed in science classes.

Science Teachers: *In your science lessons, how often do you usually ask students to do the following?*



Two-thirds say Enrico Fermi, creator of the first nuclear reactor and “architect of the nuclear age” (66%) is covered. Slightly fewer indicate that André-Marie Ampère, one of the founders of electromagnetism and inventor of solenoid is discussed (63%).

The following individuals and related topics are included in classes less frequently: René Descartes and philosophy of science (59%), Guglielmo Marconi and radio (41%), Jean Baptiste Dumas and atomic weights (36%), William of Ockham and Ockham’s razor (35%), Pierre Teilhad de Chardin, S.J. and Peking Man (26%) and Georgius Agricola and mineralogy (7%).

Most often, science teachers are asking their students to explain the reasoning behind an idea (81% in “most” or “every” lesson), represent and analyze relationships using tables, charts, or graphs (66%), or write explanations about what was observed and why it happened (68%) than they are asking students to relate science to the Church’s understandings of creation or origin (4%) or to look for the “hand of God” in nature (15%).

Seventy-five percent of science teachers in Catholic high schools believe in God without doubts. Twenty-one percent believe in God but have doubts at times.

Only 3 percent are agnostic and do not believe in God but believe God may exist and less than 1% are atheists who do not believe in God and are sure God does not exist.

Eighty-five percent of responding science teachers believe the Bible is the inspired word of God rather than the actual word of God to be taken literally word-for-word (2%). Thirteen percent do not believe the Bible is the actual or inspired word of God. Overall, 56% of science teachers agree that “the story of creation in the Bible is a sacred narrative and not meant to communicate the reality that science has described.” Twenty-two percent neither agree nor disagree with this statement and 22% disagrees with it.

Ninety-one percent believe in Big Bang cosmology and six in ten believe the Big Bang, approximately 13.8 billion years ago, is the moment described in the Book of Genesis when God created the universe and its contents. Twelve percent believe the Big Bang has a natural explanation that does not involve God. Only 3% believes God created the universe and earth in the last 10,000 years over the course of six 24-hour days. More than a quarter do not know what to believe about creation of the universe.

Seventy-four percent agree that the order and harmony seen in observations of the universe that are interpreted as “laws of nature” are reflective of a creator’s hand.

Ninety-five percent of science teachers in Catholic high schools believe in evolution by natural selection as the explanation for the diversity of life on earth—including humans. One percent neither agrees nor disagrees and 4% disagrees with evolution.

The science teachers were asked to select from different concepts and ideas the expressions they thought are most strongly associated with the origins of humans. These were ranked by respondents as such:

1. Evolution (76%)
2. God (66%)
3. Natural selection (61%)
4. Creation (28%)
5. Australopithecus (19%)
6. Adam and Eve (17%)

Only 21% of science teachers believe that Adam and Eve were real historical people.

Twenty-nine percent agree that there are “unresolvable conflicts between science and religion.” However, only 3% see “very much” conflict between science and Catholicism. Eighteen-percent agree “somewhat” that there is this conflict. By comparison, 36% “very much” see unresolvable conflicts between science and Evangelical Protestantism or Christianity and 31% see this conflict “somewhat.”

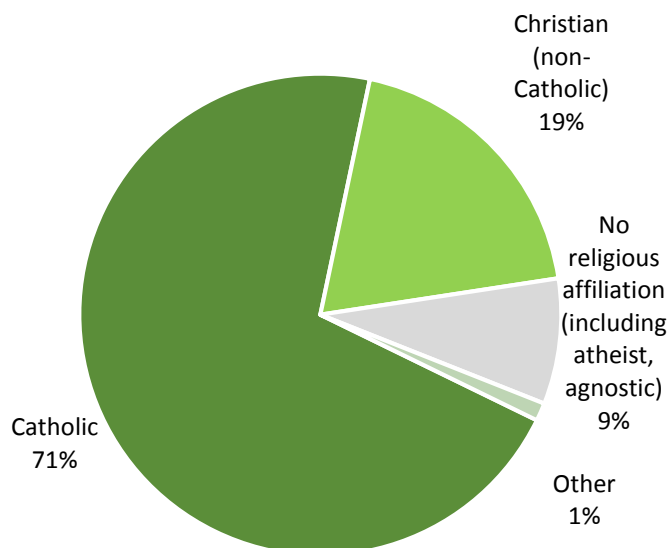
Only 2% of science teachers agree that if evidence of life is found elsewhere in the universe that this would be incompatible with their faith.

Eight in ten science teachers in Catholic high schools agrees that science is capable of providing answers to big questions, such as how the universe was created and how human life began.

Nearly six in ten science teachers, 59%, agrees that science can help people make moral judgements. A majority, 55%, agrees that science needs religion to understand complete truth. At the same time, fewer

than half (48%) agrees with the statement, “While science has provided benefits it should be held responsible for the pain and suffering caused by things like nuclear, chemical, and biological weapons or unethical experiments on human beings.”

Science Teachers: *What is your religious preference?*



Seventy-one percent of science teachers in Catholic high schools self-identify their own religious affiliation as Catholic. About one in five (19%) self-identifies with another Christian affiliation and 1% are of non-Christian affiliations. Nearly one in ten does not have a religious affiliation (including 1% atheist and 2% agnostic).

Forty-five percent of science teachers in Catholic schools attended Catholic elementary schools when they were young and 42% attended Catholic high schools. Thirty-one percent attended a Catholic college or university. Among U.S. adult Catholics, 39% attended a Catholic elementary school, 19% attended a Catholic high school, and 10% attended a Catholic college or university.

About half, 49%, say hearing a call from God to teach at a Catholic school was at least “somewhat” important to their decision to teach in a Catholic school. More, 57%, say it was at least “somewhat” important to their decision that viewed teaching as a ministry in the Catholic Church.



Catholic high school students competing at the 2012 VEX Robotics World Championship in Anaheim, California.

Religion Teachers in the Catholic Classroom

The religion teachers responding to the survey were most often involved in teaching theology (69%), religion (50%), scripture or the Bible (41%), Church history (23%), or ecumenical or interreligious issues (22%). Other courses taught by responding teachers include apologetics, social teachings, ecclesiology, ethics, Ignatian spirituality, morality, sacraments, world religions, vocations, and theology of the body.

Seventy-five percent of religion teachers say that their school integrates the teachings of the Catholic Church at least “somewhat” into all academic classes. This is a significantly lower share than what principals report (91%). Religion teachers are also more likely than science teachers to believe the sciences are integrated in all academic classes (49% compared to 36%).

Religion teachers meet together to discuss and plan curriculum less often than science teachers. Fifty-six percent of religion teachers say they do this at least once a month compared to 75% of science teachers. Religion teachers are also less likely to agree they have “very much” influence over the subject matter taught in their classes (51% compared to 72% of science teachers). They also have less influence over the textbooks used (47% “very much” compared to 72% of science teachers).

Religion teachers are more likely than science teachers to report that students ask them questions about the relationship between the Catholic faith and science (42% at least one a month compared to 28%). Thus, when students in Catholic high schools have questions about religion and science it appears they are more comfortable asking these questions to their religion teacher than a science teacher. A quarter of religion teachers say students ask them questions about Catholicism and science at least once a month outside of class as well.

Sixty-three percent of religion teachers agree at least “somewhat” that their students have no trouble reconciling their faith with science. Twelve percent neither agree nor disagree. And one in four (25%) disagree and say their students do have some trouble reconciling their faith with science.

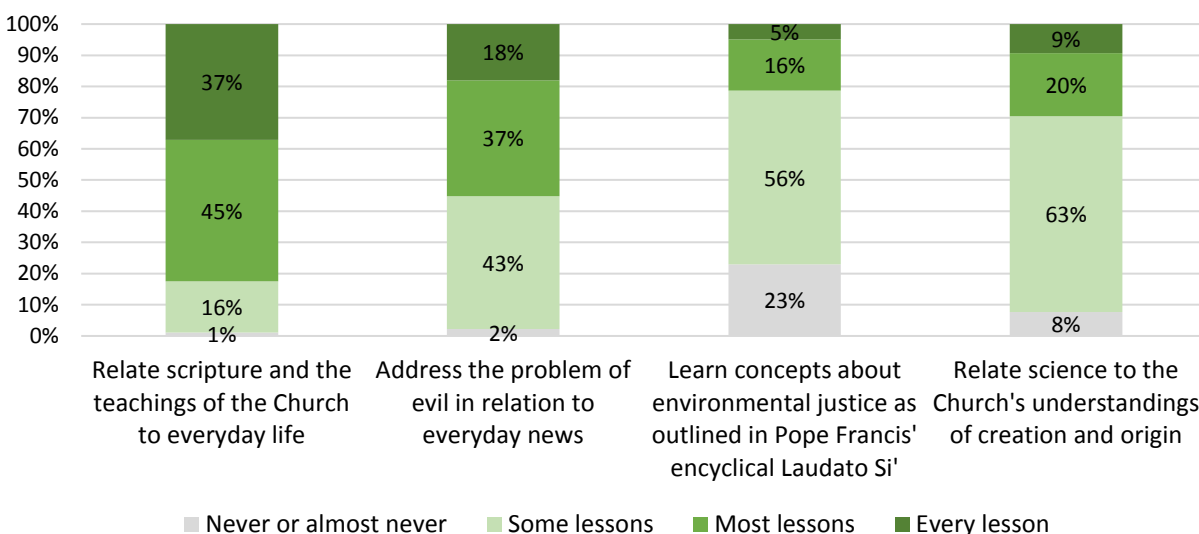
Seventy-three percent of religion teachers agree that their school’s curriculum helps students reconcile perceived conflicts between religion and science. Ninety-two percent agree that their class, specifically, achieves this.

Sixty-four percent of religion teachers perceive their school to be a STREAM campus that integrates the sciences with arts and religion.

Religion teachers were asked if the lives and work of Catholic scientists are included in religion or theology classes at their school. Sixty-nine percent say Georges Lemaître and the proposal of the Big Bang is covered. Many also indicate that Nicolaus Copernicus, Galileo Galilei, and the heliocentric view (59%) as well as Rene Descartes and philosophy of science (52%) are discussed. Fewer than half say Gregor Mendel, heredity, and the creation of genetics is ever mentioned in religion classes (42%). More than a third indicate that Pierre Teilhard de Chardin, S.J. and Peking Man (35%) and William of Ockham and Ockham’s razor are discussed in religion classes (38%).

Less often, the following individuals and topics are discussed in religion classes: Louis Pasteur, the discovery of germ theory, pasteurization, and vaccination (26%), Enrico Fermi, creator of the first nuclear reactor and “architect of the nuclear age”

Religion Teachers: *In your religion or theology lessons, how often do you usually ask students to do the following?*



(22%), Jean Baptiste Dumas and atomic weights (16%), Guglielmo Marconi and radio (16%), André-Marie Ampère, one of the founders of electromagnetism and inventor of solenoid (13%) and Georgius Agricola and mineralogy (8%).

As with science teachers, religion teachers are most often directly teaching their subject rather than engaging in lessons about the relationship between religion and science. They are frequently asking students to relate scripture and the teachings of the Church to everyday life (82% in most lessons or every lesson) or address the problem of evil in relation to everyday news (55%). Less often, they are asking students to relate science to the Church's understandings of creation or origin (29% in most lessons or every lesson) or asking them to learn concepts about environmental justice as outlined in Pope Francis' *Laudato Si'* (19%).

Ninety-eight percent of religion teachers self-identify their faith as Catholic. Sixty-three percent of religion teachers attended a Catholic elementary school and 54% attended a Catholic high school when they were younger. Seven in ten attended a Catholic college or university. One in four went to a Catholic seminary.

All responding religion teachers believe in God.

Eighty-nine percent have no doubts in their belief and 11% have doubts from time to time. Ninety-eight percent believe the Bible is the inspired word of God rather than the actual word of God to be taken literally word-for-word (less than 1%). Nearly 2% believes the Bible is not the inspired word of God but that it tells how the writers of the Bible understood the ways and principles of God.

Eighty-four percent believe in Big Bang cosmology and 69% believe the Big Bang, approximately 13.8 billion years ago, is the moment described in the Book of Genesis when God created the universe and its contents. Two percent believe the Big Bang has a natural explanation that does not involve God. Only 4% believes God created the universe and earth in the last 10,000 years over the course of six 24-hour days. More than a quarter do not know what to believe about creation of the universe.

Ninety-four percent of religion teachers agree that the order and harmony seen in observations of the universe that are interpreted as "laws of nature" are reflective of a creator's hand.

Seventy-nine percent of religion teachers in Catholic high schools believe in evolution by natural selection as the explanation for the diversity of life on earth—

including humans. Eleven percent neither agrees nor disagrees and 11% disagrees with evolution.

The religion teachers were asked to select from different concepts and ideas the expressions they thought are most strongly associated with the origins of humans. These were ranked by respondents as such with comparisons to the science teachers' responses:

1. God (92% compared to 66% of science teachers)
2. Creation (69% compared to 28%)
3. Evolution (62% compared to 76%)
4. Adam and Eve (39% compared to 17%)
5. Natural selection (16% compared to 61%)
6. Australopithecus (5% compared to 19%)

Only 32% of religion teachers believe that Adam and Eve were real historical people. Fifty-two percent do not believe and 16% do not know if they were real historical people.

Only 13% agree that there are “unresolvable conflicts between science and religion” and only 1% perceive “very much” conflict between science and Catholicism.

Only 1% of religion teachers agree that if evidence of life is found elsewhere in the universe that this would be incompatible with their faith.

Seventy percent of religion teachers in Catholic high schools agree that science is capable of providing answers to big questions, such as how the universe was created and how human life began.

More than six in ten religion teachers, 63%, agrees that science can help people make moral judgements. A large majority, 85%, agrees that science needs religion to understand complete truth.

Many religion teachers, 61%, also agree with the statement, “While science has provided benefits it should be held responsible for the pain and suffering caused by things like nuclear, chemical, and biological weapons or unethical experiments on human beings.”

Ninety-nine percent of Catholic religion teachers in Catholic high schools believe in the Real Presence of Jesus in the Eucharist. By comparison, only 81% of Catholic science teachers in Catholic high schools believes this.

Ninety-four percent of religion teachers say hearing a call from God to teach at a Catholic school was at least “somewhat” important to their decision to teach in a Catholic school. Even more, 97%, say it was at least “somewhat” important to their decision that viewed teaching as a ministry in the Catholic Church.

Lasting Impacts

As part of the Templeton-funded project, CARA also surveyed a random sample of adults, with an oversample of self-identified Catholics, nationally in 2016, asking them about their beliefs regarding science and their faith. Nineteen percent of Catholic respondents had attended a Catholic high school. When comparing those who attended a Catholic high school and those who did not these findings emerge:

- A majority of Catholics who went to a Catholic high school attends Mass at least once a month (53% compared to 40% of Catholics who did not attend a Catholic high school).
- Sixty-five percent of Catholics who went to a Catholic high school pray at least weekly compared to 58% of those who did not attend.
- Forty-eight percent of Catholic high school alumni believe in the Big Bang theory compared to 39% of those who did not attend.
- Sixty-three percent of Catholic high school alumni believe current science is compatible with the belief the God created the universe compared to 48% who did not attend.
- Sixty-five percent of Catholics who went to a Catholic high school believe in evolution compared to 53% who did not attend.
- Forty-two percent of Catholic high school alumni believe it is acceptable in the Catholic Church to believe humans evolved over time from other lifeforms compared to 24% of non-attenders holding this belief.

