



**LifeKnowledge<sup>®</sup>  
At Work**

*To advance the integration of LifeKnowledge through local teachers.*

**March 2007**

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## LifeKnowledge AT WORK Newsletter Designed for Local Teachers

LifeKnowledge AT WORK is a newsletter created by the National FFA Organization to advance the integration of LifeKnowledge in local agricultural education classrooms across America. Designed with local teachers in mind, LifeKnowledge AT WORK is a free electronic newsletter featuring tips from teachers, education experts, leadership gurus and a host of other resources.

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### LifeKnowledge Featured Articles

#### The LK Advantage in Middle School

Teaching middle school students can be especially challenging. Agriculture teacher Paul Larson talks about why he likes LK and why it works well with this age group. [Click here to read article](#)

#### Using LK to Enhance Teaching and Agriculture Departments

Hugh Mooney, agriculture teacher and head of the Galt High School Agriculture Department in Galt, Calif., explains how using LifeKnowledge and attending Delta I and II inspired him personally and influenced his agriculture program. [Click here to read article](#)

#### Using E-Moments to Make Learning Memorable

Fifth-year agriculture teacher and Delta participant Cassie Brock of Arizona explains how she uses E-Moments to make the most of LifeKnowledge in her program. [Click here to read article](#)

#### How to Use LifeKnowledge to Strengthen Teaching

Third-year agriculture teacher Cara Wiese of Savannah, Mo., shares how LK made her a better teacher from the start and how it continues to strengthen her teaching. [Click here to read article.](#)

### Featured Lesson

### LK in Action

#### Integrating LifeKnowledge into Agricultural Mechanics Courses

Do you teach Agricultural Mechanics and not know where to start to integrate LifeKnowledge lessons into your technical content? Let's explore some practical examples of connections for integrating LifeKnowledge into your technical content.

[Click here to read article](#)

### Hot Tips

#### Download Depot

Looking for some ready-to-use materials and ideas to help enhance your teaching and classroom? Check out what the Download Depot from Glencoe Online has to offer including some excellent turnkey materials for use in any classroom.

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### LifeKnowledge News

#### What's New with LK

– New, Improved Version of LifeKnowledge Available –Delaware Purchases LifeKnowledge Online for all state chapters  
[Click here to read article](#)



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## Featured Lesson Plan – Four-Stroke Cycle Engines

Agriculture teacher and FFA advisor Ryan Foor from Glenwood, Iowa, shares an agricultural mechanics lesson regarding Four-Stroke Cycle Engines. Ryan integrates the LifeKnowledge precept of Relationships into his lesson and correlates the structure of the FFA organization with the structure of an engine.

[Click here to read article](#)

### The LK Advantage in Middle School

**By Paul Larson, Agriculture Teacher,  
Freedom Middle School and High School, Freedom, Wisc. (Outside of Green Bay)**



I have been teaching for 20 years and this will be my 16th year working at least part-time with middle school students. While I enjoy this age group, it is often challenging because of their limited attention span and ability to stay on task. Their physical and emotional development level is such that it never hurts to use a little something extra to get their attention. Bringing LK into my middle school classroom has done just that. Not only are my classes better, but I am seeing more students (especially my eighth graders) getting excited about agriculture and agricultural education opportunities.

The first time I used LK was in my Leadership for Life class at the high school. When I saw the energy level and response to the strategies, I realized I needed to utilize the materials and strategies for more classes. I tried it with my middle school students and they were receptive and excited about the techniques from the start. It is so different from any other material they are exposed to during the day and the teaching strategies make learning fun for them and me. I am

now able to get through to them on a more consistent basis and it made me realize that I needed to throw out a lot of my old methods that were becoming stale.

I've found that using E-Moments is a good place to start, especially in middle school. The first couple of times I used E-Moments, my students looked at me weird like I had cracked up or gone off the deep end. But now that I've been using them for awhile, they realize my class is different and they roll with it. The E-Moments really liven up the room and change the normal routine of the classroom. I've also found that strategies such as setting context, pacing and interest approaches are helpful in keeping the students focused and giving them a better idea of what I am trying to accomplish. The important thing is to try one or two strategies first and then slowly add as you feel comfortable. It's also important to realize that not everything is going to go perfectly and that is okay. Laugh about it and try to refine it for a different situation.

*"I know many other teachers who use LK in varying degrees in middle school. Some are full scale and others just use bits and pieces. In either case, the response is that they like it and find it effective."*

I know many other teachers who use LK in varying degrees in middle school. Some are full scale and others just use bits and pieces. In either case, the response is that they like it and find it effective. But as with anything else, it takes some additional time – and in some cases, additional training – to fully engage in the program. I attended the Delta I and II conferences and that training has changed the way I teach and how I approach my daily contact with students. I am so much more student-focused than I was in the past and the students are learning and retaining more as demonstrated on tests and quizzes. It's important to remember that LK is so much more than lessons. It is a teaching *strategy* that invokes quality teaching based on brain-based research and practices. LK is not a magic bullet, but it is a tool to help guide instruction for students that will allow them to better connect with content and see how relevant and important it is to their current setting and/or futures.

The final piece of advice I give to teachers is that if they have access to LK-infused lessons and are not utilizing them, they are missing the boat. Setting up lessons with an LK focus has proven to be the best way for me to connect with all of my students, including middle school. They are engaged in learning and I am a better, more energized teacher. LK has made me look at how I teach and why I teach, causing me to make some real shifts in how I go about the business of education. The bottom line in education is and should always be: It is not about the teacher (me); it is about the student and how I can reach every student, every hour of every day. That is what makes education a challenge and what makes education the best job in the world.

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### Using LK to Enhance Teaching and Agriculture Departments

**By Hugh Mooney, Agriculture Teacher and Department Head,  
Galt High School, Galt, Calif. (Outside of Sacramento)**

After more than 20 years of teaching, LifeKnowledge (LK) came along at a very good time for me and our agriculture department. I learned about LK at an inservice activity in California in November 2004. I took the LK binder home and during Christmas break put the CD in the computer and reviewed some of the lessons. I liked what I saw and decided to try a few of the lessons in my



classes that spring. Even when I didn't use the lessons to the fullest, there was great potential. For instance, E-Moments were well received by the students. In early 2005, I attended the National FFA Ag Ed Inservice and heard about the Delta Conference. I was ready to take my use of LK to the next level and knew I needed to attend.

Participating in Delta changed my perspective of teaching and helped me realize the possibilities with LK. Any teacher who has attended Delta will tell you that it gives you a good opportunity to look in the mirror and ask if you can improve. At the first Delta Conference, I was one of the most experienced teachers there and thought I was a pretty good teacher. This was until I saw what some of the young

teachers were doing and I was blown away! I thought to myself, If I was that good when I was their age, how good could I have been today? They were so good that it made me want to go home and practice. At Delta II, the training was even more intense and I was given an opportunity to improve even more. These experiences were life-changing and I felt a personal responsibility to share what I had learned about teaching and the use of LK with those in my department, other teachers in California and anyone else who would listen.

Because of my Delta experiences, LK is now widely used in our agriculture department and we are ready to do more. We have six teachers and most of us use LK at varying levels. We have used many of the E-Moments but have not yet integrated the precepts into our technical curriculum other than what I have done for several of my units. I assist my teachers with using LK by "modeling and coaching" to help them make progress. I'll show them how something works and after they try it, I coach them to improve. I also let them know that it's not necessary to teach complete LK lessons. Rather, they can take parts of a lesson or an E-Moment and make it work for them personally. Once they see how positively it is received by the students, it creates more motivation for them to use it. And once LK becomes part of a teacher's mind-set, it becomes easier for them to use it on the fly.

By using LK, the teachers in my department have noticed a big change in their ability to influence student learning regardless of academic strength. For example, this past December, the national FFA officers stopped by while they were on a tour of California agriculture. They visited one of our freshmen classes and some of the students volunteered to share their rock songs (Karaoke Moment). This specific class is a diverse class with everything from students with special needs to honor students. The students had a great time putting on a show for the officers and were very proud of the work they had done. It was inspiring to see students who represented a broad academic spectrum excel. I could tell that the National FFA staff traveling with the officers knew they had observed something special.

The thing I tell teachers inside and outside my department is that the benefit of LK is simple. It improves student learning. It is good teaching. If students are engaged in instruction, it strengthens their understanding of technical content. As we learned at Delta, "It is not important how well teachers teach; what is important is how well students learn." In this regard, E-Moments have been very successful for our department because they improve a teacher's ability to engage students. The scripted lessons are helpful because they provide a good lead-in to a lesson. The transparency masters are beneficial when presenting chunks of information. Some of the assessments are also very well done. I think the key for me and other teachers is being able to pick and choose what works best for each of us on an individual level.

LK has come a long way in my department but there is more work to be done, and getting the word out must continue. To help with this, I have been working with others in California to develop a California Delta Conference this summer. It will all depend on what we can come up with in terms of financial resources, but there is tremendous potential to give a lot more teachers exposure to the possibilities that exist through Delta and LK. Putting on these types of conferences at the state level is even more important now that Delta is no longer offered on the national level. If given the opportunity, more teachers will want to integrate LK's teaching strategies into their programs, which will have a huge impact on agricultural education. There's nothing quite like it and I am forever grateful.

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## Using E-Moments to Make Learning Memorable

**By Cassie Brock, Agriculture Teacher, Cienega High School, Vail, Ariz. (Outside of Tucson)**



We've all experienced times during our teaching careers when getting students to focus on a lesson is like running uphill with a headwind. Thank goodness for E-Moments! The beauty of E-Moments is that they take the obscure and unfamiliar and transform it into something familiar and applicable for each student. Ever since I started using E-Moments, my students have taken a more active approach to learning because they connect new material with things they already know. LK gives students a *reason* to learn by connecting life skills and leadership to the technical content. E-Moments support that *reason* for learning by helping students remember the things we teach them every day.

Three of my favorite E-Moments are the Meteorologist Moment, the Hieroglyphic Moment and the Mother Goose Moment. The Meteorologist Moment takes a little practice, but is really fun for students once they get the hang of giving weather reports. With the

Hieroglyphic Moment, students create their own visual aid to help remember vocabulary or other essential elements of the content area. This is especially beneficial to visual learners. The Mother Goose E-Moment allows students to get really creative. My students try to show each other up and class is very entertaining.

*"The thing I tell teachers inside and outside my department is that the benefit of LK is simple. It improves student learning. It is good teaching. If students are engaged in instruction, it strengthens their understanding of technical content."*

*"One important thing to remember when using E-Moments is to mix it up. Use a variety so that students never know what you'll have them do next."*

As an example, I use the Meteorologist Moment as a concept review for my animal health unit about sanitation. The students create a report based on local sanitation conditions of either their own livestock area or a feedlot, and present the steps to be taken for sanitation control. For an animal science lesson about the urinary system, I use the Mother Goose Moment. Students put the process of the urinary system into the form of a nursery rhyme they already know. I have examples of nursery rhymes available to refresh their memories. Everyone is always excited to share their nursery rhyme "creations."

One important thing to remember when using E-Moments is to mix it up. Use a variety so that students never know what you'll have them do next. By avoiding predictability, you'll keep them engaged. E-Moments provide a means to break up my lessons and create situations where students are actively learning rather than the old style of lecture and independent study. I also have more fun teaching lessons and that enthusiasm rubs off on students. It also gives them an opportunity to interact more with content. What I mean by this is that students are able to have conversations about content and are putting that content to memory. Most of the time they don't realize the things breaking up a lesson are those they will remember most.

E-Moments take practice, but they are well worth it. Read through *Strategies for Great Teaching* by Mark Reardon and Seth Derner and pick one or two E-Moments that appeal to you. Practice directions prior to the class and then give it a whirl. If you are not as successful as you would like to be the first time, try making minor adjustments and go again. Make the first attempt with a class you are comfortable with. Let them know you are trying something new and would like their full participation. Once you've become more familiar with E-Moments and incorporating LK precepts into lessons, it makes teaching easier and creates a situation where you have a bag full of tricks to make learning fun and interactive.

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## How to Use LifeKnowledge to Strengthen Teaching

### Q&A with Cara Wiese, Agriculture Teacher, Savannah High School, Savannah, Mo.



#### 1. What classes do you teach and how big is your department?

I primarily teach Agriculture Science I, which is an introductory course for freshmen and sophomores. I also teach upper-level classes including Fish and Wildlife Management, Agriculture Business, Horticulture I and II, Processing Agriculture Commodities and Agriculture Leadership. We have two teachers for a department of approximately 200 students.

#### 2. How and why did you first start to use LK in your classroom?

I was first introduced to LK at the Missouri Ag Teachers Conference in the summer of 2004. This was the summer before my first year of teaching, so I eagerly embraced this tool. Not only was I excited about the great resource I had in my hands, but I was anxious to use it knowing how beneficial this curriculum would be to my students. Regardless of age, interest area or future plans, I knew these materials would be relevant to all of my students.

At first, I taught lessons directly from the LifeKnowledge CD. I identified lessons in leadership style, goal setting, SAE, etc. and modified them to fit the structure and age of my classes. I found a direct correlation to Agriculture Science I, Ag Business and Ag Leadership, so it was very easy to incorporate LK into these classes. Now I have moved from simply teaching lessons directly from the CD into integrating LK concepts into everyday class material. After attending Delta I and receiving the LK 2.0 CD, this task became much easier and opened my eyes to even more ways to integrate LK concepts.

This year I have made it a priority to integrate at least one LK concept into every class at least once a week. For the most part I have been able to do this because I've realized it's not about creating entirely new lessons about LK concepts. It's about taking a piece of LK and integrating that concept into what I already have planned to teach that day. For instance, I have integrated livestock judging with defining personal values, SAE with goal setting and creating an ag business with ethics. Integrating these concepts is not difficult. However, it does take a conscious effort to find those places in the curriculum where the concepts fit best.

#### 3. What LK techniques, materials or skills have you found to be especially helpful in your teaching?

I have completely embraced the E-Moments. These are excellent tools to engage students through the use of various modalities. I have found that it does take students a few classes to get used to the freedom and creativity that E-Moments allow. However, they do adapt quickly and enjoy these activities. One of my favorite E-Moments is the Little Professor Moment. I have used this one a few times with my first-year students, and they absolutely love it. My teaching partner walked in during this E-Moment and was in awe at what he saw taking place in the classroom. The students were actively engaged and excited about the materials they were teaching their classmates.

I also use many of the anticipatory sets and introductory activities. Just reading through some of these activities and openers has sparked my creativity and allowed me to adjust some of the ideas to fit other topics I may be teaching. Whenever I feel like I'm in a lull or something needs to be changed, I grab my LK CD and search for a new and innovative way to get the material to the students.

*"I use the continual integration of LK as a reminder of the need to be innovative and edgy when it comes to my teaching style. I don't want students to get bored with the materials or my methods of teaching. When I see this start to happen, I am quick to change the atmosphere of the class by adding an E-Moment or kinesthetic activity, allowing the students to adjust their state of mind and get back on track."*

#### 4. What is the value of integrating LK into your technical lessons?

Integrating LK into technical lessons creates an opportunity for students to tie agricultural material into their personal life. A number of the students in our department are not exposed to production agriculture. Teaching livestock judging and oral reasons to these students is like teaching French to them – words they have never heard and concepts they never imagined.



By linking what I consider a simple concept like livestock judging to personal values, my students make direct connections with something they know about and can relate to. Beyond this, the integration of LK concepts is important to all students as they prepare for their future. Learning goal setting, interview skills, leadership styles, ethics and so forth will help them be successful as young adults.

#### **5. How do your students react when you use LK in your classes?**

My students are very receptive to LK in the classroom. Sometimes they need a little time to adjust to the freedom of learning through auditory, visual and kinesthetic activities. However, the results far outweigh the adjustment time. I have found they are more actively engaged in class activities, more willing to express themselves in class discussion and show more creativity in the assignments and practice activities used in conjunction with class.

The integration of LK also allows students to comprehend the agricultural concepts in alternative ways, often enabling them to more clearly understand the content being taught. They have the opportunity to tie the content to their everyday lives, which creates a sense of ownership and interest for the student.

#### **6. How has your personal teaching style changed or improved since you started using the strategies embedded in LK?**

I am fortunate in that LK was available to me from the start, so I've always used it. The biggest change for me was going from the mentality of separately teaching an LK concept to integrating LK on a regular basis. This new attitude has enabled me to incorporate LK concepts into many more classes and individual lessons. I use the continual integration of LK as a reminder of the need to be innovative and edgy when it comes to my teaching style. I don't want students to get bored with the materials or my methods of teaching. When I see this start to happen, I am quick to change the atmosphere of the class by adding an E-Moment or kinesthetic activity, allowing the students to adjust their state of mind and get back on track. Overall, LK is the tool I use to keep me out of the slump of doing the same thing every day in every class, every year. LK not only keeps my students excited about learning, but it helps me be innovative and excited about teaching.

#### **7. Has your perspective on teaching changed?**

When I began my teaching career in 2004, I thought I had it all figured out. I came in with plans in mind and goals for what I wanted my students and FFA chapter to accomplish. Those plans were soon modified once I stepped into the actual classroom. I realized that not all students are motivated, not all students have the desire to be successful and some students just do not care. This was hard for me to swallow as I was the complete opposite as a high school student. Yes, there were students who were goal-oriented and had ambitions for their future, and I was thankful to have those students also. However, the reality was, I saw both in my classroom and wanted each to be successful.

In order to accomplish this, I used many LK concepts and lessons to instill goal setting, motivation and success into students while growing those concepts further with others. I have certainly seen the benefits of this as our enrollment continues to grow. I also see students taking more initiative in the planning and implementing of FFA and classroom activities. As teachers, we need to remember that the definition of success is different for all students. With LK, each student is able to find a level of success that will benefit them regardless of their career or life path.

#### **8. Overall, how has using LK influenced your career as a teacher?**

I have always used LK in some way and will continue to do so. Because of this, the integration of LK into my everyday curriculum has become second nature and almost routine. Because of these practices and my personal desire to continue to improve as an educator, I am confident that my classes will continue to be innovative, creative and engaging for students. I owe much of that to the LK curriculum that has been embedded into all of my classes since my first year of teaching. LK is an outstanding tool that assists in the development of student leaders both inside and outside the classroom.

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## **Featured Lesson Plan – Four-Stroke Cycle Engines**

**By Ryan Foor, Agriculture Teacher, Glenwood, Iowa**



Ryan Foor is an agriculture educator from Glenwood, Iowa, who believes that "LifeKnowledge is an excellent tool that provides me with the opportunity to make the agricultural education curriculum more relevant to my students." He uses the LifeKnowledge curriculum and integrates the life skills lessons into his agricultural lessons to make them more engaging and interesting while allowing students the opportunity to better retain the information. In this month's featured lesson, Foor relates the precept of Relationships to Four-Stroke Cycle Engines. The lesson focuses on the structure of the National FFA Organization and correlates it to how an engine is structured and functions. This lesson also features the Show What You Know and \$10,000 Pyramid E-Moments to actively engage students and reinforce learning. To review this lesson on Four-Stroke Cycle Engines, click on the link provided.

[To view a complete version of Ryan's lesson, click here.](#)

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# LifeKnowledge in Action – Integrating LifeKnowledge into Agricultural Mechanics Courses

By Christine White, Education Specialist, LifeKnowledge Center for Agricultural Education

Do you struggle with how to integrate LifeKnowledge lessons and techniques into your Agricultural Mechanics courses? How do you use E-Moments to engage students in the classroom and maybe even in the shop? These questions and a few others are probably running through your mind in regard to LifeKnowledge materials. The purpose of LifeKnowledge is to help students develop the skills that are needed to be competent employees once they leave high school. The LifeKnowledge curriculum provides you with ready-to-use lessons as well as ideas of how to integrate leadership concepts that support technical lessons to reinforce learning. LifeKnowledge also has sound educational techniques built into each lesson to help students retain information as well as keeping them actively engaged in learning through items such as E-Moments. Let's take a look at ways to integrate LK lessons, concepts and techniques into your Agricultural Mechanics curriculum.

The toughest part of using LifeKnowledge with Agricultural Mechanics is trying to figure out exactly how to integrate leadership with technical content. Let's explore some typical content areas found in an Agricultural Mechanics curriculum and connect a leadership concept and LK lesson to help support the technical content being taught.

Ag. Mechanics Technical Content	Leadership Concept	LK Lesson	Connection
Welding – Arc Shield Welding	Relationships	HS.60 Seeking Positive Relationships: Only teach objective 2	List the positive relationships of temperature, amperage and watts to the skills students will need to help develop positive relationships within their lives.
Small Engines – Engine Systems and Components	Teamwork	HS.68 Defining Roles on Teams: Teach the complete lesson	For an engine to work properly, each engine component has a role. The same principle is true when it comes to members of a team. Compare and contrast the parts of an engine and their functions to the roles of members on a team.
General Shop Safety – General Shop Rules	Responsibility	HS.14 Being Responsible and Accountable: Teach the complete lesson	Working in the shop requires students to be responsible and follow the rules. Use this lesson to have students assess their responsibility while being in the shop.
Woodworking – Project Construction	Time Management	MS.55 Creating Timelines: Teach the complete lesson	Creating projects can be a very time-consuming process. Teach this lesson to help students manage time on projects in the shop. Use examples related to the time that is needed to complete each step of the shop project.

The table above takes a technical skill or concept and links it to a leadership concept. Most of the examples listed above relate to the teaching of a complete LK lesson. Oftentimes you may not have the time to dedicate a whole class to a leadership lesson; however, you might be able to pull one objective, one activity or one concept that shares the common thread between the leadership concept and the technical content. The more you integrate the two together, the better you are able to expose students not only to the technical skills but also to the employability skills they will need as they enter the workforce.

To explore more examples or ideas of how to integrate LifeKnowledge into your Agricultural Mechanics or other course content, use the Integration Tool that is available on the LK 2.0 CD and on LifeKnowledge Online. This tool will provide you with the same information listed above as well as a search feature to help you narrow down lessons that apply to a concept you wish to teach.

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## Download Depot

Taken from Teaching Today - Glencoe Online

[www.glencoe.com](http://www.glencoe.com)

The Download Depot features free, easy-to-use materials that you can download and use in your classroom today. All materials have been designed with the busy teacher in mind. Listed below is a list of areas for related downloadable documents to help enhance your classroom and teaching:

- Career Development
- Classroom Management
- High Stakes Testing
- Instruction and Planning
- Integrating Technology in the Classroom

Parental Involvement  
Portfolios  
Reading Skills  
Writing Skills

To check these documents, visit: <http://www.glencoe.com/sec/teachingtoday/downloaddepot.phtml>

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## What's New with LK

### New, Improved Version of LifeKnowledge Available

LifeKnowledge just got better. LifeKnowledge Online has many new features including [online access](#) for teachers and students from any computer along with automatic program updates. Additionally, a [precept indicator](#) will measure students' levels of achievement and provide immediate feedback to assess strengths and potential growth areas. The [online coaching guide](#) includes more than 275 activities to help integrate LK into existing classroom, FFA and SAE activities. To subscribe to LK Online, call the FFA call center at 1-888-332-2668 or fax the call center at 1-800-366-6556. It is also available at [www.ffaunlimited.org](http://www.ffaunlimited.org) and in the 2007–2008 Core Catalog. When ordering LK Online, reference item number LK-07 and be prepared to provide the following information: Chapter Name, Chapter ID, State, Advisor's Name and Advisor's E-mail Address. Access to the program begins within two business days of purchase. LifeKnowledge Online Contact: Christine White, [cwhite@ffa.org](mailto:cwhite@ffa.org) or 317-802-4212.

### Delaware Purchases LifeKnowledge Online for All State Chapters

Delaware has become the first state to subscribe to the new LifeKnowledge Online service for all of the state's high school programs. Additionally, subscriptions were obtained for the University of Delaware and Delaware State University.

Karen Hutchison, education associate for the Delaware Department of Education and state FFA advisor, commented, "The new features of LifeKnowledge Online are great. We wanted all of our teachers to have access to the program since the material greatly enhances the classroom experience. We are especially excited about the online feature as it makes it easier for both teachers and students to use. It also provides easy access to teachers who are new to the classroom and missed the last round of training activities. Lastly, it is important that our teacher education programs have access so our up and coming teachers are comfortable with LifeKnowledge before entering the classroom."

Dr. William Waidelich, whose responsibilities at FFA include the LifeKnowledge program, added, "While other states are considering purchasing LifeKnowledge Online for all of their schools, Delaware has jumped out front. We anticipate that Delaware will just be the first of several states to subscribe."

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**Four-Stroke Cycle Engines**  
**Ryan Foor, Agriculture Teacher**  
**Glenwood, Iowa**  
**2006**

**Student Objectives:**

At the conclusion of this lesson, students will be able to:

**Objective 1:**

Define the five events in a four-stroke cycle engine.

**Objective 2:**

Describe the process that occurs in each event and the sequence of the events.

**Background**

**Unit:**

Engine Operation

**LifeKnowledge Precept or Lesson:**

Relationships - Participate effectively as a team member

LK Lesson HS.113 – How Organizations Are Structured – National, State and Local

**Key Terms:**

Intake, Compression, Ignition, Power, Exhaust

**Logistical Information**

**Time:**

45/50 minutes

**Resources:**

*Small Engines*, Radcliff. American Technical Publishers Inc.

**Supplies:**

Index cards or \$10,000 Pyramid Playing Cards (1 set for each group of 3 or 5 students)

Writing surface (individual whiteboards is an option)

Whiteboard/Chalkboard

Copies of Assessment (1 per student)

**Ryan Foor**



**2006**



## **Interest Approach:**

*(Taken from LK Lesson HS.113 – How Organizations Are Structured – National, State and Local)*

*In this opening activity, challenge students to think about the most well-known structures or buildings in the world. Examples include the Eiffel Tower, Empire State Building, Epcot Center, Taj Mahal, Great Pyramids, etc.*

One of the greatest achievements of mankind is our ability to build. Quietly consider some of the most well-known buildings and structures around the world. When I say “Structure,” pair up with a neighbor and brainstorm these well-known structures. We will have one minute to brainstorm as a team. What questions are there? Structure!

*Allow students a minute to complete their brainstorming. Split the class into two large groups; select a student from each group to compete against each other. Assign both students the same structure to draw from HS.113.AS.A, and then have each group guess what the building is. The first group to correctly guess what it is wins one point. Repeat this process three to four times, taking no more than eight minutes.*

*Ask the following process questions to lead into the lessons for organizational structure:*

Which structures were easy to guess right away?

Which were more difficult?

What characteristics make structures easy to identify?

*Possible responses for the last question include “a unique design, like the pyramids” or “well-circulated images of the structure in media.”*

Like buildings, organizations also have internal structures. The structure of organizations should allow people in those organizations to make decisions and communicate successfully throughout the different levels.

We are familiar with the structure of FFA and how chapter activities lead up to district events, district events lead to state events and state events advance to the national level.

Our engines have an internal structure as well. Part of that structure is the five events that we will learn about today.

**Ryan Foor**



**2006**

## Summary of Content, Instructional Sequence, Activities and Strategies:

### Objective 1: Define the five events in a four-stroke cycle engine.

Let's begin by reading about the five events that occur in a four-stroke cycle engine. Open your textbook to page 56 and read from the intake event to page 60, ending with the exhaust event.

OK, in your notes, let's write a definition of each of these events:

- a) Intake event: the air-fuel mixture is introduced to fill the combustion chamber.
- b) Compression event: The trapped air-fuel mixture is compressed inside the cylinder.
- c) Ignition event: The charge is ignited and rapidly oxidized through a chemical reaction to release heat energy.
- d) Power event: The compressed charge is ignited and hot expanding gases force the piston head away from the cylinder head.
- e) Exhaust event: Gases are removed from the combustion chamber and released to the atmosphere.

*Ask questions to review the material just presented.*

**Show What You Know Moment:** It's time to show what we know! Take out a sheet of scratch paper and a writing utensil. Let's close our books and notes. Answer to the best of your ability the following questions. Capture answers on the scratch paper.

1. What is the second event that occurs called? *Compression*
2. In which event do hot gases force the piston away from the cylinder head? *Power*
3. In which event is the air-fuel mixture introduced into the chamber? *Intake*
4. When does a chemical reaction occur that releases heat energy? *Ignition*
5. In which event are gases removed from the chamber into the atmosphere? *Exhaust*

Great! When I say "Check," open your notes and book and independently and silently check your answers. You will have 60 seconds to complete this task. What questions are there? Check!

*Allow the students to take 60 seconds to check their answers against the information in their notes and in the textbook.*

Let's discuss what the correct answers were. *Call on class members to reinforce answers.*

### Objective 2: Describe the process that occurs in each event and the sequence of the events.

*Glean the important information from what occurs during each event. List on the board or on overhead.*

Intake: piston moves down, intake valve open, exhaust valve closed

Compression: piston moves up, both valves closed

Ignition: spark plug ignites the charge

Power: piston moves down, both valves closed

Exhaust: piston moves up, intake valve closed, exhaust valve open

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Sequence: Intake, Compression, Ignition, Power, Exhaust

*Note that intake, compression, power and exhaust are strokes within the cycle.*

Looking at the information on the board, we can see that each part works differently during each event, just like people within an organization work differently depending on their task. Let's capture this information in our notes.

**Go with the Flow Moment:** *Show a sample of a flowchart. Ask class members to explain the relationships signified by the lines and shapes.*

We are going to go with the flow. Using all of the events that occur in a four-stroke cycle engine, we are each are going to develop a flowchart in our notes. Use different symbols to represent the different elements of your flowchart. What questions are there? OK, let's go with the flow and get started!

*Assist students in making their flowcharts. You may want to help establish the symbol that will represent the events prior to the students beginning.*

We have some great flowcharts! When I say "Compare," share your flowchart with the people at your table and explain your reasoning for how it is organized. Ready? Compare!

**Review:**

*Use the \$10,000 Pyramid Moment to review the objectives from this lesson. Use the information the students wrote down in their notes to develop the fact cards. Create the fact cards on 4x6 cards. Develop one set of fact cards for every three to five people. Divide the class into groups of three to five and give them their cards.*

We are going to play the game \$10,000 Pyramid. Each person will have a different role in this game. One person will be the Clue Giver, another the Teleprompter and the others will be the Players. The Clue Giver and Player sit facing each other, with the Teleprompter standing behind the Players, displaying the fact cards one at a time to the Clue Giver. The Clue Giver silently reads the fact card and then gives the Players clues until he/she guesses the information. Go ahead and determine your roles and get set up.

This game is played in rounds of 60 seconds. The Clue Giver will describe the information that is on the card the Teleprompter is holding, trying to get the Players to guess the correct term. When the Players correctly guess the information on a card, the Teleprompter places that card on the table indicating that the information was correct and the team receives one point. If the Player has difficulty guessing a card, either the Clue Giver or the Players may ask to pass to the next card. In this case, the card is placed at the back of the deck, to return to later if time allows. After each round, the groups count the Player's correct answers, and each group's score is recorded on

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the board. With each new round, everyone in the group switches roles and the entire deck is shuffled for the new Player.

*You may wish to demonstrate one round so learners can get the hang of it.*

Does anyone have any questions? OK, let's play the game!

*Continue to play the 60-second round until each of the groups has had a chance to play each role – Clue Giver, Teleprompter, Player.*

Did you have fun playing \$10,000 Pyramid? I heard a lot of great answers; it sounds like you have a solid understanding about four-stroke cycle engines. Do you remember those great structures we talked about at the beginning of class? How about the structure of FFA? Now we know how the parts inside an engine are structured and how they work together. This will be important when we take our engines apart and reassemble them. In our notes, let's write a paragraph about the events in a four-stroke cycle engine.

**Evaluation:**

Have the students complete the provided assessment regarding the events of a Four-Stroke Cycle Engine.

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Name: \_\_\_\_\_

## Four-Stroke Cycle Engines

Directions: Answer each question using complete sentences.

1. What is the second event called that occurs in a Four-Stroke Cycle Engine?
2. In which event do hot gases force the piston away from the cylinder head?
3. In which event is the air-fuel mixture introduced into the chamber?
4. When does a chemical reaction occur that releases heat energy?
5. In which event are gases removed from the chamber into the atmosphere?
6. Illustrate or describe the position the piston and valves are in during each of the events of a Four-Stroke Cycle Engine. If you are illustrating your answer, make sure to label each part.

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**\$10,000 Pyramid Playing Cards**

<b>INTAKE EVENT</b>	<b>COMPRESSION EVENT</b>
<b>IGNITION EVENT</b>	<b>POWER EVENT</b>
<b>EXHAUST EVENT</b>	

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