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SCAFFOLDING SUPPORT IN GATEWAY COURSES

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Enhancing inclusiveness stands tall as one of the most important goals of higher education. We want everyone to have the benefits of a successful educational experience, regardless of socioeconomic, racial or ethnic differences, or impediments created by lack of effective preparation. The drive for inclusiveness quite properly includes an emphasis on personal factors such as self-regard (Booth, Zoller, and Gerard, 2011; Chin and Brown 2002), and growth mindset (Dweck, 2007) It is equally important to develop *pedagogical* approaches that will support effective learning. We need to develop a *science of inclusive pedagogy* that draws on evidence-based effective practices. (see Brown, Roediger III, and McDaniell, 2014 for a comprehensive review of the science of learning). For a science of inclusive pedagogy to be effective, we need to identify specific scaffolding techniques that will enhance student performance. Scaffolding is a term for processes that move students toward greater learning.

In this paper, I focus on some attempts to provide active learning experiences in an introductory psychology course. Entry level or gateway courses are particularly important because they are among the first college courses taken by students and are often a source of failure for under-represented students. It is in such courses that improved pedagogy can make a significant difference and provide support for all students. The significance of gateway courses has been noted recently by the Gardner Institute in a report expressing despair over their effect on underrepresented students. (McMurtrie, 2020). In the current study, there was no attempt to classify students by ascribed characteristics or background. Rather, they were categorized by their performance. The underlying rationale is that techniques that seemed to work for students whose performance showed they were challenged could be applied to situations in which there are differences in performance regardless of initial classification. The general approach was to classify students on the basis of their performance within the course.

There are main questions addressed here:

1. What are some learning techniques that can be used in a standard introductory course that have potential for enhancing learning?
2. What are the quantitative effects of each technique?
3. How can we encourage students who are most at risk to take advantage of pedagogical techniques that can provide support for them?

The third question is particularly relevant given the existence of data suggesting that weaker students are less likely to take advantage of activities that will help them than they might be; in fact, it is sometimes the case that weaker students are less likely to use supportive activities than

[1] I wish to thank Arno Damerow and David Berk of the Lawrence University Instructional Technology Staff for their great assistance with the creation of the materials used in the introductory psychology course

are the strongest students. The quest for a science of inclusive pedagogy involves finding support activities that are both effective and likely to be used.

General Technique

I introduced several types of active learning into an introductory psychology course with an enrollment of 53 students. Many of these had been used in previous sections of the course. Activities include in-class writes on topics of relevance, tutorial modules connected to quizzes, self-construction of essay questions, focused retests, self-predictions about exam performance, and group video projects. (For a full course syllabus, see Appendix A). In analyzing the effects of these activities, I divided the class into four quadrants, based on exam performance. For example, I grouped the 13 students with lowest scores into category 1, the next 13 into category 2 and so on. (Category 4, the highest performers, had 14 entries). In some analyses, the groupings are based on performance on one of the three in-class exams. In others, they are based on final point totals that included a final exam. Each in-class exam consisted of a set of multiple choice questions and two essay questions. The multiple choice questions focused either on basic information or on some important implication of basic information. An example of the former might be "Which of the following is the procedure for the acquisition of a classically conditioned response?" The latter might be "How could the principles of classical conditioning be used to eliminate a fear response?" Essays used general questions such as, "Compare how we can understand learning from an evolutionary perspective with how we can understand learning from a neuroscience perspective." (See Appendix B for an example of a tutorial and Appendix C for examples of multiple choice questions used in the course)

In-Class Writes

During the course of the term, I introduced 10 in-class writing questions. They are not announced in advance and were given during the last 10 minutes of the class in which they were introduced. In some cases I introduced the question, had the students discuss them in small groups and then write individual reactions. In other cases the students wrote answers without prior discussion. The questions addressed broad issues raised by course materials. An example would be "Would our lives be improved if we never forgot anything we had learned?" Students were told that they were expected to do at least 7 in-class writes. Credit for doing seven was part of the point structure of the course. One point was given for each completed in-class write. Students could do more than 7 (up to 10) for extra credit points- one extra credit point for each one completed.

Table 1 shows the average number of completed in-class writes for students in the four quadrants, along with their final totals for points in the course, normalized for a scale of 100. Note that students were expected to do at least 7 in class writes and the maximum was 10 in-class writes.

Table 1- In-Class Writes by Quadrant. Final Course Scores are shown for each quadrant.

Quad	Completed Writes	Final Score
1	6.77	69.34
2	9.31	82.8
3	9.31	88
4	9.09	93.6

These results are equivocal. On the one hand, they suggest that completion of the writes is related to overall success; the strongest students compete almost all of them while the weakest students fail to meet even the minimum requirement. The activity may meet the test of being related to effectiveness, but does not meet the test of being something the weakest students are likely to engage in. Note that the low totals for the weakest students may simply reflect poor class attendance. The chance to earn points on in-class writes was apparently a poor motivator.

Tutorials

There were 18 tutorial texts, each followed by a multiple choice quiz. Students accessed the materials and the quizzes on-line. Each text was 1- 2 pages long. Each quiz was 15 items long. To gain credit for the tutorial unit, a student had to be correct on 13 of the 15 quiz questions. The quizzes could be repeated as many times as the student wished, and the tutorial texts could be accessed as many times as the student wished. Students were told they were expected to complete at least 14 tutorials as part of the credit structure of the course. They could do additional tutorials for extra credit. Note that multiple attempts at the quizzes for each tutorial were permitted. The tutorials were used in lieu of a standard textbook. The books read for the course were texts that described some important implications of psychological effects. The decision not to use a textbook was based on evidence that few students were reading the textbooks carefully.

Table 2 shows the average number of successfully completed tutorials for each quadrant. The quadrants were based on final course scores for each student

Table 2- Completed Tutorials by Quadrant and final scores

Quad	Tutorials	Final Score
1	12.26	69.34
2	14.91	82.8
3	16.34	88
4	17.22	93.6

The relationship between number of tutorials completed and final course score was analyzed by computing the linear regression between the two measures. The r value for regression was .998-

a remarkably strong relationship that accounts for over 99% of the variance in final scores. The resulting linear equation was:

Final Score = 4.79 X Tutorials Finished + 10.7

In other words, for each completed tutorial, almost 5 points of final score was accounted for.

It is important to remember that this relationship is correlational and not necessarily causal. It does strongly suggest that the tutorials were a significant part of course success. Students who finished more tutorials did better than students who finished fewer tutorials. Qualitative comments from students suggested that the tutorials were good preparation for understanding the in-class lectures. All of this is promising. If we introduce short tutorials containing the foundation principles of the course, completion of them will be helpful. If we think of the lecture material as the heart of the course, the tutorials and their associated quizzes are important sources of scaffolding.

Student Generated Essay Question

For each of three in-class exams, every student was invited to submit their own essay question that would appear as the second essay question on their actual exam. For those choosing not to submit a question, the second question would be instructor generated. Students who did submit a question were given an additional course point for doing so. The first essay question was instructor generated for all students. The self-generated question process was introduced because of evidence that students who attempt to construct questions will do better than those who do not. (Feldman and Lynch, 1988; King, 1992). I did an analysis of the proportion of students in each quadrant who submitted a question and the average difference in score on essay two for those students who submitted a question versus those who did not. For purposes of this analysis, the quadrants were defined for the in-class exam itself. That is, for exam one the first quadrant was the 13 students who had the lowest scores on exam one, for exam two the first quadrant was for those 13 students who had the lowest scores on exam two, etc. The results are shown in Table 3. Note that the maximum score on each essay was 11.

Table 3- Comparison of scores for self-generated essays with those for instructor generated essays

Exam	Quad	Prop Sub	Self	Non-Self	Diff
1	1	0.69	8.4	7	1.4
	2	0.85	9.2	8	1.2
	3	0.85	9.3	8.5	0.8
	4	0.86	9.8	11	-1.2
2	1	0.62	8	7	1
	2	0.62	9.2	9	0.2
	3	0.77	10.7	9.4	1.3
	4	0.64	10.2	10	0.2
					0
3	1	0.62	6.8	7.6	-0.8
	2	0.69	7.5	9	-1.5
	3	0.69	8.3	9.6	-1.3
	4	0.64	8.8	9.8	-1
Combined	1	0.64	7.7	7.2	0.5
	2	0.72	8.6	8.7	-0.1
	3	0.77	9.4	9.2	0.2
	4	0.71	9.6	10.3	-0.7

These results show little support for the idea that self-generated essay questions have a positive effect on exam performance for the essays themselves. There is no evidence that the scores on the essays are changed by having the students generate them. There is also no evidence that weaker students take advantage of the opportunity to construct an essay question, even though it means they would come into the exam knowing the exact wording of one of the two essay questions. It is not clear whether there are some undetected generalized effects of self-construction, such as doing well on the other parts of the exam, but there is no evidence for such an interpretation.

Retake Exams

After each in-class exam, students were given the opportunity to take an individualized retake exam. This would consist of new questions that parallel the questions incorrectly answered on the original exam. The number of questions on the retake would equal the number incorrectly answered on original exam and would be on the concepts missed the first time around. This means that a retake exam could in theory be one multiple-choice question long. The students were told their exam scores would be enriched by ½ of the points scored through correct answers

on the retake. For example, a typical exam would have 26 multiple choice questions worth 3 points each and two essays, each worth 11 points. If a student scored 66 points out of a possible total of 78 on the multiple choice questions, that student would have a retake exam consisting of 4 multiple choice questions, each worth 3 points. The 66 points earned were from correctly answering 22 out of 26 questions. If the student answered three of the four retake questions correctly, the additional points earned would be (3x3)/2 or 4.5. The 66 points would be adjusted to 70.5. Students would have their original exam in hand before the retakes were given. No points would be subtracted as a result of errors made on the retake. This is essentially a form of mastery, where the students would know what areas they should restudy and would be tested on those areas in particular. Table four shows the average proportion of students in each quadrant opting to take a retake and the average improvement in scores on the retakes. The quadrants were determined for each of the three in-class exams separately.

Table 4 Proportion Taking Retakes and Added Points

Exam	Quad	Prop	Improvement
1	1	0.54	10.3
	2	0.46	5.8
	3	0.62	6.4
	4	0.43	4.3
2	1	0.69	9.3
	2	0.77	8.4
	3	0.77	7.6
	4	0.36	6
3	1	0.69	9.4
	2	0.77	7.5
	3	0.77	5
	4	0.79	5.9
Average	1	0.64	9.7
	2	0.67	7.2
	3	0.72	6.3
	4	0.52	5.4

One aspect of these results is unequivocal; the retake option led to better mastery on the part of all students taking the retakes. It is also apparent that the amount of improvement is inversely related to performance on the original exam. This latter finding is not surprising since the amount of potential improvement varies with the original quadrant. There is little doubt that the mastery

system can benefit all students, but is particularly helpful for students who struggled on the original test.

Given the potential advantage of taking a retake, it is somewhat surprising that the proportion of students opting for a retake is not higher. The students had nothing to lose by taking a retake. If this was not apparent from the beginning, it certainly should be clear after the results of the first set of retakes had been made known to the students. An important challenge is how to get more students to opt for the retake exams.

Other Activities and Supports

The students also were required to engage in group projects that involved responding to an important social issue by writing a script and videotaping a presentation. (See Appendix D for a listing of a list of issues). The quantitative effects of such an exercise are not easily analyzed. Students also had access to the lecture materials through both PowerPoint and Lecture Capture. The lecture presentations were organized around PowerPoint slides. The format was that the instructor showed a series of slides and spoke about the ideas presented in each slide as they were presented. After class, the slides were available to all, using a Moodle class management system. The lectures were also available using a Lecture Capture system in which a recording of each lecture was coordinated with the slides; the changing of slides was linked to the audiotape of the instructor speaking. The Lecture Capture materials were made available after class as well. Students could access these materials at multiple times. They were available up until the time of the final exam in the course. Preliminary analysis suggests that these materials were accessed with great frequency.

Conclusions and Recommendations

The two activities that hold the most promise for enhancing learning are the tutorials and the retake exams. The close correlation between the number of completed tutorials and final course scores suggests that engagement with the tutorial materials and their related quizzes is related to success. Although these are correlations and not evidence from experimental manipulations, the evidence does seem impressive. Students who spend time working to complete the tutorials do well in other aspects of the course. There are many possible interpretations of this effect. One is that students who are working on tutorials are consistently engaged with the course and do not limit their attention to the time periods just before an exam. Another is that becoming familiar with exam-type questions is helpful in a number of ways. Another is simply that time spent on tutorials adds up to time on task, and course success is a function of total time on task. These potential hypotheses are not mutually exclusive.

The use of retake exams is also a powerful means for course success. The number of points added by doing a personalized retake is impressive. Students in the lowest quadrant were able to improve exam scores by a full letter grade. It is worth noting that the effect is strongest for the students who struggle the most; there is an inverse relationship between where a student's initial exam score falls and the amount of improvement that results.

Whatever approach is adopted, it is important to go beyond the standard lecture and test technique that has dominated the teaching of gateway courses for many years.

The in-class writes and self-constructed exam effects were much less impressive, and indeed seemed to have no effect. Whether these activities have other effects not measured with current techniques is unclear, but there is no evidence that they have enhancing effects.

The two activities that do seem to be promising share a characteristic of emphasizing mastery through repetition, with a focus on areas of challenge. This is clearly the case for repeating exams and can be inferred from the tutorial arrangements. If students need to repeat tutorials and quizzes, then they are presumably encouraged to focus on those areas of concern. A *focus on challenges* approach may have general strength for improved learning. The apparent success of these approaches are consistent with some general principles of the science of learning. (Bron, Roediger III, and McDaniell, 2014). First, they encourage distribution of practice. Rather than restrict practice to one block (just before and exam, for example), learning is spread over several time blocks. The course being examined was part of a ten week term. With three potential retakes added to three exams and 18 potential tutorials, a student would be in a test-like situation almost twice a week. Second, the high volume of testing is consistent with the claim of scientists of learning that repeated testing provides frequent retrieval practice.

The results do suggest a continued nagging problem. For the weakest students, only about 2/3 of the potential tutorials were completed. For the retakes, on average 2/3 of the students in the bottom quadrant opted for retakes. This might be called the "Two-Thirds" problem. Why not do tutorials and retakes if the only penalty is time? The Two-Thirds problem is part of a consistent challenge with scaffolding efforts that attempt to provide support for the most challenged students; students who might benefit from scaffolding activities do not take advantage of them. There are several ways to address this problem. One is simply to mandate the completion of more tutorials for struggling students and making retake exams required for the weakest students. This approach has the negative effect of being perceived as punishment for poor performance, rather than as opportunities for enhancement. Another approach would be to make additional tutorials or retake exams choices from a menu of options, with the stipulation that everyone choose at least one item from the menu. The menu might include doing a synopsis of a book describing the application of psychological principles or the preparation of a student's own tutorial on a topic of interest. This would at least have the benefit of making participation in these additional areas something that does not create more work for students in any of the categories. Whether such an approach might work is a question for the future.

References

Feldman, J.M. and J.G. Lynch (1988). Self-generated validity and other effects of measurement on belief, attitude, intention, and behavior. Journal of Applied Psychology. Psychnet.apa.org

King, Alison (1992). Facilitating elaborative learning through guided student-generated questioning. Educational Psychologist, 27, 111-126.

Appendix A- Course Syllabus

Psychology 100- Fall Term 2019

Instructor:

David Burrows, 343 Briggs, x7458; david.burrows@lawrence.edu

Meeting Time: MWF 8:30-9:40

Meeting Place: Wriston Auditorium

Books: Oliver Sacks, The Man who Mistook His Wife for a Hat and Other Clinical Tales. Touchstone: New York, 1985

Malcolm Gladwell, Blink: The Power of Thinking Without Thinking. Back Bay Books: New York, 2005

Stanley Milgram. Obedience to Authority: An Experimental View. Perennial Classics: New York, 2004

Office Hours: MWF 3:15-4:30 or by appointment

COURSE:

This course is designed to help you learn about the science of mental life. An important part of the course is a consideration of the *ways* psychologists try to study and understand the mind. The course includes different approaches to understanding thinking, emotions, feelings, beliefs, social interaction, development, psychological problems and their treatment, and the role of the brain and nervous system in psychological processes. I want you to pay special attention to some of the large questions and issues about the mind. These include questions about human nature, about how to conceptualize the human mind, what determines the way each person's mind is structured, and how humans change over time. We will talk a lot about the details, but we will try to keep the Big Picture in view.

EVALUATION:

There are exams, on-line tutorials, in-class two-minute writes, brief self-evaluations, and group projects as part of your evaluation. In some cases, there are opportunities to earn bonus points. There are 200 points of exams and required exercises. There are opportunities to earn additional bonus points. The evaluations and the associated points are:

- There will be three in-class exams, each worth 40 points. They are a combination of multiple choice and essay. Some of the multiple choice questions will be based on the book reading assignments. For one of the essays, I will give you the opportunity to submit an essay question that you construct. For each exam on which you do that, you will earn 1 bonus point (**Maximum total = 123 points NOTE THAT 3 of THESE ARE BONUS POINTS**)

- The final exam will be worth 50 points. The final will include essay questions. One of the questions will involve a written discussion of one of the books. I will distribute the book essay question in advance. (Maximum total = **50 points**).

- There will be 10 brief in-class Two-Minute Writes. You must complete at least 7 of these. Each completed write, up to 7, will be worth 1 point. Some of these will be after a group, in-class discussion. You must do at least 7, but you could do all 10 and earn bonus points- Each one above the initial 7 will be worth 1 point. (**Maximum total is 10 points. NOTE THAT 3 of THESE ARE BONUS POINTS**)

- There will be 18 tutorials on-line, each followed by a 15 item quiz. To complete one of the tutorials, you must answer 13 of 15 multiple choice questions correctly. You can keep working on each set of 15 until you have reached the required 13 correct. You must complete at least 14 of the 18 tutorial sets. Each completed tutorial is worth a point. If you do more than the 14, each additional one will be work 1 point. (**Maximum total is 18 points. NOTE THAT 4 of THESE ARE BONUS POINTS**)

- There will be a final group project that involves designing a solution to some important problem, or a way to enhance our psychological functioning. You will be asked to videotape a presentation on this problem or theme. This project is worth 6 points. (**Maximum total = 6 points**)

- Finally, before each of the in-class exams, I will ask you to give a self- estimate of your grade on the exam, and to indicate the three topics that you predict will be most difficult for you. Each of these will be worth 1 point (They are required, but I will give points anyway**) (Maximum total is 3 points)**

SUMMARY OF EVALUATION

	Points without bonus	**Bonus Points**
In class Exams (3 x 40)	120	3
Final Exam	50	-
In-class 2-minute writes (10)	7	3
On-Line tutorials (18)	14	4
Group Project	6	-
Self-estimates	3	-
Totals	200	10

Notice that with 200 points each is worth ½ percent of your final grade. The 10 bonus points could add 5 percent to your total.

How Do These Evaluations Work?

Exams. Each of the exams is a combination of multiple choice questions and two essay questions. The materials for the exams come from class presentations and the book reading assignments. As mentioned before you will have the opportunity to create one of the two essay questions in advance- you tell me the question and that is one of the ones I will use on your exam. There will also be a chance to do make-up exams that can raise your scores on the in-class exams.

Two Minute Writes. The Two-Minute Writes are on a topic I will give you in class. A typical question would be, "What would be an example of the value of studying the brain and nervous system?" Some of the Two-Minute Writes will be given right after group in-class discussions. The dates and topics for the group discussions are on the syllabus. Other two-minute writes will occur at various times during the term.

Tutorials. The tutorials are brief summaries of a topic followed by 15 multiple choice questions. You must do the whole tutorial in one sitting, but you can try to do the 15 questions as many times as you like during that sitting. You can also do the tutorial part itself as many times as you like. The actual score is not part of your grade but you must get 13 of 15 correct to get the point for the tutorial.

Group Project. You will be given a chance to indicate the problem or theme you on which you want to work. Your group will meet to work on the project and then do the videotaping. An example would be, "How can we use information about the psychology of memory to help people learn more effectively?"

SUPPORT ACTIVITIES

There are various types of support activity. These are designed to help you learn the material.

Tutorials. These are designed to help you master the basic information that is part of each unit. By doing the self-testing, you will be able to learn more before taking the exams.

Lecture Capture. The slides I use in class will be available on-line, along with the comments I make on each slide. These are useful for review purposes.

Optional Review Sessions. Before each exam I will schedule an optional review session for those wishing to attend. The time for these will be announced in class

Optional Retakes. After each exam, you will have the opportunity to do an optional retake on the concepts you did not answer correctly on the first try. I will give you ½ of the improvement you make on the retake. There will be a brief window during which you can take the retake.

WHAT IS THE PURPOSE OF THESE TYPES OF EVALUATION?

I want you to learn some of the basic information about psychology. I also want you to do three things:

Engage in Self-Direction. I want you to take the lead in directing your own learning. The ability to submit a question of your own for each exam is a chance to think about what you want to focus on or what important question is meaningful to you. The retake exams are a chance to restudy ideas that were difficult the first time around. The choice of group project is another chance to determine what things you want to focus on. The self-estimates before each exam are a way to think about what you know and to go back and restudy material that is hard for you.

Focus on Interesting Ideas. The self-direction is an important way for you to make choices about what you are going to learn. As much as possible, I want you to relate new things you learn in this course to your own interests. I hope the course is a way to develop some new interests as well.

Think About Important Applications. I want you to spend time thinking about the important ways understanding psychology can help individuals or society in general. The group discussions in class and the group project are ways to take these ideas and think about ways to use them.

SYLLABUS

Date	Topic	Reading	Moodle
Sept. 16	What is Psychology?	Six Big Questions	
Sept. 18	Scientific Thinking		
Sept. 20	Evolution *Discussion-Are we prisoners of our evolutionary status?*		
Sept. 23	The Brain I	Sacks, Introduction to "losses"; Ch. 1: Introduction to "excesses"; Ch. 10	Tutorials 1,2,3 due
Sept. 25	The Brain II		
Sept. 27	Sensation Discussion- *Are Interpretation and Construction Good Things?*		
Sept. 30	Perception		
Oct. 2	Summing up; Review		Tutorials 4,5,6 Optional Question Self-estimate
Oct. 4	**EXAM 1**		
Oct. 7	Learning I		

Oct. 9	Learning II		
Date	**Topic**	**Reading**	**Moodle**
Oct. 11	Memory Discussion- *Would it be Better If We Never Forgot Anything?*	Gladwell, Intro, Ch. 1, 2,6	Tutorials 7,8,9
Oct. 14	Thinking	Gladwell, Conclusion	
Oct. 16	Language		
Oct. 18	Development I Video Preferences		Tutorials 10,11,12
Oct. 21	Summing Up and Review		Optional Question Self-Estimations
Oct 23	**EXAM 2**		
(No Class Oct 25- Reading Period)			
Oct. 28	Development II		
Oct. 30	Intelligence Discussion- *Is Intelligence a Good Concept or a Hurtful Concept?*		
Nov. 1	Personality I Discussion- *Is the Internet Making us Less Human?*		Tutorials 13,14,15
Nov. 4	Personality II		
Nov. 6	Psychopathology		
Nov. 8	Treatment		

Nov. 11	Summing up and Review		Tutorials 16,17 Optional Question
Nov. 13	**EXAM 3**		
Nov.15	Social Psychology I	Milgram, Ch. 1,2,3	
Nov. 18	Social Psychology II	Milgram, Ch. 10,11,12	Tutorial 18
Nov. 20	Summing up and Review Discussion- *What are the Key Features of Human Nature?*		

FINAL EXAM DURING FINALS' PERIOD: MONDAY NOVEMBER 25, 8:00-10:30 AM

Appendix B

Sample Tutorial

Psychology is the scientific study of the mind. It includes studying the content of our thoughts, emotions, and actions and the process of studying the mind using scientific principles.

The content of psychology is broad. The mind defines and controls what we do, how we think, and what we feel. This covers a wide range. The subject matter of psychology includes emotions such as love, hate, anger, or fear. It includes the thoughts we have when trying to figure out what we are looking at or listening to, how to solve a problem such as setting aside enough time for studying, how to remember events of yesterday or how to understand some new experience. It includes behaviors such as walking, talking, joining a group, helping someone else with a problem, or hurting another person. It includes drives such as the desire to be included, the desire to be successful, the desire to dominate, to cooperate, or be understanding of others. The question of thoughts, emotions and behaviors are related to a large question: Should psychology confine itself to the study of observable behaviors only or should we study mental processes such as thoughts and emotions, even though we cannot directly observe them? The idea of sticking to observable behaviors is known as Behaviorism. The idea of looking at mental processes does not have a formal name, although many would label it as a cognitive approach to psychology.

The content of psychology can be organized around some basic ideas or assumptions.

The mind is the product of the brain and the nervous system. Although we may not be able to explain everything by looking at the brain, its structure and functioning is behind our psychological processes.

Humans are capable of learning through experience and practice. Other species can learn but our learning capacity is higher than most or all other species.

Human minds grow, develop and change over their lifetimes particularly in the early years but also during adulthood.

Our feelings and behaviors are affected by interactions with others, including membership in both informal and formal groups. Two important social behaviors are aggression and altruism.

There are important difference among people, and we need to understand these differences. These difference can involve how much we are extraverted or introverted, open to experience, conscientious, emotional, or agreeable. These five traits are sometimes called The Big Five

We do not always function fully or effectively. This is the study of psychopathology or psychotherapy.

There are several ideas about the best approach or perspective to take in psychology. These are not absolute ideas about what psychology consists of but they are ideas about how to approach the questions we have. Some would argue that a combination of perspectives is the best approach.

Neuroscience perspective— We can understand psychological processes best by understanding the brain and the nervous system and how they affect the mind. . We should focus on these.

Evolutionary perspective—The nature of psychological processes has been shaped by evolution. Those characteristics that have helped us survive and adapt to our surroundings have emerged as part of our makeup.

Behavioristic- The best way to understand psychological processes is by observing the actions or behaviors of organisms. These are most easily understood though scientific approaches because we can observe them.

Psychodynamic- There are underlying forces that operate on the functioning of the mind, often in conflict with each other. They are not visible. We can understand the mind by understanding these forces

Cognitive – Our psychological processes can be understand in terms of underlying thoughts. We can understand the processes by understanding the structure of these thoughts (e.g. how are memories represented in the head?) and their functioning.

There are several perspectives in part because no one of them seems to have been completely successful. Many psychologists believe a combination of perspectives gives us the best change of understanding psychological processes.

Appendix C

Sample Exam and Retake Questions

Exam Questions

1. How would the evolutionary perspective explain the existence of human emotion?
    a. Emotions would be regarded as regrettable characteristics that serve no purpose
    b. They would be tied to particular areas of the brain
    c. They would be seen as serving some adaptation
    d. They would be explained in terms of our belief systems

2. You decide to do an analysis of the effects of studying alone vs. studying in groups. You ask people whether they study alone or in groups and how well they do. What can you say about this study?
    a. If is a version of an experiment
    b. The independent variable is studying alone or studying in groups
    c. It is susceptible to self-report bias
    d. All of the above are true

3. You discover a negative correlation between how introverted a person is and how well s/he does on exams in a psychology class. What conclusion can you draw?
    a. That there is no relationship between introversion and exam performance
    b. That people who are introverted tend to do less well on exams than people who are not introverted
    c. That introversion causes people to do less well on exams
    d. That doing less well on exams tends to make you introverted

Retake Exam Questions

1. A person who tries to understand anxiety by focusing exclusively on the unconscious forces thought to be at play when a person suffers from anxiety under both calm and difficult situations is most likely taking the perspective of:
    a. Neuroscience
    b. Psychodynamics
    c. Cognition
    d. Behaviorism

2. You decide to do an analysis of the effects of practicing five hours the day before an exam versus one hour a day for each of five days before an exam. You look at people who like to study a little each day and those who do all of their studying the day before the exam. What can you say about this study?
    a. It is a survey
    b. It uses study time as an independent variable
    c. It uses exam performance as a dependent variable
    d. All of the above are true

3. You discover a positive correlation between how extraverted a person is and how willing that person is to be altruistic and help others in need. What conclusion can you draw?
    a. That being altruistic causes you to be extraverted
    b. That being extraverted causes you to be altruistic
    c. That both altruism and extraversion are probably related to genetics
    d. The people who are extraverted are more likely to help others than people who are not extraverted.

Appendix C

Sample Project Questions

1. You are assigned the task of getting people to consider real evidence when forming beliefs about such things as government policy, the quality of our leaders, and approaches to various social problems. How would you get people to pay better attention to evidence?
2. You are asked to create a policy statement on the use of intelligence tests so that they are effective and ethical. What would this statement be?
3. You have the opportunity to fund a research program on the ways that neurotransmitters can be used to improve our psychological lives. What issue or problem do you recommend working on? Why do you choose this one?
4. You are giving a talk on aggression to a group of citizens in Appleton. During the question period, someone says that, “Since aggression is natural, we should not try to suppress it.” What response would you make to this statement?
5. You are asked to design a program to change the behavior of persons who are always interacting with their cell phones and are not paying attention to anyone else. Using operant conditioning techniques, what would you do about this?
6. You are assigned to create some tips on improving memory for a group of high-school students. What would you focus on?
7. You are asked to give a talk on the importance of both inheritance and experience on psychological processes. What would you present in this talk?
8. You have a relative who claims that perception is “just seeing what is out there” and thinks there is no such thing as bias in perception. What speech can you give to this relative?