



ARIZONA STATE UNIVERSITY

GENERAL STUDIES COURSE PROPOSAL COVER FORM

Course information:

Copy and paste current course information from Class Search/Course Catalog.

College/School College of Liberal Arts and Sciences Department Psychology
Prefix PSY Number 432 Title Embodied Cognition Units: 3

Is this a cross-listed course? No If yes, please identify course(s)

Is this a shared course? No If so, list all academic units offering this course

Note- For courses that are crosslisted and/or shared, a letter of support from the chair/director of each department that offers the course is required for each designation requested.

Is this a permanent numbered course with topics? No

If yes, all topics under this permanent numbered course must be taught in a manner that meets the criteria for the approved designation(s). Chair/Director Initials (Required)

Course description: Do left-handers think differently from right-handers? Do paraplegics perceive the world differently from those who can walk? If you say about a potential date, "He leaves me cold," do you literally feel cold? And does a Botox treatment to alleviate frown lines makes it difficult to understand sentences about sadness? The surprising answer to all of these questions is YES! Embodied cognition proposes that thinking is based on neural and bodily systems of perception, action, and emotion. We will explore this claim through readings, discussions, debates, and embodied interactions, and we will consider implications of embodied cognition across areas of psychology and applications in education.

Requested designation: Literacy and Critical Inquiry-L Mandatory Review: (Choose one)

Note- a separate proposal is required for each designation.

Eligibility:

Permanent numbered courses must have completed the university's review and approval process. For the rules governing approval of omnibus courses, contact Phyllis.Lucie@asu.edu.

Submission deadlines dates are as follow:

For Fall 2016 Effective Date: October 1, 2015

For Spring 2017 Effective Date: March 10, 2016

Area(s) proposed course will serve:

A single course may be proposed for more than one core or awareness area. A course may satisfy a core area requirement and more than one awareness area requirements concurrently, but may not satisfy requirements in two core areas simultaneously, even if approved for those areas. With departmental consent, an approved General Studies course may be counted toward both the General Studies requirement and the major program of study.

Checklists for general studies designations:

Complete and attach the appropriate checklist

- Literacy and Critical Inquiry core courses (L)
Mathematics core courses (MA)
Computer/statistics/quantitative applications core courses (CS)
Humanities, Arts and Design core courses (HU)
Social-Behavioral Sciences core courses (SB)
Natural Sciences core courses (SQ/SG)
Cultural Diversity in the United States courses (C)
Global Awareness courses (G)
Historical Awareness courses (H)

A complete proposal should include:

- Signed course proposal cover form
Criteria checklist for General Studies designation(s) being requested
Course catalog description
Sample syllabus for the course
Copy of table of contents from the textbook and list of required readings/books

It is respectfully requested that proposals are submitted electronically with all files compiled into one PDF.

Contact information:

Name Amy Sannes E-mail Amy.sannes@asu.edu Phone 480.965.7259

Department Chair/Director approval: (Required)



Chair/Director name (Typed): Clark Presson Date: _____

Chair/Director (Signature): *Clark C Presson*

Arizona State University Criteria Checklist for

LITERACY AND CRITICAL INQUIRY - [L]

Rationale and Objectives

Literacy is here defined broadly as communicative competence—that is, competence in written and oral discourse. **Critical inquiry** involves the gathering, interpretation, and evaluation of evidence. Any field of university study may require unique critical skills that have little to do with language in the usual sense (words), but the analysis of written and spoken evidence pervades university study and everyday life. Thus, the General Studies requirements assume that all undergraduates should develop the ability to reason critically and communicate using the medium of language.

The requirement in Literacy and Critical Inquiry presumes, first, that training in literacy and critical inquiry must be sustained beyond traditional First Year English in order to create a habitual skill in every student; and, second, that the skill levels become more advanced, as well as more secure, as the student learns challenging subject matter. Thus, two courses beyond First Year English are required in order for students to meet the Literacy and Critical Inquiry requirement.

Most lower-level [L] courses are devoted primarily to the further development of critical skills in reading, writing, listening, speaking, or analysis of discourse. Upper-division [L] courses generally are courses in a particular discipline into which writing and critical thinking have been fully integrated as means of learning the content and, in most cases, demonstrating that it has been learned.

Notes:

1. ENG 101, 107 or ENG 105 must be prerequisites
2. Honors theses, XXX 493 meet [L] requirements
3. The list of criteria that must be satisfied for designation as a Literacy and Critical Inquiry [L] course is presented on the following page. This list will help you determine whether the current version of your course meets all of these requirements. If you decide to apply, please attach a current syllabus, or handouts, or other documentation that will provide sufficient information for the General Studies Council to make an informed decision regarding the status of your proposal.

Revised April 2014

Proposer: Please complete the following section and attach appropriate documentation.

ASU - [L] CRITERIA

TO QUALIFY FOR [L] DESIGNATION, THE COURSE DESIGN MUST PLACE A MAJOR EMPHASIS ON COMPLETING CRITICAL DISCOURSE--AS EVIDENCED BY THE FOLLOWING CRITERIA:

YES	NO		Identify Documentation Submitted
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>CRITERION 1: At least 50 percent of the grade in the course should depend upon writing assignments (see Criterion 3). Group projects are acceptable only if each student gathers, interprets, and evaluates evidence, and prepares a summary report. <i>In-class essay exams may not be used for [L] designation.</i></p>	The syllabus describes the assignments related to this criterion, and sections of the syllabus are reproduced on pages 4-6 of this form.
<p>1. Please describe the assignments that are considered in the computation of course grades--and indicate the proportion of the final grade that is determined by each assignment.</p>			
<p>2. Also:</p> <div style="border: 1px solid black; border-radius: 50%; padding: 10px; text-align: center; margin: 10px auto; width: 80%;"> Please circle, underline, or otherwise mark the information presented in the most recent course syllabus (or other material you have submitted) that verifies this </div> <p style="text-align: left; margin-left: 20px;">C-1</p>			
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>CRITERION 2: The writing assignments should involve gathering, interpreting, and evaluating evidence. They should reflect critical inquiry, extending beyond opinion and/or reflection.</p>	The syllabus describes the assignments related to this criterion, and sections of the syllabus are reproduced on pages 4-6 of this form.
<p>1. Please describe the way(s) in which this criterion is addressed in the course design.</p>			
<p>2. Also:</p> <div style="border: 1px solid black; border-radius: 50%; padding: 10px; text-align: center; margin: 10px auto; width: 80%;"> Please circle, underline, or otherwise mark the information presented in the most recent course syllabus (or other material you have submitted) that verifies this </div> <p style="text-align: left; margin-left: 20px;">C-2</p>			
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>CRITERION 3: The syllabus should include a minimum of two writing and/or speaking assignments that are substantial in depth, quality, and quantity. Substantial writing assignments entail sustained in-depth engagement with the material. Examples include research papers, reports, articles, essays, or speeches that reflect critical inquiry and evaluation. Assignments such as brief reaction papers, opinion pieces, reflections, discussion posts, and impromptu presentations are not considered substantial writing/speaking assignments.</p>	The syllabus describes the assignments related to this criterion, and sections of the syllabus are reproduced on pages 4-6 of this form.
<p>1. Please provide relatively detailed descriptions of two or more substantial writing or speaking tasks that are included in the course requirements</p>			
<p>2. Also:</p> <div style="border: 1px solid black; border-radius: 50%; padding: 10px; text-align: center; margin: 10px auto; width: 80%;"> Please circle, underline, or otherwise mark the information presented in the most recent course syllabus (or other material you have submitted) that verifies this </div> <p style="text-align: left; margin-left: 20px;">C-3</p>			

ASU - [L] CRITERIA

YES	NO		Identify Documentation Submitted
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>CRITERION 4: These substantial writing or speaking assignments should be arranged so that the students will get timely feedback from the instructor on each assignment in time to help them do better on subsequent assignments. <i>Intervention at earlier stages in the writing process is especially welcomed.</i></p>	<p>The syllabus describes the assignments related to this criterion, and sections of the syllabus are reproduced on pages 4-6 of this form.</p>
<p>1. Please describe the sequence of course assignments--and the nature of the feedback the current (or most recent) course instructor provides to help students do better on subsequent assignments</p>			
<p>2. Also:</p> <div style="border: 1px solid black; border-radius: 50%; padding: 20px; text-align: center; margin: 20px auto; width: 80%;"> <p>Please circle, underline, or otherwise mark the information presented in the most recent course syllabus (or other material you have submitted) that verifies this</p> </div>			
<p>C-4</p>			

Course Prefix	Number	Title	General Studies Designation
PSY	432	Embodied Cognition	

Explain in detail which student activities correspond to the specific designation criteria. Please use the following organizer to explain how the criteria are being met.

Criteria (from checksheet)	How course meets spirit (contextualize specific examples in next column)	Please provide detailed evidence of how course meets criteria (i.e., where in syllabus)
C-1	Grades are based on weekly writing assignment (30%), a debate (20%), an individual (or small group) presentation of a research project (20%), and a final (individual) paper describing the research project (20%).	Page 2, area marked C-1 Students will achieve these goals through a combination of activities. The first is reading and discussing reports and analyses in the professional literature. The second is contributing to in-class debates. Finally, students will develop and present (both orally and in a paper) a potential new application of embodiment ideas. Grades will be based on a) posted comments on the readings, that is the QRCs (30%); b) contributions to in-class discussions (10%); c) student contributions to the debate (20%); d) application presentation (20%); and e) final paper on the application (20%). The percentages earned in each component will be added and final grades determined as follows: A: 90-100%; B:80-89%; C:65-79%; D: 50-64%, E: < 50%.
C-2	The weekly assignment requires students to contrast the lecture material with assigned readings. The debate requires students to synthesize material from much of the course. The final application paper and presentation require a creative synthesis.	Page 2, description of QRC, debate, and application paper.. QRC stands for Question, Response, Comment. It is a way of recording your reaction to the readings or commenting on another student's reaction. It need not be more than one paragraph, but it is certainly acceptable for a QRC to be longer. A good QRC indicates that you have thought deeply about the issue. Thus, a comment such as "They should have used more subjects," or "Did they counterbalance the order of presentation" is not worth much. Instead, a good QRC is along the lines of "They should have used more subjects because they are testing a critical effect that is likely to be small. The effect is critical because..." Good QRCs also relate one reading to another. For example, "X says A, but Y says B. Perhaps A and B are really the same because..." QRCs will be graded as 0-5, where 0 means not much of a contribution, 3-4 means a good contribution, 5 means a novel or insightful contribution.
C-3	The three "substantial" assignments are the debate (a group activity), the presentation of the application (one or two students), and the final application paper (individual).	Pages 2-3, marked C-3Debate. Students in the class have a formal debate with some students taking the Pro side of the question (e.g., Resolved: high-level cognition is thoroughly embodied) and others taking the Con side. Each side will have 10 minutes to present their position, 5 minutes to rebut the other side's position, and then a final 5-minute summary. Application presentation and paper. Each student will

		<p>present a NOVEL application of embodiment theory. The application can be a proposal for a new experiment, an educational application, a clinical application, a business/advertising application, and so on. Submit a written proposal to Glenberg by MONDAY, November 9. YOU MUST OBTAIN APPROVAL BY THURSDAY, NOVEMBER 12. Ten-minute oral presentations of applications and 5-minute discussions occur November 19 – December 3. Application final paper is due three days after your project presentation. The final paper is based on your presentation and feedback from your presentation. This paper should be approximately 10-15 double-spaced pages. All papers should begin with a brief (one or two paragraph) presentation of the problem and overview of the solution (e.g., an experiment or therapy). The next section should be a review of the relevant literature. Finally, the application should be presented in detail and related to the literature review. End with a discussion section. If your application is an experiment, then the discussion section should describe how to proceed if the experiment turns out as expected and how to proceed if it does not. If your application is for an educational intervention or a therapy, then the discussion section should present how your idea can be evaluated.</p>
		<p>Pages 2-3, areas marked C-4QRCs. QRC stands for Question, Response, Comment. It is the way of recording reactions to the readings or commenting on another student's reaction. It need not be more than one paragraph, but it is certainly acceptable for a QRC to be longer. A good QRC indicates that the student thought deeply about the issue. Thus, a comment such as "They should have used more subjects," or "Did they counterbalance the order of presentation" is not worth much. Instead, a good QRC is along the lines of "They should have used more subjects because they are testing a critical effect that is likely to be small. The effect is critical because..." Good QRCs also relate one reading to another. For example, "X says A, but Y says B. Perhaps A and B are really the same because..." QRCs will be graded as 0-5, where 0 means not much of a contribution, 3-4 means a good contribution, 5 means a novel or insightful contribution.</p> <p>QRCs are required during weeks indicated with an asterisk in the schedule below. The QRC is submitted to Blackboard and is due by 5 pm on Wednesday of the week assigned, that is, after the lecture on Tuesday and before the discussion on Thursday. For example, a QRC is due the week of August 25. It must be submitted by 5 pm on Wednesday, August 26. Debate. We will have a formal debate with some students taking the Pro side of the question (Resolved: high-level cognition is thoroughly embodied) and others taking the Con side. Each side will have 10 minutes to present their position, 5 minutes to rebut the other side's position, and then a final 5-minute summary.</p>
<p>C-4</p>	<p>The weekly writing assignment (QRC) are graded each week; students receive feedback on their proposed application; students receive feedback on the oral presentation of the application, and grade on the final paper depends in part on incorporating the feedback.</p>	<p>Pages 2-3, areas marked C-4QRCs. QRC stands for Question, Response, Comment. It is the way of recording reactions to the readings or commenting on another student's reaction. It need not be more than one paragraph, but it is certainly acceptable for a QRC to be longer. A good QRC indicates that the student thought deeply about the issue. Thus, a comment such as "They should have used more subjects," or "Did they counterbalance the order of presentation" is not worth much. Instead, a good QRC is along the lines of "They should have used more subjects because they are testing a critical effect that is likely to be small. The effect is critical because..." Good QRCs also relate one reading to another. For example, "X says A, but Y says B. Perhaps A and B are really the same because..." QRCs will be graded as 0-5, where 0 means not much of a contribution, 3-4 means a good contribution, 5 means a novel or insightful contribution.</p> <p>QRCs are required during weeks indicated with an asterisk in the schedule below. The QRC is submitted to Blackboard and is due by 5 pm on Wednesday of the week assigned, that is, after the lecture on Tuesday and before the discussion on Thursday. For example, a QRC is due the week of August 25. It must be submitted by 5 pm on Wednesday, August 26. Debate. We will have a formal debate with some students taking the Pro side of the question (Resolved: high-level cognition is thoroughly embodied) and others taking the Con side. Each side will have 10 minutes to present their position, 5 minutes to rebut the other side's position, and then a final 5-minute summary.</p>

		<p>Application presentation and paper. Each student will present a NOVEL application of embodiment theory. The application can be a proposal for a new experiment, an educational application, a clinical application, a business/advertising application, and so on. Submit a written proposal to Glenberg by MONDAY, November 9. YOU MUST OBTAIN APPROVAL BY THURSDAY, NOVEMBER 12. Ten-minute oral</p>
		<p>presentations of applications and 5-minute discussions occur November 19 – December 3.</p> <p>Application final paper is due three days after the project presentation. The final paper is based on the presentation and feedback from the presentation. This paper should be approximately 10-15 double-spaced pages. All papers should begin with a brief (one or two paragraph) presentation of the problem and overview of the solution (e.g., an experiment or therapy). The next section should be a review of the relevant literature. Finally, the application should be presented in detail and related to the literature review. End with a discussion section. If the application is an experiment, then the discussion section should describe how to proceed if the experiment turns out as expected and how to proceed if it does not. If the application is for an educational intervention or a therapy, then the discussion section should present how the idea can be evaluated.</p>

PSY 432
Embodied Cognition
Fall, 2015
12-1:15 T & Th, SS 205

Instructor: Arthur Glenberg, glenberg@asu.edu Office: PSY 215
Office Hours: 10:30 – 11:30, T & Th and by appointment (email)

***Please note: information in the syllabus, other than grade and absence policies, may be subject to change with reasonable advance notice. ***

Course description

Do left-handers think differently from right-handers? Do paraplegics perceive the world differently from those who can walk? If you say about a potential date, "He leaves me cold," do you literally feel cold? And does a Botox treatment to alleviate frown lines make it difficult to understand sentences about sadness? The surprising answer to all of these questions is YES! Embodied cognition proposes that thinking is based on neural and bodily systems of perception, action, and emotion. We will explore this claim through readings, discussions, debates, and embodied interactions, and we will consider implications of embodied cognition across areas of psychology and applications in education.

Course goals

The last 15 years have seen an explosion of theory and research connected by the term "embodiment." A typical claim of embodied theories is that many forms of cognition make use of perceptual/action/emotion systems. That is, cognition is not something that can be accomplished by the manipulation of abstract symbols by rules (e.g., the way a computer works). Instead, cognition requires a body that interacts with the world. Our main goals are to understand this claim, examine evidence regarding this claim across multiple areas of psychology and application, and to determine if there can be a coherent, unified, embodied approach to understanding behavior.

We will achieve these goals through a combination of activities. The first is reading and discussing reports and analyses in the professional literature. The second is contributing to in-class debates. Finally, you will develop and present (both orally and in a paper) a potential new application of embodiment ideas.

Commented [AG1]: C-1, C-2, C-3, C-4

Learning Outcomes

- Become familiar with the scientific literature on embodied cognition
- Distinguish between embodied and non-embodied approaches
- Think critically about concepts of embodied cognition
- Apply concepts of embodied cognition to your areas of interest

Grading

Grades will be based on a) posted comments on the readings, that is your QRCs (30%); b) contributions to in-class discussions (10%); c) your contributions to the debate (20%); d) application presentation (20%); and e) final paper on the application (20%). The percentages earned in each component will be added and final grades determined as follows: A: 90-100%; B:80-89%; C:65-79%; D: 50-64%, E: < 50%.

Commented [AG2]: C-1

QRCs. QRC stands for Question, Response, Comment. It is your way of recording your reaction to the readings or commenting on another student's reaction. It need not be more than one paragraph, but it is certainly acceptable for a QRC to be longer. A good QRC indicates that you have thought deeply about the issue. Thus, a comment such as "They should have used more subjects," or "Did they counterbalance the order of presentation" is not worth much. Instead, a good QRC is along the lines of "They should have used more subjects because they are testing a critical effect that is likely to be small. The effect is critical because..." Good QRCs also relate one reading to another. For example, "X says A, but Y says B. Perhaps A and B are really the same because..." QRCs will be graded as 0-5, where 0 means not much of a contribution, 3-4 means a good contribution, 5 means a novel or insightful contribution.

Commented [AG3]: C-2, C-4

QRCs are required during weeks indicated with an asterisk in the schedule below. The QRC is submitted to Blackboard and is due by 5 pm on Wednesday of the week assigned, that is, after the lecture on Tuesday and before the discussion on Thursday. For example, a QRC is due the week of August 25. It must be submitted by 5 pm on Wednesday, August 26.

Commented [AG4]: C-4

In-class discussion. Most weeks will have one-half to one day set aside for discussion of the lecture and readings. You can prepare for the discussion by carefully reading the material and writing a QRC. In-class discussion will be graded 0-5 just like the QRCs. Some people think that they learn more by listening and thinking than by talking. Nonetheless, the class is a joint activity that gets its value from individuals interacting, sharing ideas, and criticizing ideas. Your own learning will be enhanced by putting your ideas into an open forum for discussion. How should you overcome shyness or reticence? The answer is to be prepared: Read the assigned readings, prepare a QRC and develop a point of view that you wish to defend or explore. Then, apply that point of view to the ensuing discussion.

Debate. We will have a formal debate with some students taking the Pro side of the question (Resolved: high-level cognition is thoroughly embodied) and others taking the Con side. Each side will have 10 minutes to present their position, 5 minutes to rebut the other side's position, and then a final 5-minute summary.

Application presentation and paper. Each student will present a NOVEL application of embodiment theory. The application can be a proposal for a new experiment, an

educational application, a clinical application, a business/advertising application, and so on. Submit a written proposal to Glenberg by MONDAY, November 9. YOU MUST OBTAIN APPROVAL BY THURSDAY, NOVEMBER 12. Ten-minute oral presentations of applications and 5-minute discussions occur November 19 – December 3.

Commented [AG5]: C-3, C-4

Application final paper is due three days after your project presentation. The final paper is based on your presentation and feedback from your presentation. This paper should be approximately 10-15 double-spaced pages. All papers should begin with a brief (one or two paragraph) presentation of the problem and overview of the solution (e.g., an experiment or therapy). The next section should be a review of the relevant literature. Finally, the application should be presented in detail and related to the literature review. End with a discussion section. If your application is an experiment, then the discussion section should describe how to proceed if the experiment turns out as expected and how to proceed if it does not. If your application is for an educational intervention or a therapy, then the discussion section should present how your idea can be evaluated.

Commented [AG6]: C-3, C-4

Absence Policy: Written assignments (e.g., QRC) need to be submitted on time. The debate and application presentations, by their nature, cannot be made up; talk to Glenberg about scheduling if there is a conflict. Similarly, discussion cannot be made up. If you must miss a discussion, talk to Glenberg before missing the discussion to arrange for an alternative activity.

Academic Honesty: Academic honesty is expected of all students in all examinations, papers, laboratory work, academic transactions and records. The possible sanctions for academic dishonesty include, but are not limited to, appropriate grade penalties, course failure (indicated on the transcript as a grade of E), course failure due to academic dishonesty (indicated on the transcript as a grade of XE), loss of registration privileges, disqualification and dismissal. For more information, see <http://provost.asu.edu/academicintegrity>.

Occasionally students are not aware of the definition of plagiarism or its consequences. Plagiarism is copying someone else's words or ideas without appropriate citation. Whenever you directly quote someone, that quotation must be in quotation marks (or set off by wider margins for a long quotation) and a citation provided. Whenever you repeat, refer to, or use someone's ideas, you must provide appropriate citation. Some students believe that if they change a word or two in every sentence then it is not plagiarism. THAT BELIEF IS INCORRECT. Plagiarism is an extremely serious offense and may result in expulsion from the University. For more information and valuable advice go the Writing Center's Writer's Handbook (<http://www.wisc.edu/writing/Handbook/index.html>).

Disability Accommodations: Qualified students with disabilities who will require disability accommodations in this class are encouraged to make their requests to me at the beginning of the semester either during office hours or by appointment. **Note:** Prior to receiving disability accommodations, verification of eligibility from the Disability Resource Center (DRC) is required. Disability information is confidential.

Establishing Eligibility for Disability Accommodations: Students who feel they will need disability accommodations in this class but have not registered with the Disability Resource Center (DRC) should contact DRC immediately. Their office is located on the first floor of the Matthews Center Building. DRC staff can also be reached at: 480-965-1234 (V), 480-965-9000 (TTY). For additional information, visit: www.asu.edu/studentaffairs/ed/drc. Their hours are 8:00 AM to 5:00 PM, Monday through Friday.

Courtesy

It's great to have your laptop to look up articles, definitions, and facts. But please be courteous to speakers: No email and no unrelated web-surfing while someone is presenting or leading a discussion.

Sometimes discussion can become heated. Please remember to keep your questions and comments helpful. Even when your comment is hard-headed and disputatious, it should always be directed at the science and never directed at the person.

Course/Instructor Evaluation

The course/instructor evaluation for this course will be conducted online 10-14 days before the last official day of classes. Your response(s) to the course/instructor are anonymous and will not be returned to your instructor until after grades have been submitted. The use of a course/instructor evaluation is an important process that allows our department to (1) help faculty improve their instruction, (2) help administrators evaluate instructional quality, (3) ensure high standards of teaching, and (4) ultimately improve instruction and student learning over time. Completion of the evaluation is not required for you to pass this class and will not affect your grade, but your cooperation and participation in this process is critical. About two weeks before the class finishes, watch for an e-mail with "Course Evaluations" in the subject heading. This email will be sent to your official ASU e-mail address, so make sure ASU has your current email address on file. You can check this online at the following URL: <https://webapp4.asu.edu/epo-web/forwarding>.

Schedule and Readings

Week 1: August 20 - Introduction to theories of cognition

Class name mnemonics (Assignment for August 20!). Create a mnemonic for your name before the first class. We will practice the mnemonics during class.

The mnemonic should relate your name to an easily remembered, distinctive *physical* characteristic. Example 1. Glenberg has black and white hair like a wise, old king. The most famous king is King Arthur. So, when you look at Glenberg and see his hair, it reminds you that his name is Arthur. Example 2: A rather tall woman in one of my classes noted that her name, Michelle, had two tall letters, as in the word "tall." Looking at the woman and seeing that she is tall, reminds you of the letters in her name, Michelle.

Sometimes something silly or clever will work. Arezou is a woman from Iran; I thought it would be impossible to learn her name. But she said, "Some people like his zoo; some like her zoo; but everyone likes our zoo!"

Some people try to make up mnemonics like, "I am always smiling, 'smiling' starts with an 's,' so you know my name is Sonia." Unfortunately, Sonia is NOT always smiling, so this doesn't work too well. Or someone says, "You can't see it, but I have a birthmark that looks like a lizard, so you know my name is Liz." But, if we can't see it, it doesn't help too much!

Warning: This is a lot harder to do than it sounds. Take some time to work on it; ask friends for help.

Required Readings (one from each set)

Set 1: Embodiment

- Glenberg, A. M. (2010). Embodiment as a unifying perspective for psychology. *Wiley Interdisciplinary Reviews: Cognitive Science*
- Glenberg, A. M. (2015). Few believe the world is flat: How embodiment is changing the scientific understanding of cognition. *Canadian Journal of Experimental Psychology/Revue Canadienne de Psychologie Expérimentale*, 69(2), 165–171. <http://doi.org/10.1037/cep0000056>
- Glenberg, A. M., Witt, J. K., & Metcalfe, J. (2013). From the Revolution to Embodiment: 25 Years of Cognitive Psychology. *Perspectives on Psychological Science*, 8(5), 573–585. <http://doi.org/10.1177/1745691613498098>

Set 2: Standard approach to cognition

- Newell, A. & Simon, H. A. (1976). Computer Science as Empirical Inquiry: Symbols and Search. *Communications of the ACM*, 19, 113-126.
- Mahon, B. Z. (2015). The burden of embodied cognition. *Canadian Journal of Experimental Psychology/Revue Canadienne de Psychologie Expérimentale*, 69(2), 172–178. <http://doi.org/10.1037/cep0000060>

Optional readings

- Barsalou, L. W. (1999) Perceptual symbol systems. *Behavioral and Brain Sciences*, 22:577–660.
- Barsalou, L. (2008). Grounded Cognition. *Annual Review of Psychology*, 59.
- Glenberg, A. M. (1997). What memory is for. *Behavioral and Brain Sciences*, 20, 1-55.
- Proffitt, D.R. (2006). Embodied perception and the economy of action. *Perspectives on Psychological Science*, 1(2), 110-122.
- Proffitt, D. R., & Linkenauger, S. A. (2013). Perception viewed as a phenotypic expression. In, W. Prinz, M. Beisert, and A. Herwig (Eds.) *Action Science: Foundations of an Emerging Discipline* (pp. 171–197). Cambridge, MA: MIT.
- Schubert, Thomas W., & Semin, G. R. (2009). Embodiment as a unifying perspective for

psychology. *European Journal of Social Psychology*, 39(7), 1135-1141.

doi:10.1002/ejsp.670

Shapiro, L. (2011). *Embodied Cognition*. New York: Routledge. Chapters 1 & 2.

Wilson, M. (2002). Six Views of Embodied Cognition. *Psychonomic Bulletin & Review*, 9, 625-36.

*Week 2: August 25-27 Introduction to Embodiment: Does changing the body really change cognition?

Required Readings: At least one of the following

Arrighi, R., Cartocci, G., Burr, D. (2011). Reduced perceptual sensitivity for biological motion in paraplegia patients. *Current Biology*, 21, R910-R911.

Casasanto, D. (2011). Different Bodies, Different Minds: The Body Specificity of Language and Thought. *Current Directions in Psychological Science*, 20(6), 378-383.

doi:10.1177/0963721411422058

Havas, D. A., Glenberg, A. M., Gutowski, K. A., Lucarelli, M. J., & Davidson, R. J. (2010).

Cosmetic Use of Botulinum Toxin-A Affects Processing of Emotional Language.

Psychological Science, 21(7), 895-900. doi:10.1177/0956797610374742

Proffitt, D.R. (2006). Embodied perception and the economy of action. *Perspectives on Psychological Science*, 1(2), 110-122.

Taylor-Covill, G. A. H., & Eves, F. F. (2015). Carrying a Biological "Backpack": Quasi-Experimental Effects of Weight Status and Body Fat Change on Perceived Steepness.

Journal of Experimental Psychology: Human Perception and Performance.

<http://doi.org/10.1037/xhp0000137>

*Week 3: September 1-3 Cognitive Development

Required readings (at least one of the following):

(Bruderer, Danielson, Kandhadai, & Werker, 2015)

Dahl, A., Campos, J. J., Anderson, D. I., Uchiyama, I., Witherington, D. C., Ueno, M., ...

Barbu-Roth, M. (2013). The Epigenesis of Wariness of Heights. *Psychological Science*.

doi:10.1177/0956797613476047

Campos, J. J., Bertenthal, B. I., & Kermoian, R. (1992). Early experience and emotional development: The emergence of wariness of heights. *Psychological Science*, 3(1), 61.

Rakison, D. H. & Krogh, L. (2012). Does causal action facilitate causal perception in infants younger than 6 months of age? *Developmental Science*, 15, 43-53.

Smith, L. B. (2005). Action alters shape categories. *Cognitive Science*, 29(4), 665-679.

Sommerville, J. A., Woodward, A. L., & Needham, A. (2005). Action experience alters 3-month-old infants' perception of others' actions. *Cognition*, 96, B1-B11.

Stapel, et al. (2013) Infants' action prediction is facilitated by action Experience. SRCD poster.

*Week 4: September 8-10 On the other hand (Note: no in-class meetings)

Required readings [read at least Lupker, Glenberg (2015a), Mahon, and Glenberg's response (2015b)]

- Glenberg, A. M. (2015a). Few believe the world is flat: How embodiment is changing the scientific understanding of cognition. *Canadian Journal of Experimental Psychology/Revue Canadienne de Psychologie Expérimentale*, 69(2), 165–171. <http://doi.org/10.1037/cep0000056>
- Glenberg, A. M. (2015b). Response to Mahon: Unburdening cognition from abstract symbols. *Canadian Journal of Experimental Psychology/Revue Canadienne de Psychologie Expérimentale*, 69(2), 181–182. <http://doi.org/10.1037/cep0000057>
- Lupker, S. J. (2015). CSBBCS at Ryerson University and the embodied cognition debate. *Canadian Journal of Experimental Psychology/Revue Canadienne de Psychologie Expérimentale*, 69(2), 157–158. <http://doi.org/10.1037/cep0000061>
- Mahon, B. Z. (2015a). Response to Glenberg: Conceptual content does not constrain the representational format of concepts. *Canadian Journal of Experimental Psychology/Revue Canadienne de Psychologie Expérimentale*, 69(2), 179–180. <http://doi.org/10.1037/cep0000059>
- Mahon, B. Z. (2015b). The burden of embodied cognition. *Canadian Journal of Experimental Psychology/Revue Canadienne de Psychologie Expérimentale*, 69(2), 172–178. <http://doi.org/10.1037/cep0000060>
- Masson, M. E. J. (2015). Toward a deeper understanding of embodiment. *Canadian Journal of Experimental Psychology/Revue Canadienne de Psychologie Expérimentale*, 69(2), 159–164. <http://doi.org/10.1037/cep0000055>

Optional readings

- Hickok, G., & Hauser, M. (2010). (Mis)understanding mirror neurons. *Current Biology*, 20, R593-R594.
- Kintsch, W. (2008). Symbol systems and perceptual representations. In M. de Vega, A. M. Glenberg, and A. C. Graesser (Eds.) *Symbol, Embodiment, and Meaning* (pp.). Oxford, UK: Oxford University Press.
- Louwerse, M. & Hutchinson, S. (2012). Neurological evidence linguistic processes precede perceptual simulation in conceptual processing. *Frontiers in Psychology*, doi: 10.3389/fpsyg.2012.00385
- Mahon, B. Z. & Caramazza, A. (2008). A critical look at the embodied cognition hypothesis and a new proposal for grounding conceptual content. *Journal of Physiology - Paris*, 102, 59-70.

*Week 5: September 15-17 Mirror neurons and simulation

Required readings

- Glenberg, A. M. (2011b). Introduction to the Mirror Neuron Forum. *Perspectives on Psychological Science*, 6(4), 363-368. doi:10.1177/1745691611412386
- Keyers, C. (2009). Mirror Neurons. *Current Biology*, 19, R971-R973.

Optional Readings

Rizzolatti, G., & Craighero, L. (2004). The mirror-neuron system. *Annual Review of Neuroscience*, 27, 169-192.

Rizzolatti, G., & Sinigaglia, C. (2010). The functional role of the parieto-frontal mirror circuit: interpretations and misinterpretations. *Nature Reviews Neuroscience*, 11, 264-274.

The Mirror Neuron Forum:

Glenberg, A. M. (2011b). Introduction to the Mirror Neuron Forum. *Perspectives on Psychological Science*, 6(4), 363-368. doi:10.1177/1745691611412386

Gallese, V., Gernsbacher, M. A., Heyes, C., Hickok, G., & Iacoboni, M. (2011). Mirror Neuron Forum. *Perspectives on Psychological Science*, 6(4), 369-407. doi:10.1177/1745691611413392

Glenberg, A. M. (2011a). Positions in the Mirror Are Closer Than They Appear. *Perspectives on Psychological Science*, 6(4), 408-410. doi:10.1177/1745691611413393

*Week 6: September 22-24 Motor system in high-level cognition: Language

Required reading (at least one of the following):

Aziz-Zadeh, L., Wilson, S. M., Rizzolatti, G., & Iacoboni, M. (2006). Congruent embodied representations for visually presented actions and linguistic phrases describing actions. *Current Biology*, 16(18), 1818-1823.

Hauk, O., Johnsrude, I., & Pulvermüller, F. (2004). Somatotopic representation of action words in human motor and premotor cortex. *Neuron*, 41(2), 301-307.

Optional Readings:

Glenberg, A. M., & Gallese, V. (2012). Action-based Language: A theory of language acquisition, comprehension, and production. *Cortex*, 48, 905-922. doi:10.1016/j.cortex.2011.04.010.

Glenberg, A. M., Sato, M., Cattaneo, L. (2008). Use-induced motor plasticity affects the processing of abstract and concrete language. *Current Biology*, 18, R290-R291.

Ping, R. M., Goldin-Meadow, S., & Beilock, S. L. (2014). Understanding gesture: Is the listener's motor system involved? *Journal of Experimental Psychology: General*, 143(1), 195-204. <http://doi.org/10.1037/a0032246>

Zwaan, R. & Taylor, L. J. (2006). Seeing, acting, understanding: Motor resonance in language comprehension. *Journal of Experimental Psychology: General*, 135, 1-11.

*Week 7: September 29 – October 1 Perceptual systems in high-level cognition

Required Reading (at least one of the following)

- Pecher, D., Zeelenberg, R., & Barsalou, L. W. (2003). Verifying different-modality properties for concepts produces switching costs. *Psychological Science*, 14, 119-124.
- Proffitt, D. R., & Linkenauger, S. A. (2013). Perception viewed as a phenotypic expression. In W. Prinz, M. Beisert, and A. Herwig (Eds.) *Action Science: Foundations of an Emerging Discipline* (pp. 171–197). Cambridge, MA: MIT.
- Rueschemeyer S, Glenberg AM, Kaschak M, Mueller K and Friederici A (2010). Top-down and bottom-up contributions to understanding sentences describing objects in motion. *Front. Psychology* doi: 10.3389/fpsyg.2010.00183.
- Stanfield, R.A., & Zwaan, R.A. (2001). The effect of implied orientation derived from verbal context on picture recognition. *Psychological Science*, 12, 153–156.
- Thomas, L. E. (2015). Grasp Posture Alters Visual Processing Biases Near the Hands. *Psychological Science*. <http://doi.org/10.1177/0956797615571418>

***Week 8 October 6-8: Embodiment and Social Cognition**

Required Readings

- Gallese, V., Keysers, C., & Rizzolatti, G. (2004). A unifying view of the basis of social cognition. *Trends in Cognitive Sciences*, 8(9), 396-403.
doi:10.1016/j.tics.2004.07.002

AND one of these papers

- Eisenberger, N. I. (2003). Does Rejection Hurt? An fMRI Study of Social Exclusion. *Science*, 302(5643), 290–292. <http://doi.org/10.1126/science.1089134>
- Inagaki, T. K., & Eisenberger, N. I. (2013). Shared Neural Mechanisms Underlying Social Warmth and Physical Warmth. *Psychological Science*, 24(11), 2272–2280.
<http://doi.org/10.1177/0956797613492773>
- Kille, D. R., Forest, A. L. & Wood, J. V. (2012). Tall, dark, and stable: Embodiment motivates mate selection preferences. *Psychological Science*, DOI: 10.1177/0956797612457392
- Meier, B. P., Schnall, S., Schwarz, N., & Bargh, J. A (2012). Embodiment in social psychology. *Topics in Cognitive Science*, 1-12. DOI: 10.1111/j.1756-8765.2012.01212.x
- Schubert, T. W. (2005). Your highness: vertical positions as perceptual symbols of power. *Journal of Personality and Social Psychology*, 89(1), 1.
- Williams, L. E., & Bargh, J. A. (2008). Experiencing Physical Warmth Promotes Interpersonal Warmth. *Science*, 322(5901), 606–607. doi:10.1126/science.1162548

October 13 FALL BREAK NO CLASS

Week 9: October 15: Embodiment and Culture

- Markus, H. R., & Kitayama, S (2010). Cultures and selves: A cycle of mutual constitution. *Perspectives on Psychological Science*, 5., 420-430.

Week 10: October 20-22 Debate!

Tuesday: Formulate question, make teams, prepare

Possible questions:

Cognition is thoroughly embodied

Abstract symbols are needed for cognition

Consciousness proves that not all cognition is embodied

Thursday: Debate

*Week 11 October 27-29: Applied Embodiment - Education

Required reading (read at least one)

Alibali, M. W., & Nathan, M. J. (2012). Embodiment in Mathematics Teaching and Learning: Evidence From Learners' and Teachers' Gestures. *Journal of the Learning Sciences, 21*(2), 247–286. <http://doi.org/10.1080/10508406.2011.611446>

Glenberg, A. M. (2011). How reading comprehension is embodied and why that matters. *International Electronic Journal of Elementary Education, 4*, 5-18.

Goldstone, R., Landy, D., & Son, J. Y. (2008). A well grounded education: The role of perception in science and mathematics. In M. de Vega, A. M. Glenberg, and A. C. Graesser (Eds.) *Symbol, Embodiment, and Meaning* (pp.). Oxford, UK: Oxford University Press.

Kontra, C., Lyons, D. J., Fischer, S. M., & Beilock, S. L. (2015). Physical Experience Enhances Science Learning. *Psychological Science*. <http://doi.org/10.1177/0956797615569355>

Macedonia, M. (2014). Bringing back the body into the mind: gestures enhance word learning in foreign language. *Frontiers in Psychology, 5*.

Mayer, K. M., Yildiz, I. B., Macedonia, M., & Kriegstein, K. von. (2015). Visual and Motor Cortices Differentially Support the Translation of Foreign Language Words. *Current Biology, 25*(4), 530–535. <http://doi.org/10.1016/j.cub.2014.11.068>

Optional readings

Gee, James Paul. "Learning and Games." *The Ecology of Games: Connecting Youth, Games, and Learning*. Edited by Katie Salen. The John D. and Catherine T. MacArthur Foundation Series on Digital Media and Learning. Cambridge, MA: The MIT Press, 2008. 21–40. doi:10.1162/dmal.9780262693646.021

Johnson-Glenberg, M. C., Birchfield, D., Tolentino, L., Koziupa, T. (under review). Technology-enabled embodied learning environments: Two STEM studies.

Nemirovsky, R., Rasmussen, C., Sweeny, G., & Wawro, M. (2011). When the classroom floor becomes the complex plane: Addition and multiplication as ways of bodily navigation. *Journal of the Learning Sciences, 21*, 287-323.

*Week 12 November 3-5: Applied Embodiment – Special populations Autism & Aging

Required readings (read at least one)

- Dapretto, M., Davies, M. S., Pfeifer, J. H., Scott, A. A., Sigman, M., Bookheimer, S. Y., & Iacoboni, M. (2006). Understanding emotions in others: mirror neuron dysfunction in children with autism spectrum disorders. *Nature Neuroscience*, 9, 28-30.
- De Scalzi, M., Rusted, J., & Oakhill, J. (2015). Embodiment Effects and Language Comprehension in Alzheimer's Disease. *Cognitive Science*, 39(5), 890-917. <http://doi.org/10.1111/cogs.12187>
- Eigsti, I.-M. (2013). A Review of Embodiment in Autism Spectrum Disorders. *Frontiers in Psychology*, 4. doi:10.3389/fpsyg.2013.00224
- Gallese, V., Gernsbacher, M. A., Heyes, C., Hickok, G., & Iacoboni, M. (2011). Mirror Neuron Forum. *Perspectives on Psychological Science*, 6(4), 369-407. doi:10.1177/1745691611413392 [only sections related to autism]
- LeBarton, E. S., & Iverson, J. M. (2013). Fine motor skill predicts expressive language in infant siblings of children with autism. *Developmental Science*, n/a-n/a. doi:10.1111/desc.12069
- Linkenauger, S. A., Lerner, M. D., Ramenzoni, V. C., & Proffitt, D. R. (2012). A Perceptual-Motor Deficit Predicts Social and Communicative Impairments in Individuals With Autism Spectrum Disorders: Perceptual-motor deficit in autism. *Autism Research*, 5(5), 352-362. doi:10.1002/aur.124
- Vallet, G. T. (2015). Embodied cognition of aging. *Frontiers in Psychology*, 6. <http://doi.org/10.3389/fpsyg.2015.00463>

Week 13: November 10-12 Project meetings with Glenberg NOTE: KORNER ET AL (BELOW) PROVIDES HINTS ON HOW TO TEST EMBODIMENT CLAIMS.

Optional reading: Körner, A., Topolinski, S., & Strack, F. (2015). Routes to embodiment. *Frontiers in Psychology*, 6. <http://doi.org/10.3389/fpsyg.2015.00940>

Week 14 November 17 NO CLASS; WORK ON PROJECTS

November 19 PROJECT PRESENTATIONS

November 24 PROJECT PRESENTATIONS

November 26 THANKSGIVING BREAK

December 1 PROJECT PRESENTATIONS

December 3 PROJECT PRESENTATIONS

Final papers are due three days after your project presentation