Media and Information Literacy

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I. Background

Technology continues to invade nearly every aspect of our lives. Whether it is driving a newer vehicle across town to visit friends, obtaining an airline ticket and boarding pass, making your way through the checkout at the local grocery store, or even going out fishing, advanced technology is involved, directly or indirectly. It has significantly changed how these, and countless other rather simple practices are carried out. One would find it extremely difficult to escape the grasp the multi-faceted reach of all the modern technologies that are a part of our daily lives.

The typical school in this day and age, whether public or private, puts forth a mission statement that usually mentions something along the lines of ópreparing the students for the futureô or ćto develop the necessary skills to become responsible contributing members of our society.ôThese are nice to read, make for an attractive homepage for a school district, and I even somewhat believe in them. However, it is well known that the technology world moves at a much faster pace than the education world, and as a result, nearly every school in our country cannot keep up. So then are our schools truly preparing students for the future? It makes for an interesting debate, one that certainly involves a closer look at media and information literacy.

The different ways, and speed for that matter, that people go about obtaining information is certainly different than it was 10, or even just 5 years ago. Teachers and the school community themselves, are finding it difficult to prepare students for a world that changes so fast, and utilizes so much technology, when they face their own limitations when it comes to technology access.

Media and Information Literacy

My project is going to focus on an emerging sector in the educational world: media and information literacy. Technology continues to invade and change many aspects of our lives. For this reason, a new set of literacy skills are needed to handle the many advanced sources of information, especially the evaluation of on-line sources. In 1995, David Considine served as the chair of the first National Media Literacy Conference. According to Considine

> Media literacy as the ability to access, analyze, evaluate and create information in a variety of media formats including print and non-print. It is mindful viewing, and reflective judgment. It is a new, expanded view of traditional literacy. He writes that "since most people today get most of their information from television and other visual technologies, informed students and citizens need the new information skills involved in media literacy. School systems around the country are increasingly including these competencies in the emerging curricula. Families can make media literacy a part of their lives." (Considine, 2012)

I intend to analyze how two students construct knowledge about two difficult biology concepts: transcription and translation, through the use of two different lessons. One lesson will utilize more of a traditional approach, making use of the class textbook and a learning packet. The other, will incorporate some technology pieces and computer simulations. The ultimate goal is to evaluate the effectiveness and influence of technology on literacy. It is my opinion that in the not too distant future, students are no longer going to look up information in textbooks. They will be obtaining their information from a variety of media sources, but

mainly from of the first few hits of a popular Internet search engine. ñIt is now clear that as technology has evolved it has created new types of literacy demandsò (McKenna, Labbo, Conradi & Baxter, 2011, p.363).

I am currently working towards a Masterôs degree in Educational Technology. In completing this project, I hope to gain insight into how literacy instruction is evolving with the implementation of various technologies in the classroom setting. There is certainly an emphasis being placed on literacy instruction in our schools today, and I want to be up to speed in using technology to promote literacy and to continue to create ña learning experience that is specifically designed to share the information a student needs to continue a positive, well-scaffolded trajectory of knowledge acquisitionò (Rowsell & Lapp, 2011, p. 401).

II. Home and Family

I have selected two students to work with on the Literacy Learner Analysis Project. The first student will be referred to as Matt. He is a 15 year old sophomore who comes from a family of 12 children. His family dynamics represent what seems to be becoming the new norm for the American family. Of his 11 siblings, some are step-siblings, while others are half brothers and sisters. Most of his siblings are older than him, as he is the second youngest in his family. Both Mattôs mother and step father have attended college, with just his mother going beyond a bachelorôs degree. Matt considers his reading ability to be in-line with his grade level. His leisure reading interests consist mostly of nonfiction history related subjects. Matt estimates that when it comes to leisure reading, he reads one to two books each month. Some of his other interests are role playing video games and spending time online. Mattôs weekly time spent online tends to vary due to his family size and the needs and demands that

each individual family member has for weekly computer use. When he is able to access the internet, Matt enjoys online games, occasional social media sites, and checking out websites dedicated to historical events, especially World War II. A few of Mattôs relatives served our country in various capacities and divisions of the United States Armed Forces, thus the connection with a few of his interests.

I did not know Matt before our semester started back in September. Judging by his transcripts and what I have observed thus far, I would consider Matt to be an average student. Despite his elevated interest in the subject of history, his grades in the social sciences (American History and World History) have typically been in the C range. Mattôs science (biology and physical science) and math (algebra and geometry) grades tend to be slightly higher than his two history courses. Mattôs weakest performance area is English. While not drastically lower than his other grades, there is a consistent pattern with his English grades being slightly lower when compared to his other classes.

The second selected student, Sam, is currently a senior. He comes from a family with four children. His two older half-sisters have or are currently attending college. Samôs academic platform consists of a number of college preparatory classes including, AP Biology, AP Calculus, AP Psychology, and Creative Writing and Reading. His current reading level seems to be in-line with his grade level, if not slightly above. Samôs father was a teacher for over 30 years, and currently serves as a high school principal. Needless to say, Sam comes from a family with a strong focus on academics.

Sam enjoys reading just about anything, and estimates that he reads 2-3 books each month for leisure. Some of his favorite books to tend to be fiction stories, but also enjoys reading about the history of science as well. Sam also estimated that he spends about 10-15

hours week using his laptop computer. If he is not using it to complete a homework assignment, then he often surfs the web looking at whatever interesting headlines and articles that catch his attention.

Academically, Sam has a pretty consistent record of Aôs and Bôs. Sam was a student of mine for Biology when he was a sophomore. There were times when Samôs effort on homework assignments was inadequate. However, he had the ability to make up for homework shortcomings with better than average test scores. I attribute this characteristic to his strong literacy skills.

Timeline:

The pre-assessment meetings will be held in early October. The lesson will be delivered over a two week period, and will be administered in the mornings before the start of the school day. The post-assessment meetings will be scheduled for early November.

III. Emotional Climate

My science classroom is designed to be a learning community. The types of activities and instruction range from lectures and individual in class work to cooperative learning groups for labs and whole class discussions. Most students feel safe taking risks as I am constantly reminding them that the process of science is all about investigating possible solutions to questions and observations, with many outcomes being incorrect along the way to figuring things out.

Engaging Matt and Sam in literacy activities comes fairly easy, as they are both diligent and motivated students in the classroom. While they may not always enjoy the literacy activities that are frequently used (Frayer four square vocabulary, creating graphic

organizers, writing short summaries), they both utilize class time fairly well. Each of them will ask for clarification when something is unclear.

Reading comprehension is one area where I have seen differences between the two. Sam exhibits more confidence in his ability to derive meaning from a text, whereas Matt is much more likely to ask myself or a classmate for reassurance of his understanding of a concept or vocabulary term before moving on the another question of task. Matt is one that benefits from talking through the answers to his questions. For example, Matt might ask me a question about the difference between a food chain and a food web. After listening to my response, Matt will then paraphrase aloud from what he heard as a way for him to obtain feedback on the way he understands the topic. I have only rarely seen this behavior or strategy utilized by Sam.

IV. Literacy History

When studying the lessons presented, there were few advantages that Sam had over Matt. First, Sam has already taken a Biology course, and certainly been education on the processes of transcription and translation before. This information was brand new for Matt, and it can be overwhelming when a student first studies these concepts. When looking into the strengths and weaknesses of these two students, it was quite apparent that Sam is a stronger student across the board, while Matt has had some difficulty with a science course or two in high school.

When comparing Sam and Matt, it became clear that Sam had a much more structured environment at home where reading was emphasized quite frequently. Samôs household routine consistently incorporated reading for academic purposes, so much so that Sam began reading more for pleasure. Mattôs household routine was somewhat different.

Based on my discussions with the two students, the structure and demand for academics and reading were emphasized in Mattôs house, but not to the same degree as in Samôs household. One piece of interesting information is that Samôs household does not contain any video game systems, while Mattôs has two different gaming systems located on separate levels of the house.

V. Tests and Results

Prior to the lessons, a brief pre-test was administered to the individuals. The pre-test (see Appendix A) consisted of 12 multiple choice questions that are aligned with Michigan High School Content Standards for Biology. The classification of the 12 questions were as follows: 3 comprehension, 3 analysis, 3 knowledge, 2 synthesis, and 1 application. These questions were chosen based on their alignment with the benchmarks, and the variety of Bloomôs Taxonomy Learning Domains that are addressed. The questions apply to the important biological concepts of DNA, RNA, protein synthesis, and genetics. Essentially, they cover the processes of transcription and translation. The same 12 questions were also used as the post lesson delivery assessment (see Appendix B). However, the questions and answers were scrambled from their original order.

Mattôs pre-test score was 5 correct responses out of 12 questions. He indicated that he was practically guessing on each question. This is logical due to the fact that he would not have been exposed to these concepts as part of our school districtôs middle and early high school curriculum. After completing the lessons, Mattôs post-test score increased by one point (6/12). Many of Mattôs lessons were designed with more of a focus o using media to deliver content rather than the traditional reading and constructing of knowledge using a course textbook. The combination of the lessons and evaluation tool leads me to believe that

Matt is more of a kinesthetic learner. The somewhat passive learning approach that was used failed to provide evidence of significant gains in comprehension of transcription and translation. This knowledge of Mattôs learning style will be useful moving forward.

Samôs pre-test score was 8 correct responses out of 12 questions. He had the advantage of having completed a course in Biology as a sophomore in which the concepts of transcription and translation were covered. Samôs lessons included a learning packet that had hands-on component where paper models were constructed and manipulated to show the two different processes. A series of questions accompanied the models and served as a guide for learning the material. Samôs post-test score was 10 out of 12 questions, an increase of 2 points.

The pre- and post test results are included in the Appendices. Each student answered the 12 questions on a printed bubble scoring form that was used with Illuminate Data and Assessment program that I am piloting for our district. The program utilizes a webcam to provide almost instantaneous feedback and analysis of student assessments.

VI. Lesson Plan Matrix

Lesson Foci/Date	**Objectives**	**Instructional materials**	**On-going assessment**
Understanding Genetics October 15 (Matt)	-Assess the student for current knowledge on the concepts of transcription and translation -Explain that the information passed from parents to offspring is transmitted by means of genes that are coded in DNA molecules. These genes contain the information for the production of proteins (B4.1B) -Demonstrate how the genetic information in DNA molecules provides instructions for assembling protein molecules and that this is virtually the same mechanism for all life forms (B4.2f)	-Pre-Test: Gene to Protein -Biology Textbook -Inheritable traits inventory sheet -Frayer Four Square Vocabulary template -Genetics and Inheritance Activity	Frayer four square vocabulary
Lesson Foci/Date	**Objectives**	**Instructional materials**	**On-going assessment**
Transcription October 17 (Matt)	-Describe the processes of transcription and how it relates to molecular biology (B4.2g)	-Biology Textbook -Computer with Internet access -Diagram of the process of transcription Youtube	Draw and label a diagram of transcription

Lesson Foci/Date	**Objectives**	**Instructional materials**	**On-going assessment**
Translation October 19 (Matt)	-Describe the processes of replication, transcription, and translation and how they relate to each other in molecular biology. (B4.2g) -Explain that the information passed from parents to offspring is transmitted by means of genes that are coded in DNA molecules. These genes contain the information for the production of proteins. (B4.1B) -Demonstrate how the genetic information in DNA molecules provides instructions for assembling protein molecules and that this is virtually the same mechanism for all life forms. (B4.2f)	-Biology Textbook -Computer with Internet access -Packet: From Gene to Protein- Transcription and Translation -Flow chart of the process of translation -Post-Test: Gene to Protein	Draw and label a flow chart for translation
Lesson Foci/Date	**Objectives**	**Instructional materials**	**On-going assessment**
Understanding Genetics October 16 (Sam)	-Assess the student for current knowledge on the concepts of transcription and translation -Explain that the information passed from parents to offspring is	-Pre-Test: Gene to Protein -Biology Textbook -Frayer Four Square Vocabulary template	Frayer four square vocabulary

	transmitted by means of genes that are coded in DNA molecules. These genes contain the information for the production of proteins (B4.1B) -Demonstrate how the genetic information in DNA molecules provides instructions for assembling protein molecules and that this is virtually the same mechanism for all life forms (B4.2f)		
Lesson Foci/Date Transcription October 18 (Sam)	**Objectives** -Describe the processes of transcription and how it relates to molecular biology (B4.2g)	**Instructional materials** -Packet: From Gene to Protein- Transcription and Translation	**On-going assessment** Draw and label a diagram of transcription -Packet: From Gene to Protein- Transcription and Translation
Lesson Foci/Date Translation October 23 (Sam)	**Objectives** -Describe the processes of replication, transcription, and translation and how they relate to each other in molecular biology. (B4.2g) -Explain that the information passed from parents to offspring is transmitted by means	**Instructional materials** -Biology Textbook -Packet: From Gene to Protein- Transcription and Translation -Flow chart of the process of translation -Post-Test: Gene to Protein	**On-going assessment** Draw and label a flow chart for translation -Packet: From Gene to Protein- Transcription and Translation

	of genes that are coded in DNA molecules. These genes contain the information for the production of proteins. (B4.1B) -Demonstrate how the genetic information in DNA molecules provides instructions for assembling protein molecules and that this is virtually the same mechanism for all life forms. (B4.2f)		

VII. Reflections

Blanchard and Farstrup (2011, p.286) state ñtodayôs children are the most technologically experienced generation ever to walk through the doors of our schools and into our classrooms for reading instruction.ò My goal for this project was to teach the same concepts to two students using different delivery methods in order to find out how the technology components affected the studentôs literacy and the ability to use their literacy skills to construct knowledge of difficult biological concepts. With Sam, I took more of a facilitator approach and let him work through the lessons with minimal interference. Mattôs lessons utilized several video clips from www.youtube.com as well as a virtual/lab simulation website.

Over the course of my teaching career, I have constantly witnessed students struggle with the mass amounts of terminology in the various disciplines of science. This school year I have employed a strategy known as the Frayer Model in order to better teach the vocabulary

of biology. ñThe Frayer model is a graphical organizer used for word analysis and vocabulary buildingò (*Reading educator*). For my students, I have them write a short definition, give an example, draw a simple illustration, and then also provide a non-example. I usually model one or two of the terms from a chapter or section, paying close attention to some of the more difficult terms for students to grasp.

Throughout the course of the lessons, Matt and I referred back to his Frayer model squares that he created during the first session. Early on, he struggled with these terms, but as we progressed he became more comfortable using the applicable terminology. In terms of how he was best able to grasp the meaning of the eight terms, it was much more beneficial to him to see it in print compared to watching one of the video clips. The video clips seemed to play more of a supportive role in his understanding of the concepts. While helpful, they certainly didnôt require him to engage in the understanding. Matt commented that he liked the videos and the animations of the processes were helpful in his understanding, even though the passive approach did not show significant gains in his learning. I believe the difficult part for students relying solely on technology is the fact that the technology is a form of entertainment rather than a mode for learning. Plain and simple, this particular technology did more to promote a passive learning approach, where ñthe student is an empty vessel to be filled with knowledgeò (Herr, 2007). Placing a major emphasis on allowing this particular technology to do the teaching was not beneficial to the student, as the difference between his pre and post tests was only an increase of one additional question answered correctly.

I will say that the virtual lab/simulation website was intriguing as I watched Matt complete the exercise. The program was set up so he could only select the proper corresponding nitrogenous bases in the transcription and translation processes. The fact that

he couldnôt get it wrong seemed to solidify his knowledge of the two processes. Certainly any misconceptions at that exact moment were corrected on the spot. Perhaps it was the limited amount of time spent on the lab, but these corrected misconceptions didnôt seem to be committed to any form of long term memory.

Samôs lessons did not incorporate any forms of technology. The major portions of his lessons were constructing a paper model from which transcription and translation could be studied. He was working from a foundation of biology knowledge that already included these subjects. Given these variables, he was able to increase his post score by two questions. It must be considered that this increase is at least partially due to the fact that his lessons required a more active approach.

I would change a few things were I to do this type of project again. I should have incorporated a writing component to the post test. I stuck with the multiple choice question/format because that is what my school district is utilizing for our pre- and post tests. However, after completing the project, I feel I would have gotten a better feel for the studentsô knowledge if they had to write about the topic. I would also limit the study to just one student, but maybe expand the topics covered. This would help develop a more complete profile of the learnerôs strengths and weaknesses.

VIII. Recommendations

Less than 10 years ago, the Palm Zire and other pocket PCs were going to be the future of education. Good luck finding anybody still using any of those. The electronic devices being used today, will probably be antiquated technology in about five years. That being said, the devices may change, but the way that students are obtaining knowledge through many different mediums is here to stay. Therefore, the emerging field of media

literacy is worth keeping up on. It is an area where more and more research is being conducted and documented, but certainly has challenges with the rate at which the mediums are changing. Regardless of what direction or pathway is taken, the active learner will prevail over the passive learner.

IX. Bibliography

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X. Appendices

Appendix A

Gene to Protein Pre-Test

Multiple Choice
Identify the choice that best completes the statement or answers the question.

____ 1. Which type of RNA brings the information in the genetic code from the nucleus to other parts of the cell?
a. rRNA
b. tRNA
c. mRNA
d. RNA polymerase

____ 2. Which molecules are involved in protein synthesis?
a. transfer RNA, introns, and mutagens
b. messenger RNA, introns, and ribosomal RNA
c. ribosomal RNA, transfer RNA, and mutagens
d. messenger RNA, ribosomal RNA, and transfer RNA

____ 3. From which molecules are mRNA molecules transcribed?
a. tRNA
b. rRNA
c. DNA
d. proteins

____ 4. What is produced during transcription?
a. RNA molecules
b. DNA molecules
c. RNA polymerase
d. proteins

____ 5. During eukaryotic transcription, an RNA molecule is formed that is
a. complementary to both strands of DNA.
b. identical to an entire single strand of DNA.
c. double-stranded and inside the nucleus.
d. complementary to part of one strand of DNA .

____ 6. How many nucleotides are needed to specify three amino acids?
a. 3
b. 6
c. 9
d. 12

____ 7. What happens during translation?
a. Messenger RNA is made from a DNA code.
b. The cell uses a messenger RNA code to make proteins.
c. Transfer RNA is made from a messenger RNA code.
d. Copies of DNA molecules are made.

____ 8. During translation, the type of amino acid that is added to the growing polypeptide depends on the
a. codon on the mRNA and the anticodon on the rRNA.

b. anticodon on the mRNA and the anticodon on the tRNA.
c. anticodon on the rRNA and the codon on the mRNA.
d. codon on the mRNA and the anticodon on the tRNA.

____ 9. A protein is being assembled when
a. DNA is being translated.
b. RNA is being transcribed.
c. RNA is being translated.
d. DNA is being transcribed.

____ 10. Genes contain instructions for assembling
a. operons.
b. nucleosomes.
c. proteins.
d. mutagens.

____ 11. Which is the correct sequence of the transfer of information in most organisms?
a. protein to DNA to RNA
b. RNA to DNA to protein
c. DNA to RNA to protein
d. RNA to protein to DNA

____ 12. In eukaryotes
a. Transcription takes place in the cytoplasm, and translation takes place in the nucleus.
b. Transcription takes place in the nucleus, and translation takes place in the cytoplasm.
c. Transcription and translation both take place in the nucleus.
d. Transcription and translation both take place in the cytoplasm.

Appendix B

Gene to Protein Post-Test

Multiple Choice
Identify the choice that best completes the statement or answers the question.

____ 1. What is produced during transcription?
a. RNA polymerase
b. DNA molecules
c. proteins
d. RNA molecules

____ 2. Genes contain instructions for assembling
a. mutagens.
b. operons.
c. nucleosomes.
d. proteins.

____ 3. During eukaryotic transcription, an RNA molecule is formed that is
a. double-stranded and inside the nucleus.
b. identical to an entire single strand of DNA.
c. complementary to part of one strand of DNA .
d. complementary to both strands of DNA.

____ 4. During translation, the type of amino acid that is added to the growing polypeptide depends on the
a. anticodon on the rRNA and the codon on the mRNA.
b. codon on the mRNA and the anticodon on the tRNA.
c. codon on the mRNA and the anticodon on the rRNA.
d. anticodon on the mRNA and the anticodon on the tRNA.

____ 5. Which is the correct sequence of the transfer of information in most organisms?
a. DNA to RNA to protein
b. protein to DNA to RNA
c. RNA to protein to DNA
d. RNA to DNA to protein

____ 6. What happens during translation?
a. Transfer RNA is made from a messenger RNA code.
b. Messenger RNA is made from a DNA code.
c. Copies of DNA molecules are made.
d. The cell uses a messenger RNA code to make proteins.

____ 7. Which molecules are involved in protein synthesis?
a. messenger RNA, introns, and ribosomal RNA
b. ribosomal RNA, transfer RNA, and mutagens
c. messenger RNA, ribosomal RNA, and transfer RNA
d. transfer RNA, introns, and mutagens

____ 8. From which molecules are mRNA molecules transcribed?
a. rRNA
b. DNA
c. proteins
d. tRNA

____ 9. How many nucleotides are needed to specify three amino acids?
a. 12
b. 9
c. 3
d. 6

____ 10. In eukaryotes
a. Transcription and translation both take place in the nucleus.
b. Transcription takes place in the cytoplasm, and translation takes place in the nucleus.
c. Transcription takes place in the nucleus, and translation takes place in the cytoplasm.
d. Transcription and translation both take place in the cytoplasm.

____ 11. Which type of RNA brings the information in the genetic code from the nucleus to other parts of the cell?
a. tRNA
b. mRNA
c. rRNA
d. RNA polymerase

____ 12. A protein is being assembled when
a. RNA is being translated.
b. DNA is being translated.
c. RNA is being transcribed.
d. DNA is being transcribed.

Appendix C

Lesson Plan #1 – Understanding Genetics

Dates:

-October 15 (Matt)

-October 16 (Sam)

Objective(s) for today's lesson:

-Assess the student for current knowledge on the concepts of transcription and translation

-Explain that the information passed from parents to offspring is transmitted by means of genes that are coded in DNA molecules. These genes contain the information for the production of proteins (B4.1B)

-Demonstrate how the genetic information in DNA molecules provides instructions for assembling protein molecules and that this is virtually the same mechanism for all life forms (B4.2f)

Materials & supplies needed:

-Pre-Test: Gene to Protein

-Biology Textbook

-Inheritable traits inventory sheet

-Frayer Four Square Vocabulary template

-Genetics and Inheritance Activity

• ***Introduction to the lesson*** *(10-15 minutes)* -Begin a discussion about inheritable traits that can be observed in parents, siblings, and self -Utilize questions to promote dialogue; examples: ñDo you look more like you mother or father?ò, ñDo any of your siblings look/act alike?ò, and ñAre there any traits that you share with your parents/siblings?ò -Take pre-test ñGene to Proteinò • ***OUTLINE of key events during the lesson*** *(20 minutes)* -A mini-lecture will be used to introduce the important science terminology that the students should be able to understand as we work through the series of lessons -Students will then complete the Genetics and Inheritance Activity (Part 1	***Academic, Social and Linguistic Support during each event*** Provide the template for the Frayer four square model Guide discussion questions based on student responses Assist with identifying observable traits on the Genetics and Inheritance Activity Assist with Frayer four square responses; students

only), which is a survey of their own traits -Students will fill out the Frayer Four Square template with eight given terms • ***<u>Closing summary for the lesson</u>*** *(3 minutes)* -Give a quick summary of how the terms fit together (flow chart written on the classroom white board): -DNA makes up genes (& chromosomes); DNA gets replicated so all cells have a copy; transcription writes RNA code from DNA template; RNA code gets translated into proteins, which then form structures that display traits -Complete Frayer Four Squares before the next lesson	usually need help with ideas for illustrations and non-examples
Assessment -Analyze the Frayer Four Squares for accuracy and comprehension; illustrations, examples, and non-examples will provide feedback on how students constructed knowledge of the terms	***Academic, Social, and Linguistic Support during assessment*** Provide feedback on Frayer four squares Correct any misconceptions at the beginning of next lesson

Appendix D

Lesson Plan #2 – Transcription

Dates:

-October 17 (Matt)

-October 18 (Sam)

Objective(s) for today's lesson:

-Describe the processes of transcription and how it relates to molecular biology (B4.2g)

Materials & supplies needed:

-Biology Textbook

-Computer with Internet access

-Diagram of the process of transcription

-Packet: From Gene to Protein- Transcription and Translation

• ***Introduction to the lesson*** *(5 minutes)* -Begin a discussion about comparing DNA to the master plan for a house to be built, and then copying the plans into blue prints for all the different tasks that can be transported, marked up, trashed, etc. -Relate this idea to DNA (master plans) being transcribed into strands of RNA (blueprints) to be used by the ribosomes for making polypeptide chains (which will become proteins) • ***OUTLINE of key events during the lesson*** *(25 minutes)* Matt: -In order to complete the diagram, Matt will need his textbook and also a list of video clips that I have provided him with -Matt will fill in the diagram (transcription portion) by watching and listening to several video clips describing the process of transcription. Links to video clips: 1. http://www.bozemanscience.com/science-videos/2012/5/6/transcription-and-translation.html	***Academic, Social and Linguistic Support during each event***

2.http://www.youtube.com/watch?v=yLQe138HY3s&feature=youtu.be 3. http://www.youtube.com/watch?v=M5LKPadiWdU&feature=related Sam: -Sam will complete a work packet (Gene to Protein- Transcription and Translation) to construct his knowledge of the transcription process. He will utilize his AP Biology textbook for a reference.	
Assessment -Analyze the transcription diagram for accuracy, explaining any incorrect labels or notes taken on the diagram.	***Academic, Social, and Linguistic Support during assessment***

Appendix E

Lesson Plan #3 – Translation

Dates:

-October 19 (Matt)

-October 23 (Sam)

Objective(s) for today's lesson:

-Describe the processes of replication, transcription, and translation and how they relate to each other in molecular biology. (B4.2g)

-Explain that the information passed from parents to offspring is transmitted by means of genes that are coded in DNA molecules. These genes contain the information for the production of proteins. (B4.1B)

-Demonstrate how the genetic information in DNA molecules provides instructions for assembling protein molecules and that this is virtually the same mechanism for all life forms. (B4.2f)

Materials & supplies needed:

-Biology Textbook

-Computer with Internet access

-Packet: From Gene to Protein- Transcription and Translation

-Flow chart of the process of translation

-Post-Test: Gene to Protein

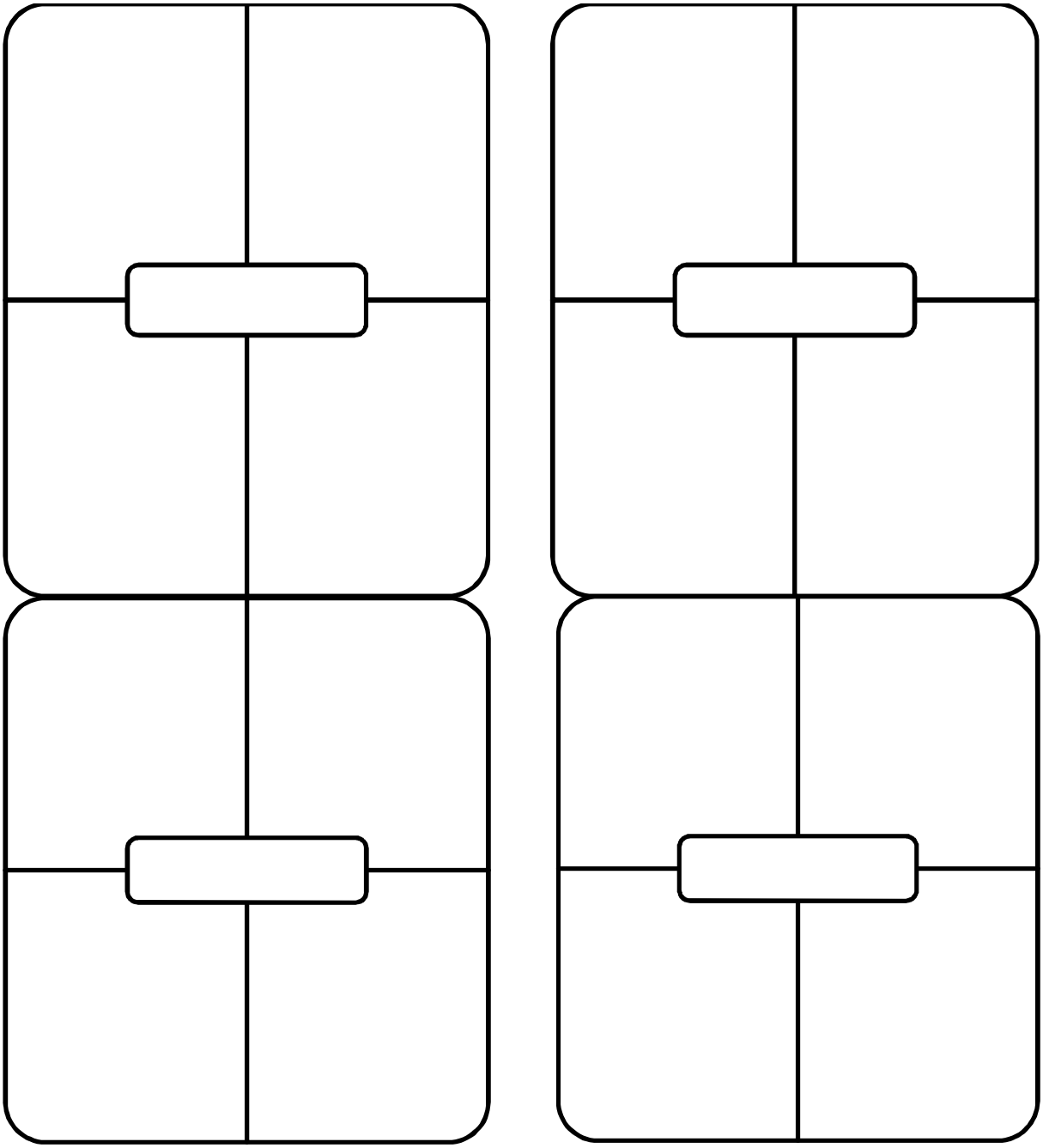
• ***Introduction to the lesson*** *(5 minutes)* -Begin a discussion about what the word ñtranslateò means -Relate the discussion to mRNA containing a code that has to be interpreted in order for the cell to make proteins. • ***OUTLINE of key events during the lesson*** *(20 minutes)* Matt: -In order to complete the diagram, Matt will need his textbook and also a list of video clips that I have provided him with -Matt will fill in the diagram (translation portion) by watching and listening to several video clips describing the process of transcription.	***Academic, Social and Linguistic Support during each event*** Guide/assist as needed for completion of the web simulation of transcription and translation

Links to video clips: 1. http://www.youtube.com/watch?v=mvV9LSUbm8g&feature=fvwrel 2. http://www.vcbio.science.ru.nl/en/virtuallessons/cellcycle/trans/ -The third and final link is a simulation for constructing a polypeptide sequence from a given DNA strand. Matt will be transcribing the mRNA from the DNA template, and then using a codon table to find the matching amino acid. 3. http://learn.genetics.utah.edu/content/begin/dna/transcribe/ Sam: -Sam will complete a work packet (Gene to Protein- Transcription and Translation) to construct his knowledge of the translation process. He will utilize his AP Biology textbook for a reference.	
Assessment -Analyze the transcription diagram for accuracy, explaining any incorrect labels or notes taken on the diagram. -Take post-test ñGene to Proteinò	***Academic, Social, and Linguistic Support during assessment***

Appendix F

Frayer Four Square Vocabulary

1. Write the vocabulary term in the central rectangle within the box.
2. In the four surrounding areas, include the definition, an example, an illustration, and a non-example.



Appendix G

this DNA fragment: A T G C A C G A T A G T T A A Where does

Process: _____ mRNA: _____ happen? _____

_____

Out to the _____

_____ - group of 3 mRNA bases

Process: _____

mRNA: _____

tRNA: _____

_____ - group of 3 tRNA bases