LIFE KNOWLEDGE PRECEPTS AND THEIR EFFECT ON UNDERSTANDING OF STUDENT CONTENT

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by
Shannon Welch
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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>List of Tables</th>
<th>v</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abstract</td>
<td>vi</td>
</tr>
</tbody>
</table>

## CHAPTER

1. Introduction 1
   - Purpose of the Project 1
   - Scope of the Project 2
   - Significance of the Project 3
   - Objectives 3
   - Definition of Terms 4

2. Review of Literature 5

3. Methodology 13

4. Results and Discussion 17
   - Data Analysis 17
   - Results 18

5. Summary, Conclusions and Recommendations 24
   - Summary 24
   - Conclusion 25
   - Recommendations 27

References 28

Appendices

A. Quiz 1: Scientific Method Quiz 32
B. Quiz 2 Ecology Quiz A: Communities, Relationships and Niches 34
LIST OF TABLES

<table>
<thead>
<tr>
<th>TABLE</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Demographic Characteristics of Test Group ((n = 26))</td>
<td>18</td>
</tr>
</tbody>
</table>
ABSTRACT

LIFE KNOWLEDGE PRECEPTS AND THEIR EFFECT ON UNDERSTANDING OF STUDENT CONTENT

by

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Research of the science of learning has unveiled the need to teach for understanding. In the same scope, it has been noted that students’ pre-existing knowledge can affect how they acquire new knowledge. The need for action research became evident when analyzing below average assessment scores of students in early units of a tenth grade, agriculture biology course. The apparent lack of understanding prompted implementation of action research encompassing teaching for understanding while utilizing students’ prior knowledge. Life knowledge is a curriculum released by the National FFA Organization and is designed for integration into agricultural courses.

Student test groups were taught small content units with and without Life Knowledge Precepts and were assessed at the close of each unit. Qualitative
observations were made noting student engagement, interest and understanding during the units for comparison. Assessment performance and observations during unit instruction were compared to determine if Life Knowledge instruction leads to higher level content knowledge and higher levels of student engagement.

The results of the trial showed assessments following Life Knowledge instruction appear to be more effective in holding student interest and attention. It was further noted that it is most effective to teach Life Knowledge at the beginning of a unit rather than at the end. Observation of student behavior during the trial suggested students were more engaged by Life Knowledge and less resistant to participation in class activities when Life Knowledge was used.
CHAPTER I

INTRODUCTION

Purpose of the Project

Research in education suggests teaching has been centered on the rote memorization of content relative facts (Bransford, Brown & Cocking, 2000). Further, knowledge and skills cannot help the learner without understanding. “In the long term, education must aim for active use of knowledge and skill” (Perkins, 1993, p. 28). Teachers who teach for understanding desire for students to understand what they are learning and move beyond the ability to simply recite facts. Making connections with the students and material taught allows teachers to reach levels of understanding (Perkins, 1993).

Life Knowledge is a curriculum supplement released for teachers by the National FFA Organization in 2004. Life Knowledge includes precepts/lessons, activities, inclusive language, directions and questioning. Life Knowledge can be used in different ways, including teaching leadership and personal growth. It can also be used to incorporate life experience into a lesson to connect learning to relevant content. There is considerable research that supports using prior knowledge to drive instruction. This research seeks to determine if using the Life
Knowledge precepts that link students' life experience and goals to concepts will increase their understanding of content.

Given that Life Knowledge has precepts that focus on life experience, and one component of teaching for understanding requires connections between content and students' lives, it may be possible for Life Knowledge precepts embedded in existing lessons to improve student engagement and performance.

Scope of the Project

The course being used for action research is a tenth grade, agriculture biology class. Early in the course, it became apparent that most of the students in the class had difficulty with critical thinking tasks, understanding directions on assignments, and lab activities. Something appeared to be missing between the instruction provided and the students deriving meaning from that instruction. Further examples of this disconnect was brought to light after analyzing student performance on various forms of assessment in the early units of the course. In most cases, more than half the students received below average scores. In addition to less than average scores, some students failed to submit assigned work for credit.

Following the recognition of these issues, a class discussion was held to identify the sources of student struggle. Student responses during discussion pointed to a lack of understanding of new content and an inability to retain and connect content learned in previous science courses. Students shared that their lack of motivation on assignments and assessments stemmed from confusion and lack of confidence in their science knowledge.
These issues led this student group to become the test subjects of action research. The action research will be to find a link or mechanism to implement to facilitate student learning that will hopefully increase student understanding.

Significance of the Project

In the specified agricultural biology class at Elk Grove High School, the need to increase student retention of content knowledge existed. Students enter the course with little to no understanding of agricultural biology concepts. Strategies need to be implemented to assist diverse learners and lead them to a higher level of understanding. The content is meaningless without understanding and the ability to apply knowledge. Supporting literature identified the need and importance of understanding and application of learning principles. Student learning needs are not being met if they leave the educational system with a series of memorized, disconnected facts that lack application (Perkins 1993).

Objectives

The specific objectives of the project include the following:

1. Describe student demographics, agriculture background, state performance level and need for modifications according to educational or behavioral plans.

2. Compare student performance (measured by student engagement) on unit assessments following inclusion of Life Knowledge Precepts and standard unit assessments without integration of Life Knowledge Precepts.
Definitions of Terms

**Life Knowledge**

Curriculum created by the National FFA Organization containing lessons that are sequenced by stages of personal development. Each lesson is designed to stand-alone as a separate lesson for integration into current agricultural education classes and FFA activities.

**National FFA Organization**

(Also known as Future Farmers of America) A youth leadership organization that is an intra-curricular segment of middle school and high school agriculture classes. National FFA seeks to help its members develop their potential for premier leadership, personal growth and career success.

**Agriculture Biology**

A course designed to develop a scientific viewpoint in students and provide each student with a background in biology as it relates to agriculture.
CHAPTER II

REVIEW OF LITERATURE

Every educator seeks to increase student knowledge and aid the learning process. However, students’ learning needs continue to change. Additionally, the information available to those in the educational arena is constantly growing, creating an arsenal of best practices and strategies that can maximize students learning and understanding of content. Teachers are expected to be lifelong learners who adapt to their students changing needs in the classroom. One theme found repeatedly in research on learning is the concept of teaching for understanding. Research also outlines various methods to best support this theme (Perkins, 1993). According to one account, teaching for understanding, “reflects a set of values that favors quantity over quality; meaning over memorizing and understanding over awareness” (Mintzes, Wandersee & Novak, 1998 p.XIX).

Many strategies exist to seek a greater degree of understanding of student needs. There are many different views of educational experts that suggest effective teaching strategies (Perkins, 1993). Specialists in the field agree that amongst those strategies are activating prior knowledge and using life experience to promote comprehension. In fact, “Drawing connections to students’ prior knowledge and experiences” ranks third on the list of Teaching Behaviors for
Powerful Learning (Darling-Hammond et al., 2008 para. 1). Promoting real-world application is also an important strategy (Tileston, 2000). Further, student experiences (prior knowledge) are necessary to change educational focus from memorization to meaningful learning that can be applied to an array of educational situations (Christen & Murphy, 1991).

Educational research has revealed that teaching strategies must shift in order to best serve students (Christen & Murphy, 1991). The early forms of organized education placed emphasis on mastering the basics, including reading, writing and mathematics. Critical thinking, problem solving and persuasive expression were not foreign to early learning, but few schools focused on teaching these more complex principles. Rather, many curriculums focused on memorization of facts (Bransford et al., 2000).

However, new research suggests the teaching paradigm must shift to achieve deep understanding of important subject matter. Modern education requires more complex principles to be demonstrated by students. These new educational demands have developed in response to needs in an ever-changing and competitive workplace (Bransford et al., 2000). For example, Theall (2004) suggested:

There are many reasons for incorporating real-life situations into instruction. Foremost are that applications of theoretical material in real-life situations make content easier to understand and that the relevance of content is demonstrated by real-life examples. If prior experience can be connected to new material in a meaningful way, that material can be more clearly understood and more easily learned. (p.1)
Theall (2004) grasped the importance and positive results of using life experience (prior knowledge) to create understanding of course material. This simply reinforces the need to focus on teaching for understanding and utilizing life experiences of students to guide learning.

One challenge of teaching for understanding centers on content that may lack luster and appeal for students and is frequently littered with common educational practices such as defining content vocabulary and memorization (Perkins & Unger, 1997). Perkins and Unger (1997) suggested using a generative topic to connect content that is more enticing for student interest. It is further suggested that one follow four basic attributes when choosing a generative topic to connect to content. The first attribute of a good generative topic is that it is central to a domain or discipline. The second is that the topic be accessible and interesting to students. Thirdly, the topic should be interesting to the teacher and finally, the topic must be connectable. Thus, the topic can be connectable beyond the discipline or content and also connect to both students’ prior experiences and current lives.

The idea of “connected information” is also supported in studies of memory. It is considered a general belief of the memory process that the ability to retrieve information from the long-term memory is improved when the new information can be connected to previously learned information (Cruickshank, et al., 1998). In a cognitive approach to learning that utilizes long-term memory, it is suggested that a lesson begin with an advance organizer. An advance organizer is simply something teachers use to prepare students for new information such as an
interest approach. The information presented to students will be understood best if
the advance organizer relates the new information being taught to information that
students have in their long-term memory (Cruickshank, et al., 1998). Specifically,
Leinhardt stated that “what can be learned is determined by what is already known”

The learning theories of cognitivism and constructivism both lend
support for utilizing prior knowledge to acquire new knowledge. Cunia (2006)
suggested the application of cognitivism to learning includes five educational
implications of cognitive theory. One of the five implications is that, “new
information is most easily acquired when people can associate it with things they
have already learned” (Cunia, 2006, p.1). In the same sense, Cunia indicated,
“learning is a process of relating new information to previously learned
information” (Cunia, 2006, p.1) among general assumptions of cognitive theory.

The importance of prior knowledge is widely accepted in constructivist
teaching. In fact, some consider eliciting prior knowledge to be the first step in
building or acquiring new knowledge (Hartle, Baskivar & Smith, 2012). Some
instructions outlining constructivist teaching suggest the first step is to activate
prior knowledge. Next, the instructor should aid the students in addressing their
misconceptions of what they currently know. This step is followed by applying new
knowledge through a vast array of means (i.e. formative assessment, problem
solving, presentations etc.) and providing immediate feedback. The final step is
metacognition, or students’ evaluation of their own learning (Hartle, et al., 2012).
The focus of constructivist teaching begins with prior knowledge and leads to building upon that knowledge and finally constructing meaning from that knowledge.

The importance of constructing meaning from existing knowledge and experience is further supported as the first of 14 learner centered psychological principles. According to this principle, “The learning of complex subject matter is most effective when it is an intentional process of constructing meaning from information and experience” (American Psychological Association, 1997, p.2). The Association refers to this principle as an explanation of the nature of the learning process in their category of cognitive and metacognitive factors of learning. Students’ must possess the skills to achieve this deep level of understanding and seek it as a personal learning goal. Educators are integral in assisting students in reaching their educational goals and developing this self-guided path to understanding through the use of strategies and tools.

The National FFA Organization and the Life knowledge team sought to provide tools to agricultural educators that would “have a lasting effect on the individual student” (Akers, Holder, & Kriefels, 2004, p.12). National FFA required that the lessons be formatted with a goal to encompass all learning styles. To ensure this occurred, Life Knowledge writers were trained to interpret how students receive and process information by well-known author and presenter, Mark Reardon (Akers et al., 2004). Life Knowledge project writer Matt Kriefels claimed, “The great thing about it (Life Knowledge lessons) is that teachers will be using the
latest practices in educational psychology and not even know it” (Akers, Holder, & Kriefels, 2004, p.13).

Life Knowledge curriculum was developed for three levels of students, including middle school, high school and advanced high school. The 257 lessons were designed by “current teachers who incorporated best practices and learning and teaching research to create a student focused and teacher-friendly product” (Whittington and Elliot, 2004 p.4).

The lesson design also incorporated components of Hunter's elements of effective instruction and latest understanding of student learning and intelligence” (Derner, 2004, p.7). According to National FFA Specialist, Derner (2004) “The lessons will likely find greatest use and value when integrated into already-existing courses” (p.8).

Life Knowledge lessons are a resource that provide teachers material that focus on 16 leadership principles, or precepts. Life Knowledge curriculum can be used in different capacities depending on the teacher and needs of the course. The curriculum could actually provide material for an entire course if the curriculum aligned. The lessons can be used as standalone lessons to teach one of the precepts if it is relative to the existing course curriculum or in units (Dodson, 2004).

Additionally, a lesson can be infused into a technical content lesson to hopefully link a challenging concept to student experience in an effort to make a connection for students. De Lay (2009) suggested, For example, if photosynthesis is in the topic and the lesson centers on how plants convert things like sunlight and water into energy,
students may struggle to understand. It may help to connect the abstract concept to something with which they have experience, like the subject of change and how it can be a positive endeavor for an organization (p.9). De Lay’s example above uses change and its positive effects which is included in one of the 16 Life Knowledge precepts.

In addition to research and belief by the founders of Life Knowledge, there are accounts by secondary agricultural educators who have learned by application in their own classroom that Life Knowledge Precepts can make connection between real-life application and content. Ryan Foor (2006), an agriculture teacher in Iowa claimed that an important part of implementation of Life Knowledge has been the integration of Life Knowledge Precepts into content. He uses the precepts at the beginning of lessons using Life Knowledge Content and the follows with technical content. At the lesson conclusion, Mr. Foor makes a connection between the precept and technical objective. This process has led to improved performance on assignments (Foor, 2006).

Alan Held (2007), an agriculture teacher in Nebraska also found classroom success with the use of Life Knowledge Precepts. Mr. Held uses precepts to manipulate lessons in a manner that relates to the students. Mr. Held (as cited in Life Knowledge At-Work Newsletter, 2007) found that:

the concepts and objectives of Life Knowledge are valuable to almost all students regardless of the class in which they are enrolled. Life Knowledge allows the teacher to use many modalities, which accomplishes greater comprehension among a higher percentage of students enrolled. It has also helped me to generate interest among students regarding a specific topic before I begin a lesson or unit. (para 2)
This and other accounts support the successful use of Life Knowledge Precepts and their impact on learning in the agriculture classroom.

Research, development and evidence from teachers who have used Life Knowledge in the classroom have given the curriculum a positive reputation that is supportive of students' needs in learning. The timeless strategy of using prior knowledge or personal experience to drive instruction is the foundation of Life Knowledge and responsible for much of the program's successful outcomes. In fact, Dr. Rick Rudd (2004), a Quality Team Leader for the Life Knowledge Project and Mr. Kurt Friedel (2004), a Life Knowledge writer, profoundly state:

...experience first' was an overarching motto for the curriculum design. The curriculum was built with the idea that students tap into their own knowledge and experience as they add new knowledge to their world. The curriculum writers were careful to make the curriculum speak to students through their experiences. (Friedel & Rudd, 2004, p.23)

The studies cited above indicated that research, educational theories, and educational psychology point to the use of utilizing students' prior knowledge and life experience to aid and increase their understanding. Life Knowledge curriculum and precepts use these same principles to drive its lessons. Accounts by secondary education teachers using Life Knowledge in conjunction with content lessons thus far point to positive results. Life Knowledge writers boast the success of connecting technical content to life experience concepts. This study is designed to determine if using Life Knowledge Precepts embedded in content lessons will have a direct effect on increased understanding of content by students.
CHAPTER III

METHODOLOGY

To determine if the application of Life Knowledge Precepts lead to greater understanding of content by students, an active research design was implemented. The test group was comprised of 26 sophomores, agriculture biology students. Data collection occurred over a six week period. Three small units of content were taught in a two week periods using the instructor's regular teaching strategies such as setting context, inclusive language, effective directions, direct instruction, cooperative learning and application activities. Life Knowledge Precepts were added to two of the units. Data was collected at the close of each unit of content.

The first unit taught during the study was based on the scientific method. The unit was taught using the same teaching strategies typically encountered by students. Students were observed during instruction and observations were noted. Following the close of instruction of the unit content, students were assessed.

The second unit was an ecology unit that focused on communities, symbiotic relationships and niches. The unit content was taught using the same teaching strategies previously employed. Near the end of the content exploration and delivery, a Life Knowledge Precept was taught. A Life Knowledge Precept is a condition or core area of the National FFA Essential Learnings. These essential
learnings are made up of the cornerstones of the FFA Mission: premier leadership, personal growth, and career success (National FFA Organization, 2004).

For this unit, the precept taught was “accurately assessing values.” As part of teaching the precept, a short series thinking questions was given to students that required their response as homework on an index card that would be collected the next day as a ticket-in-the-door. The questions for the activity were: What things do you feel you are best at, what do you think you were put on this earth to do, and explain your family dynamics (who is responsible for which things i.e. making decisions, dishes, working etc)?

The questions were developed in hopes of drawing connections between student roles, relationships, and niche in life to that of ecological communities. The following day, the class began with a discussion of student responses and relationships were drawn between content and the Life Knowledge precept. An assessment followed based on the content taught.

A third unit was taught which began with a brief video introduction and diagramming of biogeochemical cycles. This was followed by the introduction of a Life Knowledge precept. In this case the precept used was “Balance personal and professional responsibilities.” The unit was ecology based as well but focused on biogeochemical cycles and how the cycles balance. Following a class discussion, students completed the ticket-in-the-door application as with the previous unit. However, the question addressed for this precept was, how would you define a positively balanced life?
The following day began with a discussion of the precept that identified from Life Knowledge the three aspects of a properly balanced life. Students were given a large index card. On one side, students listed the three aspects of a properly balanced life and described their own life for each of the three aspects. On the remaining side, students listed the processes of each cycle and how the cycles stay balanced. The remainder of the content was taught using the same strategies as previous units, but with Life Knowledge references throughout. At the end of the unit, a class discussion occurred, again connecting the precept and the content. An assessment was given and responses were added to the data.

This methodology lead to student responses and data that can be compared to determine if Life Knowledge Precepts taught with content can lead to a higher level of student understanding. The data collection during the research was qualitative observations of student engagement, interest in the activities, and students' willingness to participate. Student understanding was also observed via qualitative observations, eliciting student responses during regular checks for understanding and student responses during classroom discussion. Observations of units taught with and without Life Knowledge were compared. Finally, a class discussion was held that gave students the opportunity to share their feelings about being taught with Life Knowledge versus the typical learning format.

Qualitative observations and student input were chosen as the data collection tool because different content units were used for the research. By using
qualitative observations of students being taught with and without Life Knowledge, the data allowed student engagement, interest and understanding to be analyzed.

Due to the diverse nature, schedules and outside activities of the students in the test group, they were only available for data collection five days per week during their scheduled fifth period on a six period per day schedule. These methods seemed to best suit the constraints of the situation while providing usable data.
CHAPTER IV

RESULTS AND DISCUSSION

Data Analysis

The data collected for this research project were qualitative in nature. Data included qualitative observations made in response to each research objective. The observations described student engagement, interest and understanding. During each unit of instruction used for action research, the instructor observed students during the course of instruction and during classroom discussions which focused on Life Knowledge and content and noted all observations and student responses. Following the completion of each unit of instruction, observations and responses were summarized. At the completion of the third and final unit, all observations and responses were analyzed and compared for similarities, differences and outliers.

The first comparison was of the unit taught without Life Knowledge being compared to the second unit which was taught with Life Knowledge near the end of the unit. The content infused with Life Knowledge instruction were also compared, as the instruction for each differed in delivery. Lastly, student responses during a classroom discussion on Life Knowledge instruction were analyzed.
Results

Results of Objective 1

The first research objective was to describe student demographics, agriculture background, state performance level and need for modifications according to educational or behavioral plans. There are 26 students in the class, 17 students are female and 9 students are male (see Table 1). Ages of students range from 15 to 16. Seven of the students are from a traditional agriculture background.

Table 1

*Demographic Characteristics of Test Group (n = 26)*

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>f</th>
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</tr>
<tr>
<td>Female</td>
<td>17</td>
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The data reveal that within the 26 students, five had active Individualized Education Plans (IEP’s), for various learning disabilities including a majority of Attention Deficit Disorder (ADD) or Attention Deficit Hyperactive Disorder (ADHD). Another four students had active Behavioral Intervention Plans, also known as 504 plans and have ADD or ADHD among other behavioral disorders. Students that comprise the course demonstrate various learning styles evidenced by the required modifications and constraints of IEP’s and 504 plans. As a group, these students are challenging to teach and manage.

Standardized test data reveal that 84.6 percent (n=22) of the students in the class were at basic and above levels in English and language arts and fifteen percent (n=4) of the students were below basic levels. Four of the students were at below basic levels in English and language arts also had IEP or 504 plans. In mathematics, 61.5 percent (n=16) of the students in the class were at basic and above levels and 38.46 percent (n=10) of the students were below basic levels. Five of the students below basic levels in mathematics also had IEP or 504 plans.

Results of Objective 2

The second action research objective was to compare student performance on units following inclusion of Life Knowledge Precepts and standard unit assessments without integration of Life Knowledge Precepts. The first unit taught during action research was delivered without Life Knowledge instruction. During this unit, observations revealed that students appeared to be bored at most times. It was very difficult to keep students on task simultaneously. Student eye
contact wandered during direct instruction and they had difficulty listening and understanding directions which became evident after students requested that instructions be explained multiple times. Additionally, students had to be reminded to re-focus on assignments as their attention would be lost and they would begin outside conversations. Finally, it was observed that only a few students in the class volunteered oral participation during checks for understanding and oral review prior to assessing. It was also observed that is was the same few students who participated in review and checks for understanding that were also able to stay on task and for mostly pay attention and show interest during instruction.

The second quiz (See Appendix B) was given with Life Knowledge Instruction taking place shortly before the quiz. In this unit, it was observed that during the parts of the unit that contained regular instruction, the students showed the same amount of interest and participation as that of the first unit. There was quite a dramatic change in that most students showed engagement and understanding upon introduction of the Life Knowledge precept. Most students were able to quickly link the precept presented to the content of the unit which was demonstrated by responses during discussion.

When asked to complete a short activity for homework based on the precept, all twenty-six students turned the assignment in when it was due. A 100 % submission rate remains the best response rate for any assignment during the course of the school for this student group. Clearly, the students showed interest and understanding by their successful participation in the assignment and eager
responses during discussion after presentation of the Life Knowledge precept and content instruction.

Student understanding became further evident by examining their responses to the homework activity. Review of the student responses revealed that all of the students grasped the basic ideas and content presented and that most were able to correctly explain the concepts in detail. There were a few students who did not remain on task during instruction, discussions and activities; however there were fewer students off-task than typically observed in the classroom. In fact, some of the students that are typically off task and do not participate were amongst those who were engaged and who voluntarily participated in discussion. Understanding of content was also demonstrated in oral review responses prior to assessment of the unit by most of the 26 students including some of those who do not typically volunteer answers and information.

The third quiz, (see Appendix C) which involved Life Knowledge instruction at the beginning of the unit and references throughout had the greatest response from students. When given the opportunity to discuss the content and relate it to their personal experience, students were far more eager to participate in oral discussion and volunteer their answers and input. In the Life Knowledge-based discussion, students were very engaged. Students stayed on task, listened to one another participate in the discussion, appeared to be intrigued by the discussion and worked diligently to complete the task. A surprising observation revealed the
students who are typically off task participated willfully in the discussion and required little encouragement to stay on task throughout.

As the unit progressed, the instructor rarely had to refer back to the Life Knowledge activity or interest approach because the students made the references themselves and connected the content to the Life Knowledge precept. This was evident by student responses to questions in content discussion, checks for understanding and oral review prior to assessing.

The results of the three instruction assessments indicated that Life Knowledge does not necessarily increase student understanding of content. Comparing data from the three methods revealed unique qualitative data. Based upon comparative observations of students during instruction of the three units, it was observed that the students were more engaged during instruction that included Life Knowledge than instruction without Life Knowledge. These observations were based on the number of students on task, watching the instructor during discussion, and discussion participation. More students were on task, paying attention and participatory during instruction with Life Knowledge than without the curriculum. Students required less encouragement to stay on task and less prompting for responses during discussion. There was a higher degree of voluntary student participation during discussion in units infused with Life Knowledge than the unit without.

The results of the discussion eliciting student input on Life Knowledge instruction presented that the majority of the students preferred being taught using
Life Knowledge instruction. In fact, 14 of the 26 students preferred Life Knowledge to conventional instruction. Fourteen of the students agreed that they felt that the strength of the Life Knowledge instruction was being able to relate the content to their own life experiences. Fifteen of the students felt more engaged or more drawn to the topic when Life Knowledge was used. Eighteen of the 26 students prefer Life Knowledge to be used at the beginning and throughout the unit versus simply introducing Life Knowledge at the end of a unit and felt that it was more effective for them when used in that way. Fourteen of the students agreed that Life Knowledge increased their understanding of the content. Finally, 13 of the students felt more confident before being assessed on content after receiving Life Knowledge instruction.
CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

The results were surprising. Tremendous research supports the benefits of accessing students’ prior knowledge and utilizing personal experience to build further knowledge therefore it was exciting to observe that Life Knowledge precept instruction was very well received by students. There was obvious interest and enjoyment in learning on the days that included Life Knowledge. With respect to when Life Knowledge should be taught in a unit, it more effective and efficient to teach Life Knowledge at the beginning and throughout a unit rather than try to tie concepts to Life Knowledge at the end of a unit as evidenced by the improved performance on assessments from the second assessment to the third.

Life Knowledge was preferred by the majority of students over conventional instruction. That same group of students concluded that they felt more engaged by the Life Knowledge instruction and that it led to a greater degree of understanding. Half of the students felt more confident before being assessed following exposure to Life Knowledge and most of the students suggested Life Knowledge had the greatest effect for them when taught at the beginning and throughout the unit rather than just near the end.
Conclusions

In comparing student performance based upon student engagement, found varied results. Student engagement appeared to be higher for Life Knowledge lessons. Observations revealed that student participation during the unit taught without Life Knowledge instruction was low. Interest was low for this unit as well, marked by most students failing to pay attention, allowing their attention and focus to wander. Voluntary participation occurred with only a small group of students who typically participated regardless of instructional methods. The participatory group was composed of the few students who typically exhibit good behavior and classroom habits regardless of what is taking place in class, marking this group the most self-driven component of the class.

In the units that utilized Life Knowledge instruction, students showed actual interest. This was evident by their eager participation in classroom activities and attention given to the activities during Life Knowledge Instruction. Once the Life Knowledge Instruction began, student participation and interest level increased and the number of students who chose to not participate and who failed to pay attention decreased dramatically. The number of times directions had to be given and reminders by the instructor to students to stay on task or refrain from outside conversation decreased during Life Knowledge instruction as well.

It was further noted that teaching Life Knowledge at the beginning and throughout a unit is more effective than teaching Life Knowledge at the end of a unit. In the second unit taught, Life Knowledge was introduced near the end of the unit.
Student engagement and participation increased dramatically when Life Knowledge Instruction began in the second unit. Before the Life Knowledge instruction, the engagement and participation of students was limited and similar to that of the first unit.

In the third unit, Life Knowledge instruction was introduced at the beginning and taught throughout. This unit had the highest level of student engagement and voluntary participation of students. Most surprisingly, students who usually stand out because of their lack of participation and interest behaved differently during the third unit by actually voluntarily participating and showing some interest. The third unit also had the least number of students who were off task and non-participatory during instruction. These observations point to the most success in teaching Life Knowledge at the beginning and throughout the unit versus merely introducing Life Knowledge at the end of a unit.

Based on observations and student input, Life Knowledge instruction clearly increases student engagement and participation. In order for results to truly be comparable, clear and provide a conclusion, the units used for assessment should all be based on content new to students. There should not be a mixture of prior knowledge level in the units used for the action research. An additional suggestion for future research may include multiple classes where instruction could be varied and class averages compared over the same content.

The results of assessment indicate that Life Knowledge precept instruction does not increase student understanding of content though half of the
students felt more confident in being assessed after receiving Life Knowledge instruction. The results also indicate that teaching Life Knowledge at the beginning and throughout a unit is more effective and leads to greater understanding of content than teaching Life Knowledge at the end of a unit which was further supported by the input from students. Based on the belief that the results may be skewed, it is inconclusive as to whether or not Life Knowledge precept instruction can lead to a better understanding of content.

Recommendations

If this research project were to be repeated, it is recommended that the content units used with and without Life Knowledge instruction be units of content new to students. Review units should not be used during this research. Most importantly, for the numerical data to be comparable, there would ideally be two classes being taught using the methodology. Two classes participating in the study would allow numerical data to be compared.

It is also recommended that the instructional method alternate between content units. That is, a unit taught without Life Knowledge precedes a unit with Life Knowledge precept inclusion and maintain an alternating pattern of teaching for the duration of the project. The last recommended change would be a larger collection of data. More than three replications need to be completed to ensure reliability. With less time constraint, there would be much room for further data collection. These changes would lead to more reliable data and a conclusion that would be satisfying for the researcher and any groups involved with the study.
REFERENCES
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Quiz Given Without Life Knowledge Instruction

**Quiz 1: Scientific Method Quiz**

**Directions:** Using what you have learned, next to the numbers below, name the step of the scientific method that corresponds with that number. After, write a short description of the step.

1.

2.

3.

4.

5.

6.

7.
First Quiz Given With Life Knowledge Instruction

**Quiz 2: Ecology Quiz A: Communities, Relationships and Niches**

**Directions:** Using what you have learned about ecological levels and relationships, please answer the following

1. Explain what a community is and provide an example.

2. Explain what an ecosystem is and provide an example.

3. Explain what a niche is and provide an example.

4. What is your niche in life?

5. Define commensalism and provide an example.

6. Define Predator-prey relationship and provide an example.

7. Define mutualism and provide an example.

8. Define parasitism and provide an example.
Second Quiz Given With Life Knowledge Instruction

**Quiz 3: Ecology Quiz B: Biogeochemical Cycles**

**Directions:** Using what you have learned about the Nitrogen, Phosphorus, Carbon and water cycles, please answer the questions below.

1.) What do all cycles do?

2.) What powers all cycles?

3.) How is the water cycle balanced?

4.) How is the carbon cycle balanced?

5.) How is the nitrogen cycle balanced?

6.) How is the phosphorus cycle balanced?

7.) How do humans negatively affect the carbon cycle?

8.) What are the 6 processes of the water cycle?

9.) How is phosphorus important?
10.) How is nitrogen important?

11.) What changes nitrogen into a usable form?

12.) How is a successful life balanced?